1180 Main Street Office Project

Initial Study Mitigated Negative Declaration

April 26, 2019

Lead Agency:

City of Redwood City
1017 Middlefield Road
Redwood City, CA 94063

Technical Assistance:

Stantec Consulting Services Inc.
1340 Treat Boulevard, Suite 300
Walnut Creek, CA 94597

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Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ADFW	Average Dry Weather Flows
AERMOD	Atmospheric Dispersion Model
APN	Assessor Parcel Numbers
Applicant	Premia Capital
AQP	air quality plan
BAAQMD	Bay Area Air Quality Management District
bgs	below ground surface
BMPs	best management practices
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CalGreen	California Green Building Standards Code
CAP	Climate Action Plan
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
City	City of Redwood City
CMP	Congestion Management Program
CNDDB	CDFW Natural Diversity Database
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CRHR	California Register of Historical Resources
CUP	Conditional Use Permit
dB(A)	Decibels A-Weighted
DBH	Diameter at beast height
DOC	Department of Conservation
DPR	Department of Parks and Recreation
DPM	Diesel Particulate Matter
DTSC	Department of Toxic Substances and Control
DWR	Department of Water Resources
EIR	Environmental Impact Report
ESA	Environmental Site Assessment
EPA	United States Environmental Protection Agency
ESO	Emergency Services Organization
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
FTA	Federal Transit Administration
GHG	greenhouse gas
Gpd	gallons per day
HCP	Habitat Conservation Plan
HRA	Health Risk Assessment
IC	Internal Combustion
IPaC	USFWS Information for Planning and Consultation
ISMND	Initial Study Mitigated Negative Declaration
Ldn	Day-Night Noise Level
Leq	Equivalent Average Noise Level
LID	Low-Impact Development
LOS	Level of Service
LUST	Leaking Underground Storage Tank
$\mu g/m^3$	micrograms per liter
Mgd	Million gallons per day



MLD	Most Likely Descendent
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NETR	Nationwide Environmental Tile Research (NETR)
NGVD	National Geodetic Vertical Datum
NO_x	Nitrous oxides
NOA	Naturally Occurring Asbestos
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
OHP	Office of Historic Preservation
PCBs.	polychlorinated biphenyls.
PDA	Priority Development Area
$PM_{2.5}$	Particulate Matter 2.5 microns or less in diameter
PM_{10}	Particulate Matter 10 micorns or less in diameter
PPV	Peak Particle Velocity
PRC	Public Resources Code
proposed project	1180 Main Street Office Project
PWWF	Peak Wet Weather Flows
RCFD	Redwood City Fire Department
RCNM	Roadway Construction Noise Model
RCPD	Redwood City Police Department
ROG	Reactive Organic Gas
RR	Railroad
RWCMoves	Redwood City Moves
RWQCB	Regional Water Quality Control Board
SBSA	South Bayside System Authority
Sharrows	shared bicycle lanes
SHHRD	Stambaugh-Heller Historical Residential District
SMCWPPP	San Mateo Countywide Water Pollution Prevention Program
SR 82	State Route 82
SR 84	State Route 84
STC	Sound Transmission Class
SVCW	Silicon Valley Clean Water
SVP	Society for Vertebrate Paleontology
TACs	toxic air contaminants
TCP	Traffic Control Plan
TCR	Tribal Cultural Resource
TDM	Transportation Demand Management
TWLTL	two-way left-turn lane
US-101	U.S. Highway 101
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
UWMP	Urban Water Management Plan
VMT	vehicle miles travelled
WDRs	Waste Discharge Requirements
WMP	Waste Management Plan
WWTP	Waste Water Treatment Plant

INITIAL STUDY MITIGATED NEGATIVE DECLARATION

Project Title: 1180 Main Street Office Project

Project Description: Premia Capital is proposing to develop the 1180 Main Street Office Project in the City of Redwood City, California. The proposed project would be developed on two adjacent parcels identified as Assessor Parcel Numbers 053-147-060 and 053-147-070 (located at 1180 and 1190 Main Street) near the City's downtown area. The project site is approximately 1.31 acres and partially developed with a concrete foundation and a vacant one-story commercial building. The proposed project would demolish the existing structures and construct a three-story commercial office building of 109,375 square feet with a two-level underground parking garage and on-site amenities including a stacked shipping container café and a 10,000 square feet publicly accessible park space.

Name of Lead Agency:
City of Redwood City
Community Development Department, Planning and Housing Division
1017 Middlefield Road
Redwood City, CA 94063

Lead Agency Contact Information:
William Chui, Associate Planner
Phone: (650) 780-5916
Email: wchui@redwoodcity.org

Determination: The City of Redwood City has determined that a) all potentially significant or significant impacts required in the Initial Study Mitigated Negative Declaration have been identified and analyzed; and b) with respect to each significant impact on the environment, either of the following apply: 1) changes or alterations have been required or incorporated into the project that avoid or mitigate the significant impacts to a level of less than significant; or 2) those changes or alterations that are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency. The ISMND and supporting documents are available at the City of Redwood City Community Development Department, Planning and Housing Division, located at 1017 Middlefield Road, Redwood City, California 95688, and online by searching the project name at: https://www.redwoodcity.org/city-hall/current-projects/development-projects?id=90

By: _____ Date: April 24, 2019

William Chui, Associate Planner

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1.0 INTRODUCTION

Premia Capital (applicant) is proposing to develop the 1180 Main Street Office Project (proposed project) in the City of Redwood City (City), California. The proposed project would be developed on two adjacent parcels identified as Assessor Parcel Numbers (APNs) 053-147-060 (currently 1180 Main Street) and 053-147-070 (currently 1190 Main Street) near the City's downtown area. The project site is approximately 1.31 acres and partially developed with a concrete foundation and a vacant one-story commercial building. The proposed project would demolish the existing structures and construct a 40-foot high three-story commercial office building of 109,375 square feet with a two-level underground parking garage and on-site amenities including a stacked shipping container café and an on-site publicly accessible park space of 10,000 square feet.

1.1 PROJECT TITLE

1180 Main Street Office Project

1.2 LEAD AGENCY

City of Redwood City
Community Development Department, Planning and Housing Division
1017 Middlefield Road
Redwood City, CA 94063

1.3 LEAD AGENCY CONTACT

William Chui, Associate Planner
Phone: (650) 780-5916
Email: wchui@redwoodcity.org

1.4 PURPOSE

The purpose of the proposed project is to allow for the development of a 40-foot high (three-story commercial office building of 109,375 square feet with associated parking and on-site amenities on the 1.31-acre project site located at 1180 Main Street in the City of Redwood City. This Initial Study Mitigated Negative Declaration (ISMND) has been prepared to evaluate the proposed project for potential environmental effects in compliance with the California Environmental Quality Act (CEQA). The City is the lead agency under CEQA and has the principal responsibility for carrying out or approving a project which that may have a significant effect on the environment. This ISMND has been prepared in anticipation of determining that all potentially significant impacts from implementing the proposed project can be mitigated to less than significant levels. This document has been prepared in accordance with CEQA, Public Resources Code (PRC) Section 21000 et seq., and the State CEQA Guidelines, California Code of Regulations (CCR), Title 14, Section 15000 et seq.

1.5 PROJECT LOCATION

The 1.31-acre project site is located at 1180 Main Street near the City's downtown area. The project site is adjacent to Elm Street, Lathrop Street, Maple Street, Main Street, and the Caltrain corridor. The project site is approximately 0.5 miles east of the Redwood City Caltrain station on James Avenue. Regional access is provided by U.S. Highway

101 (US-101), approximately 1 mile north of the project site, State Route 82 (SR 82, El Camino Real) located approximately 0.1 miles south of the project site, and SR 84 located approximately 0.5 miles east of the project site.

1.6 EXISTING SITE CONDITIONS

The project site is partially developed with a concrete foundation in the northwest portion of the site and a vacant one-story commercial building in the southeast corner of the site. There is also a concrete drainage channel that extends across the western portion of the project site. As part of a previously started, but not completed, development project at the site, bridge abutments and foundations were constructed on either side of the concrete drainage channel to allow for the construction of a bridge crossing. However, the previous development project did not complete the bridge crossing. The remaining portions of the project site are vacant and covered with disturbed ruderal vegetation.

1.7 SURROUNDING LAND USES

The project site is adjacent to Elm Street to the southeast, Lathrop Street to the southwest, Maple Street to the northwest, and railroad tracks owned by Caltrain to the northeast (Caltrain corridor tracks). Development surrounding the project site consists of a mix of uses including, commercial uses to the north, high-density residential uses to the west, commercial and residential uses to the east, and automobile sales and service centers to the south.

1.8 GENERAL PLAN DESIGNATION AND ZONING

The project site is within the City's El Camino Real Corridor Plan Area, which includes goals, policies, and strategies for street improvements to support walking, bicycling, and economic development (Redwood City 2017). According to the City of Redwood City 2010 General Plan, the project site has a general plan designation of Mixed-Use Live/Work and is within the Mixed-Use Live/Work zoning district.

The intent of the Mixed-Use Live/Work general plan designation is to provide a mix of residences and low-intensity workplaces in the same building space. Typical uses include artist lofts, studio spaces, small offices, and similar low-intensity uses. Creative industrial workspace areas are also permitted, provided that activities limit or confine noise, dust, and vibration impacts. Stand-alone residential development is not permitted (Redwood City 2010a).

Similarly, the intent of the Mixed-Use Live/Work zoning district is to provide opportunities for a mix of live/work, light industrial, technology, creative industry, and limited office, and complementary uses. Typical uses include artist lofts, studio spaces, small offices, and similar low-intensity uses. Residential uses are permitted only as live/work (stand-alone residential development is not permitted), either in new developments or as adaptive reuse of existing structures. Stand-alone commercial or industrial workspace areas are permitted, provided that activities limit or confine noise, dust, and vibration impacts; are low impact in nature; and are compatible with any nearby existing or allowed residential uses. Development generally is low to moderate in scale (Redwood City 2010a).

1.9 CEQA AND PUBLIC AGENCY REVIEW

CEQA requires that project proponents disclose the significant impacts to the environment from proposed development projects. The intent of CEQA is to foster good planning and to consider environmental issues during the planning process. The City is the Lead Agency under CEQA for the preparation of this ISMND. The CEQA Guidelines (Section 21067) define the Lead Agency as: "the public agency which has the principal responsibility for carrying out or approving a project which may have a significant effect upon the environment." Approval of the proposed project is

considered a public agency discretionary action; therefore, the proposed project is subject to compliance with CEQA. The City has directed the preparation of an analysis to comply with CEQA.

Stantec Consulting Services Inc. (Stantec) has prepared this document at the direction of the City. The purpose of this document is to disclose the environmental consequences of implementing the proposed project to decision-makers and the public. The public, City residents, and other local and state resource agencies will be given the opportunity to review and comment on this document during a 30-day public-review period. Comments received during the review period will be considered by the City prior to certification of this ISMND and project approval.

The public review period will commence on April 26, 2019 and end on May 27, 2019 pursuant to CEQA Guidelines Section 15105. If you wish to send written comments (including via e-mail), they must be received by 5 p.m. on May 27, 2019. Written comments should be addressed to:

William Chui, Associate Planner
Community Development Department, Planning and Housing Division
1017 Middlefield Road
Redwood City, CA 94063
Phone: (650) 780-5916
Email: wchui@redwoodcity.org

1.10 REQUIRED PERMITS AND APPROVALS

This ISMND would be used by the City as the Lead Agency to evaluate the potential environmental impacts of the proposed project. The applicant is requesting approval of the following applications: (1) Tentative Parcel Map; (2) Conditional Use Permit (CUP); and (3) Architectural Permit. Other anticipated project approvals/actions may include, but are not limited to, the following:

- Design Review: City of Redwood City
- Tree Removal Permit: City of Redwood City
- Adoption of the Mitigated Negative Declaration: City of Redwood City

Additionally, all work related to improvements and project grading would be subject to the Redwood City Municipal Code, including the Zoning Ordinance, Building Code, and Fire Code.

1.11 SCOPE OF THIS INITIAL STUDY

As the Lead Agency under CEQA, the City is responsible for compliance with the environmental review process prescribed by the CEQA Guidelines. This Initial Study focuses on the environmental issues identified as potentially significant in the CEQA Appendix G Environmental Checklist Form and by the CEQA Guidelines. This ISMND evaluates the potentially significant effects on the environment and identifies revisions in the project site plans (presented as mitigation measures) to mitigate the effects to a level at which no significant effect on the environment would occur. A complete project description is included in Section 2.0. Evaluations of the CEQA Appendix G Environmental Checklist Form questions are analyzed in Section 3.0 and references are included in Section 4.0 of this document.

The following technical studies were conducted and/or reviewed in preparing this ISMND: air quality modeling outputs, biological resources assessment, geotechnical study, cultural resources study, preliminary engineering study, phase I environmental site assessment (ESA), traffic impact study, and noise study. These studies and

supporting data are included as appendices to this ISMND and referred to where appropriate throughout this document.

1.12 DOCUMENT ORGANIZATION

This ISMND is organized as follows:

Section 1.0: Introduction. This section introduces the proposed project and describes the purpose and organization of this document.

Section 2.0: Project Description. This section provides a detailed description of the proposed project.

Section 3.0: Environmental Checklist and Environmental Evaluation. This section presents an analysis of the range of environmental issues identified in the CEQA Environmental Checklist and determines for each topic whether the proposed project would result in no impact, a less than significant impact, a less than significant impact with mitigation incorporated, or a potentially significant impact. If impacts are determined to be potentially significant after incorporation of applicable mitigation measures, an Environmental Impact Report (EIR) would be required. For this proposed project, however, mitigation measures have been incorporated, where needed, that would reduce all potentially significant impacts to a less than significant level.

Section 4.0: References. This section lists the references used in preparing this ISMND.

Section 5.0: List of Preparers. This section identifies the report preparers.

2.0 PROJECT DESCRIPTION

2.1 PROJECT OVERVIEW

The proposed project would be located at 1180 Main Street in Redwood City, California (Figure 2.0-1 and Figure 2.0-2). The proposed project would demolish the existing vacant one-story commercial building and a concrete foundation totaling approximately 7,623 square feet. The proposed project would redevelop the site with a 40-foot high three-story commercial office building of 109,375 square feet with a two-level underground parking garage of 75,653square feet. In addition, the proposed project would complete the existing bridge crossing with the construction of a 64-foot-wide bridge over the drainage channel. The proposed bridge would provide access to the building's main entrance and include a publicly accessible park space of 10,000 square feet. The proposed project would also include an on-site stacked shipping container café of 325 square feet.

2.2 PROJECT COMPONENTS

2.2.1 Office Building

The proposed three-story commercial office building would be approximately 40 feet in height with a gross floor area of 109,375 square feet. The proposed building's main entrance would be located on Maple Street with additional entrances located on Main Street at the southeast corner of the project site and on the northwest side of the building to access the proposed project's proposed on-site walkway along the Caltrain corridor. Access to each floor of the proposed building would be available from the elevators and stairwell located within the center of the building.

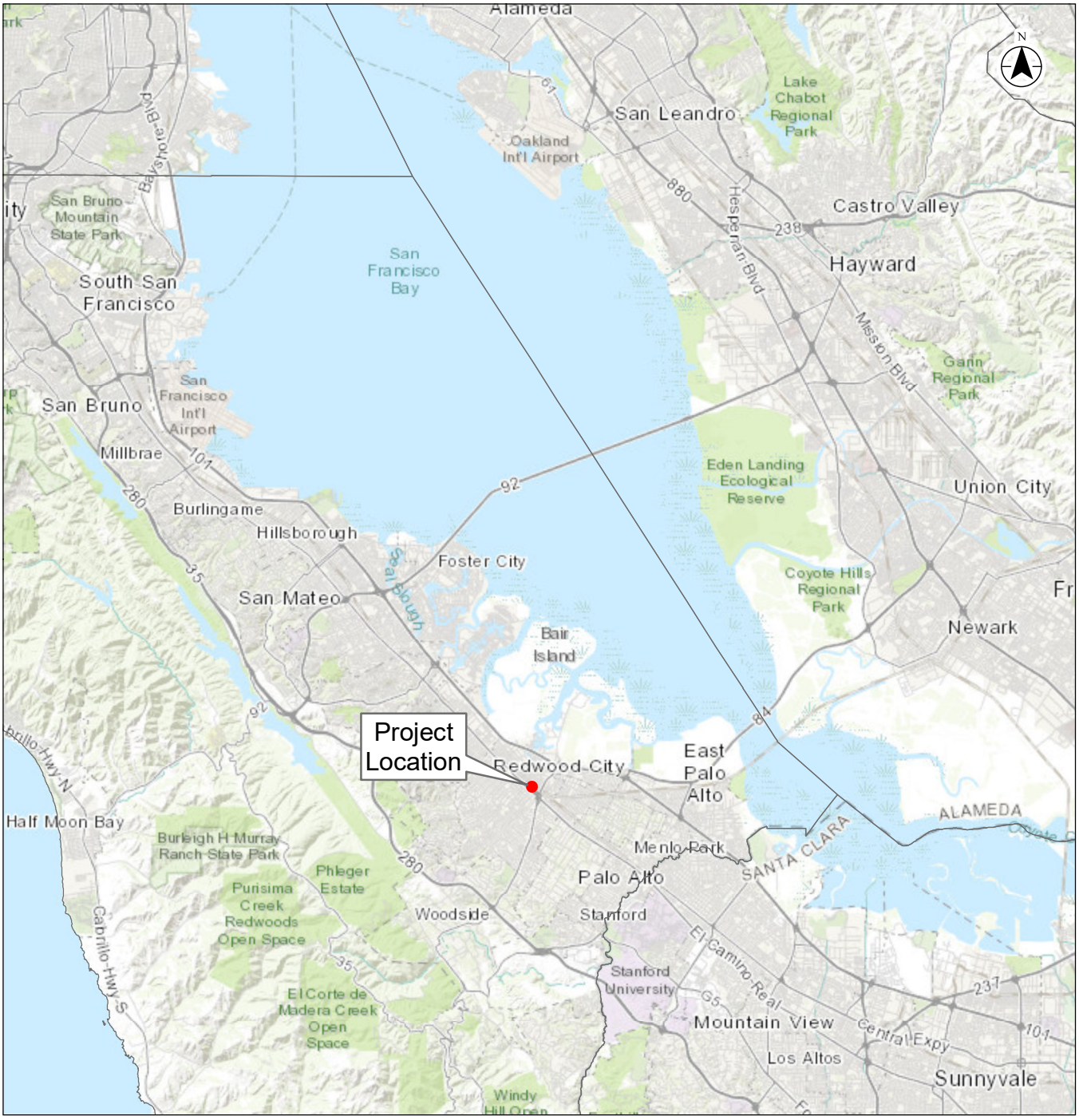
The first floor of the building would be divided as two office spaces of 6,107 square feet and 18,975 square feet, each, totaling 25,082 square feet. The first floor would also include a lobby area at the main entrance, bicycle storage room, and shower facilities. The second and third floors would each consist of one office space. The second floor would provide 34,217 square feet of office space and the third floor would provide 32,037 square feet of office space. Restroom facilities would be provided on each floor of the building. Figure 2.0-3 through Figure 2.0-6 show the preliminary conceptual site plan and floor plans, and the building elevations are shown in Figure 2.0-7 through Figure 2.0-12.

The proposed project would include 11,195 square feet of public open space including a 10,000 sq. ft. public park on the west side of the project site and a 1,195 sq. ft. exterior stair terrace on the north corner of the building. The stair terrace would provide amphitheater seating and would be accessible from outside the building at the ground level and lead to the building's second floor Private open space would include 2,569 square feet of terrace space on the first floor and 1,276 square feet of terrace space on the third floor.

The building would have a modern industrial architectural style with a sawtooth roof and exposed industrial interior. Building materials would include a mix of brick, metal, concrete, and glass. The proposed project would include exterior lighting to illuminate the building entrances, pathways, landscaping, public park, and underground parking garage for on-site safety and security. All exterior lighting would be compliant with Title 24 Cal Green Requirements. The proposed project would be required to comply with the development standards of the Mixed-Use Live/Work zoning district, including the Façade Composition and Architectural Regulations as discussed in in Section 55.8 of the Redwood City Zoning Ordinance (Redwood City 2018a).

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Notes

1. Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
2. Service Layer Credit: Esri online services, Nov. 2018

● Project Location

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Project Location
T05.05, R03.0W, Sec19
USGS 7.5min Quad: Palo Alto

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Prepared by WC on 2019-01-16
Technical Review by JG on 2019-01-16
Independent Review by JD on 2019-01-16

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City of Redwood City
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Initial Study Mitigated Negative Declaration

Figure No.
2.0-1

Title
Regional Location

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Project Location

Staging Area

Possible Additional Staging Area

0 75 150 Feet

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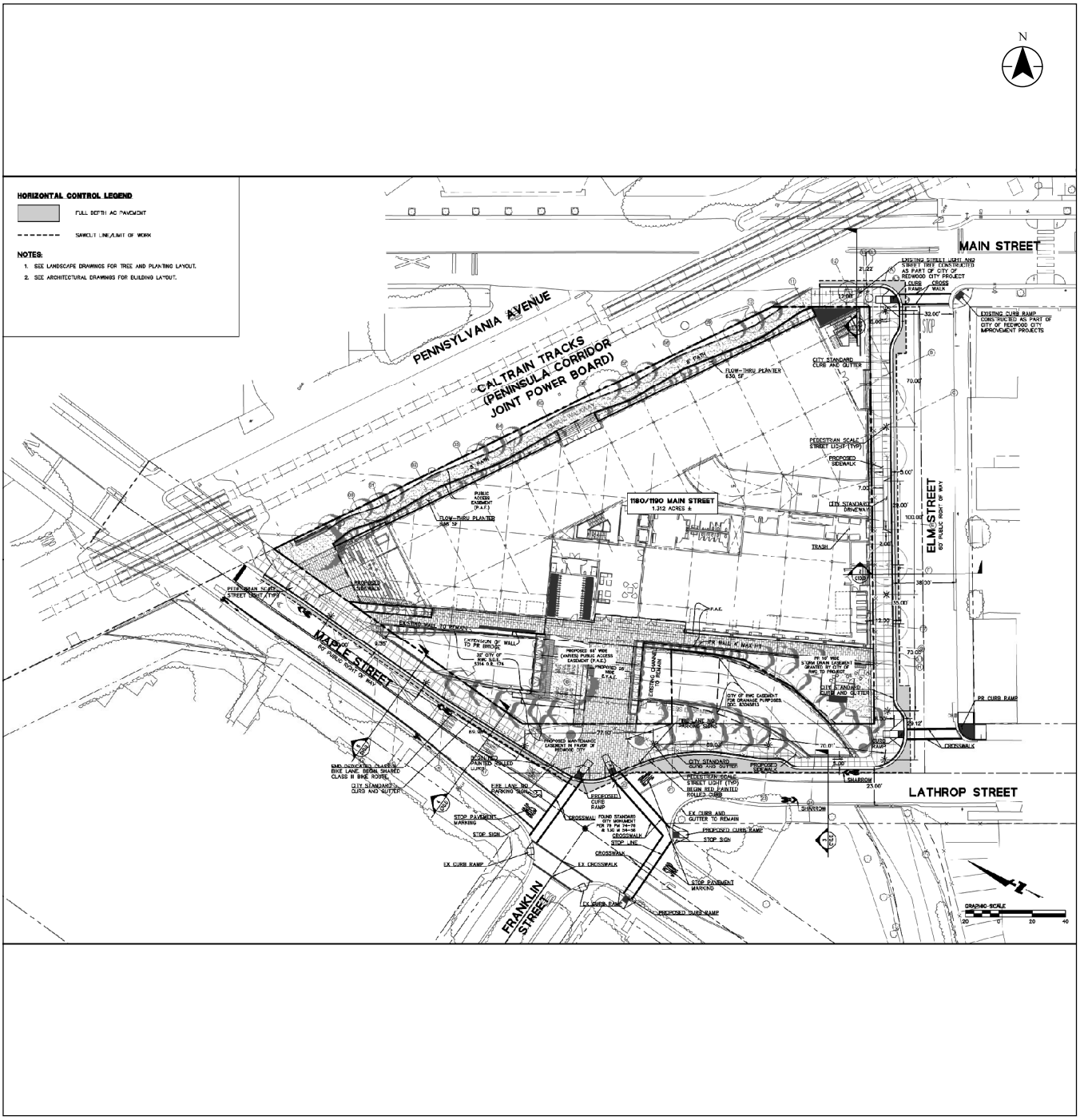
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Figure No.
2.0-2

Title
Project Site and Preliminary Staging Areas

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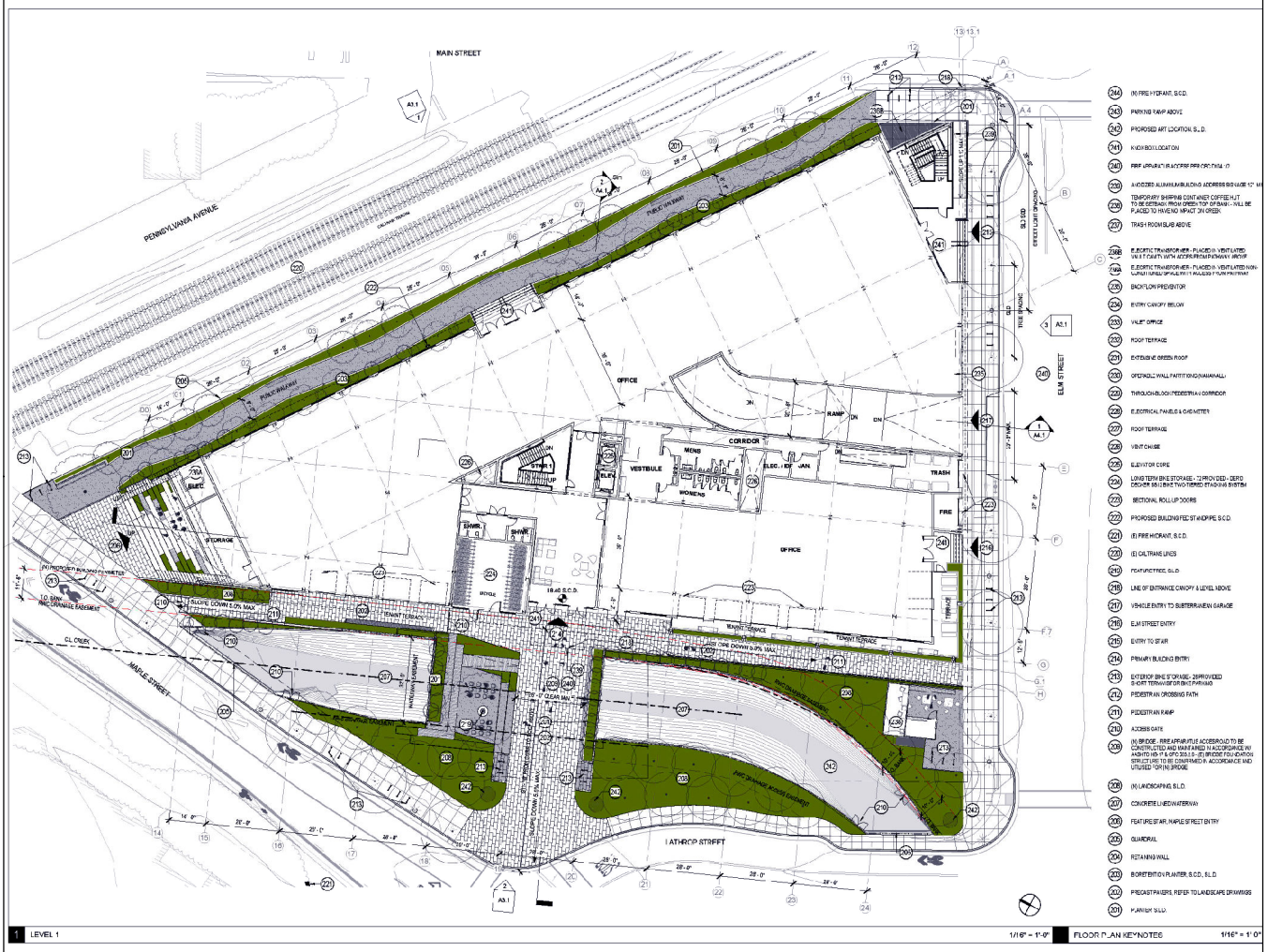
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Figure No.
2.0-3

Title
Preliminary Conceptual Site Plan

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Project Location
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USGS 7.5min Quad: Palo Alto

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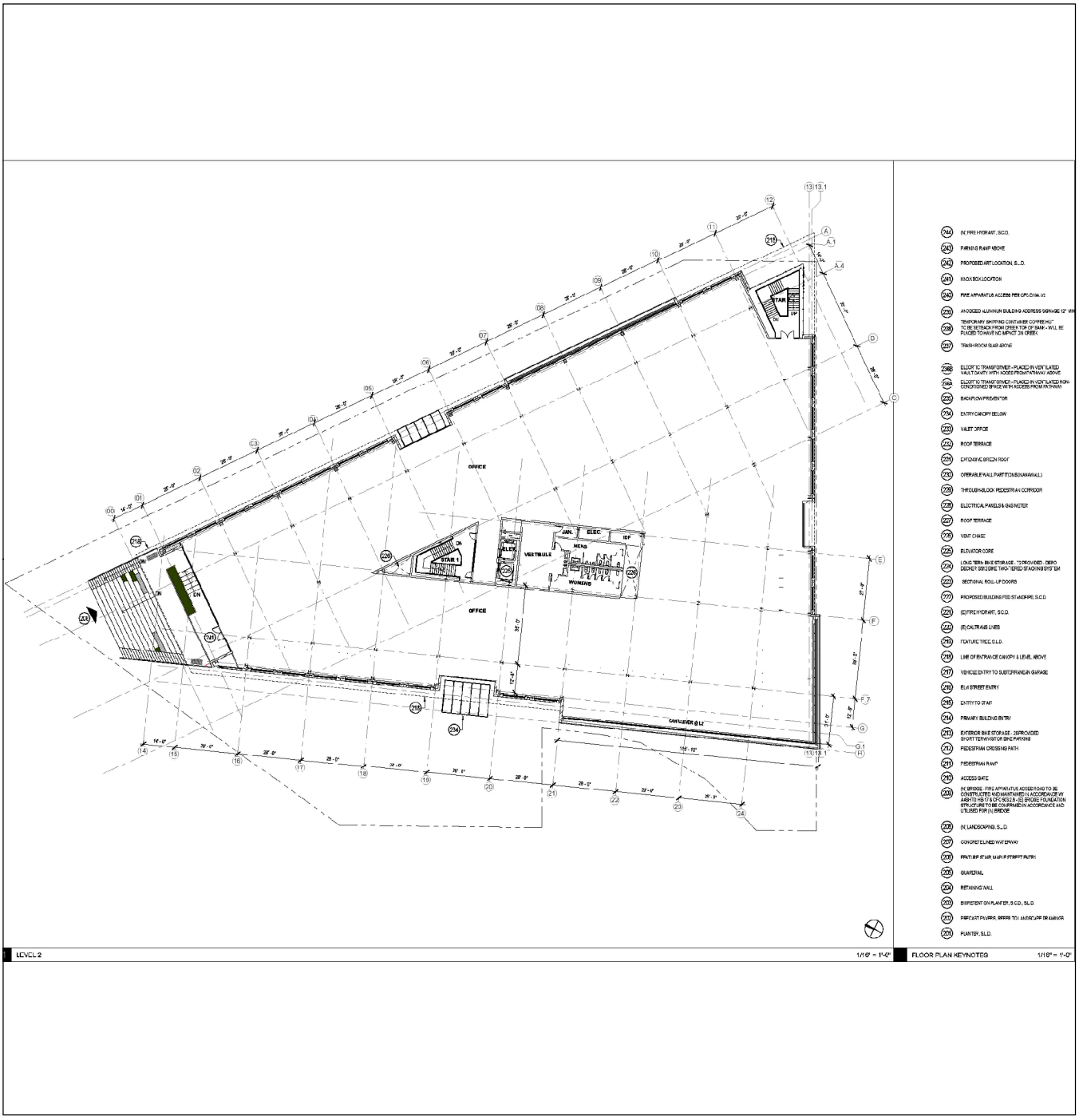
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Figure No.
2.0-4

Title
Preliminary Floor Plan - Level 1

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Notes
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DRAWING NOT TO SCALE

Stantec

Project Location
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USGS 7.5min Quad: Palo Alto

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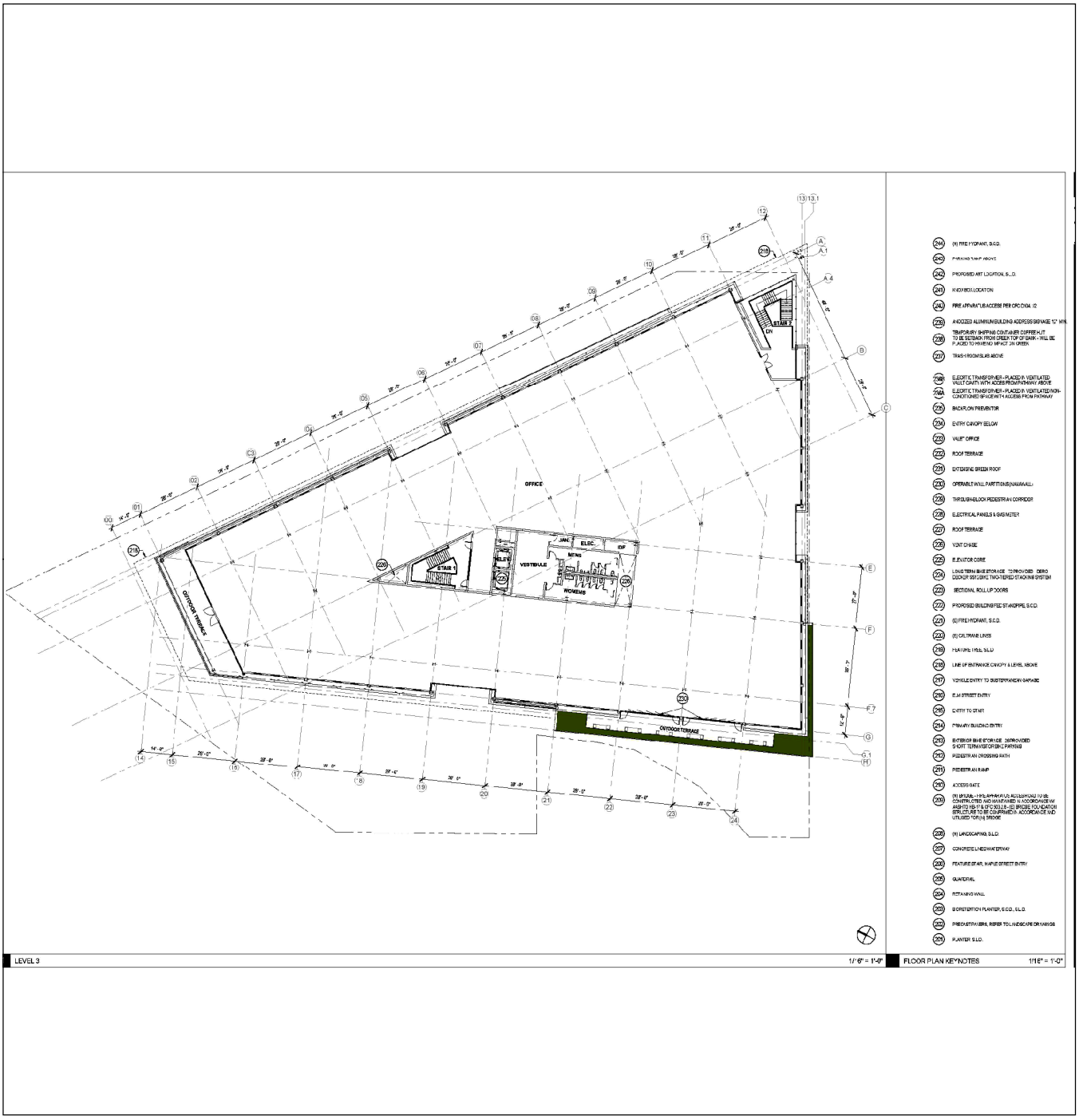
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Figure No.
2.0-5

Title
Preliminary Floor Plan - Level 2

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DRAWING NOT TO SCALE

Stantec

Project Location
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USGS 7.5min Quad: Palo Alto

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Technical Review by JG on 2019-01-16
Independent Review by JD on 2019-01-16

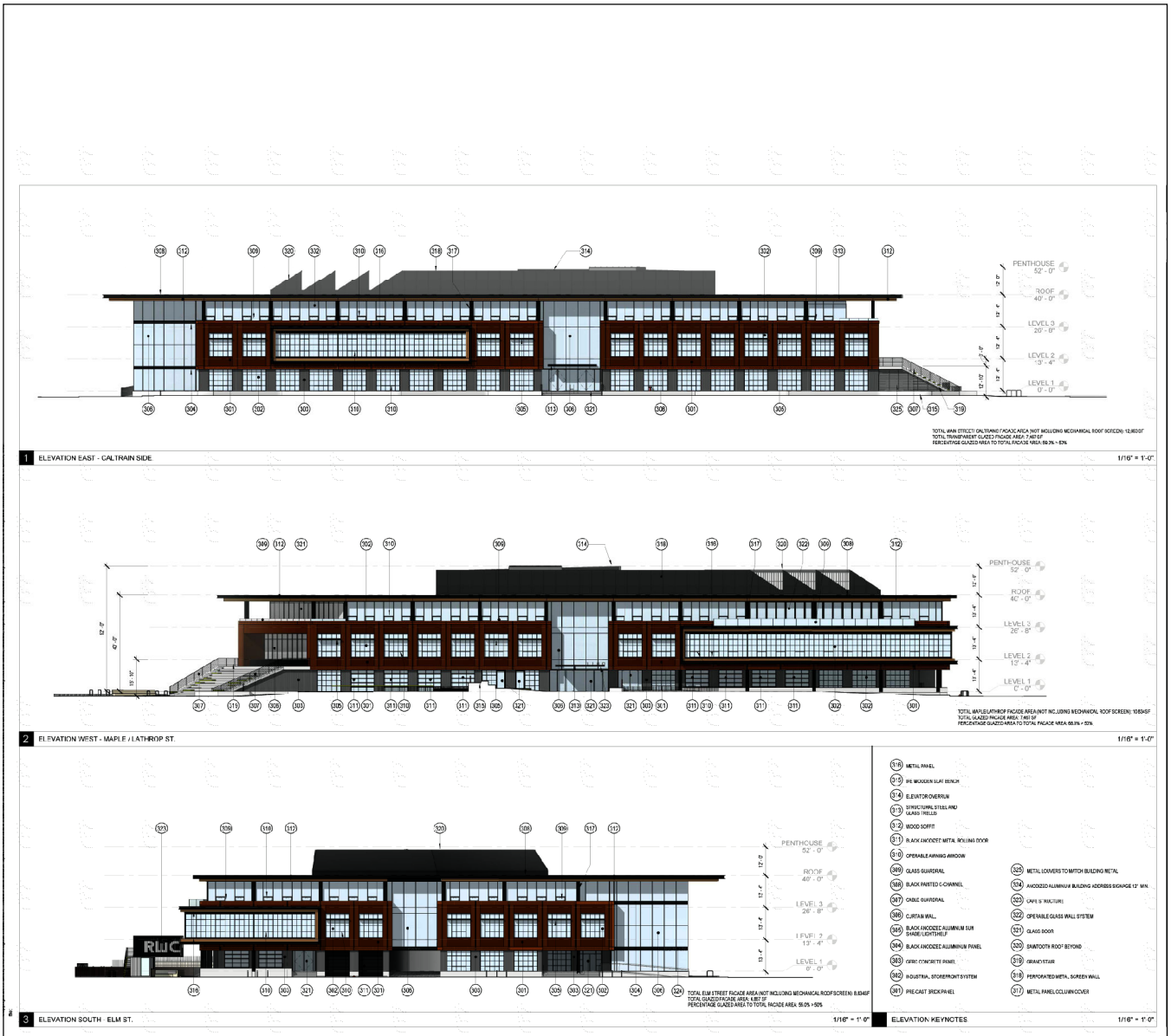
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Initial Study Mitigated Negative Declaration

Figure No.
2.0-6

Title
Preliminary Floor Plan - Level 3

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Notes
1. Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
2. Image Source Credit: Brick - 1180-90 Main Street Planning Application, June 27, 2018
3. Inset Map Service Layer Credit: Esri online services, November. 2018

DRAWING NOT TO SCALE

Stantec

Project Location
T05.05, R03.0W, Sec19
USGS 7.5min Quad: Palo Alto

185704315
Prepared by WC on 2019-01-16
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Independent Review by JD on 2019-01-16

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City of Redwood City
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Figure No.
2.0-7

Title
Preliminary Elevations

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Stantec

Project Location
T05.05, R03.0W, Sec19
USGS 7.5min Quad: Palo Alto

185704315
Prepared by WC on 2019-01-16
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Figure No.
2.0-8

Title
View from Main Steet and Elm Street

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1. Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
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3. Inset Map Service Layer Credit: Esri online services, November. 2018

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Project Location
T05.05, R03.0W, Sec19
USGS 7.5min Quad: Palo Alto

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Independent Review by JD on 2019-01-16

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1180 Main Street Office Project
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Figure No.
2.0-9

Title
View from Maple Street

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Project Location
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USGS 7.5min Quad: Palo Alto

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City of Redwood City
1180 Main Street Office Project
Initial Study Mitigated Negative Declaration

Figure No.
2.0-10

Title
View from Pennsylvania and Maple Street

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USGS 7.5min Quad: Palo Alto

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1180 Main Street Office Project
Initial Study Mitigated Negative Declaration

Figure No.
2.0-11

Title
View from Bridge at Main Entry

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Figure No.
2.0-12

Title
View from Lathrop Street

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Section 55.8 of the Redwood City Zoning Ordinance (Redwood City 2018a). In addition, the proposed project would be required to obtain an Architectural Permit pursuant Article 45 of the Redwood City Municipal Code to ensure the design and appearance of the proposed project conforms to the general character other structures surrounding the project site (Redwood City 2018).

2.2.2 Open Space and Landscaping

Bridge Crossing and Park Space

The proposed project would complete the existing bridge crossing and construct a 64-foot-wide bridge over the drainage channel to provide access to the building's main entrance on Maple Street. The proposed bridge crossing would provide a 27-foot-wide clearance to allow Fire Apparatus Access to cross the bridge and access the main entrance of the office building. The proposed bridge would also provide publicly accessible park space with landscaping and seating areas (Figure 2.0-4).

The proposed bridge would connect to the existing bridge abutments and foundations on each side of the concrete drainage channel and would not require construction activities within the drainage channel. The main bridge deck structure would be constructed from 18-inch-thick, pre-cast, pre-stressed, hollow core planks. The planks are fabricated in 4-inch-wide sections and would be placed side by side and tied together with a 5-inch-thick concrete topping slab. The deck would be designed in accordance with the American Association of State Highway and Transportation Officials (AASHTO) HB-17 provisional standards to support standard heavy traffic loading of HL-93 designation and fire apparatus. In accordance with California Code of Regulations, Title 19, Division 1, Section 3.05(a) fire apparatus access roads must be at least 20 feet in width to provide fire access and egress. The proposed project would comply with these standards and provide adequate access for emergency vehicles.

Landscaping

The proposed project would plant approximately 8,600 square feet of landscaping. Landscape plantings would be placed in bioretention planters and along the proposed public walkway between the project site and the Caltrain corridor, and planting pockets along the concrete drainage channel and within the publicly accessible park space. The proposed project would install seven street lights in between new street trees planted along the frontages of Elm Street and Maple Street. The street lights would be consistent with existing street lights in the vicinity of the project site (or equivalent as determined by the Planning Manager), which consists of the City's "Twin Head Acorn light model" and are approximately 12 feet tall. The proposed project would also include a green roof with up to approximately 560 square feet of landscaping. Landscaped areas and planters would incorporate a combination of drought tolerant plants and shrubs that meet the requirements of California's Water Efficient Landscape Ordinance. The proposed project would also plant approximately 100 trees along the sidewalks and the concrete drainage channel.

The NPDES permit also includes section C.3j (Green Infrastructure Planning and Implementation) which includes requirements for early implementation of green infrastructure projects or "no missed opportunities." With the alterations to the project frontages on Elm Street and Lathrop Street, it was determined that there was an opportunity to include green infrastructure for the treatment of the right-of-way runoff tributary to the frontages. The frontages were designed to direct the runoff to treatment facilities, which were sized based on the sizing criteria of Provision C.3.d of the NPDES permit.

Public Art

The proposed project would comply with Section 45.090 of the Redwood City Municipal Code by providing publicly accessible artwork at the corner of Lathrop Street and Elm Street, and near the bridge entrance at Maple Street and Lathrop Street. Public art selected for the proposed project would be required to comply with the standards outlined in Section 45 of the Redwood City Municipal Code. The City's Civic Cultural Commission would review the proposed public art to determine that it is placed in an appropriate location, proportional in scale of the development, and compatible with the immediate environment of the site in terms of materials, colors, and design. If the value of the artwork is determined to not fully meet the requirements of Section 45.090, the applicant would pay an additional in-lieu fee to the City's Art in Public Places Fund.

2.2.3 Shipping Container Café

The proposed project would include two 20-foot shipping containers at the southwest corner of the project site near the intersection of Elm Street and Lathrop Street. The two shipping containers would be stacked and are intended to contain a café on the first level with public seating provided on the second level. Public seating would also be provided in front of the café along Elm Street. The shipping container café would be approximately 325 square feet and 16 feet to 18 feet tall and would be painted in a complementary color scheme as the office building.

2.2.4 Access, Parking, and Circulation

Pedestrian Access and Circulation

The proposed project would include on-site pedestrian improvements consisting of installing a sidewalk along Main Street, widening the existing sidewalk on Elm Street from 10 feet to 12 feet, and constructing a public walkway between the proposed office building and the Caltrain corridor. Bulb-outs would be added at the corners of Elm Street/Lathrop Street and Elm/Main Street on the project side of the street.

The proposed project would include off-site pedestrian improvements to access the project site and the surrounding area (Figure 2.0-3). Such off-site design improvements would include the installation of marked crosswalks at the following:

- Elm Street/Lathrop Street (north crosswalk)
- Elm Street/Main Street (south crosswalk)
- Lathrop Street/Maple Street (all crosswalks)

In addition, the proposed project would make the intersection of Lathrop/Maple/Franklin Streets an all-way stop and add a side-street stop at Elm Street/Lathrop Street

Caltrain tracks are located immediately north of the project site. Pedestrians may cross the Caltrain corridor tracks on the east side of Main Street or on either side of Maple Street.

Vehicle Parking

The proposed project would construct a two-level underground parking garage of 75,653 square feet (Figure 2.0-13 and Figure 2.0-14). Access to the underground parking garage would be available from a driveway off Elm Street. The underground parking garage would provide a total of 160 parking spaces, of which 26 spaces are designated for low-emitting and carpool vehicles. In addition, to meet the City's parking requirements per Article 30 of the Redwood City Municipal Code and provide one space for every 300 square feet of gross floor area, which equates to 374

parking spaces, the proposed project would use a valet service to provide an additional 215 parking spaces in the two levels of underground parking. Therefore, the proposed project would accommodate 375 vehicles total.

While business hours have not yet been established for the proposed project, at a minimum use of the underground parking garage would be available to the public after business hours on Monday through Friday from 5:00 p.m. to 12:00 a.m., and on weekends and holidays from 8:00 a.m. to 12:00 a.m. These hours and public use of the underground parking garage would be subject to City approval. The Applicant would be required to submit a shared parking agreement as part of the project's Conditions of Approval.

Bicycle Parking

The proposed project would comply with Section 55.6.D.3 of the Redwood City Zoning Ordinance and include 72 bicycle rack spaces for building tenants and 26 bicycle rack spaces for visitors. The 72 bicycle spaces would be vertical wall-mounted racks and located in a dedicated bike storage room near the building's main entrance. The 26 bicycle rack spaces for visitors would be placed near the building's main entrance.

Emergency Access

The proposed bridge would be designed in accordance with the AASHTO standards and provide a 27-foot-wide clearance to allow Fire Apparatus Access to cross the proposed bridge and access the office building's main entrance. A designated fire access zone would be provided on the south side of the project site along Elm Street.

2.2.5 Utility Infrastructure

A Preliminary Engineering Study has been prepared by BKF Engineers to evaluate the preliminary utility, grading, and stormwater design of the proposed project. The preliminary study found that the existing public infrastructure is adequate to serve the proposed project (BKF Engineers 2019). The results of the Preliminary Engineering Study are summarized in the following subsections and the full report is provided in Appendix A.

Water

Domestic Water

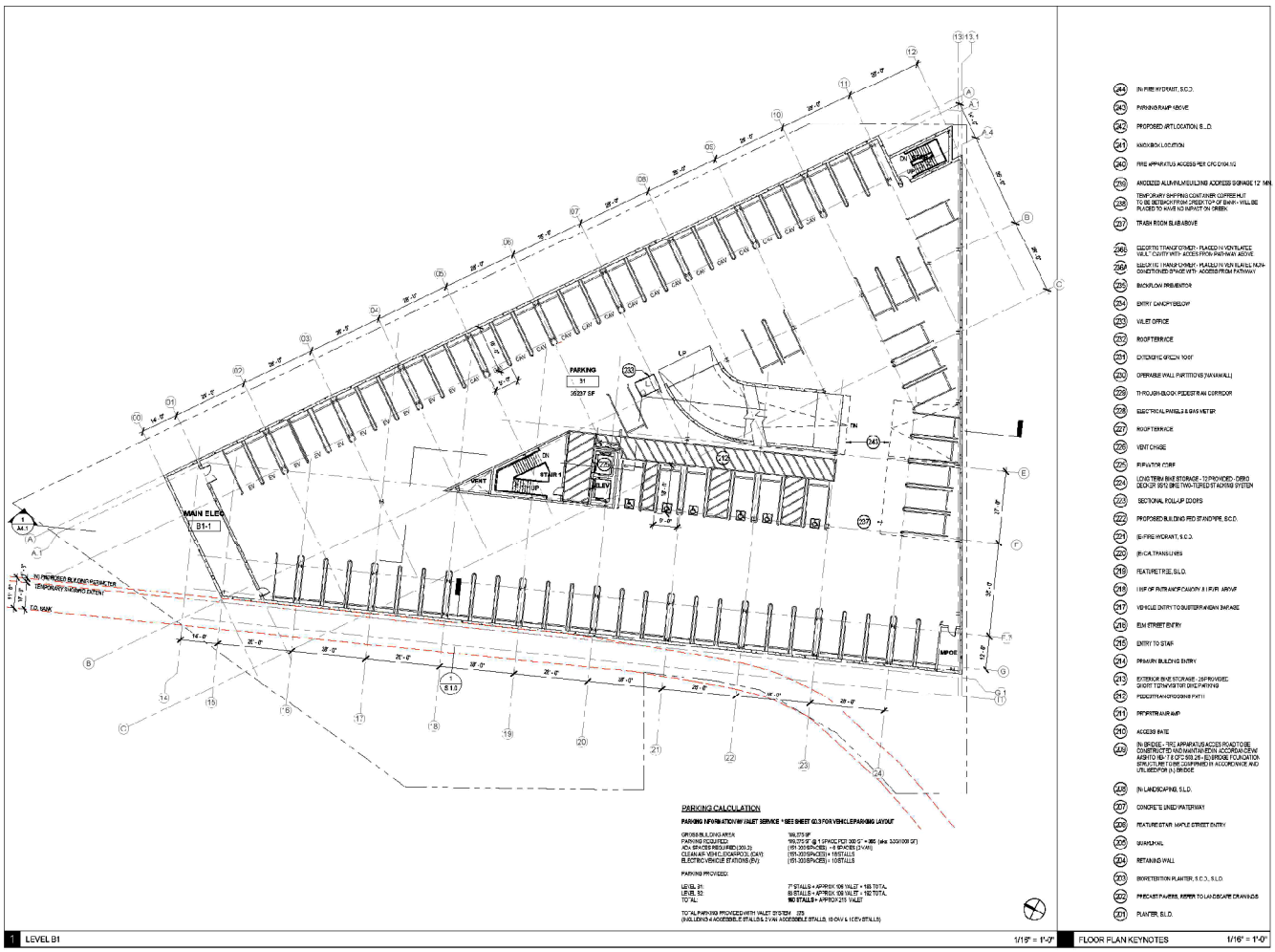
Approximately 250 gallons of water per day (gpd) is currently provided to the project site by an existing 4-inch water main in Elm Street and an 8-inch water main in Maple Street. However, the existing 4-inch water main in Elm Street does not currently meet the City's minimum size requirements for providing domestic water. Therefore, the proposed project is proposing to abandon the existing 4-inch water main in Elm Street and replace it with a new 8-inch water main to serve the proposed project. It is expected the proposed project's water demand would be 14,737 gpd resulting in a net increase of 14,487 gpd (14,737 gpd minus 250 gpd) (BKF Engineers 2019).

Recycled Water

In accordance with Municipal Code Chapter 38, Article VIII (Recycled Water Use), the proposed project would be required to use recycled water for landscape irrigation and building plumbing. The proposed project would comply with this ordinance by providing dual plumbing system for toilets, trap primers, and landscaping. However, infrastructure to provide recycled water at the project site has not yet been extended to this portion of the City. Therefore, the proposed project's plumbing and landscaping irrigation systems would not be connected to the City's domestic water system until recycled water is available (BKF Engineers 2019).

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DRAWING NOT TO SCALE

Stantec

Project Location
T05.05, R03.0W, Sec19
USGS 7.5min Quad: Palo Alto

185704315
Prepared by WC on 2019-01-16
Technical Review by JG on 2019-01-16
Independent Review by JD on 2019-01-16

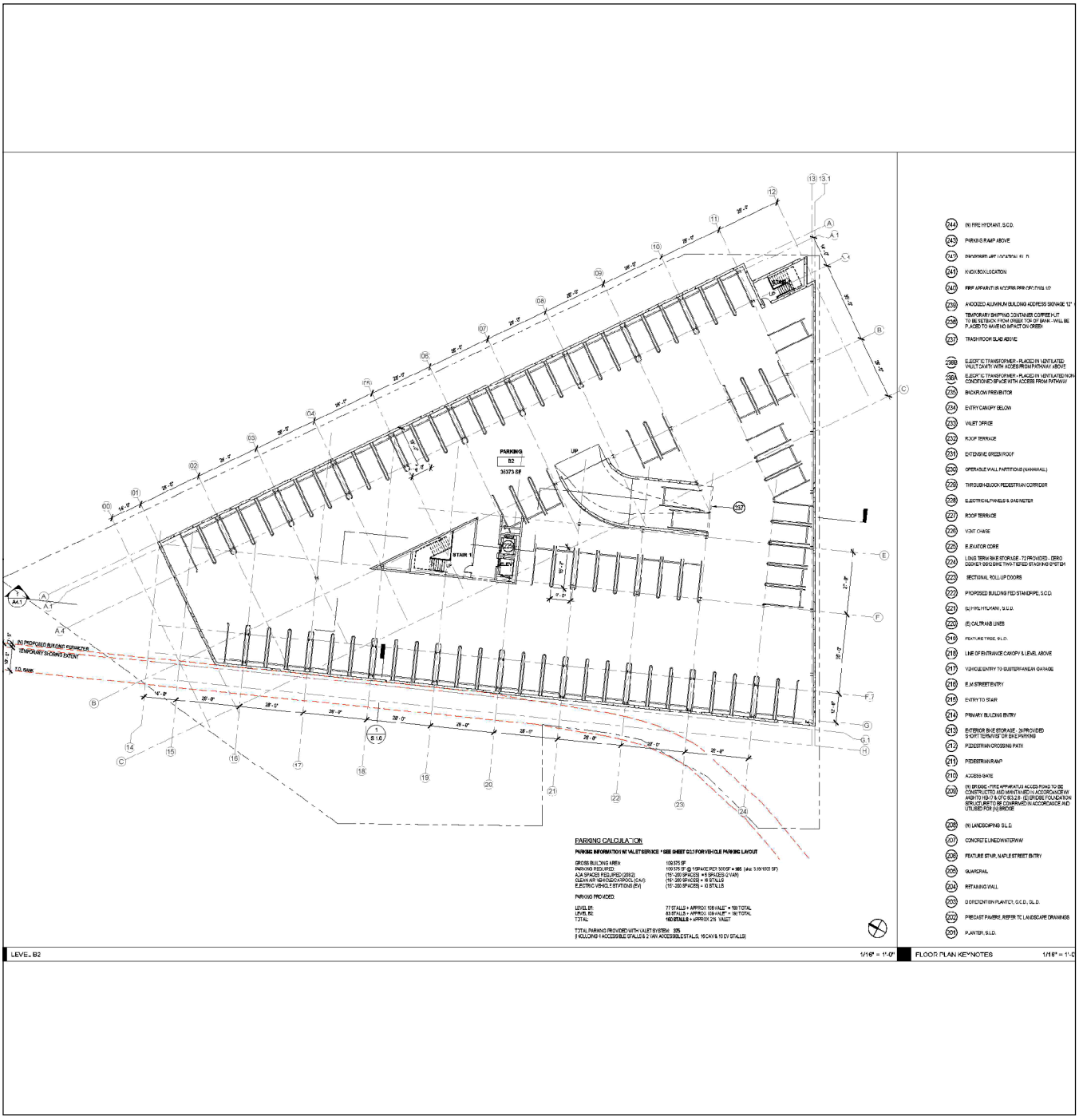
Client/Project
City of Redwood City
1180 Main Street Office Project
Initial Study Mitigated Negative Declaration

Figure No.
2.0-13

Title
Preliminary Parking Plan - B1 Floor Plan

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Stantec

Project Location
T05.05, R03.0W, Sec19
USGS 7.5min Quad: Palo Alto

185704315
Prepared by WC on 2019-01-16
Technical Review by JG on 2019-01-16
Independent Review by JD on 2019-01-16

Client/Project
City of Redwood City
1180 Main Street Office Project
Initial Study Mitigated Negative Declaration

Figure No.
2.0-14

Title
Preliminary Parking Plan - B2 Floor Plan

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Fire Water Hydrants

There is one existing fire water hydrant located along the project frontage on Lathrop Street, and three existing fire water hydrants on opposing frontages on Elm Street and Maple Street. The proposed project would install two new fire hydrants--one on Elm Street and one on Maple Street—and a new wharf hydrant along the northern side of the office building.

Wastewater

The average daily flow of wastewater at the project site is currently 268 gpd. The project site is served by three existing sewer laterals that are connected to a 8-inch sanitary sewer main in Elm Street and a 10-inch sanitary sewer main in Maple Street (BKF Engineers 2019). The proposed project would remove the existing sanitary sewer laterals and connect a new sanitary sewer lateral to the 8-inch sanitary sewer main in Elm Street, which conveys sewer flows to the 6-inch sanitary sewer main in Lathrop Street and eventually to the 10-inch sanitary sewer main in Maple Street. It is expected the proposed project would generate an average daily flow of 14,006 gpd and resulting in a net increase of 13,738 gpd (14,006 gpd minus 268 gpd) (BKF Engineers 2019). The applicant would be required to pay a sewer impact fee toward the City's Capital Improvements Projects.

Stormwater Treatment

The proposed stormwater management treatment strategy includes using a flowthrough planter along the Caltrain side of the proposed building to treat runoff collected from the building roof. A second flow-through planter would be provided adjacent to the stair terrace at Maple Street to treat runoff from the stair and terrace area. The proposed bridge area and pathway connection to Lathrop Street would be directed to adjacent landscape areas and would be considered self-retaining areas. For storms larger than the treatment storm, stormwater would flow through the media filter vault, bypassing the filter cartridges, and into Redwood Creek.

Stormwater runoff at the project site is collected by a 12-inch outfall that releases to the on-site concrete drainage channel. The proposed project would involve the removal of approximately 7,623 square feet of impervious surface consisting of the existing commercial building and the concrete foundation. These impervious surfaces would be replaced following completion of the proposed project, which would include approximately 48,646 square feet of impervious surface. The proposed project would install a new 12-inch stormwater drain line and connect it to the existing 12-inch outfall that drains to the concrete drainage channel. In addition, to meet the C.3 requirements of the San Mateo County Municipal Regional Permit, the proposed project would incorporate traditional low impact development treatment measures such as flow-through planter boxes along the northeastern and northwestern sides of the project site, and self-retained landscaped areas.

The NPDES permit also includes section C.3j (Green Infrastructure Planning and Implementation) which includes requirements for early implementation of green infrastructure projects or "no missed opportunities." With the alterations to the project frontages on Elm Street and Lathrop Street, it was determined that there was an opportunity to include green infrastructure for the treatment of the right-of-way runoff tributary to the frontages. The frontages were designed to direct the runoff to treatment facilities, which were sized based on the sizing criteria of Provision C.3.d of the NPDES permit.

Electricity and Gas

Pacific Gas and Electric Company (PG&E) provides electricity and natural gas service to the project site. The proposed project would install a new underground joint trench in Elm Street to connect to the existing overhead electric, communication, and phone lines along Lathrop Street and the existing gas line in Elm Street.

2.3 PROJECT CONSTRUCTION

2.3.1 Construction Schedule

It is anticipated construction of the proposed project would start May 2019 with the demolition of the existing on-site structures and the construction of the underground parking area. The proposed project would be constructed over 23 months with full buildout of the proposed project completed by March 2021. Construction of the proposed project would include the following three phases:

- Phase 1 – Demolition of existing building and concrete foundation (approximately 1 month)
- Phase 2 – Shoring/mass excavation for underground parking garage (approximately 3 months)
- Phase 3 – Construction of proposed office building and on and off-site improvements (approximately 19 months)

The proposed project would temporarily require up to 100 construction workers during the peak construction phase. It is anticipated that the construction workforce would be available from nearby areas. Project construction and grading activities would be consistent with Section 9.50 of the Redwood City Municipal Code and would occur between 7:00 a.m. and 8:00 p.m., Monday through Friday. Project construction and grading activities would not occur on Saturdays, Sundays, or holidays unless a special work permit is acquired from the Building Division.

2.3.2 Construction Equipment and Staging

The proposed project would require the use of heavy equipment at various stages of construction such as excavation and concrete installation. The largest pieces of equipment anticipated on-site would include rubber-tired dozers, tractors/loaders/backhoes, graders, scrapers, excavators, cranes, and forklifts. Project construction equipment and materials would be staged on-site and potentially off-site in the paved 0.18-acre parking lot across from the project site at the intersection of Maple Street and Lathrop Street. All construction staging activities would be required to stay outside of the concrete drainage channel's zone of influence which the City would confirm during the building permit plan check.

Construction Activities

Construction of the proposed project would require demolition of the vacant one-story commercial building in the southeast corner of the project site and the removal of on-site vegetation and impervious surfaces. Construction activities would involve grading of the entire project site and the permanent disturbance of the 1.31-acre site. The project site would be excavated approximately 25 feet below grade and approximately 35,000 cubic yards of soil (4,375 truck trips) would be exported from the site for construction of the two-level underground parking garage. Exported soil would be disposed off-site at a location determined by the project construction contractor during construction.

3.0 ENVIRONMENTAL CHECKLIST AND ENVIRONMENTAL EVALUATION

The environmental factors checked below would be potentially affected by this project, involving at least one impact that requires mitigation to reduce the impact from "Potentially Significant" to "Less Than Significant" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Geology/Soils
☐ Greenhouse Gas Emissions	☐ Hazards/Hazardous Materials	☒ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☒ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☒ Transportation/Traffic	☐ Mineral Resources	☐ Utilities/ Service Systems
☒ Mandatory Findings of Significance	☒ Tribal Cultural Resources	

Evaluation of Environmental Impacts

Section 3.0, Environmental Checklist and Environmental Evaluation presents the environmental checklist form found in Appendix G of the CEQA Guidelines. The checklist form is used to describe the impacts of the proposed project. A discussion follows each environmental issue identified in the checklist. Included in each discussion are project-specific mitigation measures recommended as appropriate. For this checklist, the following designations are used:

Potentially Significant Impact: An impact that could be significant and for which mitigation has not been identified. If any potentially significant impacts are identified, an EIR must be prepared instead of an ISMND.

Less Than Significant with Mitigation Incorporated: This designation applies when applicable and feasible mitigation measures previously identified in prior applicable EIRs or in the General Plan EIR have reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact" and, pursuant to Section 21155.2 of the PRC, those measures are incorporated into the ISMND. This designation also applies when the incorporation of new project-specific mitigation measures not previously identified in prior applicable EIRs or in the General Plan EIR has reduced an effect from a "Potentially Significant Impact" to a "Less Than Significant Impact."

Less Than Significant Impact: Any impact that would not be considered significant under CEQA, relative to existing standards.

No Impact: The proposed project would not have any impact. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a Lead Agency cites following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

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3.1 AESTHETICS

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

3.1.1 Environmental Setting

Visual Character of the Project Site

The project site is in an area of the City that is developed with a mix of building types, including older one-story commercial buildings and more recent four-story apartment complexes. The commercial buildings on smaller developed parcels have minimal architectural detail, ground-level parking, and minimal landscaping. The residential buildings on Maple Street have stucco and concrete tile roofs, typical of modern apartment complexes. The streetscapes are lined with overhead power lines, broken and narrow sidewalks, and minimal to no landscaping. The Caltrain corridor tracks north of the project site and concrete drainage channel that extends across the western portion of the project site are other manmade visual elements in the project area.

Scenic Resources and Scenic View Corridors

Scenic vistas are in the southern and western portions of the City within the elevated hillside neighborhoods. (Redwood City 2010a). Public views of scenic resources from the project site are limited to distant views of the Santa Cruz Mountains to the south/southwest. The General Plan identifies El Camino Real, Woodside Road, and Middlefield Road street corridors with the most visible pathways in the City. None of these corridors are connected to the project site physically or visually. The nearest officially designated state scenic highway, Interstate 280 (I-280), is approximately 3.5 miles southwest of the project site (DOT 2019).

Light and Glare Conditions

No substantial light and glare sources exist on-site. The existing one-story commercial building is vacant and does not generate any light or glare. Nighttime lighting immediately surrounding the project site is limited to security lighting as majority of the businesses are auto related and closed in the evening. The multi-family apartment complex to the west and the Caltrain corridor to the north are other sources that generate some night lighting. There are no electrical signs, billboards, or flashing or oscillating light sources in the project area.

3.1.2 Methodology

Analysis of the proposed project's visual impacts is based on an evaluation of the changes to the existing visual resources that would result from implementation of the proposed project. In determining the extent and implications of the visual changes, consideration was given to: the existing visual quality of the affected environment; specific changes in the visual character and quality of the affected environment; the extent to which the affected environment contains places or features that provide unique visual experiences or that have been designated in plans and policies for protection or special consideration; and the sensitivity of viewers and their activities and the extent to which these activities are related to the aesthetic qualities affected by the proposed project.

3.1.3 Environmental Impact Analysis

This section discusses potential impacts on aesthetics associated with the proposed project and provides mitigation measures where necessary.

Impact AES-1 Have a substantial adverse effect on a scenic vista?

Impact Analysis

A scenic vista is defined in this analysis as a viewpoint designated by a local, state, or federal entity that provides a rare, unique, or in other ways special viewpoint for the benefit of the general public. The General Plan EIR indicates that the City's scenic resources include the San Francisco Bay and its associated baylands, slough, and marshes, the views of which are available primarily from four points in the western hills of the City—Easter Cross, Easter Bowl, Cañada College, and Edgewood County Park (Redwood City 2010b). These viewing points are located over 3.5 miles to the southwest and west of the project site, and the project site is not visibly recognizable from these public viewpoints. The proposed project would not significantly alter this viewshed as these views would continue to be available. The proposed project would appear as part of the existing urban setting and would be consistent with existing land uses. Therefore, the proposed project would not have a substantial adverse effect on a scenic vista and impacts would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact AES-2 Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

Impact Analysis

The nearest officially designated state scenic highway, I-280, is approximately 3.5 miles southwest of the project site and is not visible from the project area. Furthermore, the project site is minimally developed with a concrete foundation and a vacant one-story commercial building and does not contain vegetation, rock outcroppings, or historic buildings other than four small trees. As such, the proposed project would have no impact on scenic resources within a state scenic highway.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

Impact AES-3 Substantially degrade the existing visual character or quality of the site and its surroundings?

Impact Analysis

The proposed project would demolish existing on-site structures and develop a three-story commercial office building, café, bridge crossing, and publicly accessible park space. Figure 2.0-7 through Figure 2.0-12 show the building elevations. The office building would have a modern industrial architectural style with a sawtooth roof and exposed industrial interior. Building materials would include a mix of brick, metal, concrete, and glass. The stacked shipping container café would be painted in a complementary color scheme as the office building. The proposed project would be required to comply with the development standards of the Mixed-Use Live/Work zoning district, including the Façade Composition and Architectural Regulations as discussed in Section 55.8 of the Redwood City Zoning Ordinance (Redwood City 2018a). In addition, the proposed project would be required to obtain an Architectural Permit pursuant to Article 45 of the Redwood City Zoning Ordinance to ensure the design and appearance of the proposed project conforms to the general character of other structures surrounding the project site (Redwood City 2018a).

The project site is within the Mixed-Use Live/Work zoning district, which has a maximum height of 40 feet (Zoning Code Section 55.7). The office building would be 40 feet in height and the café would be 16 feet to 18 feet in height, neither of which would exceed the allowed standards. While most of the surrounding structures are one-story, the multi-family residential development west of the project site is four stories. Therefore, the proposed project would be visually compatible with the surrounding development.

The proposed project would also provide landscaping, as described in Section 2.0, Project Description, to create an inviting public space and walkable environment. In addition, the proposed project would either provide publicly accessible artwork at the corner of Lathrop Street and Elm Street and near the bridge entrance at Maple Street and Lathrop Street, or the applicant would pay an additional in-lieu fee to the City's Art in Public Places Fund. Public art selected for the proposed project would be required to comply with the standards outlined in Section 45 of the

Redwood City Municipal Code. The City's Civic Cultural Commission would review the proposed public art to determine that it is placed in an appropriate location, proportional in scale of the development, and compatible with the immediate environment of the site in terms of materials, colors, and design.

The proposed project would alter the existing visual character of the project site by developing the primarily undeveloped parcel into an office space that would provide both live and work opportunities. The proposed project would be subject to City review to ensure high-quality design and construction, and that the visual change would not be considered an adverse change. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact AES-4 Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Impact Analysis

The project site does not contain any substantial light sources. The nighttime lighting sources include security lighting from the adjacent commercial and residential buildings, sporadic light from Caltrain operations and other vehicles. However, the project site and the surrounding area are classified as urban, which is an environment more susceptible to impacts of spill lighting. The proposed project would likely increase the number of and intensity of lighting in the project site. The proposed project would include exterior lighting to illuminate the building entrances, pathways, landscaping, publicly accessible park space, and underground parking garage for on-site safety and security. Additionally, the proposed project would install seven street lights in between new street trees planted along the frontages of Elm Street and Maple Street. The street lights would be consistent with existing street lights (or equivalent as determined by the Planning Manager), which consists of the City's "Twin Head Acorn light model" and are approximately 12 feet tall. All exterior lighting would be compliant with Title 24 Cal Green Requirements. The City's lighting standards require non-residential uses to be appropriately located and designed to shield residential uses in the development and adjacent areas (Zoning Ordinance Section 53.3). As such, impacts related to light and glare would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

3.2 AGRICULTURE AND FORESTRY RESOURCES

	Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
e)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
f)	Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
g)	Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
h)	Result in the loss of forestland or conversion of forestland to non-forest use?	☐	☐	☐	☒
i)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forestland to non-forest use?	☐	☐	☐	☒

3.2.1 Environmental Setting

The California Department of Conservation (DOC) administers the Farmland Mapping and Monitoring Program (FMMP), California's statewide agricultural land inventory. Within the General Plan area lands are designated by the FMMP as "Urban and Built- Up Land" or "Other Land," which is defined as non-agricultural land surrounded by urban development (DOC 2016). There are no areas of Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance within the City or the plan area boundaries (Redwood City 2010a).

3.2.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the General Plan, General Plan EIR, and the DOC Important Farmland map.

3.2.3 Environmental Impact Analysis

This section discusses potential impacts on agriculture and forestry resources associated with the proposed project and provides mitigation measures where necessary.

Impact AG-1	**Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

Impact Analysis

According to the City's Zoning Map, the project site is zoned Mixed-Use Live/Work. Agricultural land uses are not allowed in this zoning designation and the proposed project would not result in zoning changes that would allow for agricultural land use. As such, the proposed project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use and no impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

Impact AG-2	**Conflict with existing zoning for agricultural use or a Williamson Act contract?**

Impact Analysis

The project site is not enrolled in a Williamson Act contract and is not designated or zoned for agricultural use (Redwood City 2010a). Therefore, the proposed project would not conflict with existing zoning or with a Williamson Act contract. No impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

Impact AG-3	**Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?**

Impact Analysis

The project site does not contain forestland (as defined in PRC Section 12220[g]), or timberland (as defined by PRC Section 4526). Furthermore, the project site is not zoned Timberland Production (as defined by Government Code section 51104[g]). The project site is zoned Mixed Use Live/Work and would not be rezoned to allow forestland or

timberland production. As such, the proposed project would not convert forestland or timberland to a non-agricultural use and no impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

Impact AG-4 Result in the loss of forestland or conversion of forestland to non-forest use?

Impact Analysis

There are no forestlands on or adjoining the project site, or within the general vicinity of the project site. As such, the proposed project would not result in the loss of forestland or the conversion of forestland to non-forest use. No impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

Impact AG-5 Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forestland to non-forest use?

Impact Analysis

The project site does not contain lands with Prime Farmland, Unique Farmland, Farmland of State Importance, or Farmland of Local Importance, and is not enrolled in a Williamson Act contract. The project site is not zoned for forestland or timberland production and would not be rezoned for agricultural use. Therefore, the proposed project would not result in the conversion of farmland or forestland to a non-agricultural use. No impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

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3.3 AIR QUALITY

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose Sensitive Receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

3.3.1 Environmental Setting

Redwood City is in San Mateo County, which is within the boundaries of the San Francisco Bay Area Air Basin (Air Basin) and under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD) and the California Air Resources Board (CARB). The regional climate within the San Francisco Bay Area is driven by a summertime high-pressure cell centered over the northeastern Pacific Ocean that dominates the summer climate of the West Coast. The persistence of this high-pressure cell generally results in negligible precipitation during the summer and meteorological conditions are typically stable with a steady northwesterly wind flow. This flow causes upwelling of cold ocean water from below the surface, which produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold-water band, resulting in condensation and the presence of fog and stratus clouds along the Northern California coast. In the winter, the Pacific high-pressure cell weakens and shifts to the south, resulting in wind flows offshore, the absence of upwelling, and an increase in the occurrence of storms. Winter stagnation episodes are characterized by nocturnal drainage wind flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the Air Basin.

3.3.2 Methodology

Construction and operational emissions for the proposed project were modeled using the California Emissions Estimator Model (CalEEMod) version 2016.3.2. For detailed information on the assumptions please refer to Appendix B.

3.3.3 Environmental Impact Analysis

This section discusses potential impacts on air quality associated with the proposed project and provides mitigation measures where necessary.

Impact AIR-1 Conflict with or obstruct implementation of the applicable air quality plan?

Impact Analysis

The BAAQMD 2017 Clean Air Plan is the regional air quality plan (AQP) for the Air Basin. It identifies strategies to bring regional emissions into compliance with federal and state air quality standards. The BAAQMD Guidance provides two criteria for determining if a plan-level project is consistent with the current AQP control measures. However, the BAAQMD does not provide a threshold of significance for project-level consistency analysis. Therefore, the following criteria is used for determining a project's consistency with the AQP.

- Criterion 1: Does the project support the primary goals of the AQP?
- Criterion 2: Does the project include applicable control measures from the AQP?
- Criterion 3: Does the project disrupt or hinder implementation of any AQP control measures?

Criterion 1

The primary goals of the 2017 Clean Air Plan, the current AQP, are to:

- Protect public health through the attainment air quality standards; and
- Protect the climate

As discussed in impact discussions AIR-2, AIR-3, AIR-4, AIR-5, the proposed project would not create a localized violation of state or federal air quality standards, significantly contribute to cumulative nonattainment pollutant violations, expose sensitive receptors to substantial pollutant concentrations, or create objectionable odors affecting a substantial number of people after implementation of Mitigation Measure AIR-1 and Mitigation Measure AIR-2. Therefore, the proposed project is consistent with criterion 1 with incorporation of Mitigation Measure AIR-1, which would require all construction contractors to implement the basic construction mitigation measures recommended by the BAAQMD to reduce fugitive dust emissions and Mitigation Measure AIR-2, which would require Tier 4 emission standards for much of the off-road construction equipment.

Criterion 2

The 2017 Clean Air Plan contains 85 control measures aimed at reducing air and climate pollutants in the Bay Area. For purposes of consistency with climate planning efforts at the state level, the control strategy in the Clean Air Plan is based upon the same economic sector framework used by the CARB for its Climate Change Scoping Plans. The sectors are as follows:

- Stationary Sources
- Transportation
- Energy
- Buildings
- Agriculture
- Natural and Working Lands
- Waste Management
- Water
- Super greenhouse gases (GHGs) Pollutants

Of the 85 measures aimed at reducing air and climate pollutants, only the transportation control measure TR2 Trip Reduction Program would apply to any future land use at the project site that has more than 50 employees

The applicant would be required to conform to the energy efficiency requirements of the California Building Standards Code, also known as Title 24. Specifically, the proposed project must implement the requirements of the most recent Building Energy Efficiency Standards, which is the current version of Title 24.

In summary, the proposed project would comply with all applicable rules and regulations and the project would not impede attainment because its emissions fall below the BAAQMD regional significance thresholds. Table 3.3-1, Table 3.3-2, and Table 3.3-3 show that the proposed project does not exceed the BAAMQD thresholds of significance for construction, daily operations, and annual operations respectively.

Criterion 3

If the approval of a project would not cause a disruption, delay, or otherwise hinder the implementation of any clean air plan control measure, it would be considered consistent with the 2017 Clean Air Plan. Examples of how a project may cause the disruption or delay of control measures include a project that precludes an extension of a transit line or bike path or proposes excessive parking beyond parking requirements. The proposed project would not preclude extension of a transit line or bike path, propose excessive parking beyond parking requirements, or otherwise create an impediment or disruption to implementation of any AQP control measures.

Conclusion

The proposed project would be consistent with the criteria of the AQP with incorporation of Mitigation Measure AIR-1 and Mitigation Measure AIR-2. As such, with the incorporation of these mitigation measures, this impact would be less than significant.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures

MM AIR-1 **Implement Construction Best Management Practices.** The applicant shall require all construction contractors to implement the basic construction mitigation measures recommended by the BAAQMD to reduce fugitive dust emissions. Emission reduction measures shall include, at a minimum, the following measures. Additional measures may be identified by the BAAQMD or contractor as appropriate:

a) all exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day;
b) all haul trucks transporting soil, sand, or other loose material off-site shall be covered;
c) all visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited;
d) all vehicle speeds on unpaved roads shall be limited to 15 miles per hour;
e) all roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads will be laid as soon as possible after grading unless seeding or soil binders are used; and
f) idling times shall be minimized either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes (as required by the California Airborne

Toxics Control Measure Title 13, Section 2485 of CCR. Clear signage shall be provided for construction workers at all access points.

g) all construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.

h) a publicly visible sign shall be posted with the telephone number and person to contact at the City regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD phone number shall also be visible to ensure compliance with applicable regulations.

MM AIR-2 **Implement Construction Emissions Reductions.** The applicant shall require the following construction equipment to meet CARB Tier 4 emission standards: Cranes, Excavators, Forklifts, Generator Sets, Graders, Rubber Tired Dozers, Tractors/Loaders/Backhoes, Trenchers, and Welders.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact AIR-2 Violate any air quality standard or contribute to an existing or projected air quality violation?

Impact Analysis

This impact relates to localized criteria pollutant impacts. Potential localized impacts would be exceedances of state or federal standards for particulate matter (PM_{10}), or carbon monoxide (CO). PM_{10} are of concern during construction because of the potential temit fugitive dust during earth-disturbing activities (construction fugitive dust). CO emissions are of concern during project operation because operational CO hotspots are related to increases in on-road vehicle congestion. Each pollutant is discussed separately below.

Construction Fugitive Dust

During construction (grading), fugitive dust (PM_{10}) would be generated from site grading and other earth-moving activities. Most of this fugitive dust would remain localized and be deposited near the project site.

The BAAQMD does not have a quantitative threshold for fugitive dust. The BAAQMD Air Quality Guidelines recommend that projects determine the significance for fugitive dust through application of best management practices (BMPs). Mitigation Measure AIR-1 requires the implementation of fugitive dust control measures that are consistent with BMPs established by the BAAQMD, which reduce the proposed project's construction-generated fugitive dust impacts to a less than significant level.

Operational CO Hotspot

Localized high levels of CO (CO hotspot) are associated with traffic congestion and idling or slow-moving vehicles. The BAAQMD recommends a screening analysis to determine if a project has the potential to contribute to a CO hotspot. The screening criteria identify when site-specific CO dispersion modeling is necessary. The proposed project

would result in a less than significant impact to air quality for local CO if the following screening criteria are met:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans; or
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour; or
- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

A review of the 2017 Congestion Management Program for San Mateo County indicates that the proposed project is consistent with the applicable congestion management plan. According to the Traffic Impact Study prepared for the project by Kimley-Horn, the proposed project would generate approximately 105 new net trips during the a.m. peak hour and 97 new net trips during the p.m. peak hour and would not substantially increase traffic volumes on nearby roadways above 44,000 vehicles per hour. Furthermore, the adjacent roadways are not located in an area where vertical and/or horizontal mixing, or the free movement of the air mass, is substantially limited by physical barriers such as bridge overpasses or urban or natural canyon walls. Therefore, the proposed project would not significantly contribute to an existing or projected CO hotspot. Impacts are less than significant.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures
Mitigation Measure AIR-1 is required.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact AIR-3	**Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?**

Impact Analysis

In developing thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Project construction and operational impacts are assessed separately below.

Construction Emission

Emissions from construction-related activities are generally short-term in duration but may still cause adverse air quality impacts. The proposed project would generate emissions from construction equipment exhaust, worker travel, and fugitive dust. These construction emissions include criteria air pollutants from the operation of heavy construction equipment.

As discussed in the Project Description, the proposed project would be constructed over 23 months with full buildout

completed by March 2021. Construction would include the following phases:

- Phase 1 – Demolition of existing building and concrete foundation (approximately 1 month)
- Phase 2 – Shoring/mass excavation for underground parking garage (approximately 3 months)
- Phase 3 – Construction of proposed office building and on- and off-site improvements (approximately 19 months)

The construction schedule utilized in the analysis represents a "worst-case" analysis scenario since emission factors for construction equipment decrease as the analysis year increases, due to improvements in technology and more stringent regulatory requirements. Therefore, construction emissions would decrease if the construction schedule moves to later years. The duration of construction activity and associated equipment represent a reasonable approximation of the expected construction fleet as required pursuant to CEQA guidelines.

Table 3.3-1 provides the construction emissions estimated for the proposed project. The construction emissions in each year are well below the recommended thresholds of significance. The proposed project would implement Mitigation Measure AIR-1 as recommended by the BAAQMD and Mitigation Measure AIR-2. The emissions from construction would be less than significant.

Table 3.3-1. Annual Construction Emissions

Year	Units	ROG	NOx	PM_{10}	$PM_{2.5}$
2019	Total Emissions (tons/year)	0.21	2.57	0.09	0.08
2019	Total Emissions (lbs/year)	425.4	5139.6	181.4	169.8
2019 Average Daily Emissions	***lbs/day***	**2.52**	**30.41**	**1.07**	**1.00**
2020	Total Emissions (tons/year)	0.32	2.59	0.12	0.11
2020	Total Emissions (lbs/year)	649.4	5181	239	229.6
2020 Average Daily Emissions	***lbs/day***	**2.71**	**21.59**	**1.00**	**0.96**
2021	Total Emissions (tons/year)	0.68	0.78	0.03	0.03
2021	Total Emissions (lbs/year)	1360.6	1563.2	68.2	65.4
2021 Average Daily Emissions	***lbs/day***	**15.12**	**17.37**	**0.76**	**0.73**
BAAQMD Significance Threshold	lbs/day	54	54	82	54
Any year exceed significance threshold?		***No***	***No***	***No***	***No***
Significant Impact?		***No***	***No***	***No***	***No***

Source: CalEEMod Output (Appendix B)

Operational Emissions

As presented in Table 3.3-1, the pollutants of concern include ROG, NOx, PM_{10}, and $PM_{2.5}$. The BAAQMD Criteria Air Pollutant Significance thresholds were used to determine impacts.

Operational emissions would occur over the lifetime of the proposed project and would be from two main sources: area sources and motor vehicles, or mobile sources. It was assumed that the entire proposed project would be operational in 2021 to provide a conservative estimate of operational emissions. If a later buildout year were used,

the emissions would be lower due to cleaner vehicles from increasing regulations. Therefore, using an earlier year to consider full buildout of the proposed project would provide a worst-case scenario of emissions. The operational emissions were modeled for summer and winter seasons. The results for winter were the highest and are presented in Table 3.3-2. The unmitigated daily operational emissions would be less than significant.

Table 3.3-2. Daily Operational Emissions

Emissions Source	Pounds per Day			
	ROG	NO_x	PM_{10}	$PM_{2.5}$
Area	2.34	<0.01	<0.01	<0.01
Energy	0.06	0.57	0.04	0.04
Mobile	1.14	3.12	2.94	0.80
Winter Total	*3.54*	*3.69*	*2.98*	*0.85*
Thresholds of Significance	**54**	**54**	**82**	**54**
Significant?	***No***	***No***	***No***	***No***

Notes:
ROG = reactive organic gases
NO_x = nitrous oxides
PM_{10} = particulate matter 10 microns or less in diameter
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
Source: CalEEMod Output (Appendix B)

The annual emissions are shown in Table 3.3-3. The annual emissions are also below the thresholds of significance; therefore, the impact is less than significant.

Table 3.3-3. Annual Operational Emissions

Emissions Source	Tons per Year			
	ROG	NO_x	PM_{10}	$PM_{2.5}$
Area	0.43	<0.01	<0.01	<0.01
Energy	0.01	0.10	<0.01	<0.01
Mobile	0.15	0.40	0.37	0.10
Waste	0.00	0.00	0.00	0.00
Water	0.00	0.00	0.00	0.00
Annual Total	*0.58*	*0.50*	*0.37*	*0.11*
Thresholds of Significance	**10**	**10**	**15**	**10**
Significant?	***No***	***No***	***No***	***No***

Notes:
ROG = reactive organic gases NO_x = nitrous oxides
PM_{10} = particulate matter 10 microns or less in diameter
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
Source: CalEEMod Output (Appendix B)

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures
Mitigation Measure AIR-2 is required.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact AIR-4 Expose sensitive receptors to substantial pollutant concentrations?

Impact Analysis

This discussion addresses whether the proposed project would expose sensitive receptors to construction-generated fugitive dust (PM_{10}), naturally occurring asbestos (NOA), construction-generated diesel particulate matter (DPM), operational related toxic air contaminants (TACs), or operational CO hotspots. Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, and/or duration of exposure to air pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, childcare centers, playgrounds, retirement homes, convalescent homes, hospitals, and medical clinics. The project site itself is not considered a sensitive receptor.

The nearest existing sensitive receptors are the residential homes located across the Caltrain tracks off Pennsylvania Avenue (approximately 200 feet away).

Construction Emissions

Fugitive Dust PM_{10}

As discussed in Impact AIR-2, fugitive dust (PM_{10}) would be generated from site grading and other earth-moving activities. Most of this fugitive dust would remain localized and would be deposited near the project site. However, the potential for impacts from fugitive dust exists unless control measures are implemented to reduce the emissions from the project site. The proposed project would implement Mitigation Measure AIR-1 requiring fugitive dust control measures that are consistent with BMPs established by the BAAQMD, to reduce the project's construction-generated fugitive dust impacts to a less than significant level.

Naturally Occurring Asbestos

Construction in areas of rock formations that contain naturally occurring asbestos could release asbestos in to the air and pose a health hazard. BAAQMD enforces CARB's ATCMs at sites that contain ultramafic rock. The ATCM for Construction, Grading, Quarrying and Surface Mining Operations were signed into state law on July 22, 2002, and became effective in the Air Basin in November 2002. The purpose of this regulation is to reduce public exposure to

naturally occurring asbestos. A review of the map with areas more likely to have rock formations containing naturally occurring asbestos in California indicates that there is no asbestos in the immediate project area (USGS 2011). Therefore, it can be reasonably concluded that the proposed project would not expose sensitive receptors to naturally occurring asbestos. Impacts would be less than significant.

Diesel Particulate Matter (DPM)

Construction activities have the potential to generate DPM emissions related to the number and types of equipment typically associated with construction. Off-road, heavy-duty diesel equipment used for site grading, paving, and other construction activities result in the generation of DPM. The project site is in an urban area and within 100 feet from existing residential uses that could be exposed to diesel emission exhaust during the construction period. To estimate the potential cancer risk associated with construction of the proposed project from equipment exhaust (including DPM), a dispersion model was used to translate an emission rate from the source location to a concentration at the receptor location of interest (e.g., a nearby residence and worksites). Dispersion modeling varies from a simpler, more conservative screening-level analysis to a more complex and refined detailed analysis. This refined assessment was conducted using CARB exposure methodology with the air dispersion modeling performed using the United States Environmental Protection Agency (EPA) dispersion model AERMOD. The model provides a detailed estimate of exhaust concentrations based on-site and source geometry, source emissions strength, distance from the source to the receptor, and meteorological data from the San Carlos Airport. Results of the analysis are shown in Table 3.3-4 (Unmitigated) and Table 3.3-5 (Mitigated) and indicate construction of the proposed project would not expose nearby sensitive receptors to substantial pollutant concentrations. Therefore, with the implementation of Mitigation Measure AIR-2, impacts would be less than significant.

Table 3.3-4. Unmitigated Health Risks from Project Construction to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index	Annual $PM_{2.5}$ Concentration (µg/m3)
Maximum Exposed Individual Location (Residential)	105	7.99E-02	0.0	0.38
Maximum Exposed Individual Location (Worksite)	4.76	1.80E-01	0.0	
Threshold	10.0	1.0	1.0	0.30

Table 3.3-5. Mitigated Health Risks from Project Construction to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index	Annual $PM_{2.5}$ Concentration (µg/m3)
Maximum Exposed Individual Location (Residential)	8.42	6.34E-03	0.0	0.03
Maximum Exposed Individual Location (Worksite)	0.4	1.43E-02	0.0	
Threshold	10.0	1.0	1.0	0.30

Operational Emissions

Carbon Monoxide Hotspots

Traffic congestion and idling or slow-moving vehicles could create a potential CO hotspot. As discussed in Impact AIR-2, the proposed project would generate a less than significant impact for operational CO.

Toxic Air Contaminant Emissions

Two scenarios have the potential for exposing sensitive receptors to TACs. The first is when a project includes a new or modified source of TACs and would be located near an existing or proposed sensitive receptor. The second scenario involves a residential or other sensitive receptor development locating near an existing or planned source of TACs.

For project-level analysis, BAAQMD specifies both individual and cumulative-level thresholds of significance for risks and hazards. For projects that are considered new sources of TACs or $PM_{2.5}$ (such as stationary sources, industrial sources, or roadway projects), it is generally appropriate to use both the project-level and cumulative-level thresholds because the project-level threshold identifies said project's individual contribution to risk, while the cumulative threshold assesses said project's cumulative contribution to risk.

To address potential risk and hazard impacts, a Health Risk Assessment (HRA) was conducted for the proposed project. The HRA evaluates construction period health risk to off-site receptors and stationary and mobile source emissions and their related health risk impacts for future receptor of the project. According to the BAAQMD, a project would result in a significant impact if it would individually expose sensitive receptors to TACs resulting in an increased cancer risk greater than 10.0 in 1 million, an increased non-cancer risk of greater than 1.0 on the hazard index (chronic or acute), or an annual average ambient $PM_{2.5}$ increase greater than 0.3 micrograms per liter (µg/m^3).

A significant cumulative impact would occur if the project, in combination with other projects located within a 1,000-foot radius of the project site, would expose sensitive receptors to TACs resulting in an increased cancer risk greater than 100.0 in 1 million, an increased non-cancer risk of greater than 10.0 on the hazard index (chronic), or an ambient $PM_{2.5}$ increase greater than 0.8 µg/m^3 on an annual average basis.

Stationary Sources

The stationary source analysis evaluated the risk levels from permitted sources in the project vicinity, using the toxic air contaminant emissions reported to the BAAQMD by the stationary sources identified in the project vicinity. The BAAQMD indicates five sources of emissions that are within 1,000 feet of the project site; including three gas

stations, one generator, and one auto body shop. Following BAAQMD guidance, the stationary sources were scaled for distance using the BAAQMD Diesel Internal Combustion (IC) Engine Distance Multiplier Tool. The results of the stationary source analysis are presented in Table 3.3-6. As shown in Table 3.3-6, the highest risk would be 5.37 in 1 million, which would not exceed the BAAQMD cancer risk threshold of 10.0 in 1 million. The hazard index would be 0.02, which is below the threshold of 1.0. The results of the analysis also indicate that $PM_{2.5}$ concentration would not exceed the BAAQMD significance threshold of 0.3 µg/m^3. The BAAQMD cumulative threshold of cancer risk greater than 100.0 in 1 million, an increased non-cancer risk of greater than 10.0 on the hazard index (chronic), or an ambient $PM_{2.5}$ increase greater than 0.8 µg/m^3 on an annual average basis would not be exceeded.

Table 3.3-6. Stationary Sources

Plant ID	Stationary Source	Distance (feet)	Adjusted Adult Carcinogenic Risk (in one million)	$PM_{2.5}$ (µg/m^3)	Hazard
13509	Pacific Bell	738	4.33	0.110	0.022
16454	Quest Collision Center	--	0.00	0.000	0.000
4796	Cook's Auto Body	--	0.00	0.013	0.003
11443	H&N Lockwood Inc	--	0.00	0.000	0.000
17462	City of Redwood City #5546	532	5.37	0.012	0.019
Maximum Single Source Risks			5.37	**0.11**	**0.02**
BAAQMD Single Source Threshold			10 in 1 million	0.30	1.000
Exceeds Threshold?			No	No	No
Total Risk			9.70	0.14	0.04
BAAQMD Cumulative Threshold			100 in 1 million	0.80	10.0
Exceeds Threshold?			No	No	No

Mobile Sources

To estimate the potential cancer risk associated with the proposed project from diesel vehicle exhaust, the BAAQMD Screening Calculator was used. The Screening calculator estimates risk for a 70-year period. Since the proposed project has a mix of offices and public area risk for both areas were estimated. This was done by calculating the percent contribution each age bin contributes to the overall 70-year risk. Table 3.3-7 below provides the contribution each age bin has to the overall risk by age bin. These percentage were then used to adjust the 70-year risk provide the screening tool.

Table 3.3-7. Percent Contribution by Age Group

	3rd Tri.	0<2 yrs	2<9 yrs	2<16 yrs	16<30 yrs	16–70 yrs
Exposure Duration (years)	0.25	2	7	14	14	54
Age Sensitivity Factor	10	10	3	3	1	1
% Contribution (70 yr)	2.11	16.88	17.72	35.44	11.81	45.57
% Contribution Worker (25 / 40 yr)					21.10	33.76

Table 3.3-8. Mobile Sources

Street Name	# of Vehicles	Distance from Site (ft)	Risk (Screening Tool) (70 yr)	Worker Adjusted Risk	PM 2.5 (ug/m3)
Maple Street	3,746	20	3.48	0.73	0.081
Beech St	3,835	359	0.6	0.13	0.013
Main St	7,143	20	3.26	0.69	0.074
El Camino Real	36,000	505	5.7	1.20	0.129

Cumulative Risks and Hazards

The cumulative analysis sums all sources of emissions in the vicinity of the project site including stationary source and mobile sources. The cumulative cancer risk, hazard index, acute index and $PM_{2.5}$ concentrations are shown in Table 3.3-9. Results of the cumulative analysis indicate the proposed project would not expose future residents of the project site to significant cumulative health risks.

Table 3.3-9. Cumulative Risk from All Sources

Source	Carcinogenic Inhalation Health Risk	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index	$PM_{2.5}$
Maple Street	3.48	--	--	0.081
Beech St	0.6	--	--	0.013
Main St	3.26	--	--	0.074
El Camino Real	5.7	--	--	0.129
Pacific Bell	4.33	0.022	--	0.110
Quest Collision Center	0.00	0.000	--	0.000
Cook's Auto Body	0.00	0.003	--	0.013
H&N Lockwood Inc	0.00	0.000	--	0.000
City of Redwood City #5546	5.37	0.019	--	0.012
Railway	0.0045	--	--	0.002
Total	22.75	0.044	0	0.434
Cumulative Threshold	100.0	10.0	10.0	0.80
Exceed? (yes/no)	**No**	**No**	**No**	**No**

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure AIR-2 is required.

Level of Significance After Mitigation

Less Than Significant Impact with Mitigation.

Impact AIR-5 Create objectionable odors affecting a substantial number of people?

Impact Analysis

As stated in the BAAQMD 2017 Air Quality Guidelines, odors are generally regarded as an annoyance rather than a health hazard and the ability to detect odors varies considerably among the populations and overall is subjective.

Project Construction

Diesel exhaust and ROGs would be emitted during construction of the project, which are objectionable to some; however, emissions would disperse rapidly from the project site and, therefore, not create objectionable odors affecting a substantial number of people. As such, construction odor impacts would be less than significant.

Project Operation

Land uses typically considered associated with odors include wastewater treatment facilities, waste-disposal facilities, or agricultural operations. The proposed project does not contain land uses typically associated with emitting objectionable odors.

The potential for the proposed project to create objectionable odors affecting a substantial number of people during construction and operation would be considered less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

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3.4 BIOLOGICAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the California Department of Fish or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan?	☐	☐	☐	☒

3.4.1 Environmental Setting

The 1.31-acre project site is vacant, except for an existing one-story commercial building no longer in use. All parcels surrounding the project site are completely developed and include apartment buildings, houses, businesses, and parking lots. There are Catrain tracks running northwest-southeast, directly to the east of the project site. The following three habitat types exist within the project site as reported in the Biological Survey Memorandum (Appendix C).

Developed: There is one vacant one-story commercial building on the southeast corner of the project site and a concrete building foundation in the northern portion of the project site.

Wild oats grassland: The majority of the project site consists of non-native grassland plant cover. Dominant species include wild oats (*Avena* sp.), black mustard (*Brassica nigra*), fennel (*Foeniculum vulgare*), and yellow star thistle (*Centaurea solstitialis*).

Redwood Creek: There is a concrete lined portion of Redwood Creek running through the western portion of the project site. There were several inches of water in the creek at the time of the survey conducted on November 14, 2018. The canal measures approximately 25 feet between banks and is at least 10 feet deep.

The project site does not include designated critical habitat, and there is no critical habitat within 2 miles.

Wildlife Movement Corridors

The project site is highly disturbed and does not contain any trees or sensitive native vegetation or connectivity to suitable habitat that would be conducive to terrestrial wildlife movement. The project site is located within a heavily urbanized area that does not provide suitable, connected habitats to function as a wildlife corridor. The canal running through the western portion of the project site may provide a movement corridor for fish species that are not considered special-status (as defined in Section 3.4.2, below).

3.4.2 Methodology

Stantec reviewed existing information on biological resources known in the vicinity of the project site. The following sources were reviewed:

- California Department of Fish and Wildlife (CDFW) BIOS Natural Diversity Database (CNDDB) (CDFW 2018a) within 2 miles of the project site;
- CDFW RareFind 5 Natural Diversity Database (CNDDB) (CDFW 2018b) within 2 miles of the project site;
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) (USFWS 2018); and
- California Native Plant Society (CNPS) online version of the Inventory of Rare and Endangered Plants of California (CNPS 2018) within 2 miles of the project site.

A 2-mile buffer around the project site included portions of the following U.S. Geological Survey (USGS) quadrangles: Palo Alto, Woodside, Redwood Point, and San Mateo.

Based on the results of the database queries, Stantec compiled a list of the special-status species that would be evaluated for potential to occur in the project site (Appendix C).

Additionally, a reconnaissance-level field survey was conducted by a Stantec biologist on November 14, 2018, to assess the existing habitat suitability for special-status species. The field survey was conducted within a Study Area that included the proposed project site plus a 250-foot buffer. The results of this survey are reported in the Biological Survey Memorandum (Appendix C) and is summarized below.

Special-Status Plants

Special-status plant species are defined in accordance with the CEQA Guidelines, Section 15380, and the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018c), and includes species that are:

- Federally or state-listed, or proposed for listing, as rare, threatened, or endangered (CDFW 2018d);
- Special Plant as defined by the CNDDB (CDFW 2018d); or

- Listed by the California Native Plant Society in the online version of its Inventory of Rare and Endangered Plants of California as California Rare Plant Rank List 1 through 4 (CNPS 2018).

The CNDDB and IPaC query returned a list of eight special-status plant species. Due to the disturbed and developed nature of the project site, and prevalence of non-native grassland habitat on the project site, there is a low or no potential for any special-status plant species to occur (Appendix C).

Special-Status Wildlife

Special-status wildlife species were defined in accordance with the CEQA Guidelines, Section 15380, and included species that are:

- Listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act;
- Listed or candidates for listing as threatened or endangered under the California Endangered Species Act;
- Designated as Species of Special Concern by the CDFW;
- Included on the CDFW "Special Animals" list (CDFW 2018e); or otherwise meet the definition of rare, threatened, or endangered, as described in the CEQA Guidelines, Section 15380.

The CNDDB and IPaC search performed as part of the Biological Resources Assessment returned a list of 15 special-status wildlife species. The Biological Survey Memorandum (Appendix C) analyzed the potential for these species to occur within the project site and determined that all the species have a low or no potential to occur in the project site due to lack of suitable habitat characteristics within the project site.

3.4.3 Environmental Impact Analysis

This section discusses potential impacts on biological resources associated with the proposed project and provides mitigation measures where necessary.

Impact BIO-1	**Have a substantial adverse effect, either directly or through habitat modifications on any species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

Impact Analysis

Special-Status Plant Species

The project site does not contain habitat suitable for special-status plants (Appendix C). Therefore, no special-status plant species would be expected to occur within the project site.

Special-Status Wildlife Species

During the biological field survey of the project site on November 14, 2018, no special-status wildlife species were observed on-site. Additionally, there is a low or no potential for special-status wildlife species to be present due to a lack of suitable habitat characteristics within the project site (Appendix C).

The project site consists of ruderal vegetation that could provide marginal potential nesting and marginal foraging habitat for nesting birds protected under the Migratory Bird Treaty Act and Sections 3503 and 3513 of the California Fish and Game Code. Potential nesting habitat is present in two of the four trees on the project site, the existing vacant commercial building, as well as throughout the project site for ground nesting species. Construction of the

proposed project has the potential to directly impact nesting birds by clearing of on-site vegetation, including the two on-site trees where potential nesting habitat is present, and removing the existing commercial building. The proposed project would also reduce the amount of on-site foraging space. However, the project site and vicinity are not prime habitat since the area contains limited nesting habitat and provides only marginal foraging habitat. However, trees on adjacent properties also provide suitable nesting habitat that may indirectly be impacted by construction noise and increased activity. Though birds nesting in the area are likely acclimated to levels of disturbance similar to the proposed project, including urban noise and human activity, given the existing urban environment, implementation of Mitigation Measure BIO-1 would reduce potential impacts to nesting birds. As such, impacts to nesting birds would be less than significant with mitigation.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures

MM BIO-1 **Avoid Disturbance of Nesting Birds.** If project activities occur during the nesting season for native birds (February 1 to August 31), the following measures shall be implemented to avoid or minimize the potential for adverse impacts on nesting migratory birds and raptors:

A pre-construction nesting bird survey for species protected by the MBTA and California Fish and Game Code shall be conducted by a qualified biologist within a 250-foot radius of proposed construction activities for passerines and a 500-foot radius for raptors no more than two weeks prior to the start of construction activities.

If active nests are found a qualified biologist shall determine the size of the buffer based on the nesting species and its sensitivity to disturbance (e.g., a buffer measuring from 50 to 100 feet for passerine species and a buffer of 300 feet for raptor species). These buffers may be reduced at the discretion of a qualified biologist, but no construction activities shall be permitted within the buffer if they are demonstrated to disturb nesting birds. Active nest sites shall be monitored periodically to determine time of fledging.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact BIO-2	**Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

Impact Analysis

The project site does not contain riparian habitat or any other sensitive natural communities; therefore, there would be no impacts as a result of the proposed project. The concrete lined section of Redwood Creek running through the western portion of the project site does not contain any vegetation and would not be impacted by the proposed project. The proposed project would not impact any other sensitive natural communities as identified in local or regional plans, policies, and regulations, or by the CDFW and USFWS. Therefore, there would be no impact to sensitive natural communities as a result of the proposed project.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

Impact BIO-3	**Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

Impact Analysis

A concrete lined portion of Redwood Creek flows through the western portion of the project site. The proposed project would involve the installation of a 64-foot-wide bridge over the creek using existing bridge abutments and foundation and would, therefore, not impact Redwood Creek. In addition, all construction staging activities would be required to stay outside of the concrete drainage channel's zone of influence which the city would confirm during the building permit plan check.

Construction activities would include the refueling of construction equipment and storage of hazardous materials (e.g., fuel, oil, hydraulic fluid) on location. As a result, minor fuel and oil spills may occur with a risk of larger releases. Without rapid containment and clean-up, these materials could be potentially toxic depending on the location of the spill in proximity to Redwood Creek. If any accidental spills or site erosion enter Redwood Creek, there could be adverse impacts to the aquatic environment. The proposed project would be required to implement a SWPPP and associated BMPs, per the requirements of Redwood City's Stormwater Pollution Prevention Program, to reduce potential water quality impacts. Adherence to applicable water quality regulations, preparation of a Stormwater Pollution Prevention Plan (SWPPP), and compliance with the Redwood City Municipal Code would ensure that water quality standards are not violated during construction. Therefore, potential impacts associated with water quality during construction would be less than significant

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact BIO-4 Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Impact Analysis

Movements of wildlife generally fall into three basic categories: (a) movements along corridors or habitat linkages associated with home range activities such as foraging, territory defense, and breeding; (b) seasonal dispersal movements—typically one-way movements (e.g., juvenile animals leaving their natal areas or individuals colonizing new areas); and (c) temporal migratory movements— generally seasonal and involving a return to the place of origin (e.g., deer moving from winter grounds to summer ranges and fawning areas).

The project site contains no designated terrestrial wildlife corridors within its boundaries. The concrete lined portion of Redwood Creek within the project site may provide a suitable movement corridor for non-special-status fish species should the water levels be high enough to support fish species. However, the proposed project would not impact this water feature as the proposed bridge would be constructed using the existing abutments. In addition, all construction staging activities would be required to stay outside of the concrete drainage channel's zone of influence which the city would confirm during the building permit plan check. Furthermore, the project site is located within a heavily urbanized area, containing four small trees, and no sensitive native vegetation, or water features that would be conducive to wildlife movement. As such, the proposed project would not interfere substantially with the movement of any native resident or migratory fish, wildlife species, established native residents, migratory wildlife corridors, or impede the use of native wildlife nursery sites. Therefore, this potential impact is considered less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact BIO-5 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Impact Analysis

Four trees within the project site would be removed as part of the proposed project. City code requires applicants to apply for a Tree Removal Permit for projects requiring removal of any trees with a single trunk of a circumference of 38 inches or more measured at any point between six inches and 36 inches above ground level (Redwood City 2018a). This would correspond to trees with a diameter of 12 inches measured at breast height (DBH). City code also requires a Tree Removal Permit should any 'heritage trees' require removal. The Park and Recreation Commission may declare any tree, regardless of size, to be a heritage tree if said tree is healthy and has adapted well to the climatic conditions of the area, if said tree is visually accessible from a public right-of-way and if the Park and Recreation Commission finds that at least one of the following conditions exist (Redwood City 2018a):

- That said tree has historical significance,
- That said tree is indigenous to the area, and/or

- That said tree is one of a group of trees and that each is dependent on the other tree for survival.

None of the four trees to be removed fit the definition of a heritage tree and only one of the trees (palm tree) is greater than 12 inches DBH. Therefore, a Tree Removal Permit from the City for the removal of this tree would be required as part of the development and impacts to trees would be a less than significant impact. Additionally, the proposed project includes plans for planting approximately 100 trees and other landscaping vegetation, which would provide a net increase of vegetation on the project site. Therefore, the proposed project would not conflict with any local policy or ordinance protecting biological resources, and it would be consistent with goals and policies outlined in the Natural Resources Element of the General Plan (Redwood City 2010a). Thus, impacts would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact BIO-6	**Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan?**

Impact Analysis

The project site is located within the PG&E Bay Area Operation and Maintenance Habitat Conservation Plan (HCP) area. However, this plan only applies to PG&E maintenance activities and would not impact the proposed project. There are no other adopted HCPs, Natural Community Conservation Plans (NCCP), nor other similar approved conservation plan within or in close proximity to the plan area. The next closest HCP to the plan area is the San Bruno Mountain HCP, located approximately 9 miles northwest of the project site. The closest NCCP to the plan area is the Santa Clara Valley NCCP, approximately 25 miles to the southeast in the Coyote Valley. Therefore, there would be no impact to any adopted conservation plans.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

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3.5 CULTURAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as identified in Section 15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

3.5.1 Environmental Setting

Natural Setting

Redwood City is located within California's Coastal Ranges Geomorphic Province, which consists of northwest-southeast trending mountain ranges and valleys extending from beyond the northern California border to the Transverse Ranges in Southern California. The project site, which is located southwest of US-101 and northeast of El Camino Real, is a gently sloping plain draining northeast to the tidal marsh (Redwood City 2010a).

The geology encompassing Redwood City and the project site is mainly unconsolidated sedimentary deposits underlain by sedimentary rock and Franciscan bedrock west of Alameda de las Pulgas. The City's west border is underlain by the Cretaceous age Franciscan Complex which consists mainly of greywacke sandstone, conglomerate and shale western hills and flatland deposits. The lowland deposits, which underlie most of Redwood City, consist mostly of the deposits of Holocene age alluvium (less than 11,000 years old) consisting of a mix of clay, silt, sand, and gravel. (WSA 2017:2).

Cultural Resources

The following cultural resources discussion is modified from the Cultural, Biological, and Paleontological Resources Assessment Report, 1180 Main Street Project, Redwood City, San Mateo County, California (WSA 2017), unless otherwise referenced. Additional information regarding cultural resources can be found in the Cultural Resources Inventory and Evaluation Report (Appendix D) prepared for this document.

Prehistoric Background

The project site is in an area that was environmentally favorable for aboriginal use. In the precontact era, Native Americans often set up camp or a village near a freshwater source on the Bay margins. The resources of the San Francisco bayshore (e.g., shellfish, fish, waterfowl, tule) and the foothills (e.g., acorns seed, game, stone) would have been easily exploited, while nearby Redwood Creek would have provided a year-round source of water and riparian resources.

Ethnographic Background

The aboriginal inhabitants of the region belonged to a group known as the Costanoans (from the Spanish *Costanos* or "coastal people") who occupied the area from the central California coast inland to the approximate boundary of the Mount Diablo Range. The project site is situated within the Ramaytush subdivision of the Costanoan, which included much of present-day San Mateo and San Francisco counties (Levy 1978:485). Within the Ramaytush area, the Costanoan population was further divided into tribelets. Tribelet territories, defined by physiographic features, usually had one or more permanent villages surrounded by a number of temporary camps used to exploit seasonally available floral and faunal resources (Levy 1978:485, 487).

The project site was likely situated at or near a primary settlement of the Lamsin (Las Pulgas) tribelet (Levy 1978:485, #13) (also known as the Lamchin [San Carlos Area]) (Milliken 1995:229, Map 5, 246-247). The Lamchin tribelet occupied the bayshore and interior valleys from Belmont through Redwood City (Milliken 1995:246-247).

Historic Background

In 1835, a land grant from Mexico established Rancho de las Pulgas, an area that included all of modern-day Redwood City. The area was originally owned and managed by Don Jose Dario Arguello, a commander of the Presidio of San Francisco (1787 to 1791) and Governor of Alta California (1814-1815). Following the Mexican-American War, the 1851 Land Act required Arguello to defend his land claim. As part of this process, Arguello deeded the land to his lawyer, Simon Mezes. Mezes surveyed, planned, and established “Mezesville” on a portion of the Rancho de las Pulgas. In 1852, the County of San Mateo was created, and in 1856, Redwood City became the first County’s government seat. In 1867, the City of Redwood City was officially incorporated.

During the Hispanic period and into the American Period, the nearby redwoods were recognized as an important natural resource. The lumber industry focused on the mountainous area south of the project area and, at first, relied on San Francisquito Creek and the Santa Clara Embarcadero for transportation on and across San Francisco Bay. After its discovery in 1851, however, Redwood Creek, a deep-water channel that ran inland to what is now Redwood City, was primarily used to ship wood and logs from the redwood forests in the peninsula hills to San Francisco (Redwood City Local History 2019).

During the second half of the 19th century, the Main Street and Broadway area served as a business center for Redwood City, where lumber, shipping, tannery, warehouse, and retail uses thrived. Records from the 1870s and 1880s show a concentration of businesses along Main Street and Broadway (Redwood City 2010a).

In the early-mid 20th century, marsh-side industries such as sea-salt harvesting and cement production resulted in the creation of a modern deep-water port. In the 1940s–1950s, a new center of economic activity developed in the new residential areas west of El Camino Real, as well as south along the Bayshore Highway, and later, along the Bayshore Freeway (now US-101). In the latter half of the 20th century, the Peninsula became home to a thriving technological sector, which continues to the present day (Redwood City 2010a).

Sanborn Fire Insurance maps of the project area (1897, 1919, and 1950) primarily depict land use consisting of light industry/retail, with some houses constructed along Elm Street. The Southern Pacific Railroad (now Caltrain) (RR) runs alongside the eastern edge of the property, which would have been ideal for commercial interests (WSA 2017).

3.5.2 Methodology

To determine the presence of cultural resources within the project location and vicinity, an assessment of the project site was conducted that included the project location and areas within 0.25 miles. A records search at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS), Native American outreach, a buried site sensitivity analysis, and a pedestrian field survey was conducted for this project. The records search and cultural resources survey were completed in accordance with the CEQA guidelines as follows: 1) identifying all cultural resources within the project site; 2) offering a significance evaluation of the identified cultural resources; 3) assessing resource vulnerability to effects that could arise from project activities; and 4) offering suggestions designed to protect resource integrity, as warranted. Appendix D provides the Cultural Resources Inventory and Evaluation Report that includes detailed discussion of the methods used to identify cultural resources and the findings of the records search and surveys.

Records Search and Literature Review

Stantec conducted a records search of the project location and a surrounding 0.25-mile radius at the NWIC (NWIC File No. 18-0981) on November 27, 2018. As an affiliate of the State of California Office of Historic Preservation (OHP), the NWIC is the official state repository of cultural resource records and reports for the region that includes San Mateo County. The records search included a review of previous studies, records, and maps on file at the NWIC, as well as the following resources:

- California Inventory of Historic Resources (California Department of Parks and Recreation) for San Mateo County;
- California Historical Landmarks (California OHP);
- Historic Property Data File (California OHP) for Redwood City;
- The Redwood City Historic Resources Inventory.

The records search identified seven previous cultural resource studies conducted within or adjacent to the project location and an additional 16 archaeological studies conducted within 0.25 miles of the project location.

The NWIC did not identify any previously recorded cultural resources in or adjacent to the project location. However, 41 resources have been recorded within 0.25 miles of the project location. Two of these resources (P-41-000506/CA-SMA-358/H and P-41-002293/CA-SMA-397H) are archaeological sites, and the remaining 39 are historic-era buildings, structures, and/or elements of the Stambaugh-Heller Historical Residential District (SHHRD) (P-41-002422).

P-41-000506/CA-SMA-358/H was first recorded in 2001 as part of a telecommunications project (Brown 2001). The resource was described as a large scatter of historic and prehistoric/protohistoric artifacts and contained both a surface and subsurface component (Brown 2001). Artifacts encountered included chert debitage, nails, glass fragments, butchered (mammal) bone, and marine shell. It was noted that the entire site has been disturbed by historic and modern construction activities, possibly as early as the 1850s; however, the possibility of intact subsurface deposits “is still possible” (Brown 2001).

The site was revisited in 2010 during an archaeological survey conducted for the San Francisco to San Jose segment of the proposed California High-Speed Train project (Martinez et al. 2010). Martinez et al. (2010) recommended CA-SMA-358/H as eligible for listing on the National Register of Historic Places (NRHP) under Criterion D as it is likely to yield information regarding important questions in prehistory and history.

P-41-002293/CA-SMA-397H consists of a historic-era debris scatter containing ceramic and glass fragments and construction debris, indicating a date range spanning from the 1840s–1920s. It has not been evaluated for NRHP or California Register of Historical Resources (CRHR) eligibility.

The SHHRD (P-41-002422) is a roughly six-block area in Redwood City containing wood frame residences and a church built between approximately 1860 and 1915. The western boundary of the SHHRD extends to approximately 180 feet east of the project location; the project location is not located in the SHHRD. The 21 contributing buildings to the SHHRD located within 0.25 miles of the project location are primarily one- and two-story homes of fairly modest size and detail. Integrity of the contributors to the district is moderately high (WSA 2017).

The results of the NWIC records search are confidential and not for public distribution. The full records search results, including lists of all studies and resources within 0.25 miles of the project location, are provided as an appendix to the Cultural Resources Inventory and Evaluation Report (Appendix D).

Review of Additional Documentation

In addition to the formal records search, Stantec reviewed the following resources:

- Nationwide Environmental Tile Research (NETR) database for available aerial imagery and topographic maps of the project location (NETR 2019);
- USGS historic topographic maps, Palo Alto Quadrangle (USGS 2019).

These resources provided additional context for researching and evaluating the built-environment resource recorded during the field survey (see the Field Survey discussion, below) and the results of this map and aerial imagery review can be found in that discussion.

Stantec also reviewed the Cultural, Biological, and Paleontological Resources Assessment Report, 1180 Main Street Project, Redwood City, San Mateo County, California (WSA 2017). This report, provided to Stantec by the client (Premia), was prepared as part of the due diligence efforts in advance of environmental documents for the present project. The archaeological assessment included an archival and records search of the proposed project area and a surrounding 0.25-mile radius at the NWIC, a Sacred Lands File search at the Native American Heritage Commission (NAHC), and a pedestrian archaeological survey (WSA 2017). The data provided in that report served as a confirmation of the data obtained independently for the present study. The results of the NWIC records search completed for that project were nearly identical to the results received for the present study (several more built environment resources have been recorded within 0.25 miles of the project area since then; but no resources were identified within the project area). No new or previously recorded archaeological resources were encountered within the project area during the pedestrian survey completed for that project (WSA 2017). The conclusions and recommendations provided later in this report reflect those provided in this study.

Native American Correspondence

As required under CEQA, and as part of the due diligence efforts in advance of environmental documents for the present project, WSA contacted the NAHC on July 20, 2017, to request information on known Native American traditional or cultural properties within the project location, and to request a list of individuals or groups with cultural affiliation to the project location (WSA 2017). The NAHC responded by letter on July 31, 2017, stating that a record search of the Sacred Lands File for the project location yielded negative results, but that the area is sensitive for cultural resources (NAHC 2017).

A list of five Native American contacts was included in the response. WSA sent certified letters to the five individuals on August 1, 2017, requesting comment on this project. Follow-up phone calls were made on August 15, 2017, and two of the five contacts were reached. A second round of phone calls to the remaining three individuals who could not be reached was made on August 22, 2017. Appendix D contains the documents related to consultation with the NAHC and the tribal representatives. Two individuals, Irene Zwierlein and Andrew Galvan, recommended an archaeological and Native American monitor to be present on-site during ground disturbing activities (WSA 2017).

Field Survey

On November 13, 2018, Stantec Archaeologist, Joanne Grant, conducted an intensive archaeological pedestrian survey of the project location (see Figure 2). The survey covered the entire project area and consisted of walking roughly parallel 10-meter-wide transects in an east-west direction. During the field survey, the entire project area was examined for the presence of historic or prehistoric site indicators. The archaeologist investigated rodent burrows for any indicators of color/texture changes that could indicate buried deposits and employed periodic trowel and boot scrapings to clear small patches of vegetation in areas with poor ground visibility.

The project area consists of primarily level, vacant terrain, surrounded by a cyclone fence. However, the parcel contained several features, including a concrete pad, a standing structure, and a concrete-lined canal. These features are discussed below. No prehistoric or historic-era archaeological resources, or indicators of buried cultural deposits, were identified during the archaeological field survey.

An irregular shaped, rebar reinforced concrete foundation is situated along the eastern side of the channelized creek, at the northernmost point of the project location, close to Maple Street. This foundation is modern and not studied as part of the effort. According to the property owner, this pad was constructed approximately 10 years ago (pers. comm. Artega November 14, 2018).

1190 Main Street

A one-story building, 1190 Main Street, is located on the southeast corner of the project site, at the intersection of Elm and Main Streets. Research indicates that it was constructed in 1952 (WSA 2017). It appears to have been used as a commercial space, with a showroom space facing Main Street (the building is now vacant). This building is slated for demolition as part of this project. Although the building is over 50 years of age, it has not been evaluated, due to the City's policy of not evaluating post-war buildings. Should the historic eligibility of the building need to be determined, it would be done under a separate task.

Channelized Section of Redwood Creek

A channelized, concrete-lined segment of Redwood Creek flows along the western end of the presently-vacant parcel. No additional features or artifacts were found in association with this resource. The channelized creek is gunite concrete-lined, with angled sides at roughly 45 degrees. The gunite concrete-lined banks exhibit cracking, with weeds growing in some areas. A large palm bush is growing alongside the canal at the point where it travels beneath Lathrop Street. Outside of the project boundaries, the canal flows under Maple Street to the north, and flows under Lathrop Street to the southwest. A two-rail, wood fence is located along the canal crest. The modification changing Redwood Creek from a natural waterway to an engineered, concrete lined channel occurred between 1961 and 1968 (NETR 2019). The original concrete lining has been replaced periodically over the years as routine maintenance. Due to the age of the channelized, concrete lined creek, it was recorded on a Department of Parks and Recreation (DPR) form as 1180RC-1 (see Appendix D in the Cultural Resources Inventory and Evaluation Report [Appendix D]).



Redwood Creek is an approximately 10-mile-long perennial stream that discharges into South San Francisco Bay. In 1851, it was discovered that the creek emptied directly into a naturally deep channel of water that, in turn, flowed into San Francisco Bay. Shortly afterwards, logging companies started using the creek to move the redwood logs (hence the name Redwood Creek) from the peninsula hills down to this deep-water channel. From this channel, the logs were transported to San Francisco, where they were ultimately milled into lumber (Redwood City Local History 2019; Redwood City History 2017).

Historically, the 1897 Sanborn map, as well as the 1897 USGS topographic map, shows Redwood Creek as flowing partially through the project location, from approximately 40 feet southwest of Maple Street, and exiting the project location at the intersection of Maple Street and Elm Street (Sanborn Map and Publishing Company 1897, USGS 1897). The 1897 Sanborn map also shows a foot bridge crossing the creek on Elm Street (Sanborn Map and Publishing Company 1897). By 1919, an additional wooden bridge was built across Redwood Creek at Maple Street (Sanborn Map and Publishing Company 1919). The creek and crossing remained relatively unchanged until the late 1940s, when a concrete bridge was identified as crossing over Redwood Creek at Lathrop and Maple Streets in 1950 (Sanborn Map and Publishing Company 1950). In 1960, the creek remained largely as it had been; however, by 1968, the creek had been improved with concrete lining and channelized (NETR 2019). Redwood Creek continues to flow through Redwood City; however, throughout much of this urban area, it is through underground pipes (Kyle 2002), including south of the project location at El Camino Real, and north of the project location at Maple Street.

The channelized canal appears ineligible for the CRHR under Criteria 1, 2, 3, and 4. Research has not uncovered any evidence to suggest that the channelized canal is associated with a significant event or individual (CRHR Criteria 1 and 2), embodies distinctive characteristics of type, period, region, or method of construction, has high artistic value, or represents the work of a master (CRHR Criterion 3), or has recognized data potential (Criterion 4). Although Redwood Creek played an important role in the exportation of lumber and other products (such as grains and livestock) in the mid-late 1800s, the channelization of the canal in the mid-1960s occurred well outside of this potential period of significance. The channelized canal's features appear to be a standardized design for concrete-lined, channelized creeks. It appears to have been maintained and modified regularly since it was originally constructed in the 1960s. Although the channelized creek retains its integrity of location, setting, feeling, and association (the canal is in the same location, and its primary purpose as supporting a natural drainage network through an urban area remains), the canal has lost integrity of design, workmanship, and materials, as it has been subject to modifications and maintenance over the years, including the replacement of its original concrete lining. In all, the resource appears to lack significance of all criteria and is, therefore, ineligible for the CRHR.

For additional information regarding 1180RC-1, please see the Cultural Resources Inventory and Evaluation Report (Appendix D).

Buried Site Sensitivity

The records search did not identify previously recorded cultural resources within the project location. Additionally, the current pedestrian surface survey did not identify any new resources within the project location. The soils in the project location consist of Urban Land Orthents on nearly level to gently sloping land. These soils can be poorly drained to well-drained and are present on alluvial plains, fluviomarine terraces, and foothills (USGS 2018).

The geologic age of the project location is Quaternary alluvium and marine deposits (Pliocene to Holocene) (USGS 2018). This fairly recent age (approximately 5 million years ago to present), combined with the presence of a perennial water source (Redwood Creek) that flows through the project location, suggests that there is a moderate potential to encounter buried resources.

3.5.3 Environmental Impact Analysis

This section discusses potential impacts on cultural resources associated with the proposed project and provides mitigation measures where necessary.

Impact CUL-1 Cause a substantial adverse change in the significance of a historical resource as identified in Section 15064.5?

Impact Analysis

The archival research and the NWIC records search completed as part of the cultural resource analysis indicated that there are no known historical resources, as identified in Section 15064.5, within the project location. Although the building located in the southeast corner of the project site is over 50 years of age, due to the City's policy of not evaluating post-war buildings, this building does not require documentation and/or evaluation.

During the field survey, the channelized, concrete-lined segment of Redwood Creek that flows along the western end of the project location was recorded. As discussed earlier, the channelized segment of Redwood Creek does not appear to meet the criterion for listing in the CRHR.

However, there is a potential for encountering previously undiscovered historical resources as identified in Section 15064.5 during project implementation, due to the proximities of Redwood Creek and a combined prehistoric/historic resource to the project location, along with the former businesses and residences that were once present in the project location. Additionally, the NAHC indicated that the area is sensitive for cultural resources (NAHC 2017), and two of the Native American contacts recommended an archaeological and Native American monitor to be present on-site during ground disturbing activities (WSA 2017).

If an inadvertent discovery were to occur, it could result in damage to the resource that would cause a substantial adverse change in its significance, thereby constituting a significant impact. Prehistoric resources might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period resources might include debris scatters of ceramic, glass, or metal containers; household or personal items; privy pits; or building foundations or other structural remains. The implementation of Mitigation Measure CUL-1 and Mitigation Measure CUL-2 would reduce to a less than significant level any potential impacts from an inadvertent discovery of a historical resource.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures

MM CUL-1 **Pre-Construction Cultural Resource Awareness Training and Cultural Resource Construction Monitoring.** Prior to the start of construction, all construction personnel shall receive a worker's environmental awareness training on cultural resources by a qualified archaeologist. The training, which may be conducted with other environmental or safety trainings, shall provide a description of cultural resources that may be encountered during construction and outline the steps to follow if a discovery is made.



MM CUL-2 **Cultural Materials Discovered During Construction.** The cultural resources study identified the project area as having a likelihood for buried cultural deposits and requires construction monitoring during all ground disturbing activities by a qualified archaeologist and an Ohlone tribal monitor. If evidence of any prehistoric or historic-era subsurface archaeological features or deposits are discovered during excavation or other earth-moving activities, the archaeological and Native American monitors can assess the significance of the find(s) and determine the appropriate treatment. Appropriate treatment may include recordation and/or additional excavation. A monitoring report shall be completed by the archaeological monitor at the end of construction. This report shall include a brief summary of the pre-construction cultural resource awareness training and the results of monitoring. The monitoring report shall be kept on file at Redwood City.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact CUL-2 Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Impact Analysis

The archival research, the NWIC records search, and the archaeological field survey completed as part of the cultural resource analysis did not identify any known archaeological resources pursuant to Section 15064.5 within the project location. However, there is a potential for encountering previously undiscovered unique archaeological resources during project implementation, due to the proximities of Redwood Creek and a combined prehistoric/historic resource to the project location, along with the former businesses and residences that were once present in the project location. Additionally, the NAHC indicated that the area is sensitive for cultural resources (NAHC 2017), and two of the Native American contacts recommended an archaeological and Native American monitor to be present on-site during ground disturbing activities (WSA 2017).

If an inadvertent discovery were to occur, it could result in damage to the unique archaeological resource that would cause a substantial adverse change in its significance, thereby constituting a significant impact. The implementation of Mitigation Measures CUL-1 and CUL-2 would reduce any potential impacts from inadvertent discovery of a unique archaeological resource to a less than significant level.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures

Mitigation Measures CUL-1 and CUL-2 are required.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact CUL-3 Disturb any human remains, including those interred outside of formal cemeteries?

Impact Analysis

There are no known human remains within the project area, and no indications that the project location has been used for burial purposes in the past. Therefore, it is unlikely that human remains would be encountered during construction. However, ground disturbance and subsurface construction activities such as trenching, and grading associated with the proposed project could potentially disturb previously undiscovered human burial sites. Therefore, Mitigation Measure CUL-3 would be implemented to reduce impacts to a less than significant level by ensuring compliance with Section 7050.5 of the California Health and Safety Code and PRC 5097.98.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measure

MM CUL-3 **Procedures for Human Burials Encountered During Construction**. If ground-disturbing activities uncover previously unknown human remains, Section 7050.5 of the California Health and Safety Code applies, and the following procedures shall be followed:

There shall be no further excavation or disturbance of the area where the human remains were found or within 100 feet of the find until the San Mateo County Coroner and the appropriate City representative are contacted. Duly authorized representatives of the Coroner and the City shall be permitted onto the project site and shall take all actions consistent with Health and Safety Code Section 7050.5 and Government Code Sections 27460, et seq. Excavation or disturbance of the area where the human remains were found and an area within 100 feet of the find shall not be permitted to re-commence until the Coroner determines that the remains are not subject to the provisions of law concerning investigation of the circumstances, manner, and cause of any death. If the Coroner determines the remains are Native American, the Coroner shall contact the NAHC within 24 hours, and the NAHC shall identify the person or persons it believes to be the "most likely descendant" (MLD) of the deceased Native American. The MLD may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98. If the MLD does not make recommendations within 48 hours, the landowner shall reinter the remains in an area of the property secure from further disturbance. If the landowner does not accept the MLD's recommendations, the owner or the MLD may request mediation by NAHC.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

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3.6 GEOLOGY AND SOILS

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, involving:	☐	☒	☐	☐
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☒	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on strata or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property?	☐	☒	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

3.6.1 Environmental Setting

The City is located within a seismically active region and earthquakes have the potential to cause ground shaking of significant magnitude in the area. The California Geological Survey defines an active fault as one that has had surface displacement in the last 11,000 years or has experienced earthquakes in recorded history. The project site does not contain an active fault system. The major active faults in the area include the San Andreas, Monte Vista-Shannon, San Gregorio, Hayward, and Calaveras faults located approximately 6.9 miles west, 5.4 miles southwest, 21 miles west, 24 miles northeast, and 33 miles east respectively (Langan 2018). The California Geological Survey defines an active fault as one that has had surface displacement in the last 11,000 years or has experienced earthquakes in recorded history. In a fact sheet published in 2003, the USGS estimated that there was a 62 percent

probability that between 2003 and 2032, a 6.7 or greater magnitude earthquake will occur in the San Francisco Bay Region. The probability of a 6.7 magnitude or greater earthquake occurring along individual faults was estimated to be 21 percent along the San Andreas Fault, ten percent along the San Gregorio Fault, 27 percent along the Hayward-Rodgers Creek Fault, and 11 percent along the Calaveras Fault (Redwood City 2010a).

Ground shaking from an earthquake can result in ground failure, including liquefaction, ground-induced landslides, and subsidence. Most of Redwood City is in an area where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacement. (Redwood City 2010a). Additionally, the project site consists of flat topography and is not located in a landslide hazard zone (Department of Conservation 2015). The soils at the project site are classified as Urban Land Orthents, which consist mostly of urban land, and deep and very deep, nearly level gently sloping, poorly drained to well drained soils on alluvial fans.

3.6.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the General Plan, General Plan EIR, and United States Department of Agriculture Natural Resources Conservation Service soil reports.

Paleontological Resources

Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites, and coral marine), and fossils of microscopic plants and animals (microfossils). The age and abundance of fossils depend on the location, topographic setting, and particular geologic formation in which they are found. Fossil discoveries not only provide a historic record of past plant and animal life; they may also assist geologists in dating rock formations.

The potential for fossils to be preserved in a particular rock formation depends on the environmental conditions under which it formed. For example, sedimentary rocks formed in marine environments are more likely to preserve the remains of organisms than metamorphic rocks, which form under intense heat and pressure. Unit descriptions in geologic maps may explicitly describe the paleontological potential of a particular rock unit, though more often, a review of fossil locality records and published literature is required.

To determine the potential for paleontological resources in the project area, geologic units from maps of the area were analyzed for their potential paleontological sensitivity based on existing literature and known localities. The paleontological database at the University of California, Berkeley's Museum of Paleontology (UCMP) was consulted, and the Society of Vertebrate Paleontology (SVP) guidelines were followed while conducting the paleontological review.

Society of Vertebrate Paleontology's Guidance for Assessing the Paleontological Potential of Rock Units

The SVP have identified two phases for identification of potential for paleontological resources: 1) assess the potential that nonrenewable paleontological resources could be directly or indirectly impacted or destroyed by the proposed project activities, and 2) generate and implement measures to mitigate any potential impacts from proposed project activities.

The SVP classifies the potential for paleontological resources within rock units as units having high, undetermined, low, or no potential for containing paleontological resources. High potential is described as "rock units from which vertebrate or significant invertebrate, plant or trace fossils have been recovered, including but not limited to

sedimentary formations, some volcaniclastic formations, some low-grade metamorphic rocks which contain significant paleontological resources anywhere within their geographical extent, sedimentary rock units temporally or lithologically suitable for the preservation of fossils, rock units which contain potentially datable organic remains older than late Holocene, and rock units which may contain new vertebrate deposits, traces, or trackways" (SVP 2010). Underdetermined potential is described as "rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment" (SVP 2010). Low potential is described as "poorly represented by fossil specimens in institutional collections, or where fossils are only preserved in rare circumstances" (SVP 2010). Rock units with no potential to contain paleontological resources include high-grade metamorphic rock (gneisses, schists) and plutonic igneous rocks (granites, diorite) (SVP 2010).

Known Resources

The UCMP database search did not identify any paleontological resources within the project location. The closest vertebrate fossil site to the project is an assemblage located approximately 10 miles southeast, known as the "Mountain View Dump". The soils in the project location are comprised of Quaternary alluvium and urban land fill. These recent soils do not contain strata known to be geologically sensitive for the presence of paleontological resources (e.g., Plio-Pleistocene age sedimentary rock). Combined with the fact that no vertebrate fossils have been recovered from in or near the project location, the project area has a low potential for paleontological resources.

3.6.3 Environmental Impact Analysis

This section discusses potential impacts on geology and soils associated with the proposed project and provides mitigation measures where necessary.

Impact GEO-1	**Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, involving:**
i)	**Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.**
ii)	**Strong seismic ground shaking?**
iii)	**Seismic-related ground failure, including liquefaction?**
iv)	**Landslides?**

Impact Analysis

i. Fault Rupture

Surface rupture is associated with being located close to an active fault. The City is not located within an Alquist-Priolo Earthquake Fault Zone. An Alquist-Priolo zone is located about 0.5 miles west of the plan area (approximately 6.9 miles from the project site), roughly paralleling and west of I-280. The City is subject to several other potential seismic hazards, as discussed under Impact GEO-1 in the following paragraphs, but the likelihood of damages resulting from fault rupture within the City are considered remote (Redwood City 2010a). Due to the lack of Alquist-Priolo fault zones at the project site, the risk of surface rupture near the project site is low and no impact would occur.

ii. Ground Shaking

The project site is in a seismically active region and earthquake-related ground shaking is expected to occur during the design life of the proposed project. The major active faults in the area include the San Andreas, Monte Vista-Shannon, San Gregorio, Hayward, and Calaveras faults located approximately 6.9 miles west, 5.4 miles southwest, 21 miles west, 24 miles northeast, and 33 miles east respectively (Langan 2018). In addition, other faults in the San Francisco Bay Area may cause strong seismic ground shaking at the project site. The proposed project would be constructed in conformance with the latest edition of the California Building Code, which includes engineering standards appropriate to withstand anticipated ground accelerations at the project site. Conformance with the earthquake design parameters of the California Building Code would be subject to City review as part of the building site plan and permit review process. Furthermore, the proposed project would be required to comply with the City's Municipal Code and General Plan Policies PS-6.1 through PS-6.3 and PS-9.1-a, which require new development to prepare site-specific soil reports and incorporate the recommendations and findings of these reports into the project's engineering and geotechnical analysis (Redwood City 2010a). The recommendations and findings identified in the site-specific geotechnical analysis would be incorporated into the proposed project as part of Mitigation Measure GEO-1. Therefore, impacts related to ground shaking at the project site would be less than significant with implementation of Mitigation Measure GEO-1.

iii. Liquefaction

According to Figure 4.6-3 in the General Plan EIR, there is potential for liquefaction to occur on the project site (Redwood City 2010b). The project design would be required to conform to the latest edition of the California Building Code, Redwood City Municipal Code, and General Plan Policies PS-6.1 through PS-6.3 and PS-9.1-a, which requires site-specific soil reports to be prepared for all new developments in the City (Redwood City 2010a). The recommendations indicated in the site-specific geotechnical investigation would be incorporated into the project design as part of Mitigation Measure GEO-1. Therefore, impacts related to liquefaction would be less than significant with Mitigation Measure GEO-1 incorporated.

iv. Landslides

The lower elevations in the eastern and northeastern portion of Redwood City (which includes the project site) are mapped as "flatland" with no landslides. (Redwood City 2010a). Therefore, the potential for a landslide to occur is low. No impact would occur.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM GEO-1 Implement Geotechnical Report Design Measures. Prior to issuance of grading permits, the applicant shall incorporate all design specifications and recommendations contained within the site-specific soils report into relevant project plans and specifications. These specifications shall pertain to, but are not limited to, building foundations, backfill of excavations, soil subgrade preparations, design of below-grade walls, and grading activities. In addition, the proposed project shall implement the following measures pertaining to dewatering and shoring:

- **Dewatering Activities**. The construction contractor shall implement a dewatering system prior to and throughout excavation activities that maintains groundwater levels at least three feet below the bottom of the excavation, including excavation for waterproofing or subgrade stabilization. The dewatering system shall meet the following minimum performance standards:

- Stable excavation walls and bottom shall be provided;
- A reasonably dry base of excavation shall be provided;
- Native soils shall be filtered and loss of ground from dispersion or erosion shall be prevented;
- Piping (boiling) of the excavation bottom shall be prevented;
- All dewatering and shoring systems shall be installed and removed in accordance with governing (e.g., City, state) requirements; and
- The contractor shall allow for the controlled release of groundwater to its static level in a manner that prevents disturbance of bottom soils and prevents flotation or movements of structures or pipelines.

The contractor shall be prepared to implement alternative systems should the initial dewatering system fail to achieve these minimum performance requirements. The contractor shall be prepared to locally dewater or modify construction excavations, if and where needed, to provide stable and reasonably dry excavations. The dewatering system shall be localized, targeted, and short-term (days) in order to prevent consolidation and subsidence from prolonged dewatering. The project contractor shall submit the dewatering system plans to Caltrain for review and approval prior to start of excavation activities to determine if any dewatering restrictions need to be implemented due to the project site's proximity to the Caltrain tracks and corridor.

- **Shoring During Excavation Activities.** The contractor shall be required to shore the estimated 25-foot excavations with soldier piles, timber lagging, and tiebacks in accordance with Caltrain's 2003 Engineering Standards for Excavation Support Systems, California Division of Occupational Safety and Health regulations, and all other recommendations provided in the site-specific Geotechnical Report (Appendix F). All shoring plans shall be submitted to Caltrain for review and approval prior to the start of excavation activities within 15 feet of the centerline of the Caltrain corridor tracks.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact GEO-2 Result in substantial soil erosion or the loss of topsoil?

Impact Analysis

Project construction activities would involve the removal of vegetation, grading, and excavation of soils on approximately 1.31 acres. These activities could expose unprotected soils to stormwater runoff causing erosion and loss of topsoil. Projects that disturb 1 acre or more of soils during construction are required to comply with the National Pollutant Discharge Elimination System (NPDES) permitting program and implement a SWPPP that identifies BMPs to control the discharge of sediment and other pollutants during construction. The proposed project would be required to implement a SWPPP and associated BMPs, per the requirements of Redwood City's Stormwater Pollution Prevention Program, to reduce potential erosion impacts. Therefore, soil erosion impacts associated with construction impacts would be less than significant.

Completion of the proposed project would result in approximately 48,646 square feet of impervious surface at the project site. The San Mateo Countywide Water Pollution Prevention Program is a partnership of the City/County Association of Governments (C/CAG), each incorporated city and town in the county, and the County of San Mateo, which share a common NPDES permit (C/CAG 2015). New development projects in the City are required to comply

with the San Mateo County Erosion and Sediment Control Plan requirements per the Municipal Regional Permit issued by the San Francisco Regional Water Quality Control Board (RWQCB). Also, the City's Municipal Code (Chapter 27A – City of Redwood City Stormwater Management and Discharge Control Program Ordinance) identifies specifications to minimize potential post-construction erosion impacts. In accordance with the City's Stormwater Management and Discharge Control Program Ordinance the proposed project would be required to incorporate permanent stormwater control measures during operation of the proposed project to reduce water quality impacts of stormwater runoff from the entire site. Therefore, soil erosion impacts during operation of the proposed project would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact GEO-3	**Be located on strata or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?**

Impact Analysis

The project site and surrounding area soil types are classified as Urban Land Orthents on nearly level to gently sloping land. These soils can be poorly drained to well-drained, and are present on alluvial fans, flood plains, and stream terraces (Redwood City 2010a). Construction of the proposed two-level underground parking garage would require the excavation of the project site to approximately 25 feet below grade. During the geotechnical site investigation groundwater was encountered at the project site between 10 feet to 12 feet below ground surface (bgs). However, high groundwater at the project site has historically been reported at 5 feet bgs and therefore groundwater could be encountered. Excavation activities near or below the groundwater table has potential to expose surrounding roadways, utilities, and the Caltrain corridor tracks to unstable soils due to vertical movement and settlement. Therefore, excavations would require shoring and dewatering to protect the surrounding improvements (Langan 2018). The proposed project would be required to implement Mitigation Measure GEO-1 and comply with the shoring and dewatering methods identified in the site-specific Geotechnical Report (Appendix F). In addition, due to the project site's proximity to the Caltrain corridor tracks (within 15 feet of the Caltrain tracks centerline) all shoring would be constructed in accordance with Caltrain's 2003 Engineering Standards for Excavation Support Systems. The project contractor would also be required to submit the proposed dewatering and shoring system plans to Caltrain for review and approval prior to the start of construction activities.

Additionally, implementation of the Mitigation Measure GEO-1 would require groundwater levels to be maintained at least three feet below the bottom of excavation, including excavation for waterproofing or subgrade stabilization. If dewatering methods are used, groundwater would be pumped out of the excavation to the surface and then discharged to the sanitary sewer. Water extracted during dewatering may contain chemical contaminants (either from pre-existing sources or from equipment) or may become sediment-laden from construction activities and would be monitored and managed in accordance with applicable regulations of the RWQCB. Impacts related to unstable soils would be less than significant with Mitigation Measure GEO-1 incorporated.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures
Mitigation Measure GEO-1 is required.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact GEO-4	**Be located on expansive soil, as defined in Table 18 1 B of the Uniform Building Code, creating substantial risks to life or property?**

Impact Analysis

The soils at the project site are classified as Urban Land Orthents, which consist mostly of urban land, and deep and very deep, nearly level gently sloping, poorly drained to well drained soils on alluvial fans. Shrink and swell movements occur in fine-grained sediments containing expansive clays. Soils containing high clay content often exhibit a moderate to high potential to expand when saturated, and contract when dried out. There is potential for soils to shrink/swell at the project site. The proposed project would be required to comply with the latest edition of the California Building Code, Redwood City Municipal Code, and General Plan Policies PS-6.1 through PS-6.3 and PS-9.1-a, which requires site-specific soil reports to be prepared for all new developments in the City. The recommendations indicated in the site-specific soil report would be incorporated into the project design as part of Mitigation Measure GEO-1. Therefore, impacts to expansive soil would be less than significant with Mitigation Measure GEO-1 incorporated.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures
Mitigation Measure GEO-1 is required.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact GEO-5	**Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?**

Impact Analysis

The proposed project would connect directly to the City's existing municipal sewer system and would not require septic tanks or any other alternative wastewater disposal system. Therefore, no impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.



Level of Significance After Mitigation
No Impact.

Impact GEO-6 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Impact Analysis

The UCMP database search did not identify any paleontological resources within the project area (UCMP 2018). The Quaternary alluvium and marine deposits found throughout the project area do not contain strata known to be geologically sensitive for the presence of paleontological resources (e.g., Plio-Pleistocene age sedimentary rock or various marine sediments). Therefore, it is unlikely that paleontological resources would be encountered during construction.

However, subsurface construction activities such as trenching and grading associated with the proposed project could potentially damage or destroy previously undiscovered paleontological resources. Therefore, Mitigation Measure GEO-2 would require implementation of standard inadvertent discovery procedures to reduce potential impacts to previously undiscovered paleontological resources. With the implementation of Mitigation Measure GEO-2, potential impacts would be reduced to a less than significant level.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measure

MM GEO-2 **Procedures for Paleontological Resources Discovered During Construction.** If any paleontological resources are encountered during ground disturbing or subsurface construction activities (e.g., trenching, grading), all construction activities within a 50-foot radius of the identified resource shall cease and the City shall immediately be notified. The applicant shall retain a qualified paleontologist (as approved by the City) to evaluate the find and recommend appropriate treatment of the inadvertently discovered paleontological resource. The appropriate treatment of an inadvertently discovered paleontological resource shall be implemented to ensure that impacts to the resource are avoided, in conformance with SVP guidelines (SVP 1996, 2010).

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

3.7 GREENHOUSE GASES

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

3.7.1 Environmental Setting

The issue of combating climate change and reducing GHG emissions has been the subject of State legislation (AB 32 and Senate Bill 375). The Governor's Office of Planning and Research has adopted changes to CEQA Guidelines, and the environmental checklist, which is used for Initial Studies such as this one. The changes to the checklist, which were approved in 2017, are incorporated below in the two questions related to a project's GHG impact.

Emissions Inventories and Trends

California uses the annual statewide GHG emission inventory to track progress toward meeting statewide GHG targets. The inventory for 2016 shows that California's GHG emissions continue to decrease, a trend observed since 2007. In 2016, emissions from routine GHG emitting activities statewide were 429 million metric tons of CO_2 equivalent ($MMTCO_2e$), 12 $MMTCO_2e$ lower than 2015 levels. This puts total emissions just below the 2020 target of 431 million metric tons (CARB 2018).

Potential Environmental Impacts

For California, climate change in the form of warming has the potential to incur/exacerbate environmental impacts, including, but not limited to, changes to precipitation and runoff patterns, increased agricultural demand for water, inundation of low-lying coastal areas by sea-level rise, and increased incidents and severity of wildfire events (IPCC 2014). Although certain environmental effects are widely accepted to be a potential hazard to certain locations, such as rising sea level for low-lying coastal areas, it is currently infeasible to predict all environmental effects of climate change on any one location.

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and virtually every individual on earth. Although, a project's GHG emissions are at a micro-scale relative to global emissions but could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact.

Regulatory Requirements

California has adopted statewide legislation addressing various aspects of climate change and GHG emissions mitigation. Much of this legislation establishes a broad framework for the state's long-term GHG reduction and climate change adaptation program. The governor has also issued several executive orders related to the state's evolving



climate change policy. Of particular importance are AB 32 and Senate Bill 32, which outline the state's GHG reduction goals of achieving 1990 emissions levels by 2020 and a 40 percent reduction below 1990 emissions levels by 2030.

In the absence of federal regulations, control of GHGs is generally regulated at the state level and is typically approached by setting emission reduction targets for existing sources of GHGs, setting policies to promote renewable energy and increase energy efficiency, and developing statewide action plans.

In 2013, the City approved its Climate Action Plan (CAP), which targets reductions of 15 percent below 2005 GHG levels by 2020. The Climate Action Plan addresses several strategies to reduce GHG emissions and implement environmental programs. The CAP includes city-wide goals and strategies, but not a project-specific threshold for determining the significance of GHG emissions.

3.7.2 Methodology

BAAQMD provides multiple options for project-level GHG thresholds in its 2017 CEQA Guidelines. BAAQMD does not presently provide a construction-related greenhouse gas generation threshold but recommends that construction-generated greenhouse gases be quantified and disclosed. BAAQMD also recommends that lead agencies (in this case, the City of Redwood City) make a determination of the level of significance of construction-generated greenhouse gas emissions in relation to meeting AB 32 greenhouse gas reduction goals. The lead agency is also encouraged to incorporate BMPs to reduce GHG emissions during project construction, as feasible and applicable.

The proposed project is located within the BAAQMD; therefore, the BAAQMD thresholds are the most appropriate to use for the project. The thresholds suggested by BAAQMD for project-level operational greenhouse gas generation are as follows:

- Compliance with a qualified GHG Reduction Strategy, or
- 1,100 $MTCO_2e$/year, or
- 4.6 metric tons of CO_2 equivalent per service population (employees plus residents).

The BAAQMD CEQA Guidelines state that if annual emissions of GHG exceed the thresholds, the proposed project would result in a cumulatively considerable significant impact to global climate change. Therefore, if the proposed project is less than any one of the thresholds identified above, then the project would result in a less than significant cumulative impact to global climate change.

The proposed project's GHG emissions were quantified using CalEEMod version 2016.3.2 with the same assumptions used for the air quality analysis (see Appendix B). The analysis in this section is based, in part, on the findings of the CalEEMod analysis completed by Stantec. The modeling data is provided in its entirety in Appendix B.

3.7.3 Environmental Impact Analysis

This section discusses potential impacts concerning greenhouse gases associated with the proposed project and provides mitigation measures where necessary.

Impact GHG-1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Impact Analysis

Constructions Emission Inventory

The proposed project would emit GHG emissions during construction from the off-road equipment, worker vehicles, and any hauling that may occur. As previously indicated, BAAQMD does not presently provide a construction-related GHG generation threshold but recommends that construction-generated GHGs be quantified and disclosed. The construction phases include, site preparation, demolition, excavation and shoring, site grading, paving, building construction, and architectural coating. $MTCO_2e$ emissions during construction of the proposed project are shown in Table 3.7-1.

Table 3.7-1. Construction Greenhouse Gas Emissions

Construction Year	MTCO2e
2019	404
2020	419
2021	136
BAAQMD Operational significance threshold	1,100 per year
Exceed Threshold?	**No**

Source: CalEEMod Output (Appendix B)

As shown in Table 3.7-1, the proposed project's estimated maximum yearly construction emissions would be 419 $MTCO_2e$, which is well below the BAAQMD operational threshold of 1,100 $MTCO_2e$ per year. Some air districts (Sacramento Air Quality Management District, South Coast Air Quality Management District, and San Luis Obispo County Air Pollution Control District) recommend amortizing construction emissions over the life of the project. Commercial projects are typically amortized over a 30- to 40-year lifespan. To provide a conservative estimate, the 30-year period was used. The amortized construction emissions are expected to be 32 $MTCO_2e$ per year. The proposed project would not have a significant GHG impact during construction.

Operational Emission Inventory

Long-term, operational GHG emissions would result from project-generated vehicular traffic, on-site combustion of natural gas, operation of any landscaping equipment, off-site generation of electrical power over the life of the project, the energy required to convey water to and wastewater from the project site, the emissions associated with the hauling and disposal of solid waste from the project site, and any fugitive refrigerants from air conditioning or refrigerators.

Operational GHG emissions by source are shown in Table 3.7-2. The total annualized project emissions are estimated to be 1,076 $MTCO_2e$. Emissions analysis includes compliance with City and state standards. Because the CalEEMod module used to estimate reductions for certain existing regulatory requirements is termed "mitigation" within the model, the mitigated output from CalEEMod is used; however, those modeling components are not considered mitigation under CEQA but, rather, are treated as part of the baseline conditions because these measures are City and state requirements for development projects.

As shown in Table 3.7-2, the project's emissions would be below the BAAQMD threshold of 1,100 $MTCO_2e$ per year.

Table 3.7-2. Operational Greenhouse Gas Emissions

Source Category	$MTCO_2e$
Area	0.01
Energy Consumption	633
Mobile (Vehicle)	372
Solid Waste Generation	26
Water Usage	13
Subtotal Operational Emissions	1,044
Amortized Construction Emissions	32
Total Project GHG Emissions	1,076
BAAQMD Operational Threshold	1,100 $MTCO_2e$/year
Significant Impact?	**No**

Notes:

a. Includes CalEEMod "mitigation" for locational features (diversity of uses, distance to downtown, distance to transit), compliance with regulatory measures (Green Building Code, traffic demand management, and solid waste recycling).

b. Construction emissions annualized over an anticipated 30-year project lifespan.

Source: CalEEMod Output (Appendix B)

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact GHG-2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Impact Analysis

The City's CAP is focused on implementing strategies to reduce GHG emissions through energy, transportation and land use, and solid waste. The CAP has been developed to address GHG emissions resulting from both municipal operations and communitywide emissions. The CAP includes a goal of reducing GHG emissions by 15 percent below 2005 GHG levels by 2020. State of California has adopted regulations that apply to the proposed project that would help the City achieve its reduction goal. The proposed project would be subject to Title 24 energy efficiency standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The proposed project would comply with the California Green Building Standards Code, which includes requirements to increase recycling, reduce waste, reduce water use, increase bicycle use, and other measures that would reduce GHG emissions. Motor vehicle emissions associated with the proposed project would be reduced through compliance with state regulations on fuel efficiency and fuel carbon content. The regulations include the Pavley fuel efficiency standards that require manufacturers to meet increasing stringent fuel mileage rates for vehicles sold in California and the Low Carbon Fuel Standard that requires reductions

in the average carbon content of motor vehicle fuels. Emissions related to electricity consumption by the proposed project would be reduced as the electric utility complies with the Renewable Portfolio Standard, which requires utilities to increase its mix of renewable energy sources to 50 percent by 2030. The proposed project would not conflict with the City's CAP and regulations adopted by the State of California to reduce GHG emissions; therefore, impacts would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

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3.8 HAZARDS AND HAZARDOUS MATERIALS

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely-hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to *Government Code Section 65962.5* and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

3.8.1 Environmental Setting

Hazardous materials, as defined by the CCR, are substances with certain physical properties that could pose a substantial present or future hazard to human health or the environment when improperly handled, disposed, or otherwise managed. Hazardous materials are grouped into the following four categories, based on their properties:

- Toxic – Causes Human Health Effects
- Ignitable – Has the Ability to Burn

- Corrosive – Causes Severe Burns or Damage to Materials
- Reactive – Causes Explosions or Generates Toxic Gases

Hazardous waste is any hazardous material that is discarded, abandoned, or slated to be recycled. The criteria that define a material as hazardous also define a waste as hazardous. If improperly handled, hazardous materials and hazardous waste can result in public health hazards if released into the soil or groundwater or through airborne releases in vapors, fumes, or dust.

California Government Code, Section 65962.5 requires the California EPA to compile, maintain, and update specified lists of hazardous material release sites. The required lists of hazardous material release sites are commonly referred to as the "Cortese List," which are contained on internet websites, including the online EnviroStor database from the Department of Toxic Substances Control (DTSC) and the online GeoTracker database from the State Water Resources Control Board (SWRCB). These two databases include hazardous material release sites, along with other categories of sites or facilities specific to each agency's jurisdiction. A search of EnviroStor and GeoTracker databases in January 2019 revealed there is record of a historic underground storage tank at the site (DTSC 2018, SWRCB 2018). The project site was previously an auto repair shop and is listed as a historic gasoline leaking underground storage tank (LUST) cleanup site closed in 1995. According to the EDR Radius Map Report compiled in 2017, as included in the 2017 Phase I ESA prepared by AEI Consultants (Appendix E), the site was cleaned up and the status is now "completed", and the case was closed by San Mateo County in 1995 (AEI Consultants 2017, SWRCB 2018).

Federal regulations and regulations adopted by the BAAQMD apply to the identification and treatment of hazardous materials during demolition and construction activities. Failure to comply with the regulations respecting asbestos and dust control may result in a Notice of Violation being issued by the BAAQMD, civil penalties under state and/or federal law, and possible action by the EPA under federal law. Federal law covers several different activities involving asbestos, including demolition and renovation of structures (40 CFR § 61.145). The California Department of Conservation, California Geologic Survey, and USGS map naturally-occurring asbestos (NOA) areas throughout the State of California for research purposes.

The closest airport to the project site is San Carlos Airport, which is approximately 2.6 miles northwest and is a public airport. There are no private airports in San Mateo county (Tollfree 2018). According to the California Department of Forestry and Fire Protection, the City is not located in or adjacent to a local or state fire hazard severity zone (CAL FIRE 2019).

3.8.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the General Plan, General Plan EIR, and online regulatory compliance databases.

3.8.3 Environmental Impact Analysis

This section discusses potential impacts concerning hazards and hazardous materials associated with the proposed project and provides mitigation measures where necessary.

Impact HAZ-1	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Impact Analysis

The proposed project would involve the development of an office building. During the construction phase, limited amounts of hazardous materials would be used, including standard construction materials such as concrete, paints, solvents, and heavy construction equipment that would contain diesel fuels and oils. The project contractor would be required to comply with all applicable federal, state, and local regulations related to the transport, use, or disposal of hazardous materials, as overseen by the California EPA and DTSC.

Development of the proposed project includes demolition of an existing structure that may contain asbestos or lead. Demolition of the building may, therefore, expose workers to asbestos and lead. Chapter 9 of the Redwood City Municipal Code requires that these materials be properly removed and disposed of by a certified contractor prior to demolition activities, and in accordance with applicable BAAQMD requirements for building demolition.

During operation of the proposed project, the use of hazardous materials would be limited to those commonly found at an office facility such as, solvents, cleaners, paints, and pesticides for landscape maintenance activities. These common household hazardous materials would be used in limited quantities and would not create a substantial hazard to the public or the environment. Therefore, impacts related to the routine transport, use, and disposal of hazardous materials during project construction and operation would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact HAZ-2	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Impact Analysis

The proposed project would involve the development of an office building. The proposed project would also include demolition of an existing structure that may contain asbestos or lead; Chapter 9 of the Redwood City Municipal Code requires that these materials be properly removed and disposed of by a certified contractor prior to demolition activities, and in accordance with applicable BAAQMD requirements for building demolition.

As discussed in Impact HAZ-1, project construction and operation activities would involve limited use of hazardous materials, including paints, solvents, fuels, oils, cleaners, and pesticides. The use of these substances is not expected to create a significant hazard to the public or the environment through reasonably foreseeable upset or accident. Furthermore, the proposed project would be required to comply with applicable federal, state, and local laws pertaining to the safe handle, storage, and transport of hazardous materials. In addition, during construction the applicant would be required to implement a SWPPP to prevent contaminated runoff from leaving the project site, per

the requirements of Redwood City's Stormwater Pollution Prevention Program. As such, impacts related to the release of hazardous materials into the environment would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact HAZ-3 Emit hazardous emissions or handle hazardous or acutely-hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Impact Analysis

The project site is not located within 0.25 miles of an existing or proposed school. The nearest school is Hoover Elementary School, which is approximately 0.7 miles east of the project site. Furthermore, use of heavy equipment and activities involving potentially hazardous materials would be limited to the construction phase and confined to construction areas and within existing roadways. The use of potentially hazardous materials would be regulated by health and safety requirements under federal, state, and local regulations, including handling, storage, and disposal of the materials, as well as emergency spill response. Additionally, the proposed project would not involve the development of a use that would emit hazardous materials, substances, or waste during operation. As such, the proposed project would have a less than significant impact related to the emission or handle of hazardous materials near a school.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact HAZ-4 Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Impact Analysis

The project site is included on GeoTracker as a historic gasoline LUST site closed in 1995 (SWRCB 2018). According to the 2017 EDR Radius Map Report included in Appendix E, the site was cleaned up and the status is now "completed", and the case was closed in 1995 (AEI Consultants 2017, SWRCB 2018). The EDR Report identified two other LUST site properties within the project vicinity. This includes the Cook's Auto Body identified as an open LUST case currently undergoing site cleanup. This property is located 0.4 miles north of the project site and topographically down-gradient of the project site; therefore, is not suspected to present and environmental concern to the project site. The other property, 135 Maple Street, located directly west of the project site, is identified as a closed LUST facility as

of 2002. This property has since been redeveloped with the present multi-family apartment complex and is not considered to be of environmental concern (AEI Consultants 2017). There are no other properties in the project vicinity identified as a hazardous materials site. Additionally, the Caltrain corridor tracks adjacent to the project site to the north are not identified on GeoTracker or EnviroStor. The proposed project would not create a significant hazard to the public or the environment and no impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

Impact HAZ-5	**For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?**

Impact Analysis

The project site is not located within 2 miles of a public airport. The nearest public airport to the project site is the San Carlos Airport, located approximately 2.6 miles northwest of the project site and there are no private airports in San Mateo County (Tollfree 2018). As such, the project site does not fall within an airport land use plan and would not result in a safety hazard for people residing or working in the project area. No impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

Impact HAZ-6	**For a project located within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?**

Impact Analysis

The project site is not located within the vicinity of a private airstrip. There are no private airports in San Mateo County (Tollfree 2018). As such, the proposed project would not result in a safety hazard for people residing or working in the project area. No impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

Impact HAZ-7	**Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

Impact Analysis

The proposed project would not involve permanent modification of existing roadways. During the construction phase, temporary and/or partial street closures may be needed. However, access to the project site and the surrounding area would be maintained in accordance with a Traffic Control Plan (TCP). The TCP would identify all detours, appropriate traffic controls, and ensure adequate circulation and emergency access are provided during the construction phase. Therefore, project construction and operation activities would not interfere with an emergency evacuation or response plan and a less than significant impact would occur.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact HAZ-8	**Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?**

Impact Analysis

The California Department of Fire and Forestry Protection does not identify the City in a local or state very high fire hazard severity zone (CAL FIRE 2019). According to the General Plan EIR, the highest fire hazard areas are in the southern and western hillsides of the plan area, which is marked by steep terrain and large areas of potentially combustible “fuel” vegetative materials (Redwood City 2010b). The project site is in very near the downtown area and located in an urban area near other commercial uses. As such, the proposed project is not expected to be exposed to risks associated with wildland fires. No impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

3.9 HYDROLOGY AND WATER QUALITY

	Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there should be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☒	☐	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e)	Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f)	Otherwise substantially degrade water quality?	☐	☐	☒	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☒	☐
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☒	☐
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j)	Inundation of seiche, tsunami, or mudflow?	☐	☐	☐	☒

3.9.1 Environmental Setting

The project site would be developed with a 40-foot high three-story commercial office building of 109,375 square feet with associated parking and on-site amenities on the 1.31-acre project site located at 1180 Main Street in Redwood City. The project site is in the San Francisco Bay Hydrologic Region, specifically within the Cordileras Creek-Frontal San Francisco Bay Estuaries Hydrologic Unit (EPA 2017). The project site is in the Atherton Channel Watershed. The Bayfront Canal and Atherton Channel collect stormwater within the area before discharging the stormwater flows to the San Francisco Bay. Drainage patterns in the region primarily include a northeast flow from the Santa Cruz Mountains to the San Francisco Bay. Other surface waters in the vicinity of the project site include bay channels, tidal waters, streams, and creeks.

The NPDES permit program regulates municipal and industrial discharges to surface waters of the United States. In California, the NPDES permit program is administered by the SWRCB and the nine Regional Water Quality Control Boards. The City lies within the jurisdiction of the San Francisco RWQCB and is subject to the Waste Discharge Requirements (WDRs) of the MS4 Permit (Order Number R2-2015-0049, NPDES Permit Number CAS612008). Provision C.3 of the MS4 Permit requirements apply to all new development or redevelopment projects that create or replace 10,000 square feet of impervious surfaces and specific land use projects that create or replace 5,000 square feet of impervious surfaces (e.g., auto service facilities, retail gasoline outlets, restaurants, and/or uncovered surface parking). Provision C.3 of the MS4 Permit also mandates that new development projects meet certain criteria: 1) incorporate site design, source control, and stormwater treatment measures into the project design; 2) minimize the discharge of pollutants in stormwater runoff and non-stormwater discharge; and 3) prevent increases in runoff flows as compared to pre-development conditions. Low-impact development (LID) methods are the primary mechanisms for implementing such controls. New development projects must treat 100 percent of the calculated runoff (based on the sizing criteria described in the C.3 provisions of the MS4 Permit) with LID treatment measures that include harvesting and reuse, infiltration, evapotranspiration, or biotreatment/bioretention (Redwood City 2010a).

The NPDES permit also includes section C.3j (Green Infrastructure Planning and Implementation) which includes requirements for early implementation of green infrastructure projects or “no missed opportunities.” With the alterations to the project frontages on Elm Street and Lathrop Street, it was determined that there was an opportunity to include green infrastructure for the treatment of the right-of-way runoff tributary to the frontages. The frontages were designed to direct the runoff to treatment facilities, which were sized based on the sizing criteria of Provision C.3.d of the NPDES permit.

3.9.2 Methodology

The evaluation of potential hydrologic and water quality impacts was based on a review of City documents including the General Plan and General Plan EIR, Geotechnical Investigation by Langan Engineering and Environmental Services, Inc. (Appendix F), and the Preliminary Engineering Study prepared by BKF Engineers (Appendix A). Mapping tools provided by the Federal Emergency Management Agency (FEMA) were also reviewed. The information obtained from these sources are summarized to establish existing conditions and to identify potential environmental effects.

3.9.3 Environmental Impact Analysis

This section discusses potential impacts on hydrology and water quality associated with the proposed project and provides mitigation measures where necessary.

Impact HYD-1 Violate any water quality standards or waste discharge requirements?

Impact Analysis

Construction

Construction of the proposed project would require demolition of the vacant one-story commercial building in the southeast corner of the project site and the removal of on-site vegetation and impervious surfaces. Construction activities would involve grading and permanent disturbance of the 1.31-acre site. The project site would be excavated approximately 25 feet below grade and approximately 35,000 cubic yards of soil (4,375 truck trips) would be exported from the site for construction of the two-level underground parking garage. Exported soil would be disposed off-site at a location determined by the project construction contractor during construction. These activities have the potential to generate stormwater runoff and to discharge pollutants such as fuel, solvents, oil, paints, and trash into the City's storm drain system. The proposed project would comply with the NPDES General Construction Permit. The NPDES General Construction Permit includes the preparation of a SWPPP and incorporation of BMPs to control sedimentation, erosion, and hazardous materials from contacting stormwater, with the intent of keeping all products of erosion from moving off-site into receiving waters. The proposed project would be required to implement a SWPPP and associated BMPs, per the requirements of Redwood City's Stormwater Pollution Prevention Program, to reduce potential water quality impacts. Adherence to applicable water quality regulations, preparation of a SWPPP, and compliance with the Redwood City Municipal Code would ensure that water quality standards are not violated during construction. Therefore, potential impacts associated with water quality during construction would be less than significant.

Operation

The proposed project would change the vacant lands at the project site with construction of an office building, open space park area, and a café. Stormwater runoff at the project site is collected by a 12-inch outfall that releases to the on-site concrete drainage channel. The proposed project would involve the removal of approximately 7,623 square feet of impervious surface consisting of the existing commercial building and an existing (currently un-used) concrete foundation. These impervious surfaces would be replaced following completion of the proposed project, which would result in approximately 48,646 square feet of impervious surface. The proposed project would install a new 12-inch stormwater drain line and connect it to the existing 12-inch outfall that drains to the concrete drainage channel. In addition, to meet the C.3 requirements of the San Mateo County Municipal Regional Permit the proposed project would incorporate traditional LID treatment measures such as flow-through planter boxes along the northeastern and northwestern sides of the project site, and self-retained landscaped areas. As such, operation of the proposed project would have a less than significant impact related to water quality degradation.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact HYD-2	**Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there should be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?**

Impact Analysis

The proposed project would not use groundwater supplies for construction or operation. Historically high groundwater at the project site has been reported at 5 feet bgs (Langan 2018). However, based on the preliminary investigations and previous borings at the project site, groundwater is estimated to be at a depth of 10 to 15 feet bgs (Langan 2018). The project site would be excavated approximately 25 to construct the two-level underground parking garage. Therefore, groundwater could be encountered during excavation activities and require dewatering. The proposed project would be required to implement Mitigation Measure GEO-1 and comply with the shoring and dewatering methods identified in the site-specific Geotechnical Report (Appendix F), and in accordance with Caltrain's 2003 Engineering Standards for Excavation Support Systems and California Division of Occupational Safety and Health regulations.

As discussed in the Geotechnical Report, excavation activities would require groundwater levels to be maintained at least three feet below the bottom of excavation, including excavation for waterproofing or subgrade stabilization. If dewatering methods are used, groundwater would be pumped out of the excavation to the surface and then discharged to the sanitary sewer. The applicant would comply with the groundwater discharge requirements and regulations of the RWQCB to prevent any discharge of contaminated dewatered groundwater into the sanitary sewer or storm drain system. Water quality would be screened using laboratory analyses as needed and extracted groundwater would be disposed in compliance with the RWQCB requirements. The proposed project would replace approximately 7,623 square feet of impervious surface with 48,646 square feet of impervious surface. The project site is in a highly urbanized area and there are no groundwater supply wells on-site and the project site is not a source for municipal uses (RWQCB 2017). The proposed project would comply with the dewatering methods recommended in the site-specific Geotechnical Report and would meet the minimum performance standards as outlined in Mitigation Measure GEO-1 to ensure groundwater levels are maintained. As such, the increase of impervious surfaces would not deplete the groundwater supplies from the deeper aquifer recharge areas and the proposed project would not affect groundwater resources. Therefore, impacts related to groundwater recharge would be less than significant with the incorporation of mitigation.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures
Mitigation Measure GEO-1 is required.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact HYD-3 **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?**

Impact Analysis

Construction of the proposed project would not include ground disturbing work within the drainage channel. The project would require grading or soil exposure during construction. If not controlled, the transport of these materials into local waterways could temporarily increase suspended sediment concentrations. To minimize this impact, the proposed project would be required to comply with all of the requirements of the City's Municipal Code. The proposed project would be required to implement a SWPPP and associated BMPs, per the requirements of Redwood City's Stormwater Pollution Prevention Program. The SWPPP would include BMPs, which would be implemented during construction activities to reduce the potential of erosion. Therefore, erosion impacts during construction activities would be less than significant.

Given the nature of the proposed project, there is limited potential for erosion or siltation to occur once the proposed project has been constructed. In addition, the C.3 requirements of the MS4 Permit include source control measures and site design measures that address stormwater runoff and would reduce the potential for erosion or siltation. Additionally, the proposed project would be required to implement construction phase BMPs, post-construction design measures that encourage infiltration in pervious areas, and post-construction source control measures to help keep pollutants out of stormwater. Stormwater treatment measures are required post-construction, as well, for projects that create or replace 10,000 square feet or more of impervious surface. Therefore, erosion and siltation impacts associated with operation of the proposed project would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact HYD-4 **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?**

Impact Analysis

The proposed project would take place within the boundaries of a partially developed site that is currently connected to the City's storm drain system. The redevelopment does not involve the alteration of any natural drainage channels or any watercourse. The proposed project would add approximately 41,000 square feet of new impervious surface that may increase the amount of surface runoff. Stormwater runoff at the project site is collected by a 12-inch outfall that releases to the on-site concrete drainage channel. To manage additional runoff, a new 12-inch stormwater drain line would be installed that would connect to the existing 12-inch outfall that drains to the concrete drainage channel. In addition, to meet the C.3 requirements of the San Mateo County Municipal Regional Permit, the proposed project would incorporate traditional LID treatment measures such as flow-through planter boxes along the northeastern and

northwestern sides of the project site, and self-retained landscaped areas. Therefore, the proposed project would not result in on- or off-site flooding, and the impacts would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact HYD-5 Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Impact Analysis

During construction activities, the proposed project would conform to the requirements of the NPDES General Construction Permit, which involves the preparation and implementation of a SWPPP. The SWPPP would specify BMPs to incorporate during construction to prevent, control, and reduce polluted runoff from entering the City's storm drain system and waterways per the requirements of Redwood City's Stormwater Pollution Prevention Program. Additionally, the C.3 requirements of the MS4 Permit include source control measures and LID measures that address stormwater runoff and would reduce the potential for erosion or siltation, as well as require the proposed project to implement stormwater treatment measures to treat site runoff.

The proposed project would also install a new 12-inch stormwater drain line and connect it to the existing 12-inch outfall that drains to the concrete drainage channel. BMPs would be implemented to reduce the amount of stormwater entering the City's storm drain system. Furthermore, implementation of these BMPs would prevent and minimize the potential for sediment, debris, and other pollutants to enter the City's storm drain system. Therefore, the proposed project would not generate stormwater runoff that would exceed the capacity of existing or planned stormwater drainage systems or generate a substantial amount of polluted runoff. The impacts would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact HYD-6 Otherwise substantially degrade water quality?

Impact Analysis

Implementation of BMPs during construction would be in accordance with the provisions of the SWPPP, as per the requirements of Redwood City's Stormwater Pollution Prevention Program. These BMPs would minimize the release

of sediment, soil, and other pollutants. As described above, the proposed project would comply with the C.3 provision of the MS4 Permit and incorporate BMPs during operation of the proposed project to prevent, control, and reduce stormwater runoff resulting from the increase in impervious surfaces at the project site. Construction of the landscaped areas would control the volume and rate of stormwater runoff and would treat stormwater before it enters the City's storm drain system. With the implementation of the requirements of Redwood City's Stormwater Pollution Prevention Program and MS4 Permit compliance, the proposed project would not result in degradation of water quality. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is required.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact HYD-7	**Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?**

Impact Analysis

According to FEMA's Flood Insurance Rate Map, the project site is in Zone X, an area that has 0.2 percent annual chance of a flood hazard, and areas of 1 percent annual chance flood with average depth less than one foot or with drainage areas of less than 1 square mile (FEMA 2019). Construction within flood plains is governed by the City's Municipal Code Chapter 41, Floodplain Management. Section 41.18 sets forth construction requirements for development that would minimize flood hazard risks, including anchoring, elevation, and flood-proofing, and standards for utilities, subdivisions, residential and non-residential construction. As part of the City's involvement in the National Flood Insurance Program, all new developments within designated flood hazard zones, including both the 100-year and 500-year floodplains, would be required to meet specific flood damage avoidance requirements that may include, raising the elevation of habitable space above anticipated flood heights, creating 'freely communicating' structures that allow flood waters to pass through lower levels of buildings; and, ensuring that site design does not result in a reduction of floodplain areas, which could result in increasing flooding conditions downstream (Redwood City 2010a). Furthermore, the proposed project does not include housing. Therefore, there would be no residential buildings subject to flooding impacts and the impact would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact HYD-8 Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Impact Analysis

The project site is in flood Zone X, an area with 0.2 percent or 1 percent annual chance of a flood hazard. As stated above, compliance with the City's Municipal Code Chapter 41, Floodplain Management and requirements established by the City's National Flood Insurance Program, would ensure that the proposed project would not impede or redirect flood flows. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact HYD-9 Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Impact Analysis

The project site is not mapped in an area protected from 100-year floods by a levee (DWR 2019). The project site is located within the outermost boundaries of the Emerald Lake dam inundation area, which could increase flood hazards at the project site. As part of the City's involvement in the National Flood Insurance Program, all new developments within designated flood hazard zones, including both the 100-year and 500-year floodplains, would be required to meet specific flood damage avoidance requirements. These requirements may include, but not be limited to, raising the elevation of habitable space above anticipated flood heights, creating 'freely communicating' structures that allow flood waters to pass through lower levels of buildings, and ensuring that site design does not result in a reduction of floodplain areas, which could result in increasing flooding conditions downstream (Redwood City 2010a). The proposed project site is at the far north-eastern boundary of the Lower Emerald Lake potential dam inundation area (San Mateo County 2005; Redwood City 2010a). As such, likelihood of flood waters reaching the project site are minimal. Additionally, the General Plan policies and implementation programs within the Public Safety Chapter introduce flood prevention methods to further reduce impacts associated with flooding and flooding hazards in the plan area. Specifically, Policies PS-7.2 and PS-7.4 prioritize improvements to the City's storm drain system that are prone to flooding and consult with upstream jurisdictions to reduce runoff into these areas. Programs PS-27, PS-32, PS-35, PS-48, PS-49, and PS-57 further reduce impacts associated with flooding by requiring new development to be designed to provide protection from impacts of flooding (Redwood City 2010a). The proposed project would comply with the requirements set out in the General Plan EIR and as such project level specific impacts would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact HYD-10 Inundation of seiche, tsunami, or mudflow?

Impact Analysis

The project site, primarily because of its location and topographical characteristics, would not be susceptible to a seiche, tsunami, or mudflow. A seiche affects locations adjacent to larger water bodies such as lakes or reservoirs. The project site is not located near any such water body. Therefore, development of the proposed project would not place people or structures at risk from these types of flooding, and there would be no impact.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

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3.10 LAND USE AND PLANNING

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c) Conflict with any applicable habitat conservation plan or natural communities' conservation plan?	☐	☐	☐	☒

3.10.1 Environmental Setting

The project site is partially developed with a concrete foundation in the northwest portion of the site and a vacant one-story commercial building in the southeast corner of the site. There is also a concrete drainage channel that extends across the western portion of the project site. As part of a previously started, but not completed, development project at the site, bridge abutments and foundations were constructed on either side of the concrete drainage channel to allow for the construction of a bridge crossing. However, the previous development project did not complete the bridge crossing. The remaining portions of the project site are vacant and covered with disturbed ruderal vegetation. Development surrounding the project site consists of a mix of uses including, commercial uses to the north, high-density residential uses to the west, commercial and residential uses to the east, and automobile sales and service centers to the south. Caltrain corridor tracks lie to the northeast.

3.10.2 Methodology

Evaluation of potential land use impacts are based on a review of documents pertaining to the proposed project, including the General Plan, General Plan EIR, El Camino Real Corrido Plan, Redwood City Municipal Code, and Zoning Ordinance.

3.10.3 Environmental Impact Analysis

This section discusses potential impacts concerning land use and planning associated with the proposed project and provides mitigation measures where necessary.

Impact LU-1 Physically divide an established community?

Impact Analysis

The proposed project would redevelop an underutilized site, which consists of an unoccupied commercial building. The proposed development would be confined on two contiguous parcels and would not change the overall arrangement of the neighborhood's street network or otherwise prevent movement through the area. The proposed project includes a publicly accessible park space that would facilitate a visual and physical connection between

adjacent uses. This enhanced connection represents a beneficial impact related to community cohesion. No impact related to division of established communities would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

Impact LU-2	**Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?**

Impact Analysis

General Plan and Zoning Consistency

The primary land use planning documents that govern the project site are the General Plan and Zoning Code. The project site's General Plan land use designation is Mixed-Use Live/Work. The project site's zoning designation is Mixed-Use Live/Work. The proposed project is consistent with both the General Plan and zoning land use designations that allow for development of an office. However, offices with a gross floor area of 2,500 square feet or more in the Mixed-Use Live/Work zoning district require a CUP. The proposed project includes development of a 109,375 square feet office building and therefore would be subject to approval of a CUP. The proposed project would comply with all applicable regulations for its land use and zoning designations. Structures in the Mixed-Use Live/Work zoning district must comply with both the maximum height in stories (3-stories) and in feet (40 feet in height). The proposed office building is three stories and 40-feet high . Maximum height is identified by the start of the rooftop (40 feet for the proposed project). Additionally, the stacked shipping container café would be 16 feet to 18 feet in height and does not exceed maximum height requirements. Therefore, the proposed project would comply with the zoning district guidelines.

The multi-family residential structures to the west of the project site are similar in height to the proposed project. The proposed project meets the maximum height of the MULW zoning district and would not vary from the zoning code requirements relative to height, the proposed height would be consistent with the existing development in the project area. For the reasons described above, the proposed project would not conflict with applicable land use plans, policies, or regulations adopted for the purpose of avoiding an environmental effect, and impacts would be less than significant.

El Camino Real Corridor Plan Consistency

The project site is within the City's El Camino Real Corridor Plan Area, which includes goals, policies, and strategies for street improvements to support walking, bicycling, and economic development. To facilitate walking and biking, the proposed project would include new and improved sidewalks, public walkways, a park, and shared bicycle lanes. Publicly accessible artwork would also be installed at the corner of Lathrop Street and Elm Street, and near the bridge entrance at Maple Street and Lathrop Street. The proposed project would also help in City's economic

development by providing employment spaces for businesses. For these reasons, the proposed project would be compatible with the El Camino Real Corridor Plan.

Plan Bay Area

The project site is located within the El Camino Real Mixed-Use Corridor Priority Development Area (PDA) and is also within the Transit Priority Area (MTC 2018). PDAs are areas within existing communities that local city or county governments have identified and approved for compact development and are served by transit. The proposed project is consistent with the overall regional policy framework of Plan Bay Area because it would redevelop an existing underutilized site within an urban footprint and locate jobs near housing and transit. Therefore, no impact would occur.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact LU-3 Conflict with any applicable habitat conservation plan or natural communities conservation plan?

Impact Analysis

The project site is located within the PG&E Bay Area Operation and Maintenance HCP area. However, this plan only applies to PG&E maintenance activities and would not impact the proposed project. There are no other adopted HCPs, NCCP, nor other similar approved conservation plan within or in close proximity to the project site. Therefore, there would be no impact to any adopted conservation plans.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

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3.11 MINERAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the State?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

3.11.1 Environmental Setting

The DOC Division of Mine Reclamation identifies sites with mineral resource potential. The City is not identified as having significant mineral resources and the City's General Plan does not identify any lands zoned or designated for mineral extraction (DOC 2015; Redwood City 2010a). In addition, the Division of Mine Reclamation Assembly Bill 3098 list does not identify any operating mines in the City (DOC 2019).

3.11.2 Methodology

The following analysis is based on review of the General Plan, General Plan EIR, and the DOC Division of Mine Reclamation mineral lands classification map.

3.11.3 Environmental Impact Analysis

This section discusses potential impacts on mineral resources associated with the proposed project and provides mitigation measures where necessary.

Impact MIN-1	**Result in the loss of availability of a known mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the State?**

Impact Analysis

According to the DOC Mineral Lands Classification map of Aggregate Resources, the project site is in an area designated Mineral Resource Zone-1, indicating that it is an area in which adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence (DOC 1982). No mineral extraction operations exist on or near the project site, and mineral extraction is not included as part of the proposed project. Therefore, the proposed project would not result in the loss of availability of a known mineral resource and no impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.



Level of Significance After Mitigation
No Impact.

Impact MIN-2 Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

Impact Analysis

As mentioned under Impact MIN-1, the project site is not identified in the General Plan or by the DOC Division of Mine Reclamation as containing valuable mineral resources. Therefore, the proposed project would not result in the loss of availability of a locally important mineral resource recovery site and no impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

3.12 NOISE

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Result in exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?	☐	☐	☒	☐
c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport of public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

3.12.1 Environmental Setting

The information in this section is summarized from the Noise Technical Memorandum included as Appendix G in this document.

Existing Ambient Noise Levels

The City of Redwood City is exposed to several sources of noise, including traffic on major highways, such as US-101, SR 84, and SR 82, and noise from railways, such as the Caltrain tracks. Traffic noise depends primarily on traffic speed (tire noise increases with speed), proportion of medium and large truck traffic (trucks generate engine, exhaust, and wind noise in addition to tire noise), and number of speed control devices, such as traffic lights (accelerating and decelerating vehicles and trucks can generate more noise).

The loudest source of noise at the project site is the Caltrain tracks, which border the northeast edge of the site (along Pennsylvania Avenue). The total number of trains passing the site is approximately two per hour, except for morning and evening rush hour times, when the total train count can be up to four per hour. Noise from the trains

includes general noise from the interaction of the train wheels on the tracks, warning horns from the train engine, and alarms from the traffic control bars.

Traffic noise in the area is sparse with Main Street being the busiest street. The traffic on Main Street is comprised of primarily vehicles, but also contains medium trucks, company trucks, and construction vehicles. There is very little traffic on Elm and Maple Streets. Other sources of noise at the project site include intermittent construction activity on Lathrop Street, including one backhoe, one truck, two workers, sidewalk activity, and nature-based noises.

A noise survey was conducted between Tuesday, November 20, and Wednesday, November 21, 2018, to establish the existing baseline condition for the proposed project and the results are included in Appendix G.

Sensitive Receptors

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are considered to be more sensitive to noise intrusion than are commercial or industrial activities. Ambient noise levels can also affect the perceived desirability or livability of a development.

The project site is surrounded by a mix of land uses, including commercial spaces and a church to the north, high-density residential uses to the west, commercial and residential uses to the east, and automobile sales and service centers to the south. The sensitive receivers are considered to be the San Jose Obrero Catholic Church across Pennsylvania Avenue to the north and the Franklin Street Apartments across Maple Street to the west.

3.12.2 Methodology

Results from the long-term site measurements were used to provide baseline noise conditions at nearby sensitive receptors and within the project vicinity. For the purpose of this analysis, potential sensitive receptors were determined by reviewing current aerial photography and by walking the project site.

Impacts from future project-related traffic were estimated using predicted traffic counts from the Transportation Impact Analysis report prepared by Kimley-Horn, dated December 2018 (Appendix H).

Short-term site noise data were used as an input to the Federal Highway Administration Roadway Construction Noise Model (RCNM) as the existing ambient noise level input. The RCNM is used as the Federal Highway Administration's national standard for predicting noise generated from construction activities. The RCNM analysis includes the calculation of noise levels (Lmax and Leq) at incremental distances for a variety of construction equipment. The spreadsheet inputs include acoustical use factors, Lmax values, and Leq values at various distances depending on the ambient noise measurement location. For this analysis, it was assumed that a worst-case noise scenario for construction activity would entail the operation of three noisiest pieces of equipment (grader, dozer, and compactor) simultaneously. Noise modeling outputs are included in Appendix G.

3.12.3 Environmental Impact Analysis

This section discusses the potential impacts on noise associated with the proposed project and provides mitigation measures where necessary.

Impact NOI-1 Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Impact Analysis

Exterior Traffic Noise Level Impacts

To describe future noise levels due to traffic added from the peak hour project, a.m. and p.m. peak hour traffic counts with and without the proposed project provided by Kimley-Horn (Appendix H) were used to determine the percentage increase of traffic on the roads adjacent to the project site and adjacent sensitive receivers.

Table 3.12-1 shows the cumulative peak hour counts associated with traffic on the local roadway network both with and without the proposed project. The last columns in the table show the overall percentage change and the estimated difference in peak hour noise level.

Table 3.12-1. Traffic Peak Hour Counts and Estimated Noise Increase

Roadway	Cumulative Peak Hour Traffic Count	Cumulative Peak Hour Traffic Count with Project	Percentage Change	Estimated dB(A) Change
Maple Street	386 (519)	433 (572)	12% (10%)	0.5 (0.4) dB(A)
Lathrop Street	145 (250)	204 (314)	41% (26%)	Still 1 dB(A) or Less
Main Street	475 (703)	506 (727)	7% (3%)	0.3 (0.1) dB(A)
Elm Street	58 (76)	89 (98)	53% (29%)	Still 1 dB(A) or Less

Notes: Numbers in parenthesis are p.m. peak hour traffic volumes.

The proposed project is expected to minimally increase traffic counts along the busiest roads surrounding the project site; Maple Street and Main Street. There would be essentially no change in traffic noise expected along these streets and there would be no impact.

Peak hour traffic counts are expected to significantly increase with the proposed project along Lathrop and Elm Streets. Even though the percentage of traffic is expected to increase, the future noise levels on Lathrop and Elm Streets with the proposed project are not expected to significantly increase over the current conditions, as shown in the table. Therefore, the proposed project would not cause increased traffic noise levels over the baseline conditions at the neighboring sensitive receptors and this would be a less than significant impact.

Interior Traffic and Train Noise Level Impacts

The June 27, 2018, Planning Application drawing set indicates the proposed project would involve a new three-story commercial office building with two levels of below-grade parking. The 2016 California Green Building Standards Code (CalGreen) states if the building is exposed to a noise level of 65 dB(A) Leq-1-hr during any hour of operation, the exterior façade design shall incorporate noise reduction features. Exterior ambient noise measurements indicate the façades of the building facing the Caltrain tracks and corridor would be exposed to 1-hr Leq noise levels up to 78.7 dB(A) and would be subject to this requirement.

In particular, exterior wall and roof-ceiling assemblies exposed to the noise source should meet a composite Sound Transmission Class (STC) rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30) shall be used in all affected areas or wall and roof-ceiling assemblies exposed to the noise source making up the

building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq -1Hr) of 50 dBA in occupied areas during any hours of operations.

Therefore, proposed project would incorporate Mitigation Measure NOI-1 for the exterior façade design of the building to be designed to reduce noise levels on the interior of the building to a maximum of 50 dB(A) Leq during normal operating hours.

Project Fixed-Source Noise

Typical commercial building construction involves new rooftop mechanical equipment, air handling units, exhaust fans, and potentially chillers and cooling towers. This equipment generates noise that could radiate to the neighboring properties. Chapter 24 “Noise Regulation” does not currently have any specific noise restrictions for exterior mechanical equipment to neighboring properties. The code section only addresses noise from an assembly of three or more people between the hours of 8:00 p.m. and 7:00 a.m. on weekdays or anytime on weekends and holidays and noise from construction. Therefore, the impact of fixed-source noise to the neighboring properties would be less than significant.

Short-Term Construction Noise Impacts

Two types of short-term noise impacts could occur during construction of the proposed project. First, construction crew commutes and the transport of construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the project site. This increased traffic would be composed of vehicles, medium trucks, and heavy trucks.

Existing traffic on Main Street and Maple Street already includes a component of construction vehicles and trucks to service the existing commercial facilities, such as PRENAV, Inc. and Cooks Collision. Noise levels along these streets are not expected to increase due to project-related construction traffic.

The second type of short-term noise impact is related to noise generated during construction. Construction activities would include excavation activities and grading, foundation work, building construction, and paving. Each construction stage has its own mix of equipment and, consequently, its own noise characteristics. These various construction operations would change the character of the noise generated at the project site and, therefore, the ambient noise level as construction progresses. The loudest phases of construction include excavation, building construction, and grading phases, as the noisiest construction equipment is earthmoving and grading equipment. Table 3.12-2 below lists types of construction equipment that may be used throughout construction and the maximum and average operational noise level as measured at 100 feet from the operating equipment. The 100-foot distance represents the distance between the northwest edge of the project site and the existing Franklin Street Apartment buildings across Maple Street to the west.

Table 3.12-2. Summary of Federal Highway Administration Roadway Construction Noise Model at Existing Apartment Receiver

Source	Distance to Nearest Sensitive Receptor	Sound Level at Motel		
		Lmax, dB(A)	Acoustical Use Factor (%)	Leq, dB(A)
Backhoe	100 feet	71.5	40	67.6
Compactor (ground)	100 feet	77.2	20	70.2
Crane	100 feet	74.5	16	66.6
Concrete Mixer Truck	100 feet	72.8	40	68.8
Compressor (air)	100 feet	71.6	40	67.7
Bulldozer	100 feet	75.6	40	71.7
Excavator	100 feet	74.7	40	70.7
Front End Loader	100 feet	73.1	40	69.1
Flat Bed Truck	100 feet	68.2	40	64.3
Generator	100 feet	74.6	50	71.6
Grader	100 feet	79.0	40	75.0
Paver	100 feet	71.2	50	68.2
Pickup Truck	100 feet	69.0	40	65.0
Pneumatic Tools	100 feet	79.2	50	76.1
Welder / Torch	100 feet	68.0	40	64.0
Tractor	100 feet	78.0	40	74.0

Source: FHWA 2006, AQ/GHG assumptions (Appendix B)

A reasonable worst-case noise condition for general construction activity is that a grader, pneumatic tools, and a tractor would operate simultaneously at the same location. This represents a conservative scenario, as it assumes that all three pieces of equipment would be operating at the same time and same place. Construction would occur in sequential phases, thus in reality, it is not likely the three loudest pieces of equipment would be operating simultaneously at the exact location of the project site closest to the nearest noise-sensitive receiver. Nevertheless, the RCNM calculated that this scenario would result in a combined noise level of 83.5 dB(A) Lmax and 79.9 dB(A) Leq at the existing apartments 100 feet from the project site.

Although noise levels could range into the “clearly unacceptable” ranges, as defined in the General Plan, construction activities and increases in noise levels from construction activities would be temporary and construction activities would be limited to the restrictions set by Chapter 24 “Noise Regulation”, Division 3 “Construction” of the Redwood City Municipal Code.

In addition to the restrictions listed in the Redwood City Municipal Code, Program PS-63 in the General Plan and the Federal Transit Administration offers construction mitigation measures listed in Section 12.1.3 “Mitigation of



Construction Noise" in the Transit Noise and Vibration Impact Assessment document (FTA-VA-90-1003-06 May 2006). In conclusion, construction noise would be short-term and intermittent. Furthermore, implementation of Mitigation Measure NOI-2 would ensure compliance with the City's construction noise standards; therefore, impacts would be less than significant with mitigation incorporated.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures

MM NOI-1 **Interior Noise Reduction.** Prior to issuance of building permits, the City shall ensure through design review that all facades of the building which have exposure to the rail lines shall be constructed to meet the requirements of the 2016 CalGreen Code, Section 5.507 "Environmental Comfort". In particular, exterior wall and roof-ceiling assemblies exposed to the rail line shall meet a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30). Or, the services of a qualified acoustical consultant may be obtained to conduct a detailed noise study to help design the exterior façade such that the interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq -1Hr) of 50 dBA in occupied areas during any hours of operations.

MM NOI-2 **Construction Noise Reduction.** Implementation of the following multi-part mitigation plan is required to reduce the potential construction period noise impacts.

- Follow all construction noise requirements listed Section 24, Division 3 "Construction" of the Redwood City Municipal Code and Program PS-63 "Enforcing Construction and Maintenance Noise Regulations" in the General Plan.
- Minimize noise from construction activities by enforcing construction hours, including vehicle start-up and preparation.
- Limit construction to the hours of 8:00 a.m. to 5:00 p.m. on weekdays and 9:00 a.m. to 5:00 p.m. on Saturdays, with no noise-generating construction on Sundays or holidays.
- Control noise from construction worker's radios to the point where they are not audible at existing residences that border the project site.
- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
- Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction area.
- Utilize "quiet" air compressors and other stationary noise sources where technology exists.
- The construction contractor would prohibit unnecessary idling of internal combustion engines.
- Notify residents adjacent to the project site of the construction schedule in writing.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact NOI-2 Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?

Impact Analysis

During construction of the proposed project, equipment such as cranes, excavators, graders, loaders, backhoes, and bulldozers may be used as close as 100 feet from the nearest sensitive receptor. Construction equipment that would

be used during project construction would generate vibration levels between 0.003 peak particle velocity (PPV) and 0.089 PPV at 25 feet, as shown below in Table 3.12-3. All the groundborne vibration levels are below the FTA vibration threshold at which human annoyance could occur of 0.10 PPV. Additionally, construction activities would be temporary in nature and would occur during normal daytime working hours as per the General Plan. Therefore, construction vibrations are not predicted to cause damage to existing buildings or cause annoyance to sensitive receptors, and impacts would be less than significant.

Table 3.12-3. Vibration Source Levels for Construction Equipment

Type of Equipment	Peak Particle Velocity at 25 Feet	Peak Particle Velocity at 50 Feet	Peak Particle Velocity at 100 Feet	Threshold at which Human Annoyance Could Occur	Potential for Project to Exceed Threshold
Large Bulldozer	0.089	0.031	0.011	0.10	None
Loaded Trucks	0.076	0.027	0.010	0.10	None
Small Bulldozer	0.003	0.001	0.000	0.10	None
Auger/Drill Rigs	0.089	0.031	0.011	0.10	None
Jackhammer	0.035	0.012	0.004	0.10	None
Vibratory Hammer	0.070	0.025	0.009	0.10	None

Source: FTA 2006

Impacts due to vibration from the adjacent Caltrain tracks and corridor are addressed in the February 23, 2018 “1180 Main St, Redwood City Vibration Study” report prepared by Mei Wu Acoustics. The study measured ground vibration levels on the foundation of the existing building on the eastern corner of the site; approximately 41 feet from the centerline of the nearest Caltrain corridor track, for a minimum of 24 hours. All measurements were then compared to the limits in the Federal Transit Administration (FTA) “Transit Noise and Vibration Impact Assessment” document FTA-VA-90-1003-06, Table 8.1 as a guideline to assess vibration impacts. The Mei Wu Study concluded all measured events were considered acceptable by the FTA guidelines, except for two very short intermittent events that exceeded 83 dB and only one of these events occurred during the day when the building would be occupied. Therefore, the impact from rail line vibration would be less than significant and no further mitigation measures were recommended. Please refer to the report for further discussion of the vibration measurements and results (Appendix G).

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact NOI-3	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Impact Analysis

As discussed in the long-term operational impact discussion in Impact NOI-1, it is not anticipated that implementation of the proposed project would expose future employees and visitors to significant increases in noise levels. Additionally, the proposed project's contribution to traffic noise would not permanently result in a perceptible permanent increase in ambient noise levels at the project site. Therefore, noise levels with implementation of the proposed project would result in a less than significant impact.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact NOI-4	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Impact Analysis

Please refer to the "Short-Term Construction Noise" discussions under Impact NOI-1. Noise levels with implementation of the proposed project would result in a less than significant impact with the incorporation of Mitigation Measure NOI-2.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures
Mitigation Measure NOI-2 is required.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact NOI-5	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Impact Analysis

The nearest public airport to the project site is the San Carlos Airport, located approximately 2.6 miles northwest of the project site. The project site falls well outside the 55 dBA CNEL contour line for the San Carlos Airport as shown in Figure PS-9 in the General Plan (Redwood City 2010a). Therefore, no impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

Impact NOI-6	**For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?**

Impact Analysis

No private airstrips or helipads are located within the proximity of the project site (Tollfree 2018). Therefore, no impacts would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

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3.13 POPULATION AND HOUSING

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.13.1 Environmental Setting

According to the U.S. Census, the City's population has grown from 76,815 in 2010 to 86,685 in 2017, an approximate 12.8 percent increase (U.S. Census Bureau 2019). The City is currently the third largest city in San Mateo County (State of California Department of Finance 2018). Population is projected to increase to 92,400 people by 2030, an approximate 21.4 percent increase and San Mateo County population is projected to increase by 17.6 percent (Redwood City 2010a).

3.13.2 Methodology

The evaluation of potential population, housing, and employment impacts of the proposed project is based on review of the General Plan, General Plan EIR, and population data compiled by the California Department of Finance. The following impact discussions consider the effects of the proposed project related to employment, population, and housing in the City.

3.13.3 Environmental Impact Analysis

This section discusses potential impacts on population and housing associated with the proposed project and provides mitigation measures where necessary.

Impact POP-1 **Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

Impact Analysis

The project site and surrounding area are designated Mixed Use Live/Work by the General Plan, which provides opportunities for a mix of live/work, light industrial, technology, creative industry, and limited office, and complementary uses. According to the City's General Plan, stand-alone commercial or industrial workspace areas are permitted, provided that activities limit or confine noise, dust, and vibration impacts, are low impact in nature, and are compatible with any nearby existing or allowed residential uses (Redwood City 2010a). The proposed project is a

commercial office building. Since the project does not include any housing there is no direct impact on population growth in the area. There is a potential for indirect impacts to population once the project construction is complete and the commercial office building is in use (discussed below).

The proposed project would require up to 100 construction workers during the peak construction phase. It is anticipated that the construction workforce would be available from nearby areas and that the proposed project would not affect the population of the City. In addition, the project site is within commuting distance of the greater San Francisco Bay Area, so construction workers are not expected to relocate. Temporary construction activities are not expected to increase the demand for housing, and the impacts would be less than significant.

Operation of the proposed project could potentially create new jobs and increase the demand for new employees. The growth that would occur from the proposed project is accounted for in the City's General Plan and General Plan EIR. The potential increase in employment opportunities associated with the proposed project would not directly or indirectly induce substantial population growth; therefore, the proposed project would result in a less than significant impact.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact POP-2 Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Impact Analysis

There are no residential dwelling units on-site. As such, the proposed project would not displace any existing housing and therefore, no impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

Impact POP-3 Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?

Impact Analysis

The project site is mostly undeveloped (except for a vacant one-story commercial building) and does not contain any on-site residential dwelling units. As such, the proposed project would not result in the displacement of people or require the construction of replacement housing. No impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

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3.14 PUBLIC SERVICES

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
• Fire protection?	☐	☐	☒	☐
• Police protection?	☐	☐	☒	☐
• Schools?	☐	☐	☐	☒
• Parks?	☐	☐	☐	☒
• Other public facilities?	☐	☐	☐	☒

3.14.1 Environmental Setting

Fire Protection

The Redwood City Fire Department (RCFD) provides fire suppression, fire prevention, and emergency medical service within the City. The project area is within fire response area 31 and the closest fire station to the project site is Fire Station 9, which is approximately 0.5 miles north of the project site at 755 Marshall Street. Fire Station 10 is approximately 0.95 miles southwest of the project site at 2190 Jefferson Ave. The RCFD includes seven fire stations and provides service to residents and businesses within City limits.

Police Protection

The Redwood City Police Department (RCPD) provides police protection services for the City. The RCPD is located at 1301 Maple Street, which is approximately 0.9 miles from the project site. The RCPD is comprised of 96 sworn officers, 36 civilian employees, 4 reserve officers, and 25 volunteers. The established response time goal of five minutes or less for all emergency calls was met during the 2007-2008 fiscal year (data that was available at the time that the General Plan EIR was written) (Redwood City 2010b). The RCPD collaborates with the RCFD, the Redwood City Emergency Operations Center, and the San Mateo County Office of Emergency Services to provide emergency services in accordance with the Emergency Services Organization (ESO). The ESO is an interagency agreement outlining the various roles and functions each agency assumes when a large-scale emergency or area-wide disaster strikes. These roles are well defined in order to maintain a steady and secure response and recovery (Redwood City 2010a). The project site is located within Beat-3.

Schools

The City is served by three public school districts: Redwood City School District, Belmont-Redwood Shores School District, and Sequoia Union High School District. The project site is within the Redwood City School District and the

school attendance zone is Hoover Elementary School. The nearest school is Hoover Elementary School, located approximately 0.7 miles east of the project site.

Parks

The City's Parks, Recreation, and Community Services Department manages the 23 parks, various recreational facilities, and open space areas within the City (Redwood City 2019). Additionally, San Mateo County manages Edgewood Park & Natural Preserve, which is within City limits and approximately 3.25 miles away from the project site. The nearest park to the project site is Roselli Mini-Park, which is less than one block away on Pennsylvania Avenue. There is also a dog park, Main Street Dog Agility Park, located just south east of the project area on the opposite side of Main Street.

Other Facilities

There are five libraries within Redwood City limits. The closest library to the project site is the Downtown Library which is approximately 0.25 miles away at 1044 Middlefield Road. There are two community centers within 1 mile of the project site: Red Morton Community Center and Fair Oaks Community Center.

3.14.2 Methodology

The following analysis is based on a review of documents pertaining to the proposed project, including the General Plan, General Plan EIR, and the Redwood City Municipal Code.

3.14.3 Environmental Impact Analysis

This section discusses potential impacts on public services associated with the proposed project and provides mitigation measures where necessary.

Impact PUB-1	**Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:** **Fire protection?** **Police protection?** **Schools?** **Parks?** **Other public facilities?**

Impact Analysis

Fire Protection

Fire service is currently provided to the project site by RCFD. Development of the proposed project could result in an increased demand for fire protection. As required by the California Fire Code, the proposed project would be required

to include site-specific design features such as ensuring appropriate emergency access and requiring structures to be built with approved building materials. Conformance with this code reduces the risks associated with fire hazards. Site access would allow entry to the building via several entry points. The proposed 64-foot-wide bridge over the drainage channel, which would provide access to the building's main entrance on Maple Street, would be designed and built to appropriately provide clearance for Fire Apparatus Access to the main entrance.

The proposed project is not expected to result in substantial adverse impacts to fire protection services and emergency services. With two existing fire stations within 1 mile of the project site (as described above), the increase in potential services needed would not require significant expansion or construction of a new fire station. In addition, the proposed project would comply with the current fire codes, building codes, and the City's Municipal Code. Therefore, there would be no need for new or expanded fire department facilities to serve the proposed project. Impacts would be less than significant.

Police Protection

Police service is currently provided to the project site by RCPD. Development of the project could result in an increased demand for protection services. However, the proposed project is not expected to result in substantial adverse impacts on police services. As described above, the City's existing police department is within 1 mile of the project site, which would allow timely access to calls generated at the site. Therefore, impacts would be less than significant.

Schools

The proposed project does not include residential uses that would induce population growth or increase student enrollment in the project area. The proposed project would not require the construction of new or expansion of existing school facilities. Therefore, the proposed project would have no impact on school facilities.

Parks

As discussed in the recreation section of this ISMND the proposed project would not substantially increase the use of nearby recreation facilities. The project would include a 10,000 square feet on-site publicly accessible park space. Having this park at the project site would reduce use of nearby parks. Therefore, the proposed project would not create adverse physical impacts to nearby parks and there would be no impact.

Other Public Facilities

The proposed project would not include residential uses that would induce population growth in the project area. It is anticipated that construction workers already live in the local area and commute to the project site. No significant increase to use of public facilities would occur and the proposed project would not require the construction or expansion of other public facilities. Therefore, there would be no impact to other public facilities.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

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3.15 RECREATION

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

3.15.1 Environmental Setting

The City's Parks, Recreation, and Community Services Department manages the 23 parks, various recreational facilities, and open space areas within the City (Redwood City 2010a). Additionally, San Mateo County manages Edgewood Park & Natural Preserve, which is within City limits and approximately 3.25 miles away from the project site. The nearest park to the project site is Roselli Mini-Park, which is less than one block away on Pennsylvania Avenue. There is also a dog park, Main Street Dog Agility Park, located just south east of the project area on the opposite side of Main Street.

The proposed project would comply with Section 55.6.D.2 of the City's Municipal Code and include indoor, ground floor parking for 72 bikes and outdoor parking for 26 visitor bikes (Redwood City 2018a). The proposed project would also include a 10,000 square feet on-site publicly accessible park space. The proposed project would include landscaping and public seating areas at the building's main entrance on Maple Street.

3.15.2 Methodology

The following analysis is based on a review of the General Plan and the General Plan EIR and the Redwood City Municipal Code.

3.15.3 Environmental Impact Analysis

This section discusses potential impacts related to recreational facilities associated with the proposed project and provides mitigation measures where necessary.

Impact REC-1	**Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

Impact Analysis

The proposed project would involve the development of a commercial office building. The project would not include a residential component and would not permanently increase the City's residential population. It is expected that employees that work at the proposed office building would already reside in or near the City and would not

substantially increase the use of nearby recreation facilities. The proposed project would include a 10,000 square feet on-site publicly accessible park space. Therefore, the proposed project would not result in the deterioration of City recreational facilities, and there would be a less than significant impact.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact REC-2	**Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?**

Impact Analysis

The proposed project would involve the development of 10,000 square feet on-site publicly accessible park space, a portion of which crosses over the concrete drainage channel. As discussed in Section 3.4, Biological Resources, no work would occur in the channel. Therefore, there would be no adverse physical effect on the environment related to recreation facilities.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

3.16 TRAFFIC AND TRANSPORTATION

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☒	☐	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e) Result in inadequate emergency access?	☐	☐	☒	☐
f) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☒	☐	☐

3.16.1 Environmental Setting

The information in this section is summarized from the Traffic Impact Analysis Report prepared by Kimley-Horn in December 2018. The complete report is included as Appendix H in this document.

Existing Roadway Network

The proposed project would generate new vehicular trips that would increase traffic volumes on the nearby street network as described below.

El Camino Real is a four-lane north-south boulevard. El Camino Real runs parallel to US-101 and connects multiple cities in the Bay Area from Daly City to the north and Santa Clara to the south. The posted speed limit on El Camino Real within the study area is 35 miles per hour.

Bay Road begins as a residential two-lane roadway to the west at Beech Street and continues east as a four-lane industrial street, serving commercial and industrial land uses within the study area. The speed limit on Bay Road is 30 miles per hour.

Beech Street is a two-lane local road with on-street parking. Within the study area, Beech Street begins at El Camino Real and terminates just south of the Caltrain corridor tracks serving industrial land uses. Beech Street continues north of the Caltrain corridor tracks and serves residential land uses. Within the study area, the speed limit on Beech Street is 25 miles per hour.

Broadway is an east-west industrial street, which runs between Hopkins Avenue and Fifth Avenue. Between Hopkins Avenue and El Camino Real, Broadway is a two-lane roadway with bicycle lanes that serves residential land uses. Within the downtown area, between El Camino Real and Woodside Road, there are two to four lanes along Broadway with either on-street parking or bicycle lanes. East of Woodside Road, Broadway is a four-lane road with a two-way left-turn lane (TWLTL) and shared bicycle lanes (sharrows) or bicycle lanes. West of Woodside Road, the posted speed limit is 25 miles per hour on Broadway and 30 miles per hour east of Woodside Road.

Chestnut Street is a two-lane, local street with on-street parking. There is an at-grade crossing with the Caltrain corridor tracks near the Pennsylvania Avenue. Within the study area, Chestnut Street, serves industrial land uses and serves residential and commercial land uses north of the Caltrain corridor tracks. Chestnut Street connects with Veterans Boulevard to the north and El Camino Real to the south. Within the study area the speed limit on Chestnut Street is 25 miles per hour.

Elm Street is a two-lane local street with on-street parking. Elm Street runs between Lathrop Street and Main Street. Left turns from Elm Street onto Main Street are prohibited. Entrance to the proposed project's garage is located off Elm Street. The speed limit on Elm Street is 25 miles per hour.

Franklin Street is a two-lane local street with on-street parking that serves residential uses. Franklin Street begins at Jefferson Avenue and becomes Lathrop Street at Maple Street. The speed limit on Franklin Street is 25 miles per hour.

Jefferson Avenue is a connector street that connects the residential and downtown area in Redwood City. West of Middlefield Road, Jefferson Avenue is a four-lane roadway with on-street parking and shared bicycle lanes and a speed limit of 30 miles per hour. East of Middlefield Road, Jefferson Avenue becomes a two-lane roadway with on-street parking and a speed limit of 25 miles per hour.

Lathrop Street is a two-lane local roadway with on-street parking that serves industrial land uses. Lathrop Street connects with El Camino Real and turns into Franklin Street at Maple Street. The speed limit on Lathrop Street is 25 miles per hour.

Main Street is a two-way roadway that runs between El Camino Real and Veterans Boulevard. Within the study area, Main Street is designated as a local street with on-street parking and serves industrial land uses. North of Middlefield Road, Main Street is designated as a pedestrian street with on-street parking and a TWLTL in some segments. There is a median island on Main Street from the Caltrain corridor tracks towards Elm Street to prevent cars heading downtown from accessing the tracks when the gate arms are down. Within the study area the speed limit on Main Street is 30 miles per hour. There is an at-grade crosswalk with the Caltrain corridor tracks, just north of Elm Street.

Maple Street is north-south roadway that runs from Redwood Creek to El Camino Real. Within the study area south of Main Street, it is designated in the General Plan as a two-lane pedestrian street and as a Neighborhood Main

Street in Redwood City Moves (RWCMoves). Maple Street has Class II bike lanes and a speed limit of 25 miles per hour that serves residential purposes. North of Main Street, Maple Street is predominantly a two-lane street with on-street parking, and a speed limit of 25 miles per hour. From Main Street to Middlefield Road, Maple Street is one-way in the southbound direction with on-street parking. North of Marshall Street, there is no on-street parking and the posted speed limit is 30 miles per hour.

Middlefield Road is an east-west connector street that connects the residential and downtown areas. East of Maple Street, Middlefield Road is a two-lane roadway with a two-way left-turn lane, on street parking, and Class II bicycle lanes with a speed limit of 30 miles per hour. West of Maple Street, Middlefield Road is primarily a two-lane roadway with on-street parking and a speed limit of 25 miles per hour.

Woodside Road is a north-south, designated boulevard that connects to Interstate 280 and US-101. Within the study area, Woodside Road is a four to five-lane roadway. South of US-101, Woodside Road is designated as SR 84. The posted speed limit is 35 miles per hour.

Existing Transit Facilities

SamTrans Bus Services

SamTrans has multiple bus routes near the project site. Routes 79, 274, 275, 278, 296, and 397 service the nearby area of the proposed project. Route ECR RAPID is a rapid bus service that runs along El Camino Real from the Daly City BART station to the Palo Alto Transit Center. In the vicinity of the project site, Route ECR RAPID runs on El Camino Real along Jefferson Avenue and Woodside Road, with the nearest bus stop at the Redwood City Transit Center, located less than 0.5 miles from the project site.

Caltrain

Caltrain provides commuter-heavy rail services between San Francisco County and Santa Clara County. The Redwood City Caltrain station is located on James Avenue, approximately 0.5 miles west of the project site. During the weekday a.m. peak, the station is served by three northbound limited-stop trains, two northbound baby bullet trains, six southbound limited-stop trains, and two southbound baby bullet trains. During the weekday p.m. peak, the station is served by four northbound limited-stop trains, three northbound baby bullet trains, three southbound limited-stop trains, and two southbound baby bullet train. Those taking Caltrain may transfer to SamTrans bus routes ECR, 95, 274, 275, 276, 278, 295, 296, 397, 398 and RAPID.

Existing Pedestrian Facilities

Sidewalks and crosswalks are mostly provided throughout the project area in Redwood City to allow pedestrians to access nearby transit stops, residential uses, and commercial uses. There are existing sidewalks present for the majority of the area surrounding the project site, except adjacent to the project site along Lathrop Street and Maple Street. There are no marked crosswalks directly adjacent to the project site.

Caltrain tracks are located immediately north of the project site. Pedestrians may cross the Caltrain corridor tracks on the east side of Main Street or on either side of Maple Street.

Existing Bicycle Facilities

Class II bicycle lanes are located throughout the City. The following is a list of the Class II bicycle lanes near the study area:



- Brewster Avenue between Perry Street and Main Street
- Broadway between Chestnut Street and Woodside Road
- Main Street between Convention Way and Veterans Boulevard
- Maple Street between El Camino Real and Pennsylvania Avenue
- Marshall Street between Arguello Street and Walnut Street
- Middlefield Road between Marshall Street and Veterans Boulevard and between Cassia Street and Woodside Road
- Veterans Boulevard between Whipple Avenue and Chestnut Street
- Walnut Street from Bradford Street to Veterans Boulevard
- Winslow Street from Broadway and Howland Street

Class III bicycle routes are located throughout the City. The following is a list of the Class III bicycle routes near the study area:

- Arguello Street between Brewster Avenue and Broadway
- Broadway between Winslow Street and Marshall Street and between Woodside Road and Charter Street
- Charter Street between Broadway and Middlefield Road
- Jefferson Avenue between Alameda de las Pulgas and El Camino Real
- Maple Street between Pennsylvania Avenue and Main Street
- Middlefield Road/Winslow Street between Broadway and Cassia Street
- Middlefield Road between Woodside Road and Douglas Avenue
- Roosevelt Avenue between Upton Street and El Camino Real

Existing Intersection Level of Service

Traffic operations were evaluated at the study intersections under existing traffic conditions. Results of the analysis are presented in Table 3.16-1. As shown in the table and presented in Appendix H, all study intersections function within acceptable Level of Service (LOS) standards under this scenario, except for the following intersections:

- #3 – El Camino Real / Beech Street (a.m. Peak Hour)
- #14 – Main Street / Pine Street – SR 84 Ramps (p.m. Peak Hour)
- #17 – Woodside Road (SR 84) / Middlefield Road (a.m. and p.m. Peak Hours)
- #19 – Woodside Road (SR 84) / Broadway (a.m. and p.m. Peak Hours)

Table 3.16-1. Existing Intersection Level of Service Summary

#	Intersection	LOS Criteria	Jurisdiction	Control	Existing			
					a.m. Peak		p.m. Peak	
					LOS	Delay (sec)[1]	LOS	Delay (sec)[1]
1	El Camino Real / Jefferson Avenue	D	City / Caltrans	Signal	D	51.8	D	48.5
2	El Camino Real / Maple Street	D	City / Caltrans	Signal	A	6.1	A	9.5
3	El Camino Real / Beech Street	D	City / Caltrans	SSSC	**E**	**35.3**	D	28.0
4	El Camino Real / Chestnut Street	D	City / Caltrans	Signal	B	14.7	B	19.5
5	Franklin Street-Lathrop Street / Maple Street	D	City	SSSC	B	11.9	C	15.6
6	Lathrop Street / Elm Street[2]	D	City	-	Uncontrolled Intersection			

#	Intersection	LOS Criteria	Jurisdiction	Control	Existing			
					a.m. Peak		p.m. Peak	
					LOS	Delay (sec)[1]	LOS	Delay (sec)[1]
7	Lathrop Street / Beech Street	D	City	SSSC	B	10.4	B	10.7
8	Lathrop Street. Chestnut Street	D	City	SSSC	B	11.6	B	13.9
9	Elm Street / Project Driveway (Future)	D	City	SSSC	Future Intersection			
10	Main Street / Maple Street	D	City	SSSC	B	10.8	B	10.6
11	Main Street / Elm Street	D	City	SSSC	A	9.1	B	10.4
12	Main Street / Beech Street	D	City	SSSC	B	10.5	B	12.4
13	Main Street / Chestnut Street	D	City	Signal	B	16.3	B	19.6
14	Main Street / Pine Street-SR 84 Ramps	D	City	SSSC	C	21.0	**F**	**62.3**
15	Middlefield Road / Main Street	D	City	Signal	C	29.2	C	34.9
16	Middlefield Road / Chestnut	D	City	Signal	B	15.3	B	19.0
17	Woodside Road (SR 84) / Middlefield Road[3]	E	City / Caltrans	Signal	**F**	**99.2**	**F**	**112.9**
18	Woods ide Road (SR 84) / Bay Road	D	City / Caltrans	Signal	D	37.7	D	39.0
19	Woodside Road (SR 84) / Broadway	D	City / Caltrans	Signal	**E**	**74.6**	**F**	**81.6**

Note:
SSSC – Side-Street Stop Control
Intersections that are operating below acceptable levels are shown in **BOLD**.
[1] The average control delay is reported for signalized intersections. The delay for the worst movement is reported for SSSC intersections.
[2] Intersection #6 – Lathrop Street / Elm Street is an uncontrolled intersection and removed from analysis.
[3] Intersection #17 – Woodside Road (SR 84) / Middlefield Road is a Congestion Management Program intersection with a LOS threshold of E.

3.16.2 Methodology

Analysis of significant environmental impacts at intersections and freeway segments was based on the methodology of LOS. The LOS of an intersection is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. The LOS standard for City of Redwood City intersections is LOS D except for City/Council Association of Governments of San Mateo County designated Congestion Management Program (CMP) intersections, which allows for a minimum LOS E. Project impacts at City of Redwood City signalized intersections would be considered significant if one of the following criteria is met:

1. If the intersection operates at an acceptable LOS (e.g., LOS A, B, C, or D for City intersections and LOS A, B, C, D or E for CMP intersections) without the project and degrades to an unacceptable LOS (e.g., LOS E, or F) with the project; or
2. If the intersection operates at an unacceptable LOS (e.g., LOS E, or F for City intersections or LOS F for CMP intersections) without the project and the project increases the delay by five (5) or more seconds.

Project impacts at City of Redwood City unsignalized intersections would be considered significant if one of the following criteria is met:

1. If the intersection operates at an acceptable LOS (e.g., LOS A, B, C, or D) without the project and degrades to an unacceptable LOS (e.g., LOS E, or F) with the project and the traffic volumes at the intersection satisfy the California Manual of Uniform Traffic Control Devices Peak Hour Volume warrant for traffic signal installation; or
2. If the intersection operates at an unacceptable LOS (e.g., LOS E, or F) without the project and the project increases the delay by five (5) or more seconds and the traffic volumes at the intersection satisfy the California Manual of Uniform Traffic Control Devices Peak Hour Volume warrant for traffic signal installation.

The scenarios analyzed in the analysis are as follows:

- **Existing Conditions** – Based on traffic counts taken in March 2016, April 2017, and May 2018 and existing roadway geometry and traffic control in 2018.
- **Existing Plus Project Conditions** – Based on traffic generated by the proposed project added to existing traffic volumes. Existing roadway geometry with proposed project roadway improvements and traffic controls are assumed for this scenario.
- **Background Condition** – Based on traffic from approved projects in the study area (provided by City staff and dated June 2018) added to existing traffic volumes.
- **Background Plus Project Conditions** – Based on traffic from approved projects in the study area and traffic generated by the proposed project added to existing traffic volumes.
- **Cumulative Conditions** – Based on traffic from approved and pending projects in the study area (provided by City staff and dated June 2018) added to existing traffic volumes.
- **Cumulative Plus Project Conditions** – Based on future cumulative year traffic projections and traffic generated by the proposed project.

The following 19 intersections were selected for traffic analysis to evaluate the a.m. and p.m. peak hour traffic. Intersection #9 is the future intersection pursuant to proposed project construction.

1. El Camino Real / Jefferson Avenue
2. El Camino Real / Maple Street
3. El Camino Real / Beech Street
4. El Camino Real / Chestnut Street
5. Franklin Street-Lathrop Street / Maple Street
6. Lathrop Street / Elm Street
7. Lathrop Street / Beech Street
8. Lathrop Street / Chestnut Street
9. Elm Street / Project Driveway
10. Main Street / Maple Street
11. Main Street / Elm Street
12. Main Street / Beech Street
13. Main Street / Chestnut Street
14. Main Street / Pine Street-SR 84 Ramp
15. 15 Middlefield Road / Main Street
16. Middlefield Road / Chestnut Street
17. Woodside Road (SR 84) / Middlefield Road
18. Woodside Road (SR 84) / Bay Road
19. Woodside Road (SR 84) / Broadway

3.16.3 Environmental Impact Analysis

This section discusses potential impacts on traffic and transportation associated with the proposed project and provides mitigation measures where necessary.

Impact TRANS-1 Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Impact Analysis

Construction

The proposed project would be completed over a period of 23 months and would result in construction traffic on nearby roadway network. As noted in Section 2.0, Project Description, 100 workers are estimated during the peak construction phase. Assuming all workers are driving solo to the project site, there would be 100 two-way trips. Since construction traffic would be temporary and spread across the construction duration, the proposed project would not cause streets in the project area to exceed LOS thresholds. Additionally, the proposed project would include preparation of a traffic control plan (TCP) as part of encroachment permits from the City that would include detours, emergency access, and appropriate traffic controls during construction. Therefore, construction impacts would be less than significant.

Operations

Project Trip Generation

Trips generated by the proposed project were based on the average rates for ITE Land Use 710 (General Office Building). Since the project site is within 0.5 miles from the Redwood City Caltrain station, a transit reduction was applied. The proposed project is also located close to downtown and mixed land uses; therefore, an MXD (mixed-use development) reduction was also applied. Table 3.16-2 presents the trip generation for the proposed project. As shown in the table, the proposed project would generate 105 vehicle trips in the a.m. peak hour and 97 vehicle trips in the p.m. peak hour.

Table 3.16-2. Project Trip Generation Summary

ITE Land Use Code	Land Use	Size	Units	Daily Trips	a.m. Peak			p.m. Peak		
					Total	In	Out	Total	In	Out
710	General Office Building	112.113	KSF	1,092	130	112	18	129	21	108
Transit Reduction[1]				-73	-9	-8	-1	-7	-1	-6
Mixed-Use Reduction[2]				-229	-16	-14	-2	-25	-4	-21
Total External Project Trips				**1019**	**105**	**90**	**15**	**97**	**16**	**81**

Notes:

[1] Utilized transit reduction rate from Redwood City Downtown Precise Plan of 7.3% for the a.m. peak and 6.0% for the p.m. peak. Transit reduction rate for daily trips 6.66% (average of a.m. and p.m. reduction).

[2] Utilized mixed-used reduction rate from Redwood City Downtown Precise Plan of 12.3% for the a.m. and 19.1% for the p.m.

Existing Plus Project Level of Service

Traffic operations were evaluated at the study intersections under existing conditions plus traffic generated by the proposed project. Results of the analysis are presented in Table 3.16-3. As shown in the table, all study intersections would function within acceptable LOS standards under this analysis scenario, except for the following intersections:

- #3 – El Camino Real / Beech Street (a.m. Peak Hour)
- #14 – Main Street / Pine Street – SR 84 Ramps (p.m. Peak Hour)
- #17 – Woodside Road (SR 84) / Middlefield Road (a.m. and p.m. Peak Hours)
- #19 – Woodside Road (SR 84) / Broadway (a.m. and p.m. Peak Hours)

This impact would be less than significant as proposed project would not increase the delay by five (5) or more seconds at the intersections operating unacceptably without the proposed project.

Table 3.16-3. Existing Plus Project Intersection Level of Service Summary

#	Intersection	LOS Criteria	Jurisdiction	Control	Existing Plus Project					
					a.m. Peak			p.m. Peak		
					LOS	Delay (sec)[1]	Delay Var	LOS	Delay (sec)[1]	Delay Var
1	El Camino Real / Jefferson Avenue	D	City / Caltrans	Signal	D	52.0	0.2	D	49.0	0.5
2	El Camino Real / Maple Street	D	City / Caltrans	Signal	A	6.5	0.4	A	9.8	0.3
3	El Camino Real / Beech Street	D	City / Caltrans	SSSC	**E**	**36.0**	**0.7**	D	32.3	4.3
4	El Camino Real / Chestnut Street	D	City / Caltrans	Signal	B	14.7	0.0	B	19.5	0.0
5	Franklin Street-Lathrop Street / Maple Stree[t2]	D	City	SSSC/AWSC	A	8.9	-3.0	B	10.7	-4.9
6	Lathrop Street / Elm Street[3]	D	City	-/SSSC	A	9.3	-	B	10.2	-
7	Lathrop Street / Beech Street	D	City	SSSC	B	10.6	0.2	B	10.8	0.1
8	Lathrop Street. Chestnut Street	D	City	SSSC	B	11.6	0.0	B	13.9	0.0
9	Elm Street / Project Driveway (Future)	D	City	SSSC	A	8.9	-	A	9.1	-
10	Main Street / Maple Street	D	City	SSSC	B	11.1	0.3	B	11.0	0.4
11	Main Street / Elm Street	D	City	SSSC	A	9.2	0.1	B	10.5	0.1

#	Intersection	LOS Criteria	Jurisdiction	Control	Existing Plus Project					
					a.m. Peak			p.m. Peak		
					LOS	Delay (sec)[1]	Delay Var	LOS	Delay (sec)[1]	Delay Var
12	Main Street / Beech Street	D	City	SSSC	B	10.8	0.3	B	12.9	0.5
13	Main Street / Chestnut Street	D	City	Signal	B	16.6	0.3	B	19.5	-0.1
14	Main Street / Pine Street-SR 84 Ramps	D	City	SSSC	C	21.1	0.1	**F**	**63.8**	**1.5**
15	Middlefield Road / Main Street	D	City	Signal	C	29.7	0.5	D	35.1	0.2
16	Middlefield Road / Chestnut	D	City	Signal	B	15.5	0.2	B	19.3	0.3
17	Woodside Road (SR 84) / Middlefield Road[4]	E	City / Caltrans	Signal	**F**	**101.4**	**2.2**	**F**	**115.3**	**2.4**
18	Woodside Road (SR 84) / Bay Road	D	City / Caltrans	Signal	D	38.2	0.5	D	38.9	-0.1
19	Woodside Road (SR 84) / Broadway	D	City / Caltrans	Signal	**E**	**75.2**	**0.6**	**F**	**82.4**	**0.8**

Notes:
SSSC – Side-Street Stop Control
AWSC – All-Way Stop Control
Intersections that are operating below acceptable levels are shown in **BOLD**.
[1] The average control delay is reported for signalized intersections. The delay for the worst movement is reported for SSSC intersections.
[2] Intersection #5 – Franklin Street-Lathrop Street / Maple Street becomes an all-way stop control intersection with the proposed project.
[3] Intersection #6 – Lathrop Street / Elm Street is an uncontrolled intersection becomes a side-street stop control intersection with the Project.
[4] Intersection #17 – Woodside Road (SR 84) / Middlefield Road is a CMP intersection with a LOS threshold of E.

Background Level of Service

Intersection LOS was evaluated at the study intersections for both Background and Background Plus Project scenarios and are presented in Table 3.16-4. As shown in the table, all study intersections function within acceptable LOS standards under these scenarios, except for the following intersections:

- #3 – El Camino Real / Beech Street (a.m. Peak Hour for Background Scenario; and a.m. and p.m. Peak hours for Background Plus Project scenario)
- #14 – Main Street / Pine Street – SR 84 Ramps (p.m. Peak Hour for both scenarios)
- #17 – Woodside Road (SR 84) / Middlefield Road (p.m. Peak Hour for both scenarios)
- #18 – Woodside Road (SR 84) / Bay Road (p.m. Peak Hour for both scenarios)
- #19 – Woodside Road (SR 84) / Broadway (a.m. and p.m. Peak Hours for both scenarios)

The proposed project would not increase the delay by five (5) or more seconds at most of the intersections operating unacceptably without the proposed project. The p.m. peak hour LOS for El Camino Real / Beech Street intersection would increase by 5 seconds. However, this intersection is unsignalized and volumes do not satisfy peak hour

volume signal warrant as discussed below in Table 3.16-6. Intersection # 14 Main Street / Pine Street-SR 84 Ramps meets the signal warrant analysis as per Table 3.16-6, however, the increase in LOS is less than 5 seconds. Therefore, this impact would be less than significant.

Table 3.16-4. Background Intersection Level of Service Summary (With and Without Project)

#	Intersection	LOS Criteria	Background				Background Plus Project					
			a.m. Peak		p.m. Peak		a.m. Peak			p.m. Peak		
			LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	Delay Var	LOS	Delay (sec)[1]	Delay Var
1	El Camino Real / Jefferson Avenue	D	D	52.6	D	51.1	D	53.4	0.8	D	51.8	0.7
2	El Camino Real / Maple Street	D	A	7.3	B	10.5	A	7.5	0.2	B	10.8	0.3
3	El Camino Real / Beech Street	D	**E**	**40.5**	D	33.6	**E**	**41.9**	**1.4**	**E**	**38.6**	**5.0**
4	El Camino Real / Chestnut Street	D	B	15.1	C	20.5	B	15.2	0.1	C	20.5	0.9
5	Franklin Street-Lathrop Street / Maple Street[2]	D	C	15.7	C	21.4	A	10.0	-5.7	B	13.0	-8.4
6	Lathrop Street / Elm Street[3]	D	Uncontrolled Intersection				A	9.5	-	B	10.8	-
7	Lathrop Street / Beech Street	D	B	10.7	B	11.3	B	10.8	0.1	B	11.4	0.1
8	Lathrop Street. Chestnut Street	D	B	11.9	B	14.7	B	11.9	0.0	B	14.7	0.0
9	Elm Street / Project Driveway (Future)	D	Future Intersection				A	8.9	-	A	9.1	-
10	Main Street / Maple Street	D	B	11.7	B	11.3	B	12	0.3	B	11.7	0.4
11	Main Street / Elm Street	D	A	9.2	B	10.5	A	9.3	0.1	B	10.6	0.1
12	Main Street / Beech Street	D	B	10.9	B	12.5	B	11	0.1	B	13.0	0.5
13	Main Street / Chestnut Street	D	B	17.6	C	26.3	B	17.8	0.2	C	26.9	0.6
14	Main Street / Pine Street-	D	D	27.3	**F**	**102.9**	D	27.4	0.1	**F**	**104.6**	**1.7**

#	Intersection	LOS Criteria	Background				Background Plus Project					
			a.m. Peak		p.m. Peak		a.m. Peak			p.m. Peak		
			LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	Delay Var	LOS	Delay (sec)[1]	Delay Var
	SR 84 Ramps											
15	Middlefield Road / Main Street	D	C	33.4	D	39.9	C	34.1	0.7	D	40.2	0.3
16	Middlefield Road / Chestnut	D	B	18.2	C	22.0	B	18.4	0.2	C	22.6	0.6
17	Woodside Road (SR 84) / Middlefield Road[4]	E	**E**	**67.7**	**F**	**89.2**	**E**	**69**	**1.3**	**F**	**90.9**	**1.7**
18	Woodside Road (SR 84) / Bay Road	D	D	53.0	**E**	**67.0**	D	53.2	0.2	**E**	**67.3**	0.3
19	Woodside Road (SR 84) / Broadway	D	**F**	**148.5**	**F**	**162.6**	**F**	**149.5**	**1.0**	**F**	**163.7**	**1.1**

Notes:
SSSC – Side-Street Stop Control
AWSC – All-Way Stop Control
Intersections that are operating below acceptable levels are shown in **BOLD**.
[1] The average control delay is reported for signalized intersections. The delay for the worst movement is reported for SSSC intersections.
[2] Intersection #5 – Franklin Street-Lathrop Street / Maple Street becomes an all-way stop control intersection with the proposed project.
[3] Intersection #6 – Lathrop Street / Elm Street becomes a side-street stop control with the Project.
[4] Intersection #17 – Woodside Road (SR 84) / Middlefield Road is a CMP intersection with a LOS threshold of E.

Cumulative Level of Service

Under Cumulative conditions, the following lane geometry improvements were assumed:

- Intersection #9 – Elm Street/ Project Driveway: Northbound approach as the driveway for Block D of the proposed 1601 El Camino Real project.

Intersection LOS was evaluated at the study intersections for both Cumulative and Cumulative Plus Project scenarios and are presented in Table 3.16-5. As shown in the table, all study intersections function within acceptable LOS standards under these scenarios, except for the following intersections:

- #1 – El Camino Real / Jefferson Avenue (a.m. and p.m. Peak Hours for both scenarios)
- #3 – El Camino Real / Beech Street (a.m. and p.m. Peak Hours for both scenarios)
- #5 – Franklin Street-Lathrop Street / Maple Street (p.m. Peak Hour for Cumulative scenario)
- #13 – Main Street / Chestnut Street (p.m. Peak Hour for both scenarios)
- #14 – Main Street / Pine Street – SR 84 Ramps (a.m. and p.m. Peak Hours for both scenarios)
- #17 – Woodside Road (SR 84) / Middlefield Road (a.m. and p.m. Peak Hours for both scenarios)
- #18 – Woodside Road (SR 84) / Bay Road (a.m. and p.m. Peak Hours for both scenarios)
- #19 – Woodside Road (SR 84) / Broadway (a.m. and p.m. Peak Hours for both scenarios)

The proposed project would not increase the delay by five or more seconds at most of the intersections operating unacceptably without the proposed project. However, Intersections #3 El Camino Real / Beech Street, #13 Main Street / Chestnut Street, and #14 Main Street / Pine Street – SR 84 Ramps would increase the LOS by more than five seconds for the p.m. peak. Therefore, this impact would be potentially significant.

Table 3.16-5. Cumulative Intersection Level of Service Summary (With and Without Project)

#	Intersection	LOS Criteria	Cumulative				Cumulative Plus Project					
			a.m. Peak		p.m. Peak		a.m. Peak			p.m. Peak		
			LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	Delay Var	LOS	Delay (sec)[1]	Delay Var
1	El Camino Real / Jefferson Avenue	D	**E**	**75.2**	**E**	**69.2**	**E**	**76.5**	**1.3**	**E**	**71.2**	**2.0**
2	El Camino Real / Maple Street	D	A	8.3	B	11.6	A	8.6	0.3	B	11.8	0.2
3	El Camino Real / Beech Street	D	**F**	**145.5**	**F**	**129.9**	**F**	**144.7**	**-0.7**	**F**	**158.2**	**28.3**
4	El Camino Real / Chestnut Street	D	B	16.7	C	24.4	B	16.7	0.0	C	24.4	0.0
5	Franklin Street-Lathrop Street / Maple Street[2]	D	C	21.9	**E**	**35.4**	B	11.4	-10.5	C	17.2	-18.2
6	Lathrop Street / Elm Street[3]	D	Uncontrolled Intersection				B	10.2	-	B	12.4	-
7	Lathrop Street / Beech Street	D	B	12.3	C	15.4	B	12.5	0.2	C	15.7	0.3
8	Lathrop Street. Chestnut Street	D	B	13.7	C	16.1	B	13.7	0.0	C	16.1	0.0
9	Elm Street / Project Driveway (Future)	D	A	9.4	A	9.4	B	10.5	1.1	B	10.1	0.7
10	Main Street / Maple Street	D	B	13.0	B	12.2	B	13.4	0.4	B	12.7	0.5
11	Main Street / Elm Street	D	A	9.6	B	11.0	A	9.6	0.0	B	11.2	0.2
12	Main Street / Beech Street	D	B	11.8	C	15.4	B	12.0	0.2	C	16.3	0.9
13	Main Street / Chestnut Street	D	D	38.3	**E**	**73.0**	D	41.4	2.6	**F**	**84.4**	**11.4**

#	Intersection	LOS Criteria	Cumulative				Cumulative Plus Project					
			a.m. Peak		p.m. Peak		a.m. Peak			p.m. Peak		
			LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	Delay Var	LOS	Delay (sec)[1]	Delay Var
14	Main Street / Pine Street-SR 84 Ramps	D	**E**	**35.5**	**F**	**163.8**	**E**	**35.8**	**0.3**	**F**	**169.9**	**6.1**
15	Middlefield Road / Main Street	D	D	41.2	D	52.6	D	42.2	1.0	D	53.7	1.1
16	Middlefield Road / Chestnut	D	C	21.4	D	36.0	C	21.6	0.2	D	37.8	1.8
17	Woodside Road (SR 84) / Middlefield Road[4]	E	**F**	**133.1**	**F**	**144.7**	**F**	**136.4**	**3.3**	**F**	**146.7**	**2.0**
18	Woodside Road (SR 84) / Bay Road	D	**F**	105.5	**F**	**128.4**	**F**	**107.2**	**1.7**	**F**	**128.8**	**0.4**
19	Woodside Road (SR 84) / Broadway	D	**F**	**265.4**	**F**	**263.3**	**F**	**267.7**	**2.3**	**F**	**264.7**	**1.4**

Notes:
SSSC – Side-Street Stop Control
AWSC – All-Way Stop Control
Intersections that are operating below acceptable levels are shown in **BOLD**.
[1] The average control delay is reported for signalized intersections. The delay for the worst movement is reported for SSSC intersections.
[2] Intersection #5 – Franklin Street-Lathrop Street / Maple Street becomes an all-way stop control intersection with the proposed project.
[3] Intersection #6 - Lathrop Street / Elm Street becomes a side-street stop control intersection with the Project.
[4] Intersection #17 – Woodside Road (SR 84) / Middlefield Road is a CMP intersection with a LOS threshold of E.

Signal Warrant Analysis

A signal warrant analysis conducted for the intersections is shown in Table 3.16-6. As shown in the table, eight intersections do not meet the signal warrant analysis. Intersections #3 El Camino Real / Beech Street, and #14 Main Street / Pine Street-SR 84 Ramps satisfy peak hour signal warrant, however, other considerations such as other signal warrants and its proximity to the existing signal at Intersection # 13 – Main Street / Maple Street should be evaluated before installing a signal.

Table 3.16-6. Unsignalized Intersections Signal Warrant Analysis

#	Intersection	Existing	Existing Plus Project	Background	Background Plus Project	Cumulative	Cumulative Plus Project
3	El Camino Real / Beech Street	Not Meet	Not Meet	Not Meet	Not Meet	**Meet *(p.m. Peak Hour)***	**Meet *(p.m. Peak Hour)***
5	Franklin Street-Lathrop Street / Maple Street[2]	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet

#	Intersection	Existing	Existing Plus Project	Background	Background Plus Project	Cumulative	Cumulative Plus Project
6	Lathrop Street / Elm Street[3]	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet
7	Lathrop Street / Beech Street	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet
8	Lathrop Street. Chestnut Street	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet
9	Elm Street / Project Driveway (Future)	–	Not Meet	-	Not Meet	_	Not Meet
10	Main Street / Maple Street	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet
11	Main Street / Elm Street	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet
12	Main Street / Beech Street	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet	Not Meet
14	Main Street / Pine Street-SR 84 Ramps	Not Meet	Not Meet	**Meet *(p.m. Peak Hour)***	**Meet *(p.m. Peak Hour)***	**Meet *(a.m. and p.m. Peak Hour)***	**Meet *(a.m. and p.m. Peak Hour)***

Intersection Vehicle Queuing

As congestion increases, it is common for traffic at intersections to form lines of stopped (or queued) vehicles. Queue lengths were determined for each turn lane and the distance that vehicles will back up in each direction approaching an intersection was measured (Appendix H). The City does not have specified standards for queuing in its policy guidelines. Thus, for purposes of this analysis, queuing deficiencies were considered to occur under conditions where the proposed project traffic causes the queue in a left turn pocket to extend beyond the turn pocket by 25 feet or more (e.g., the length of one vehicle) into adjacent traffic lanes that operate (e.g., move) separately from the left turn lane. Where the vehicle queue already exceeds that turn pocket length under pre-project conditions, a queuing deficiency would occur if project traffic lengthens the queue by 25 feet or more. The analysis showed that several existing turn bay storage lengths already exceed under existing conditions and the proposed project does not add to the existing queuing lanes by 25 feet or more. Therefore, impacts would be less than significant.

There is a median on the southbound approach at the intersection of Main Street / Elm Street which restricts vehicles from making an eastbound left turn from Elm Street onto Main Street. Vehicles traveling from the project site to downtown would need to utilize the Maple Street / Franklin Street-Lathrop Street intersection to the west or head south towards the Main Street / Beech Street intersection. This median at Main Street / Elm Street also extends into the intersection, making the northbound left from Main Street onto Elm Street a more difficult maneuver, however existing counts show that vehicles (13 trips in the a.m. peak hour and 9 trips in the p.m. peak hour) still make this maneuver. It is anticipated that 13 trips in the a.m. peak hour and 2 trips in the p.m. peak hour would make this maneuver, resulting in less than 10 seconds of delay for the northbound left-turn movement and less than 5 feet of queuing during the peak hours. Therefore, impacts would be less than significant.

Impact Summary and Mitigation

Based on the results of the traffic analysis, the proposed project impacts are summarized in Table 3.16-7. In the Cumulative Plus Project scenario, the intersection of El Camino Real / Beech Road would operate at an unacceptable LOS F with a worst movement delay of 158.2 seconds in the p.m. peak hour and would increase the delay by more

than 5 seconds. The intersection satisfies the peak hour volumes signal warrant and installing a signal would result in the intersection operating at LOS B with an average intersection delay of 11.0 seconds. However, other considerations such as other signal warrants and its proximity to an existing signal at Intersection #2 –El Camino Real / Maple Street would need to be evaluated before installing a signal. Additionally, installing a signal would require approval from Caltrans. Therefore, Mitigation Measure TRANS-1 requiring left-turn restrictions from Beech Street is the most feasible mitigation. The westbound left-turn movement should be prohibited at least during the peak times when there are high volumes on El Camino Real. This would result in the intersection operating at LOS D with a worst movement delay of 28.4 seconds. The redistribution of traffic due to prohibition of left turn was evaluated and was found not to degrade the operation of adjacent intersections to unacceptable levels.

In the Cumulative Plus Project scenario, the intersection of Main Street / Chestnut Street would operate at an unacceptable LOS F with a worst movement delay of 84.4 seconds in the p.m. peak hour and an increase in delay by more than 5 seconds. This is a significant impact. Mitigation Measure TRANS-2 requires signal timing optimization would result in LOS D with an average intersection delay of 50.8 seconds. Therefore, the impact would be less than significant with the mitigation.

In the Cumulative Plus Project scenario, the intersection of Main Street / Pine Street-SR 84 Ramps would operate at an unacceptable LOS F with a worst movement delay of 169.9 seconds in the p.m. peak hour, increase the delay by more than 5 seconds, and volumes satisfy the peak hour volume signal warrant. This is a significant impact. Mitigation Measure TRANS-3 requires installation of a signal or stop signs along Main Street to convert the intersection control to an all-way stop control. This would result in LOS D with an average intersection delay of 50.8 seconds. Therefore, the impact would be less than significant with mitigation.

Table 3.16-7. Intersection Impact Summary

Impact Type	Location	Scenarios	Impact Significance
LOS	#3 – El Camino Real / Beech Road	Cumulative Plus Project p.m. Peak Hour	Mitigated to Less than Significant
LOS	#13 – Main Street / Chestnut Street	Cumulative Plus Project p.m. Peak Hour	Mitigated to Less than Significant
LOS	#14 – Main Street / Pine Street-SR 84 Ramps	Cumulative Plus Project p.m. Peak Hour	Mitigated to Less than Significant

Vehicle Miles Travelled Analysis

Senate Bill 743 (Steinberg, 2013) required changes to the guidelines implementing CEQA Guidelines (Cal. Code Regs., Title 14, Div. 6, Ch. 3, § 15000 et seq.) regarding the analysis of transportation impacts. Office of Planning and Research proposed changes to the CEQA Guidelines that identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts. Regulatory changes to the CEQA Guidelines that implement SB 743 were approved on December 28, 2018. July 1, 2020 is the statewide implementation date and agencies may opt-in use of new metrics prior to that date. Redwood City has not adopted any thresholds for evaluating VMT. Therefore, the analysis here is limited to a qualitative evaluation.

The project site is a 0.5-mile walk from the Redwood City Caltrain station located on James Avenue, west of the project site. The project site is also well served by bus service. The proposed project is located in a Transit Priority Area and a Priority Development Area (MTC 2018). These areas have been identified as appropriate for additional compact development by Plan Bay Area. CEQA Guidelines Section 15064.3, subdivision (b)(1), states that "generally, projects within 0.5 miles of either an existing major transit stop, or a stop along an existing high-quality

transit corridor should be presumed to cause a less than significant transportation impact". Appendix M of the CEQA Guidelines defines a "major transit stop" as "a site containing an existing rail transit station". Based on the location of the project site, 0.5 miles from the existing Redwood City Caltrain station, the proposed project can be presumed to cause a less than significant transportation impact.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures

MM TRANS-1 **Restrict Left Turns.** Prior to issuance of building occupancy permits, the City shall ensure that the westbound left-turn movement from Beech Street onto El Camino Real should be prohibited at a minimum during the peak times when there are high volumes on El Camino Real. The applicant shall pay the fair share for installing the appropriate signage as determined by the City.

MM TRANS-2 **Signal Optimization.** Prior to issuance of building occupancy permits, the City shall ensure that the signal timing at the intersection of Main Street / Chestnut Street is optimized. The applicant shall pay its fair share for this improvement as determined by the City.

MM TRANS-3 **Install Signal or All-Way Stop Control.** Prior to issuance of building occupancy permits, the City shall ensure a signal is installed at the intersection of Main Street / Pine Street-SR 84 Ramps to convert the intersection control to signal control or install stop signs along Main Street to convert the intersection control to an all-way stop control. The applicant shall pay its fair share for this improvement as determined by the City.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact TRANS-2 Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Impact Analysis

Intersection #17 Woodside Road (SR 84) / Middlefield Road is a CMP intersection with a standard set to LOS E or better. The proposed project would not change the LOS at this intersection under any of the scenarios discussed above and therefore, it would not conflict with the LOS standards established by the Redwood City/Council Association of Governments of San Mateo County CMP.

The CMP requires new development projected to add 100 or more peak hour trips to the CMP roadway network to implement Transportation Demand Management (TDM) measures that would reduce project impacts. Based on the trip distribution shown in Appendix H, the proposed project would add a total of 56 peak hour trips to Intersection #17 Woodside Road (SR 84) / Middlefield Road and does not require preparation of a TDM. However, the Citywide Transportation Plan requires preparation of a TDM for new commercial uses more than 10,000 square feet (Redwood City 2018b). The proposed project includes a TDM plan (Appendix I) that identifies trip reduction methods to be implemented in order to reduce the number of new a.m. and p.m. peak hour single occupant vehicle trips by shifting

project trips to alternative modes of transportation. Therefore, the proposed project would not conflict with any applicable CMP and would have a less than significant impact.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact TRANS-3 Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?

Impact Analysis

The nearest public airport to the project site is the San Carlos Airport, located more than two miles northeast. The proposed project is not located within the airport safety zones identified in the airport land use compatibility plan for any airport. The proposed project would be developed with three floors, which would not disrupt air traffic patterns. Therefore, no impact would occur.

Level of Significance Before Mitigation
No Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
No Impact.

Impact TRANS-4 Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Impact Analysis

During construction, the proposed project would use heavy construction equipment on local roadways and major arterials. The use of roadways by heavy construction equipment can increase the risk to drivers, cyclists, and pedestrians in the project area. The proposed project would require replacement of existing utilities resulting in construction activities in the roadways. An encroachment permit would be obtained from the City for any staging/construction-vehicle parking on adjacent streets. Notices regarding closure to the public of street parking would be posted in compliance with City regulations in advance of use. Any disturbed or staging areas in the City's right-of-way would be returned to pre-construction conditions upon project completion. Therefore, project construction would not create a transportation hazard and the impact would be less than significant.

The proposed project would be compatible with the kind of traffic generated by the surrounding commercial developments in the project vicinity. The proposed project does not propose to make changes to a roadway that would create road hazards or alter design features developed to mitigate such hazards.



The project site is located within walking distance to the Redwood City Caltrain Station as well as the downtown area. As discussed in Section 2.0, Project Description, the proposed project would include on-site and off-site pedestrian improvements consisting of new sidewalks and crosswalks on nearby roads. The proposed crosswalks would be equipped with pedestrian warning devices. In addition, the intersection of Lathrop/Maple/Franklin Streets would be changed to an all-way stop and a side-street stop at Elm Street/Lathrop Street would be added. Caltrain tracks are located immediately north of the project site. Pedestrians may cross the Caltrain corridor tracks on either side of Main Street or on either side of Maple Street using the at-grade pedestrian crossing. While implementation of the project's pedestrian improvements would promote walkability and connectivity, the Traffic Impact Analysis identified that there are still missing pedestrian facilities surrounding the project site such as no marked crosswalks at the intersection of Maple Street/Franklin Street-Lathrop Street or signage for the pedestrian crossings at Maple Street and Main Street. Therefore, the proposed project would be required to construct these pedestrian facilities prior to issuance of building occupancy permits as discussed in Mitigation Measure TRANS-4. As such, the proposed project would not create a hazard to pedestrian facilities and this impact would be less than significant with implementation of Mitigation Measure TRANS-4.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measure

MM TRANS-4 **Pedestrian Crossing Improvements.** Prior to issuance of building occupancy permits, the City shall ensure that the applicant has constructed the following pedestrian improvements:

- Update the site plan to include marked crosswalks and install accessible curb ramps on all legs of the intersection of Maple Street/Franklin Street – Lathrop Street.
- Add signage (e.g., R15-8 LOOK) for the pedestrian railroad crossing at Maple Street and Main Street.
- Install two-stage pedestrian crossing at Maple Street/Main Street and improve sidewalks on the east side of Maple Street between Main Street and the railroad.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

Impact TRANS-5 Result in inadequate emergency access?

Impact Analysis

The proposed bridge would be designed in accordance with the AASHTO standards and provide a 27-foot-wide clearance to allow Fire Apparatus Access to cross the proposed bridge and access the office building's main entrance. A designated fire access zone would be provided on the south side of the project site along Elm Street. The Redwood City Fire Department and Redwood City Community Development Department coordinate the review of building permits. All access driveways would be designed in accordance with City's standards and would have to be reviewed and approved by the fire department prior to construction. The proposed project plans would include approved fire and emergency access through all phases of construction and operation per the provisions of the City's Fire Code, which regulates emergency access. Therefore, the proposed project would not result in inadequate emergency access and a less than significant impact would occur.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact TRANS-6 Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

Impact Analysis

The proposed project includes bicycle racks, pedestrian improvements, and bicycle improvements that would encourage other modes of transportation. The citywide transportation plan RWCMoves identifies several bicycle improvement projects along El Camino Real, Main Street, Maple Street, and Lathrop Street to encourage more bicycle usage in the area. The proposed project includes construction of some of these improvements adjacent to the site such as the Class III bicycle route signage and shared bicycle lanes along Lathrop Street, however, it would still conflict with the with City's plans and policies as it does not include improvements on Maple Street as required by RWCMoves. Mitigation Measure TRANS-5 would ensure that the proposed project pays its fair share towards the bicycle cycle tracks on Maple Street and improvement projects near the project site. In addition, the proposed project should maintain 35.5 feet of space in the traveled way on Maple Street to accommodate the planned cycle tracks and required fire access as noted in the traffic study (Appendix H). Based on the review of site plans dated June 7, 2018, Maple Street has a total right-of way of 60 feet and would be able to accommodate both bike lane and sidewalk. Impacts would be less than significant with mitigation.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures

MM TRANS-5 **Fair Share for Bicycle Improvements.** Prior to issuance of building occupancy permits, the City shall ensure that the applicant has paid its fair share towards bicycle cycle tracks on Maple Street and improvements projects near the project site.

MM TRANS-6 **Maple Way Improvements.** Prior to issuance of grading permits, the City shall review the final site plans to ensure that 35.5 feet of space in the traveled way is maintained on Maple Street to accommodate the planned cycle tracks and required fire access.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

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3.17 TRIBAL CULTURAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined by Public Resources Code section 21047 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

3.17.1 Environmental Setting

Refer to Section 3.5, Cultural Resources, for the ethnographic contextual information.

3.17.2 Methodology

The cultural resources investigations carried out for the proposed project included background research conducted at the NWIC of the CHRIS (Appendix D), consultation with Native American Tribes (see Section 3.5, Cultural Resources), and a review of historic maps and ethnographic documents.

The record search included a review of all cultural resources and reports within 0.25 miles of the project area (Section 3.5). The records search was conducted by reviewing the Office of Historic Preservation (OHP) records, base maps, historic maps, and literature for San Mateo County on file at the NWIC. Other sources reviewed included the OHP Historic Properties Directory, California Inventory of Historical Resources, and ethnographic information. No information regarding potential tribal cultural resources in or near the project location were identified through these efforts.

As required under CEQA, and as part of the due diligence efforts in advance of an environmental document, WSA contacted the NAHC on July 20, 2017 to request information on known Native American traditional or cultural



properties within the project location, and to request a list of individuals or groups with cultural affiliation to the project location (WSA 2017). The NAHC responded by letter on July 31, 2017, stating that a record search of the Sacred Lands File for the project location yielded negative results, but that the area is sensitive for cultural resources (NAHC 2017).

A list of five Native American contacts was included in the response. WSA sent certified letters to the five individuals on August 1, 2017 requesting comment on the proposed project. Follow-up phone calls were made on August 15, 2017, and two of the five contacts were reached. A second round of phone calls to the remaining three individuals who could not be reached was made on August 22, 2017. Appendix D contains the documents related to consultation with the NAHC and the tribal representatives. Two individuals, Irene Zwierlein and Andrew Galvan, recommended an archaeological and Native American monitor to be present on-site during ground disturbing activities (WSA 2017).

3.17.3 Environmental Impact Analysis

This section discusses potential impacts on tribal cultural resources associated with the proposed project and provides mitigation measures where necessary.

Impact TRIB-1	**Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined by Public Resources Code Section 21047 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:**
i)	**Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or**
ii)	**A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?**

Impact Analysis

The archival research, the NWIC records search, and the archaeological field survey performed as part of the cultural resource analysis did not identify any known tribal cultural resources (TCR) as defined by PRCs 21047 or 5020.1(k) within the project location. However, there is a potential for encountering previously undiscovered tribal cultural resources during project implementation, due to the proximities of Redwood Creek and a prehistoric archaeological resource to the project location. Additionally, the NAHC indicated that the area is sensitive for cultural resources (NAHC 2017), and two of the Native American contacts recommended an archaeological and Native American monitor to be present on-site during ground disturbing activities (WSA 2017).

The proposed project is not anticipated to have an impact on any known or potential TCRs. However, ground disturbance and subsurface construction activities such as trenching, and grading associated with the proposed project could potentially damage or destroy previously undiscovered TCRs. Mitigation Measures CUL-1 and CUL-2 require cultural resource awareness training and construction monitoring by a qualified archaeologist and Ohlone tribal monitor (Mitigation Measure CUL-1) and the implementation of standard inadvertent discovery procedures

(Mitigation Measure CUL-2) to reduce potential impacts to previously undiscovered TCRs. With the implementation of Mitigation Measure CUL-1 and Mitigation Measure CUL-2, potential impacts would be reduced to a level of less than significant.

Level of Significance Before Mitigation
Potentially Significant Impact.

Mitigation Measures
Mitigation Measures CUL-1 and CUL-2 are required.

Level of Significance After Mitigation
Less Than Significant Impact with Mitigation.

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3.18 UTILITIES AND SERVICE SYSTEMS

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☒	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, State, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

3.18.1 Environmental Setting

Existing potable water lines, sanitary sewer lines, and stormwater system facilities are maintained by the Redwood City Public Works Services Department. The City purchases all of its potable water from the San Francisco Public Utilities Commission (SFPUC) Regional Water System. Redwood City's recycled water system provides non-potable water supply. Recycled water infrastructure is not currently available at the project site. The proposed project would be designed to comply with Municipal Code Chapter 38, Article VIII (Recycled Water Use) by providing dual plumbing system for toilets, trap primers, and landscaping would be connected to the City's domestic water system until recycled water is available.

The proposed project would be provided with water service by the City of Redwood City using existing water mains. To accommodate planned development at the project site the proposed project is proposing to abandon the existing 4-inch main on Elm Street and replace it with a new 8-inch water main to serve the proposed project. It is expected that the proposed project's water demand would be 14,737 gpd (BKF Engineers 2019). In accordance with state law, the City has adopted an Urban Water Management Plan (UWMP), which compares projected water use to available water supply sources over the next 20 years. The UWMP is updated every 5 years. The most recent UWMP is dated



June 2016. The UWMP evaluates the past, current, and projected water use along with water supply projections through 2040 for normal, single-dry, and multi-dry years. According to the 2016 UWMP, future water supply would be adequate to offset future water demands during all three scenarios through 2040 (Redwood City 2016).

Silicon Valley Clean Water's Wastewater Conveyance System takes wastewater from Redwood City's collection system and pumps the wastewater to its wastewater treatment plant, South Bayside System Authority treatment plant (SBSA) (Silicon Valley Clean Water). Once treatment is complete effluent is used for landscape irrigation (recycled water system) or pumped into the San Francisco Bay. Wastewater flows are defined as average dry weather flow (ADWF) and peak wet weather flow (PWWF). ADWF is the average flow that occurs on a daily basis with no evident reaction to rainfall. PWWF is the highest measured hourly flow that occurs during wet weather. Wastewater flows can vary with precipitation levels, insofar as rainwater can enter the wastewater collection system through infiltration and inflow (I/I) during significant rain events. The SBSA treatment plant has an operating capacity of 29 million gallons per day (mgd) average dry weather flow (ADWF). The plant is permitted by the RWQCB to discharge 29 mgd ADWF into San Francisco Bay. The current permitted peak wet weather capacity of the SBSA facility is 71 mgd (Redwood City 2016).

Recology of San Mateo County is the City's selected contractor to handle all solid waste collection for the City (Redwood City 2016). Collected solid waste at the project site would be transported to the South Bayside Transfer Station (SBTS), located in the City of San Carlos.

3.18.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the General Plan, General Plan EIR, City of Redwood City 2015 Urban Water Management Plan, and Section 2.0 Project Description of this ISMND.

3.18.3 Environmental Impact Analysis

This section discusses potential impacts on utilities and service systems associated with the proposed project and provides mitigation measures where necessary.

Impact UTIL-1 Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Impact Analysis

Wastewater generated by the proposed project would be treated by the WWTP, which operates according to the regulations of the San Francisco Bay RWQCB and the Clean Water Act. Redwood City has water conservation policies in place, including the Water Shortage Contingency Plan and the Water Conservation Plan, which would minimize the amount of wastewater generated. Compliance with these regulations would ensure that the proposed project would not exceed the SVCW and RWQCB wastewater treatment requirements; therefore, impacts would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact UTIL-2 Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?

Impact Analysis

The proposed project would generate additional wastewater required to be treated at the WWTP. Currently, wastewater needs for the site are estimated at 268 gallons per day for the existing on-site commercial building (Appendix A). The proposed project is estimated to produce 14,006 gallons of wastewater per day (Appendix A). The WWTP currently operates below its designed flow capacity of 29 mgd of sanitary base flow (SBF) ADWF and 71 mgd during PHWWF. According to the Urban Water Management Plan, Redwood City has maximum capacity rights of 11.4 mgd ADWF and 30.5 mgd PHWWF at the SVCW treatment plant (Redwood City 2016). As of April 2010, the City had purchased about 12.3 mgd of its total ADWF allocation. Between 1995 and 2006, Redwood City's total average annual dry weather inflows to the SBSA ranged from 7.5 to 9 mgd. During the summer of 2008, the average dry weather flow from Redwood City was about 7.3 mgd. All of these figures are well below the City's purchased ADWF capacity (Redwood City 2010a). The proposed project would generate 14,006 gpd or 0.014 mgd of wastewater, which would be a fraction of the available capacity. Since the WWTP is operating well below its maximum capacity, the project would not result in the WWTP exceeding wastewater treatment requirements; therefore, impacts would be less than significant.

As stated in the project description, approximately 250 gallons of water per day (gpd) is currently provided to the project site by an existing 4-inch water main in Elm Street and an 8-inch water main in Maple Street. However, the existing 4-inch water main in Elm Street does not currently meet the City's minimum size requirements for providing domestic water. Therefore, the proposed project is proposing to abandon the existing 4-inch water main on Elm Street and replace it with a new 8-inch water main to serve the proposed project. It is expected the proposed project's water demand would be 14,737 gpd (BKF Engineers 2019).

The 2016 UWMP calculates the City's past, current, and projected water use and water supply through 2040. According to the UWMP, future water supply would be adequate to offset future water demands from planned development during normal, single-dry, and multi-dry years through 2040 (Redwood City 2016). The proposed project would, therefore, be adequately served by the City's water supply and would not require the construction of new water treatment facilities or expansion of existing facilities; therefore, impacts would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.



Impact UTIL-3 Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?

Impact Analysis

Stormwater runoff at the project site is collected by a 12-inch outfall that releases to the on-site concrete drainage channel. The proposed project would install a new 12-inch stormwater drain line and connect it to the existing 12-inch outfall that drains to the concrete drainage channel. Low impact development treatment measures such as flow-through planter boxes and self-retained landscape areas would be incorporated. Since the stormwater improvements would take place on-site and connect to the existing outfall, there would be no significant environmental impact and impacts would be a less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact UTIL-4 Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Impact Analysis

The 2016 UWMP calculates the City's past, current, and projected water use and water supply through 2040. According to the UWMP, the future water supply would be adequate to offset future water demands from planned development during normal, single-dry, and multi-dry years through 2040 (Redwood City 2016). The UWMP contemplated the build out of the uses and densities that were envisioned in the City's General Plan and, thus, a project-specific water supply analysis is not required. Additionally, the proposed project would be required to comply with the water conservation requirements codified in Chapter 38 of the Municipal Code. Therefore, the impact would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact UTIL-5	**Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

Impact Analysis

The WWTP has a permitted treatment capacity of 29 mgd. As discussed above, Redwood City has been allocated about 11.4 mgd ADWF and 30.5 mgd PHWWF at the SBSA treatment facility. According to the General Plan population projections and employment base projections, the City estimates that the General Plan would account for a population increase to 116,732 by the year 2030. The total estimated average dry weather flow for the plan area in 2030 would be 8.17 mgd, which is well below the City's average dry weather capacity allocation of 11.4 mgd (Redwood City 2010a; Redwood City 2016). The proposed project would generate 14,006 gpd or 0.014 mgd of wastewater, which would be a fraction of the available capacity. Considering the projections included in the General Plan and the amount of wastewater that would be generated by the proposed project, impacts would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact UTIL-6	**Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?**

Impact Analysis

Based on the CalEEMoD default estimates, the proposed project would generate no more than 1-ton per day of solid waste that would be disposed at the South Bayside Transfer Station in San Carlos. Ninety percent of the solid waste from Redwood City is then sent to the Ox Mountain Sanitary Landfill, located east of Half Moon Bay (Redwood City 2010a). The landfill is currently at 37 percent of its total capacity (as of December 2015), is permitted to accept 3,598 tons of waste per day and has a remaining capacity of 22 million cubic yards. Due to the substantial amount of available capacity remaining at Ox Mountain Sanitary Landfill, sufficient capacity would be available to accommodate the proposed project's solid waste disposal needs. Therefore, a less than significant impact related to solid waste would occur.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

Impact UTIL-7 Comply with federal, state, and local statutes and regulations related to solid waste?

Impact Analysis

The proposed project would include solid waste and recycling facilities at a readily available location. State Assembly Bill 939 requires diversion of 65 percent of construction waste materials generated during the project. Municipal Code Chapter 9, Article XI (Recycling and Salvaging of Construction and Demolition Debris) also requires the construction contractor to divert a minimum of 60 percent of the total construction and demolition debris. The applicant would prepare and submit a Waste Management Plan (WMP) for approval by the City prior to the issuance of building permits. The WMP shall identify the types of construction and demolition debris materials that would be generated for disposal and recycling. The proposed project would comply with all applicable local, state, and federal statutes and regulations related to solid waste. Therefore, the impacts would be less than significant.

Level of Significance Before Mitigation
Less Than Significant Impact.

Mitigation Measures
No mitigation is necessary.

Level of Significance After Mitigation
Less Than Significant Impact.

3.19 MANDATORY FINDINGS OF SIGNIFICANCE

	Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b)	Have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental impacts of a project are considerable when viewed in connection with the impacts of past projects, the impacts of other current projects, and the effects of probable future Projects)?	☐	☒	☐	☐
c)	Have environmental impacts which will cause substantial adverse impacts on human beings, either directly or indirectly?	☐	☒	☐	☐

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Impact Analysis

As evaluated in this ISMND, the proposed project would not substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory. Mitigation Measures BIO-1, CUL-1, CUL-2, CUL-3, and GEO-2 have been included herein to reduce potential impacts to special-status species and habitats, and inadvertent discovery of cultural resources to a less than significant level.



b) Does the project have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental impacts of a project are considerable when viewed in connection with the effects of past projects, the impacts of other current projects, and the impacts of probable future projects)?

Impact Analysis

The General Plan EIR evaluated the cumulative effects associated with growth and development in the City. The proposed project would not result in any new cumulative impacts not previously identified in the General Plan EIR. All cumulative impacts resulting from the proposed project related to air quality, geology, hydrology, noise, and traffic would be mitigated with implementation of Mitigation Measures AIR-1, AIR-2, GEO-1, NOI-1, NOI-2, TRANS-1, TRANS-2, TRANS-3, TRANS-4, TRANS-5, and TRANS-6.

c) Does the project have environmental impacts which will cause substantial adverse impacts on human beings, either directly or indirectly?

Impact Analysis

An air quality analysis and an HRA were performed for the proposed project. All environmental impacts which would cause substantial adverse impacts on human beings, either directly or indirectly would be mitigated with the implementation of Mitigation Measures AIR-1 and AIR-2.

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APPENDICES

Appendix A PRELIMINARY ENGINEERING STUDY

BkF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

Preliminary Engineering Study

1180 Main Street
Redwood City, California 94063

April 26, 2018

Revised June 27, 2018

Revised February 11, 2019

PREPARED FOR:

Premia 1180 Main, LLC
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BkF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

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BkF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

1. INTRODUCTION

BKF has prepared a Tentative Map for the 1180 Main Street development as part of the planning application for the project. The project comprises 1.30 acres bounded by Elm Street to the South, Lathrop Street to the Southwest, Maple Street to the Northwest, Peninsula Corridor Joint Power Board to the Northeast and Main Street to the Northeast. The proposed development includes construction of a 3 story commercial building and a 1 level subterranean parking garage. Surface improvements surrounding the development include replacement of the sidewalk, curb, and gutter along Maple Street, Lathrop Street, Elm Street, and Main Street. New utility laterals will also be installed to serve the new development.

2. EXISTING & PROPOSED BOUNDARY CONDITIONS

The existing project site consists of 2 lots. Lot 1 is APN 053-147-060. Lot 2 is APN 053-147-070. The Tentative Map has proposed merging these 2 lots into a single parcel. Proposed easements for public access and emergency vehicle access are included on the proposed boundary sheet.

3. DOMESTIC & RECYCLED WATER

3.1 Domestic Water

The existing site is served by water services connected to an existing 4" main in Elm Street and to an existing 8" main in Maple Street. Water demand for the existing commercial building was estimated using Attachment Q from the City of Redwood City Engineering Standards, which is included as an attachment to this narrative. The existing indoor water demand is estimated at 250 gallons per day (gpd).

The water demand for the proposed project was also estimated using Attachment Q. Based on a total gross square footage of 110,000 the estimated project demand is 14,737 gpd.

Proposed Project Water Demand = 14,737 gallons per day (gpd)
Existing Water Demand = 250 gallons per day (gpd)
Net Increase in Water Demand = 14,487 gallons per day (gpd)

There is an 8" asbestos-cement pipe (ACP) water main in Main Street, an existing 4" cast iron pipe (CIP) water main in Elm Street, an 8" polyvinyl chloride pipe (PVC) water main in Maple Street and an 8" cast iron pipe (CIP) water main in Lathrop Street. The project site is currently served by water laterals connected to the 4" main in Elm

Street and to an existing 8" main in Maple Street. The 4" water main in Elm Street does not meet City requirements for minimum size of domestic water mains. For this reason, the project is proposing to abandon the 4" main along the project frontage on Elm Street from the intersection of Lathrop Street to where the project's new water lateral connects to the main. This section of the water main will be upgraded to a new 8" domestic water main. The proposed development will be served by a new 8" domestic water main on Elm Street.

3.2 Recycled Water

City Ordinance No. 2335 requires the use of recycled water for landscape irrigation and building plumbing. The proposed building will provide dual plumbing that will include a separate plumbing system for water closets, urinals, trap primers, and landscaping irrigation. Because recycled water service has not been extended to the vicinity of the project site, both building plumbing systems will be connected to the domestic water system until recycled water is available. At the time when recycled water is available, the building's dual plumbing will be disconnected from the City's domestic water main, and connected to the recycled system to serve the eligible plumbing fixtures, with separate backflow prevention and meters.

4. FIRE SERVICE

4.1 Fire Code Requirements

A fire protection engineer will need to be consulted to determine required fire flow requirements for the project. However, for planning purposes BKF has performed a preliminary review of the fire code as it relates to the proposed development of the site. The commercial building has a required fire flow of 4,750 gpm as determined by total square footage. Summarized below is the required fire flow, as determined by Table B105.1 of the 2016 California Fire Code.

Construction Type: II-A
Total Floor Area: 110,000 sf
Required Fire Flow: 4,750 gpm for 4 hours
Required Fire Flow (assuming 50% flow reduction for sprinklers): 2,375 gpm.

Based on a water flow test provided by the City of Redwood City on May 19, 2016, the flow available from the City's domestic water system at the existing hydrant at the corner of Main and Elm Streets is 2,871 gpm. A second flow test for the existing hydrant at the corner of Lathrop and Elm Streets provided a flow of 1,780 gpm at 20

psi. There generally appears to be adequate flow in the area. However, the project will need to work with a fire consultant and the fire department to confirm the existing available flow is adequate for the building, since the second test resulted in a flow less than that required by preliminary fire code calculations.

The required number of fire hydrants for a fire flow of 2,375 gpm is 3 hydrants with an average spacing of 450 feet, according to Table C102.1 of the 2016 California Fire Code. There are 3 existing hydrants along the project frontages. As part of the development, the project will install a new fire hydrant on Elm Street, a new fire hydrant on Maple Street, and a new wharf hydrant along the northern side of the proposed building, providing a total of 6 hydrants. This exceeds the required total of 3 hydrants to serve the proposed project.

4.2 Fire Access

Based on Section D104 and D105 of the 2016 California Fire Code, the site requires two aerial fire apparatus access roads. According to section D105.3, at least one of these roads must be positioned parallel to one entire side of the building. Elm Street and Maple Street provide the required 2 means of fire access to the building, with Elm Street being positioned parallel to one entire side of the building.

5. SANITARY SEWER

5.1 Existing Sanitary Sewer

There are existing sanitary sewer facilities in Elm Street, Lathrop Street, Main Street and Maple Street. There is an 8" vitrified clay pipe (VCP) sanitary sewer main in Main Street, a 6" vitrified clay pipe (VCP) sanitary sewer main in Elm Street (size is assumed, as it is not shown on City Base Map G08), 8" VCP sanitary sewer main in Lathrop Street, and a 10" VCP sanitary sewer main in Maple Street. The project site is currently served by a sewer lateral connecting to the 6" sanitary sewer main in Elm Street and to the 10" sanitary sewer main in Maple Street.

Existing sewer generation has been calculated using Attachment L of the City of Redwood City Engineering Standards and is included as Attachment 3 to this narrative. The existing average daily flow for the site is 268 gallons per day (gpd). The peak hourly flow during business hours is 0.88 gallons per minute (gpm) and the peak hourly flow during off-hours is 0.38 gpm.

5.2 Proposed Sanitary Sewer and Existing System Capacity

The proposed project will install a new sanitary sewer lateral connecting to the existing 6" main in Elm Street, which conveys sewer flows to the 8" main in Lathrop, and eventually to the 10" main in Maple Street. Proposed sewer generation for the project has been calculated using Attachment L from the City of Redwood City Engineering Standards. The proposed average daily flow is 14,006 gpd, which represents an increase of 13,738 gpd over existing conditions. The peak hourly flow during business hours is 48.6 gallons per minute (gpm) and the peak hourly flow during off-hours is 19.5 gpm.

BKF reviewed the City of Redwood City's 2008 Sanitary Sewer Master Plan (2008 SSMP) and the 2013 Sanitary Sewer Master Plan Update (2013 SSMP) to determine if capacity deficiencies were identified for the City's Sanitary Sewer collection system in the vicinity of the site. The only sanitary sewer main along the project frontage modeled as part of the master plans was the 10" sanitary sewer main in Maple Street. This is due to the fact that the mains in Elm and Lathrop Streets are smaller pipes. The 2008 Sanitary Sewer Master Plan identified a Capacity Improvement Project for this 10" sanitary sewer main in Maple Street (CIP #11 in the 2008 SSMP). However, review of Figures 7-12 of the 2013 SSMP indicate that the Maple Street sanitary sewer main is capable of conveying peak wet weather flows for the 10 year-24 hour design storm under future build-out conditions with a flow depth to pipe diameter ratio (d/D) between 0.76 and 1.00. Since the pipe is able to convey anticipated peak wet weather sanitary sewer flows without surcharging, it would appear that there is capacity for the expected project flows.

In order to mitigate the increase in sewer generation associated with the project, the City requires that the Project pay a fee that goes toward funding the City's Capital Improvements Program (CIP). The fee is based on sanitary sewer line remediation costs to reduce rainfall dependent inflow and infiltration (RDI/I) equal to the additional sewage generated by the project. This reduction in RDI/I offsets the increased sewage generation created by the project, resulting in a net-zero impact to the City's sanitary sewer system.

The City's Sewer Master Plan (dated 2008, including the 2013 update), Figures 7 & 8 show that the pipes downstream of the project will have a flow depth to pipe diameter ratio (d/D) less than 0.5 for the existing and future Peak Dry Weather Flows. Figures 9 & 10 show that the downstream pipes have a d/D ratio of 0.51-0.75 for the existing and future Peak Wet Weather Flows for the 5 year, 8-hour design storm.

Figures 11 & 12 show that several downstream pipes have d/D ratio of 0.76-1.00 for the existing and future Peak Wet Weather Flows for the 10 year, 24-hour design storm. It is our understanding that when the Maple Street Pump station constraint is considered, the downstream pipe d/D ratio is 0.51-0.75 for the future Peak Wet Weather Flow at the 5 year, 8-hour event, and 0.76-1.00 for the 10 year, 24-hour future Peak Wet Weather Flow. It is our understanding that the project will contribute a sewer impact fee to the City, which is meant to offset the wet weather flow effects from inflow and infiltration into the sewer system (by Capital Improvement Project implementation to limit inflow and infiltration), with the intent that the projects impact on the system would be mitigated by that I/I improvement. Additionally, it is our understanding that the CEQA process and future evaluation of the project sewer generation will be formally analyzed to determine impacts and condition of the downstream sewer mains.

6. STORM DRAINAGE

6.1 Site Drainage

The existing site consists of an existing building, a lined concrete drainage channel (within a 32' existing Storm Drain Easement), and existing structural slab adjacent to the drainage channel. The site is approximately 14% impervious. Most of the storm runoff infiltrates into the pervious ground surface. The storm runoff from the impervious surfaces is collected by a 12" outfall that releases to the concrete drainage channel. Some runoff sheet flows towards the Peninsula Corridor Joint Powers Board Caltrain track at the Northern side the property.

The proposed project will increase the amount of impervious areas, which will result in an increase in stormwater runoff. The proposed building and onsite hardscape will be drained by an onsite storm drain line, connecting to the 12" outfall that drains to the drainage channel. Before discharging to the City storm drain, runoff from the site will flow through detention and treatment measures as discussed below in sections 6.2 and 6.3.

6.2 Detention Sizing

The City of Redwood City requires detention of project stormwater so that the flow rate of stormwater leaving the site under proposed conditions during the 30-year storm event does not exceed the 10-year flow rate under existing conditions. The stormwater detention sizing for this project is estimated by using the City's Engineering Design Standard Attachment O. The methodology includes the

calculation of runoff coefficients based on the amount of impervious surfaces in the pre-development and post-development conditions.

Preliminary calculations indicate that the volume of storm water required for detention is 1,329 cubic feet (cf). This volume of stormwater will be detained within an oversized portion of the onsite storm drain line. Based on the required detention volume of 1,329 cf, 195 LF of 42" diameter storm drain pipe at the downstream end of the onsite system would provide adequate storage. A total volume of 1,433 cf of storage is provided by onsite pipes, which exceeds the minimum detention volume per City standards. The last onsite manhole will include a weir, with orifice to restrict flows to no more than the existing 10-year flow rate.

6.3 Stormwater Treatment

In accordance with the Clean Water Act regulations, the development is required to review and implement permanent post-construction storm water Best Management Practices (BMPs) in accordance with the Provision C.3 permit and San Mateo Countywide Storm Water Pollution Prevention Program requirements. To meet the C.3 requirements, the Project would have to incorporate traditional Low Impact Development (LID) treatment measures in the system design. These LID measures typically include bioretention areas or flow-thru planter boxes that would occupy approximately 4% of the project site.

The proposed stormwater management treatment strategy involves using a flow-through planter along the Caltrain side of the building to treat runoff collected from the building roof. A second flow-through planter is provided adjacent to the grand stair at Maple Street to treat runoff from the stair and terrace area. The bridge area and pathway connection to Lathrop Street will be directed to adjacent landscape areas and will be considered self-retaining areas. For storms larger than the treatment storm, stormwater will flow through the media filter vault, bypassing the filter cartridges, and into Redwood Creek.

6.4 Flood Protection - FEMA

The site is classified as "Zone X" – Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood according to FEMA Map number 06081C0301E Panel 301 of 510, dated October

16, 2012. The drainage channel flowing through the project site is classified as "Zone A" - 1% annual chance flood discharge contained in channel.

Since the project is not inside the 100-year and 500-year flood zones, processing with FEMA will not be required for development on the site.

7. CONCLUSIONS

BKF has provided preliminary utility, grading and stormwater design for this proposed development and has found that the site is capable of supporting the proposed development. It is our determination that based on the information available at this time, the existing public infrastructure is adequate to serve the proposed development. The site can be readily served by all required utilities and public services and will have a less than significant impact on the existing sanitary sewer, domestic water, and storm drain systems. The Tentative Parcel Map contains the proposed site work, utility infrastructure and mapping that facilitates the installation of this project and is included for reference.

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ATTACHMENT 1

Water Demand Projection Worksheet
(City of Redwood City Attachment Q)

(Existing Conditions)

ATTACHMENT Q (1 of 3)

WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1180/1190 Main Street
JOB NUMBER _____
JOB LOCATION _____

CAL. BY JYJ
CHKD. BY _____
DATE 02/22/18

INDOOR WATER DEMAND PROJECTION

A. RESIDENTIAL

1. Multi - Family
_____ Units X 2.2 Persons = _____ Persons

2. Single Family
_____ Units X 3.4 Persons = _____ Persons

_____ Persons X 60* GPD = _____ **GPD Projected**

B. OFFICE/COMMERCIAL

1,924 sqft X 0.13 gpd/sqft = 250 **GPD Projected**

C. HOTEL

_____ rooms X 195 gpd/room = _____ **GPD Projected**

D. RESTAURANTS

_____ seats X 30 gpd/seat = _____ **GPD Projected**

E. ALL OTHERS SEE PAGE 3:

= _____ **GPD Projected**

LANDSCAPING WATER DEMAND PROJECTION

A. RESIDENTIAL

17 gpd X _____ persons = _____ **GPD Projected**

B. COMMERCIAL

_____ sqft X 3.5 cuft of water /sqft of landscape per year = _____ **CUFT/YR**

To convert to GPD:

_____ cuft/yr X 7.48 gal/cuft X 1 yr/365 days = _____ **GPD Projected**

TOTAL DOMESTIC WATER DEMAND PROJECTION

INDOOR + LANDSCAPING PROJECTION = 250 **GPD Projected**

* From SFPUC Demand Study by URS, " Projected Water Usage for BAWSCA Agencies " , Tech Memo of August 2006.

ATTACHMENT Q (2 of 3)

WATER DEMAND PROJECTION WORKSHEET
OCCUPANT LOADS

JOB TITLE _____ CAL. BY _____
JOB NUMBER _____ CHKD. BY _____
JOB LOCATION _____ DATE _____

DESIGNED USE OF THE FACILITY	OCCUPANT LOAD OF FLOOR AREA
A. SCHOOL/CLASSROOM	20 sqft/person
B. HEALTH CLUB	50 sqft/person/shift (3 shifts per day)
C. MANUFACTURING AREAS	200 sqft/person
D. NURSERIES (DAY-CARE)	35 sqft/person
E. STORAGE FACILITIES	300 sqft/person

ATTACHMENT Q (3 of 3)

WATER DEMAND PROJECTION WORKSHEET
UNIT LOADS

JOB TITLE _____ CAL. BY _____
JOB NUMBER _____ CHKD. BY _____
JOB LOCATION _____ DATE _____

TYPE OF ESTABLISHMENT	VOLUME OF CONSUMPTION/DAY
Assembly Halls	2 gal per seat
Bowling Alley	75 gal per lane
Churches	7 gal per seat
Dance Halls	2 gal per person
General Hospitals	0.27 gal per sqft
Health Clubs	25 gal per person
Laundries	400 gal per machine
Manufacturing (excluding industrial usage)	30 gal per person/shift
Motels with bath, toilet and kitchen wastes	170 gal per room
Nursing homes/Daycare	75 gal per person
Medical Offices (other than hospitals)	0.18 gal per sqft
Research and Development	0.21 gal per sqft
Schools	35 gal per person
Service Station	750 gal per bay
Storage facilities	1 gal per person
Stores (Retail type)	450 gal per 25 ft frontage
(Food -- non-restaurant type)	900 gal per 25 ft frontage
Trailer parks or tourist camps (with built-in bath)	50 gal per person

(Proposed Conditions)

ATTACHMENT Q (1 of 3)

WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1180/1190 Main Street
JOB NUMBER _____
JOB LOCATION _____

CAL. BY JYJ
CHKD. BY _____
DATE 02/22/18

INDOOR WATER DEMAND PROJECTION

A. RESIDENTIAL

1. Multi - Family
_____ Units X 2.2 Persons = _____ Persons

2. Single Family
_____ Units X 3.4 Persons = _____ Persons

_____ Persons X 60* GPD = _____ **GPD Projected**

B. OFFICE/COMMERCIAL

110,000 sqft X 0.13 gpd/sqft = 14,300 **GPD Projected**

C. HOTEL

_____ rooms X 195 gpd/room = _____ **GPD Projected**

D. RESTAURANTS

_____ seats X 30 gpd/seat = _____ **GPD Projected**

E. ALL OTHERS SEE PAGE 3:

= _____ **GPD Projected**

LANDSCAPING WATER DEMAND PROJECTION

A. RESIDENTIAL

17 gpd X _____ persons = _____ **GPD Projected**

B. COMMERCIAL

6,095 sqft X 3.5 cuft of water /sqft of landscape per year = 21,333 **CUFT/YR**

To convert to GPD:

21,333 cuft/yr X 7.48 gal/cuft X 1 yr/365 days = 437 **GPD Projected**

TOTAL DOMESTIC WATER DEMAND PROJECTION

INDOOR + LANDSCAPING PROJECTION = 14,737 **GPD Projected**

* From SFPUC Demand Study by URS, " Projected Water Usage for BAWSCA Agencies " , Tech Memo of August 2006.

ATTACHMENT Q (2 of 3)

WATER DEMAND PROJECTION WORKSHEET
OCCUPANT LOADS

JOB TITLE _____ CAL. BY _____
JOB NUMBER _____ CHKD. BY _____
JOB LOCATION _____ DATE _____

DESIGNED USE OF THE FACILITY	OCCUPANT LOAD OF FLOOR AREA
A. SCHOOL/CLASSROOM	20 sqft/person
B. HEALTH CLUB	50 sqft/person/shift (3 shifts per day)
C. MANUFACTURING AREAS	200 sqft/person
D. NURSERIES (DAY-CARE)	35 sqft/person
E. STORAGE FACILITIES	300 sqft/person

ATTACHMENT Q (3 of 3)

WATER DEMAND PROJECTION WORKSHEET
UNIT LOADS

JOB TITLE _____ CAL. BY _____
JOB NUMBER _____ CHKD. BY _____
JOB LOCATION _____ DATE _____

TYPE OF ESTABLISHMENT	VOLUME OF CONSUMPTION/DAY
Assembly Halls	2 gal per seat
Bowling Alley	75 gal per lane
Churches	7 gal per seat
Dance Halls	2 gal per person
General Hospitals	0.27 gal per sqft
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Laundries	400 gal per machine
Manufacturing (excluding industrial usage)	30 gal per person/shift
Motels with bath, toilet and kitchen wastes	170 gal per room
Nursing homes/Daycare	75 gal per person
Medical Offices (other than hospitals)	0.18 gal per sqft
Research and Development	0.21 gal per sqft
Schools	35 gal per person
Service Station	750 gal per bay
Storage facilities	1 gal per person
Stores (Retail type)	450 gal per 25 ft frontage
(Food -- non-restaurant type)	900 gal per 25 ft frontage
Trailer parks or tourist camps (with built-in bath)	50 gal per person

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ATTACHMENT 2

Fire Hydrant Flow Test
City of Redwood City

Community Development Department
Engineering and Transportation

1017 Middlefield Road
P.O. Box 391
Redwood City, CA 94064
Tel: (650) 780-7380
Fax. (650) 780-7309

FIRE FLOW TEST

Date and Time:	14-Feb-18		
Project Site Address:	**1180 Main Street**		
(Subject Property)	**City of Redwood City**		
APN	**053-147-060**		
Customer Name:	Json Jung	Phone:	650-482-6404
RWC Engineering Contact:	Alex Chan	Phone:	650-780-7307
Public Works Contact:	Mike Villa	Phone:	650-780-7491
Fire Authority and Contact:		Phone:	
Test Conducted By:	Mike Villa		
Payment Amount:	Not Established	Account:	Not Established
Received by:			

READINGS		F.H. ADDRESS	PRESSURE ZONE	SHGL
Static Pressure (S) At Test Hydrant, nearest to the subject property	65 PSI	1555 El Caminoi	City Main	178'
Residual Pressure (R1) At Test Hydrant, nearest to the subject property	60 PSI	1555 El Caminoi		
Flow (Q1) At Flow Hydrant	604 GPM	101 Lathrop Street		
****Fire Hydrant Nozzle Coefficient (F)** For Claw 76 and 885; and Mueller Centurion	0.9			
Calculated Flow (Q2) for R2= 20 PSI	**1780.62 GPM*****			

*Formula

Q2=F*Q1((S-R2)/(S-R1))^0.56

Reviewed by:

Water Purveyor Representative

SKETCH

(Include Flow Hydrant, Test Hydrant, Street Names, Subject Property, Main Sizes, Distances)

See Attachment

*From "Test of Water Supplies", p17-105.

**From: "Water Supply Testing - American Mutual Insurance Alliance"

***Regardless of the results of this test, Redwood City Water Utility Division assumes no liability for normal pressure fluctuations from time to time as a result of normal operation of the system.

1180 Main Development

Flow hydrant (Test 1)

Read hydrant (Test 1)

STRUCTURE SYMBOLS

- Catch Basin
- Curb Inlet
- Drop Inlet
- Siphon
- Area Drain
- SD Manholes
- SD Cap
- SD Junction
- Storm Filter
- Dewater
- Discharge Point
- Inlet Point
- Outfall
- Slide Gate
- SD Valve
- SD Pump Station
- Production Well
- Pressure Reducing Station
- Sample Station
- Test Station
- Hydrant
- Fire Connection
- Cathodic Protection Anode
- Water Meter
- Butterfly Valve
- Gate Valve
- W Pump Station
- Reservoir
- Water Tank
- Water Cap
- Water Coupling
- Cross
- Reducer
- Tee
- Unknown
- Wet Tap
- Air Release
- Blowoff
- Double Check
- Pressure Reducing
- R P Backflow
- Simple Check
- SS Manhole
- SS Pump Station
- SS Lift Station
- SS Air Release
- SS Cap
- Cleanout
- SS Coupling
- Lamp Hole

WATER MAIN SYMBOLS

Storm Drain
- Force Main
- Gravity Main
- Culvert
- Connector
- Open Channel
- Covered Channel
- Abandoned
- Water Laterals
- ARV
- Distribution
- Domestic
- Fire Connection
- Hydrant Line
- Irrigation
- UNKNOWN
- Abandoned
- Block Book Grid

Water Mains
- Distribution
- Irrigation
- Transmission
- Abandoned
- Sewer Mains
- Force Main
- Gravity Main
- Abandoned
- Non-City
- Sewer Laterals
- Active
- Abandoned
- Recycled Water
- Distribution
- Blowoff Line
- Irrigation
- Distribution
- ARV

Redwood City California Founded 1867

FOR REFERENCE ONLY. THE CITY OF REDWOOD CITY ASSUMES NO LIABILITY FOR ERRORS OR OMISSIONS IN THE INFORMATION SHOWN ON THESE MAPS. ALL UTILITIES SHOULD BE FIELD VERIFIED.

F06	F08	F10
G06	G08	G10
H06	H08	H10

0 50 100 150 200 Feet

REDWOOD CITY MAINTAINED UNDERGROUND UTILITIES

Community Development Department
Engineering and Transportation

1017 Middlefield Road
P.O. Box 391
Redwood City, CA 94064
Tel: (650) 780-7380
Fax. (650) 780-7309

FIRE FLOW TEST

Date and Time:	14-Feb-18		
Project Site Address:	**1180 Main Street**		
(Subject Property)	**City of Redwood City**		
APN	**053-147-060**		
Customer Name:	Json Jung	Phone:	650-482-6404
RWC Engineering Contact:	Alex Chan	Phone:	650-780-7307
Public Works Contact:	Mike Villa	Phone:	650-780-7491
Fire Authority and Contact:		Phone:	
Test Conducted By:	Mike Villa		
Payment Amount:	Not Established	Account:	Not Established
Received by:			

READINGS		F.H. ADDRESS	PRESSURE ZONE	SHGL
Static Pressure (S) At Test Hydrant, nearest to the subject property	65 PSI	1303 Main St	City Main	178'
Residual Pressure (R1) At Test Hydrant, nearest to the subject property	60 PSI	1303 Main St		
Flow (Q1) At Flow Hydrant	974 GPM	1202 Main St		
****Fire Hydrant Nozzle Coefficient (F)** For Claw 76 and 885; and Mueller Centurion	0.9			
Calculated Flow (Q2) for R2= 20 PSI	**2871.39 GPM*****			

*Formula

Q2=F*Q1((S-R2)/(S-R1))^0.56

Reviewed by:

Water Purveyor Representative

SKETCH

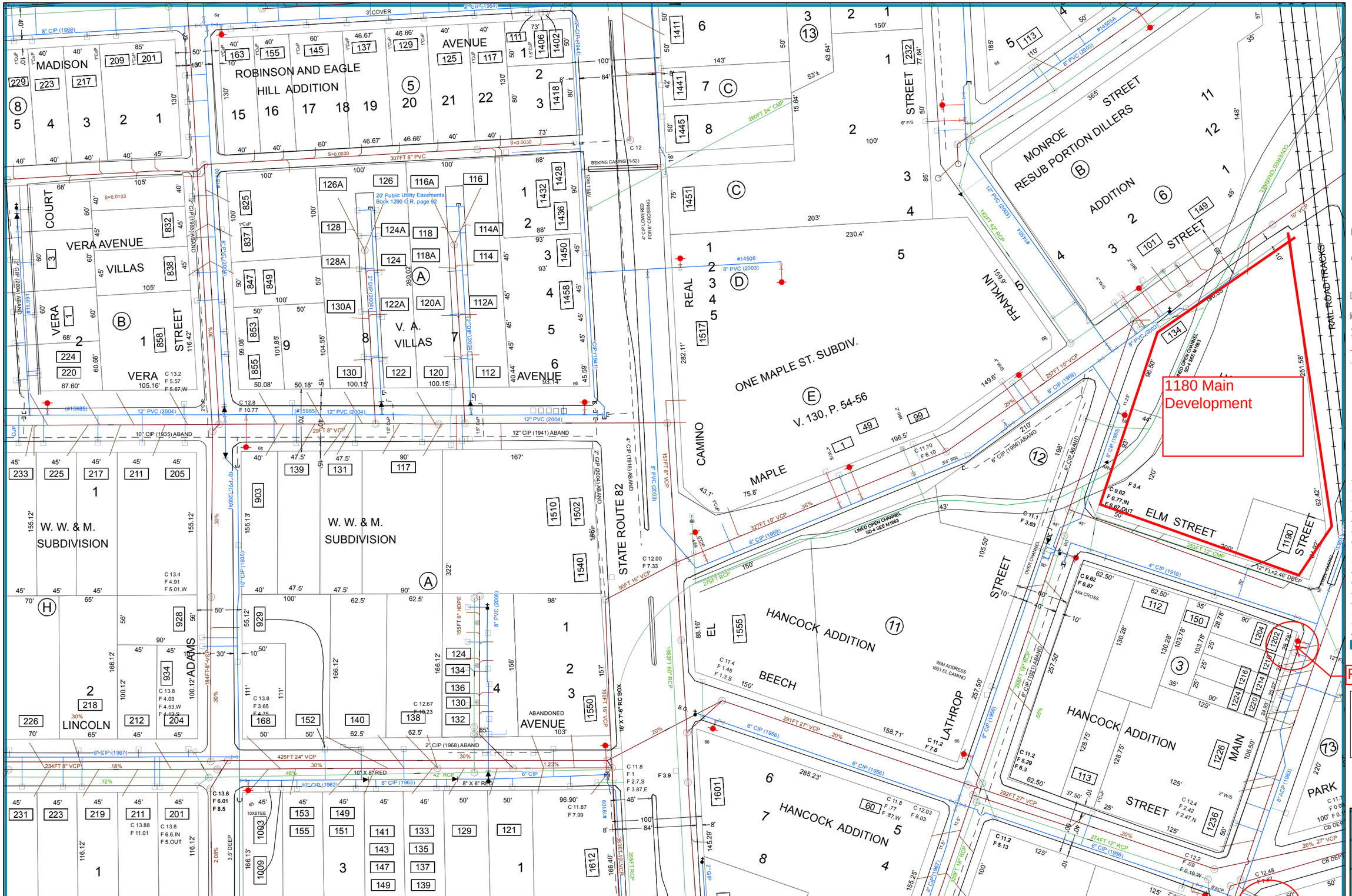
(Include Flow Hydrant, Test Hydrant, Street Names, Subject Property, Main Sizes, Distances)

See Attachment

*From "Test of Water Supplies", p17-105.

**From: "Water Supply Testing - American Mutual Insurance Alliance"

***Regardless of the results of this test, Redwood City Water Utility Division assumes no liability for normal pressure fluctuations from time to time as a result of normal operation of the system.


1180 Main Development
Flow hydrant (Test 2)
Read hydrant (Test 2)
MADISON
ROBINSON AND EAGLE HILL ADDITION
AVENUE
COURT
VERA AVENUE
VILLAS
VERA
STREET
W. W. & M. SUBDIVISION
ADAMS
LINCOLN
V. A. VILLAS
ABANDONED AVENUE
REAL
CAMINO
ONE MAPLE ST. SUBDIV.
V. 130, P. 54-56
MAPLE
STATE ROUTE 82
MONROE RESUB PORTION DILLERS
ADDITION
FRANKLIN
ELM STREET
HANCOCK ADDITION
BEECH
LATHROP
MAIN
PARK
RAIL ROAD TRACKS
20' Public Utility Easements Book 1290 O.R. page 92
307FT 8" PVC
260FT 24" CMP
BEKINS CASING (1-52)
4" CIP LOWERED FOR 6" CROSSING
#14506 8" PVC (2003)
#14505A 6" PVC (2003)
12" PVC (2003)
180FT 42" RCP
COVERED CHANNEL
10" VCP
6" PVC-(2003)
257FT 10" VCP
8" CIP (1969)
LINED OPEN CHANNEL SD-4 SEE M1993
327FT 10" VCP
8" CIP (1968)
275FT RCP
90FT 16" VCP
195.3FT 60" RCP
10' X 7'-6" RC BOX
426FT 24" VCP
234FT 8" VCP
2" CIP (1968) ABAND
42" RCP
8" X 6" RED
291FT 27" VCP
292FT 27" VCP
274FT 12" RCP
6" CIP (1956)
8" CIP (1963)
6" CIP (1967)
12" PVC (2004)
10" CIP (1935) ABAND
12" CIP (1941) ABAND
29FT 8" VCP
4" CIP (1918) ABAND
8" PVC (2003)
355FT RCP
250FT 18" RCP
8" CIP (1927)
6" CIP (1966) ABAND
4" CIP (1918)
253FT 12" CMP
12" FL=2.46' DEEP
8" ACP (1985)
STRUCTURE SYMBOLS
Catch Basin
Curb Inlet
Drop Inlet
Siphon
Area Drain
SD Manholes
SD Cap
SD Junction
Storm Filter
Dewater
Discharge Point
Inlet Point
Outfall
Slide Gate
SD Valve
SD Pump Station
Production Well
Pressure Reducing Station
Sample Station
Test Station
Hydrant
Fire Connection
Cathodic Protection Anode
Water Meter
Butterfly Valve
Gate Valve
W Pump Station
Reservoir
Water Tank
Water Cap
Water Coupling
Cross
Reducer
Tee
Unknown
Wet Tap
Air Release
Blowoff
Double Check
Pressure Reducing
R P Backflow
Simple Check
SS Manhole
SS Pump Station
SS Lift Station
SS Air Release
SS Cap
Cleanout
SS Coupling
Lamp Hole
WATER MAIN SYMBOLS
Storm Drain
Force Main
Gravity Main
Culvert
Connector
Open Channel
Covered Channel
Abandoned
Water Laterals
ARV
Distribution
Domestic
Fire Connection
Hydrant Line
Irrigation
UNKNOWN
Abandoned
Block Book Grid
Water Mains
Distribution
Irrigation
Transmission
Abandoned
Sewer Mains
Force Main
Gravity Main
Abandoned
Non-City
Sewer Laterals
Active
Abandoned
Recycled Water
Distribution
Blowoff Line
Irrigation
Distribution
ARV
FOR REFERENCE ONLY. THE CITY OF REDWOOD CITY ASSUMES NO LIABILITY FOR ERRORS OR OMISSIONS IN THE INFORMATION SHOWN ON THESE MAPS. ALL UTILITIES SHOULD BE FIELD VERIFIED.
F06 F08 F10
G06 G08 G10
H06 H08 H10
0 50 100 150 200 Feet
REDWOOD CITY MAINTAINED UNDERGROUND UTILITIES

REDWOOD CITY MAINTAINED UNDERGROUND UTILITIES

Read hydrant (Test 2)

STRUCTURE SYMBOLS

- Catch Basin
- Curb Inlet
- Drop Inlet
- Siphon
- Area Drain
- SD Manholes
- SD Cap
- SD Junction
- Storm Filter
- Dewater
- Discharge Point
- Inlet Point
- Outfall
- Slide Gate
- SD Valve
- SD Pump Station
- Production Well
- Pressure Reducing Station
- Sample Station
- Test Station
- Hydrant
- Fire Connection
- Cathodic Protection Anode
- Water Meter
- Butterfly Valve
- Gate Valve
- W Pump Station
- Reservoir
- Water Tank
- Water Cap
- Water Coupling
- Cross
- Reducer
- Tee
- Unknown
- Wet Tap
- Air Release
- Blowoff
- Double Check
- Pressure Reducing
- R P Backflow
- Simple Check
- SS Manhole
- SS Pump Station
- SS Lift Station
- SS Air Release
- SS Cap
- Cleanout
- SS Coupling
- Lamp Hole

WATER MAIN SYMBOLS

- Storm Drain
  - Force Main
  - Gravity Main
  - Culvert
  - Connector
  - Open Channel
  - Covered Channel
  - Abandoned
- Water Laterals
  - ARV
  - Distribution
  - Domestic
  - Fire Connection
  - Hydrant Line
  - Irrigation
  - UNKNOWN
  - Abandoned
- Block Book Grid
- Water Mains
  - Distribution
  - Irrigation
  - Transmission
  - Abandoned
- Sewer Mains
  - Force Main
  - Gravity Main
  - Abandoned
- Sewer Laterals
  - Non-City
  - Active
  - Abandoned
- Recycled Water
  - Distribution
  - Blowoff Line
  - Irrigation
  - Distribution
  - ARV

Redwood City California Founded 1867

FOR REFERENCE ONLY. THE CITY OF REDWOOD CITY ASSUMES NO LIABILITY FOR ERRORS OR OMISSIONS IN THE INFORMATION SHOWN ON THESE MAPS. ALL UTILITIES SHOULD BE FIELD VERIFIED.

G06	G08	G10
H06	H08	H10
I06	I08	I10

0 50 100 150 200 Feet

BkF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

ATTACHMENT 3

Sewer Demand Projection Worksheet
(City of Redwood City Attachment L)
City of Redwood City Sanitary Sewer Master Plan Figures

ATTACHMENT L (Existing Conditions)

SEWAGE GENERATION PROJECTION WORKSHEET

JOB TITLE 1180/1190 Main Street
JOB NUMBER _____
JOB LOCATION _____

CAL. BY JYJ
CHKD. BY _____
DATE 02/22/18

ATTACHMENT Q MUST BE COMPLETE BEFORE PROCEEDING

SEWER GENERATION IS BASED ON 95% OF INDOOR WATER DEMAND PROJECTION

Key: GPD_W = GPD Water Demand Projected from Attachment Q
GPD_S = GPD Sewer Demand Projected

A. RESIDENTIAL

_____ GPD_W X 0.95 = _____ **GPD_S**

B. OFFICE/COMMERCIAL

250 GPD_W X 0.95 = 238 **GPD_S**

C. HOTEL

_____ GPD_W X 0.95 = _____ **GPD_S**

D. RESTAURANTS

_____ GPD_W X 0.95 = _____ **GPD_S**

E. ALL OTHERS TO BE REVIEWED ON A CASE BY CASE BASIS

= _____ **GPD_S**

F. INFILTRATION

1. PVC pipe: _____ miles X 100 GPD X _____ diameter (in.) = _____ **GPD_S**
2. Clay pipe: 0.01 miles X 500 GPD X 6 diameter (in.) = 30 **GPD_S**

G. AVERAGE DAILY FLOW = 268 GPD (SUM OF A - F)

H. PEAK HOURLY FLOW* FOR PUMPING STATIONS

1. Peak Business Hr. Flow = [(B+C+E)/12 hrs + (F/24 hrs)] x 2.5/60min + [(A+D)/12 hrs]/60 min = 0.88 **GPM**
2. Peak Off-Hrs. Flow = [(A+C+D)/12hrs + (F/24hrs)] x 2.5/60 min + ((B+E)/12 hrs)/60 min = 0.38 **GPM**

* Peak hourly flows assume an effective 12-hour day and that office and residential peaks occur at separate times.

ATTACHMENT L (Proposed Conditions)

SEWAGE GENERATION PROJECTION WORKSHEET

JOB TITLE 1180/1190 Main Street
JOB NUMBER _____
JOB LOCATION _____

CAL. BY JYJ
CHKD. BY _____
DATE 02/22/18

ATTACHMENT Q MUST BE COMPLETE BEFORE PROCEEDING

SEWER GENERATION IS BASED ON 95% OF INDOOR WATER DEMAND PROJECTION

Key: GPD_W = GPD Water Demand Projected from Attachment Q
GPD_S = GPD Sewer Demand Projected

A. RESIDENTIAL

_____ GPD_W X 0.95 = _____ **GPD_S**

B. OFFICE/COMMERCIAL

14,737 GPD_W X 0.95 = 14,000 **GPD_S**

C. HOTEL

_____ GPD_W X 0.95 = _____ **GPD_S**

D. RESTAURANTS

_____ GPD_W X 0.95 = _____ **GPD_S**

E. ALL OTHERS TO BE REVIEWED ON A CASE BY CASE BASIS

= _____ **GPD_S**

F. INFILTRATION

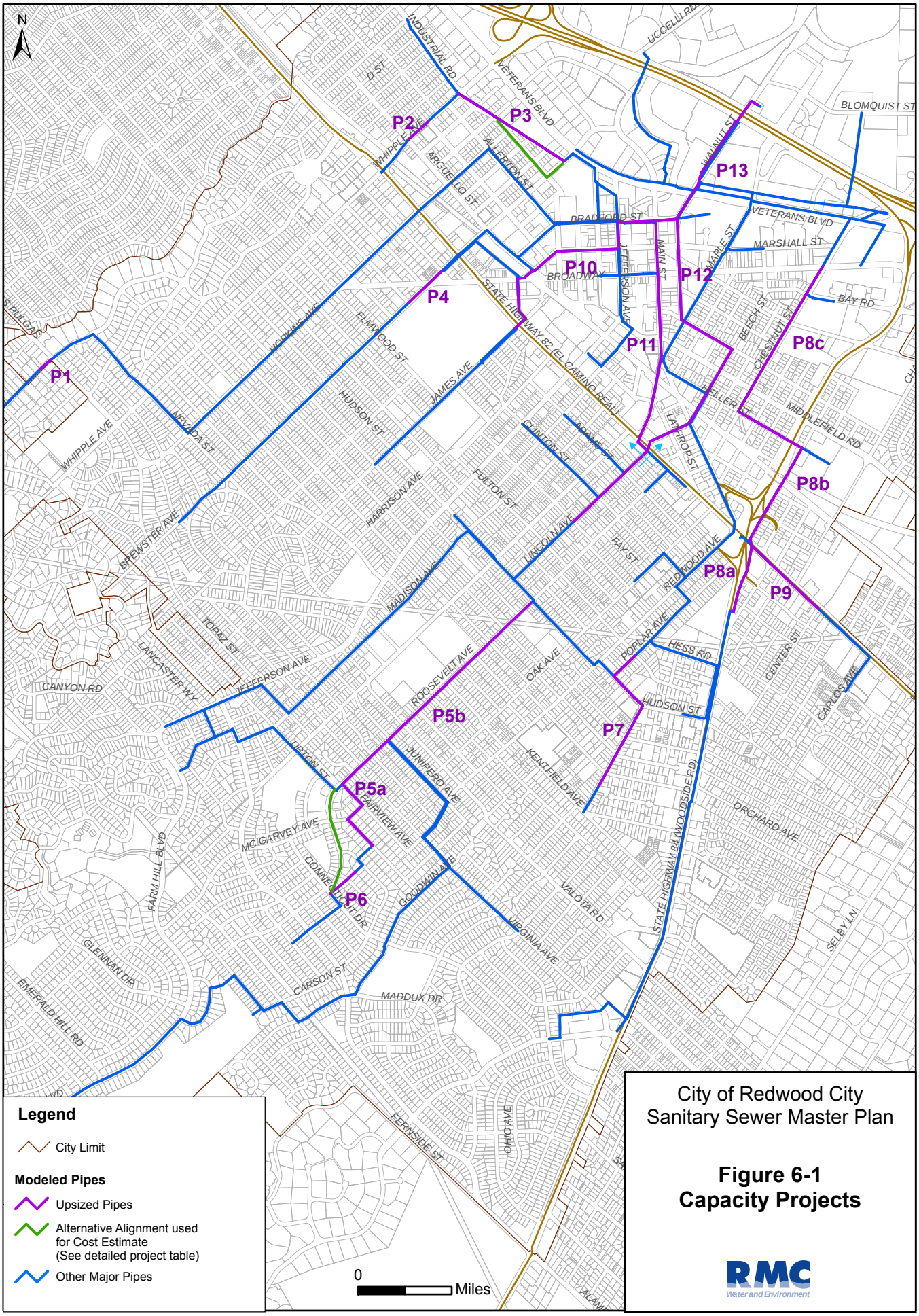
1. PVC pipe: 0.01 miles X 100 GPD X 6 diameter (in.) = 6 **GPD_S**
2. Clay pipe: _____ miles X 500 GPD X _____ diameter (in.) = _____ **GPD_S**

G. AVERAGE DAILY FLOW = 14,006 GPD (SUM OF A - F)

H. PEAK HOURLY FLOW* FOR PUMPING STATIONS

1. Peak Business Hr. Flow = [(B+C+E)/12 hrs + (F/24 hrs)] x 2.5/60min + [(A+D)/12 hrs]/60 min = 48.6 **GPM**
2. Peak Off-Hrs. Flow = [(A+C+D)/12hrs + (F/24hrs)] x 2.5/60 min + ((B+E)/12 hrs)/60 min = 19.5 **GPM**

* Peak hourly flows assume an effective 12-hour day and that office and residential peaks occur at separate times.


N
P1
P2
P3
P4
P5a
P5b
P6
P7
P8a
P8b
P8c
P9
P10
P11
P12
P13
INDUSTRIAL RD
VETERANS BLVD
WHIPPLE AVE
ARGUELLO ST
ALLERTON ST
BRADFORD ST
BROADWAY
MAIN ST
JEFFERSON AVE
MAPLE ST
MARSHALL ST
BLOMQUIST ST
WALNUT ST
UCCELLI BLVD
BAY RD
BEECH ST
CHESTNUT ST
MIDDLEFIELD RD
HOPKINS AVE
ELMWOOD ST
JAMES AVE
HUDSON ST
NEVADA ST
STATE HIGHWAY 82 (EL CAMINO REAL)
CLINTON ST
ADAMS ST
LATHROP ST
FULTON ST
HARRISON AVE
BREWSTER AVE
LINCOLN AVE
FAY ST
REDWOOD AVE
MADISON AVE
POPLAR AVE
HESS RD
CENTER ST
CARLOS AVE
TOPAZ ST
LANCASTER WY
JEFFERSON AVE
CANYON RD
ROOSEVELT AVE
OAK AVE
HUDSON ST
LINTON ST
JUNIPERO AVE
KENTFIELD AVE
FAIRVIEW AVE
MC GARVEY AVE
CONNECTICUT DR
GOODWIN AVE
ORCHARD AVE
FARM HILL BLVD
VALOTA RD
STATE HIGHWAY 84 (WOODSIDE RD)
VIRGINIA AVE
SELBY LN
GLENNAN DR
EMERALD HILL RD
CARSON ST
MADDUX DR
FERNSIDE ST
OHIO AVE
Legend
City Limit
Modeled Pipes
Upsized Pipes
Alternative Alignment used for Cost Estimate (See detailed project table)
Other Major Pipes
0
Miles
City of Redwood City
Sanitary Sewer Master Plan
Figure 6-1
Capacity Projects
RMC
Water and Environment

1180 Main Project Site
d/D<0.50

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community, Copyright:© 2012 Esri, DeLorme, NAVTEQ, TomTom

LEGEND

Gravity Main d/D

- <0.50
- 0.51 - 0.75
- 0.76 - 1.00
- 1.01 - 1.99
- >2.00
- Un-Modeled Gravity Main
- Force Main

- Simulated Overflow

N

0 0.45 0.9

Scale in Miles

FIGURE 7

City of Redwood City
Sewer System Master Plan Update

EXISTING PDWF RESULTS

Engineering a Construction

WEST YOST ASSOCIATES

1180 Main Project Site
d/D<0.50

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community, Copyright:© 2012 Esri, DeLorme, NAVTEQ, TomTom

LEGEND

Gravity Main d/D

- <0.50
- 0.51 - 0.75
- 0.76 - 1.00
- 1.01 - 1.99
- >2.00
- Un-Modeled Gravity Main
- Force Main

- Simulated Overflow

N

0 0.45 0.9

Scale in Miles

FIGURE 8

City of Redwood City
Sewer System Master Plan Update

FUTURE PDWF RESULTS

Engineering a Construction

WEST YOST ASSOCIATES

1180 Main Project Site
d/D=0.51-0.75

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community, Copyright:© 2012 Esri, DeLorme, NAVTEQ, TomTom

LEGEND

Gravity Main d/D
- <0.50
- 0.51 - 0.75
- 0.76 - 1.00
- 1.01 - 1.99
- >2.00
- Un-Modeled Gravity Main
- Force Main

- Simulated Overflow
- HGL Within 5' of Rim

N

0 0.45 0.9

Scale in Miles

FIGURE 9

City of Redwood City
Sewer System Master Plan Update

EXISTING PWWF RESULTS
5-YR 8-HR SYNTHETIC DESIGN STORM

Engineering & Construction

WEST YOST ASSOCIATES

1180 Main Project Site
d/D=0.51-0.75

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community, Copyright:© 2012 Esri, DeLorme, NAVTEQ, TomTom

LEGEND

Gravity Main d/D
- <0.50
- 0.51 - 0.75
- 0.76 - 1.00
- 1.01 - 1.99
- >2.00
- Un-Modeled Gravity Main
- Force Main

- Simulated Overflow
- HGL Within 5' of Rim

N

0 0.45 0.9

Scale in Miles

FIGURE 10

City of Redwood City
Sewer System Master Plan Update

FUTURE PWWF RESULTS
5-YR 8-HR SYNTHETIC DESIGN STORM

Engineering & Construction

WEST YOST ASSOCIATES

1180 Main Project Site
d/D=0.76-1.00

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community, Copyright:© 2012 Esri, DeLorme, NAVTEQ, TomTom

LEGEND

Gravity Main d/D
- <0.50
- 0.51 - 0.75
- 0.76 - 1.00
- 1.01 - 1.99
- >2.00
- Un-Modeled Gravity Main
- Force Main

- Simulated Overflow
- HGL Within 5' of Rim

N

0 0.45 0.9

Scale in Miles

FIGURE 11

City of Redwood City
Sewer System Master Plan Update

EXISTING PWWF RESULTS
10 YR 24 HR DESIGN STORM

Engineering & Construction

WEST YOST ASSOCIATES

1180 Main Project Site
d/D=0.76-1.00

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community, Copyright:© 2012 Esri, DeLorme, NAVTEQ, TomTom

LEGEND

Gravity Main d/D
- <0.50
- 0.51 - 0.75
- 0.76 - 1.00
- 1.01 - 1.99
- >2.00
- Un-Modeled Gravity Main
- Force Main

- Simulated Overflow
- HGL Within 5' of Rim

N

0 0.45 0.9

Scale in Miles

FIGURE 12

City of Redwood City
Sewer System Master Plan Update

FUTURE PWWF RESULTS
10 YR 24 HR DESIGN STORM

Engineering & Construction

WEST YOST ASSOCIATES

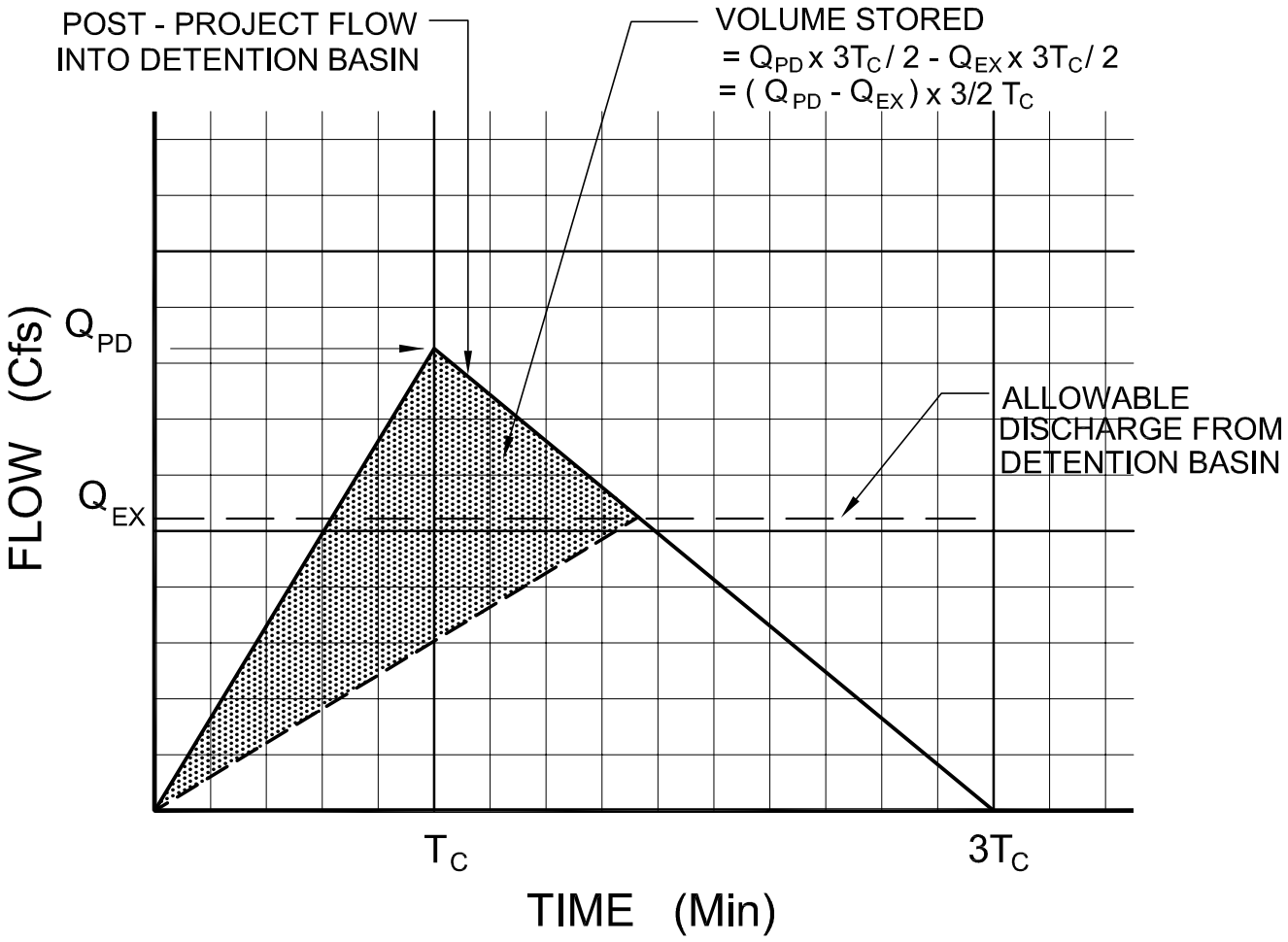
BkF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

ATTACHMENT 4

Synthetic Unit Hydrograph
(City of Redwood City Attachment O)
Rainfall Intensities
(City of Redwood City Attachment G)

ATTACHMENT O

SYNTHETIC UNIT HYDROGRAPH
FOR ESTIMATING POST-DEVELOPMENT STORMWATER STORAGE



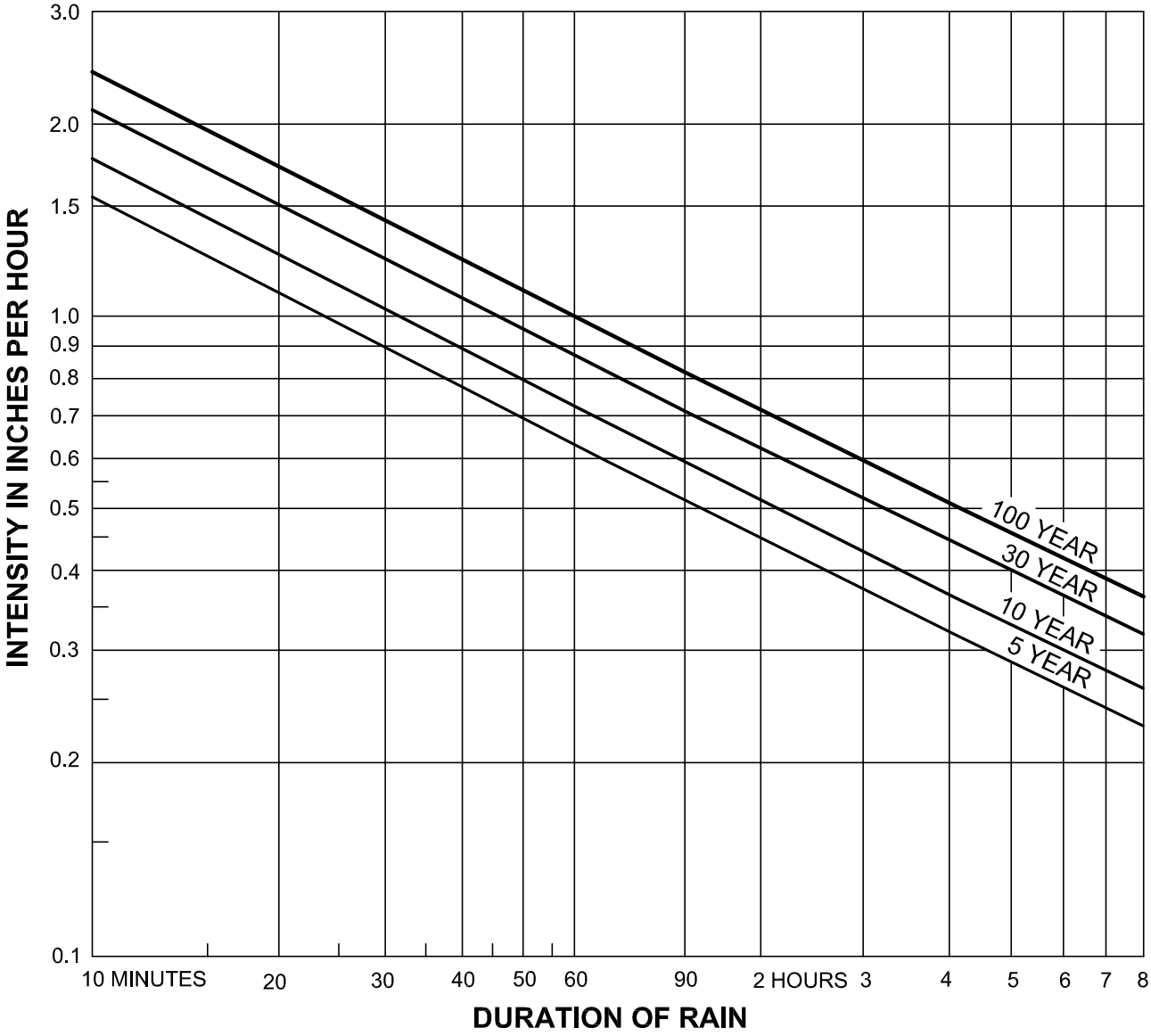
$$Q_{PD} = C_{PD} I A$$

$$Q_{EX} = C_{EX} I A$$

PD = POST - DEVELOPMENT CONDITIONS
EX = EXISTING PRE - DEVELOPMENT CONDITIONS

ATTACHMENT G

I.D.F. CURVES



RAINFALL INTENSITY FREQUENCY CURVES FOR REDWOOD CITY

BkF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

ATTACHMENT 5

Area Calculations and Detention Sizing

1180/1190 Main Street

Table 1

Site Hydrology Calculations

Table 1.1 - Design Rainfall Intensities

Storm Drain Facilities Design Storm Intensities

Calculated per Attachment G, City of Redwood City Engineering Standards

Tc =	10	min	(min Tc per Attachment G)
$i_{10\text{-year}}$=	1.7	in/hr	per Attachment G
$i_{30\text{-year}}$=	2.1	in/hr	per Attachment G
$i_{100\text{-year}}$=	2.5	in/hr	per Attachment G

C.3 Treatment Storm Intensity (for sizing of flow-based treatment measures)

Per San Mateo County C.3 Technical Guidance Manual

$i_{(C.3)}$= 0.20 in/hr

Table 1.2 - Pre-Development Hydrology

Surface	Area (SF)	Coefficient	C*A
BUILDING ROOFS	2,279	0.95	2,165
ASPHALT PAVEMENT	-	0.90	-
CONCRETE PAVEMENT	5,344	0.90	4,810
LANDSCAPE AREA	47,118	0.30	14,135
TOTAL	54,741	0.39	21,110

Rational Method Q=CiA

$Q_{(10\text{-YEAR-EX})}$=	0.82	CFS
$Q_{(30\text{-YEAR-EX})}$=	1.02	CFS
$Q_{(100\text{-YEAR-EX})}$=	1.21	CFS

Table 1.3 - Post-Development Hydrology

Surface	Area (SF)	Coefficient	C*A
BUILDING ROOFS	40,920	0.95	38,874
ASPHALT PAVEMENT	7,726	0.90	6,953
CONCRETE PAVEMENT	-	0.90	-
LANDSCAPE AREA	6,095	0.30	1,829
TOTAL	54,741	0.87	47,656

Rational Method Q=CiA

$Q_{(10\text{-YEAR-PD})}$=	1.86	CFS
$Q_{(30\text{-YEAR-PD})}$=	2.30	CFS
$Q_{(100\text{-YEAR-PD})}$=	2.74	CFS

Table 1.4 - Detention Sizing

Redwood City Engineering Standards: Attachment O - Post Development Stormwater Storage

Detention Volume, V_{DET} (CF) = $(Q_{PD} - Q_{EX})_{REQ'D} * 3/2 * T_C$

$Q_{EX\ (10\text{-}YEAR)}$=	0.82	cfs
$Q_{PD\ (30\text{-}YEAR)}$=	2.30	cfs
$(Q_{PD}-Q_{EX})$=	1.474	cfs
T_C=	10	min
Required Detention Volume=	**1326**	**cu-ft**

Storage Provided in Onsite Storm Drain Pipes:

	Length (LF)	Volume (CF)
42" Pipe (see note below)	195	1,433
	Total	**1,433**

Note: The effective detention area of the pipe cross section is calculated as the height of water below the top of weir in the outlet manhole. The top of weir is set 12" below the inside top of pipe, which provides an effective pipe cross sectional area for detention of 7.35 SF.

Note: Flow Through Planter Sizing is shown on attached Combination Flow and Volume Worksheets.

FLOW THROUGH PLANTER
BETWEEN BUILDING AND
CALTRAIN RIGHT-OF-WAY

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	**1180/1190 Main Street**
1-2	City application ID:	
1-3	Site Address or APN:	**1180/1190 Main Street**
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	**4**
1-6	Region Mean Annual Precipitation (MAP)	**14.60**
1-7	Site Mean Annual Precipitation (MAP)	**19.10**

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 4.0. The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** **1.31**

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: **DMA #1**

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	**40,920**	**1.0**	**40,920**
2-3	Pervious surface	**0**	**0.1**	**0**
	Total DMA Area (square feet) =	**40,920**		

2-4 ***Total Effective Impervious Area (EIA)*** **40,920** **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9”	2.04"
2	La Honda, 24.4”	0.86"
3	Half Moon Bay, 25.92”	0.82"
4	Palo Alto, 14.6”	0.64"
5	San Francisco, 21.0”	0.73"
6	San Francisco airport, 20.1”	0.85"
7	San Francisco Oceanside, 19.3”	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** **0.64**
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** **0.84** **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** **2,855** **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	**0.2**	**Inches per hour**
4-2	Divide Item 3-2 by Item 4-1	**4.19**	**Hours of Rain Event Duration**

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	**1,637**	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	**1,228**	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	**2,141**	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	**714**	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	**0.58**	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	**6.98**	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	**1268**	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	**2,212**	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	**643**	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	**0.51**	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	**6.09**	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	**1,268**	**Square feet** (Either Item 5-2 or final amount in Item 7-1)

FLOW THROUGH PLANTER
AT TERRACE/GRAND STAIR

Worksheet for Calculating the Combination Flow and Volume Method

Instructions: After completing Section 1, make a copy of this Excel file for each Drainage Management Area within the project. Enter information specific to the project and DMA in the cells shaded in yellow. Cells shaded in light blue contain formulas and values that will be automatically calculated.

1.0 Project Information

1-1	Project Name:	**1180/1190 Main Street**
1-2	City application ID:	
1-3	Site Address or APN:	**1180/1190 Main Street**
1-4	Tract or Parcel Map No:	
1-5	Rainfall Region	**4**
1-6	Region Mean Annual Precipitation (MAP)	**14.60**
1-7	Site Mean Annual Precipitation (MAP)	**19.10**

The calculations presented here are based on the **combination flow and volume sizing method** provided in the Countywide Program's C.3 Technical Guidance, Version 4.0. The steps presented below are explained in Section 5.1 of the Guidance, applicable portions of which are included in this file, in the sheet named "Guidance from Chapter 5".

Click here for map

1-8 ***MAP adjustment factor is automatically calculated as:*** **1.31**

(The "Site Mean Annual Precipitation (MAP)" is divided by the MAP for the applicable rain gauge, showin in Table 5-3, below.)
Refer to the map in Appendix C of the C.3 Technical Guidance to identify the Rainfall Region for the site.

2.0 Calculate Percentage of Impervious Surface for Drainage Management Area (DMA)

2-1 Name of DMA: **DMA #4**

For items 2-2 and 2-3, enter the areas in square feet for each type of surface within the DMA.

	Type of Surface	Area of surface type within DMA (Sq. Ft.)	Adjust Pervious Surface	Effective Impervious Area
2-2	Impervious surface	**2,600**	**1.0**	**2,600**
2-3	Pervious surface	**0**	**0.1**	**0**
	Total DMA Area (square feet) =	**2,600**		

2-4 ***Total Effective Impervious Area (EIA)*** **2,600** **Square feet**

3.0 Calculate Unit Basin Storage Volume in Inches

Table 5-3. Unit Basin Storage Volumes in Inches for 80 Percent Capture Using 48-Hour Drawdowns, based on runoff coefficient

Region	Station, and Mean Annual Precipitation (Inches)	Runoff Coefficient of 1.0
1	Boulder Creek, 55.9”	2.04"
2	La Honda, 24.4”	0.86"
3	Half Moon Bay, 25.92”	0.82"
4	Palo Alto, 14.6”	0.64"
5	San Francisco, 21.0”	0.73"
6	San Francisco airport, 20.1”	0.85"
7	San Francisco Oceanside, 19.3”	0.72"

3-1 ***Unit basin storage volume from Table 5-3:*** **0.64**
(The coefficient for this method is always 1.0, due to the conversion of any landscaping to effective impervious area.)

3-2 ***Adjusted unit basin storage volume:*** **0.84** **Inches**
(The unit basin storage volume [Item 3-1] is adjusted by applying the MAP adjustment factor [Item 1-8].)

3-3 ***Required Capture Volume (in cubic feet):*** **181** **Cubic feet**
(The adjusted unit basin sizing volume [Item 3-2] is multiplied by the DMA EIA [Item 2-4] and converted to cubic feet)

4.0 Calculate the Duration of the Rain Event

4-1	Rainfall intensity	**0.2**	**Inches per hour**
4-2	Divide Item 3-2 by Item 4-1	**4.19**	**Hours of Rain Event Duration**

5.0 Preliminary Estimate of Surface Area of Treatment Measure

5-1	4% of DMA EIA (Item 2-4)	**104**	**Square feet**
5-2	Area 25% smaller than Item 5-1 (i.e., 3% of DMA EIA)	**78**	**Square feet**
5-3	Volume of treated runoff for area in Item 5-2	**136**	**Cubic feet** (Item 5-2 * 5 inches per hour * 1/12 * Item 4-2)

6.0 Initial Adjustment of Depth of Surface Ponding Area

6-1	Subtract Item 5-3 from Item 3-3	**45**	**Cubic feet** (Amount of runoff to be stored in ponding area)
6-2	Divide Item 6-1 by Item 5-2	**0.58**	**Feet** (Depth of stored runoff in surface ponding area)
6-3	Convert Item 6-2 from feet to inches	**6.98**	**Inches** (Depth of stored runoff in surface ponding area)

6-4 If ponding depth in Item 6-3 meets your target depth (recommend 6"), skip to Item 8-1. If not, continue to Step 7-1.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

7.0 Optimize Size of Treatment Measure

7-1	Enter an area larger than Item 5-2	**88**	**Sq.ft.** (enter larger area if you need less ponding depth.)
7-2	Volume of treated runoff for area in Item 7-1	**153**	**Cubic feet** (Item 7-1 * 5 inches per hour * 1/12 * Item 4-2)
7-3	Subtract Item 7-2 from Item 3-3	**28**	**Cubic feet** (Amount of runoff to be stored in ponding area)
7-4	Divide Item 7-3 by Item 7-1	**0.32**	**Feet** (Depth of stored runoff in surface ponding area)
7-5	Convert Item 7-4 from ft. to inches	**3.81**	**Inches** (Depth of stored runoff in surface ponding area)

7-6 If the ponding depth in Item 7-5 meets target, stop here. If not, repeat Steps 7-1 through 7-5 until you obtain target depth.
(Note: Overflow outlet elevation should be set based on the calculated ponding depth.)

8.0 Surface Area of Treatment Measure for DMA

8-1	Final surface area of treatment	**88**	**Square feet** (Either Item 5-2 or final amount in Item 7-1)

PROJECT SITE

Figure 2
SAN MATEO COUNTY
MEAN ANNUAL PRECIPITATION
(VALUES IN INCHES)

Precipitation Data Source: PRISM Climate Group, Oregon State University
Map Created By: EOA, Inc.
Date: June 2013

N

0 1 2 4 6 8 Miles

BkF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

ATTACHMENT 6

Storm Water Control Plan

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LEGEND

- PROPOSED ROOF (IMPERVIOUS)
- PROPOSED ON-SITE PAVEMENT (IMPERVIOUS)
- PROPOSED LANDSCAPING (PERVIOUS)
- PROPOSED BIORETENTION (PERVIOUS)
- EXISTING CHANNEL AREA OF REDWOOD CREEK (NOT INCLUDED IN CALCULATIONS)
- STORMWATER MANAGEMENT AREA BOUNDARY

NOTES

1. THIS STORMWATER MANAGEMENT PLAN HAS BEEN CREATED TO SHOW COMPLIANCE WITH PROVISION C.3 OF THE SAN MATEO COUNTYWIDE STORM WATER POLLUTION PREVENTION PROGRAM.
2. THE OFFICE BUILDING IS TREATED BY AN AT-GRADE FLOW THROUGH PLANTER. THE REQUIRED TREATMENT AREA WAS CALCULATED USING THE COMBINATION FLOW/VOLUME METHOD.
3. AREA ON THE WESTERN SIDE OF REDWOOD CREEK IS DESIGNATED AS A SELF-RETAINING AREA.
4. THIS PROJECT WILL IMPLEMENT STORMWATER DETENTION MEASURES TO MITIGATE THE INCREASE IN IMPERVIOUS AREA FROM EXISTING CONDITIONS.
5. CHANNEL AREA OF REDWOOD CREEK ON THE PROJECT SITE WEREN'T INCLUDED. THE 11% PROPOSED PERVIOUS SURFACES AT THE SITE DOES NOT INCLUDE THE CHANNEL AREA OF REDWOOD CREEK.

DESIGN RAINFALL INTENSITIES

T_C = 10 MIN

$i_{10\text{-YEAR}}$ = 1.70 in/hr

$i_{30\text{-YEAR}}$ = 2.10 in/hr

$i_{100\text{-YEAR}}$ = 2.50 in/hr

PRE-DEVELOPMENT HYDROLOGY				
SURFACE	AREA (SF)	AREA (AC)	COEFF.	C*A
BUILDING ROOFS	2,279	0.05	0.95	0.048
ASPHALT PAVEMENT	–	–	–	–
CONCRETE PAVEMENT	5,344	0.12	0.90	0.11
LANDSCAPE AREA	47,118	1.09	0.30	0.33
TOTAL	54,741	1.26	0.39	0.49

RATIONAL METHOD Q=CiA

PEAK $FLOW_{10\text{-YEAR-EX}}$ = (0.39)(1.70)(1.26) = 0.82 CFS

PEAK $FLOW_{30\text{-YEAR-EX}}$ = (0.39)(2.10)(1.26) = 1.02 CFS

PEAK $FLOW_{100\text{-YEAR-EX}}$ = (0.39)(2.50)(1.26) = 1.21 CFS

POST-DEVELOPMENT HYDROLOGY				
SURFACE	AREA (SF)	AREA (AC)	COEFF.	C*A
BUILDING ROOFS	40,920	0.94	0.95	0.893
ASPHALT PAVEMENT	7,726	0.18	0.90	0.162
CONCRETE PAVEMENT	–	–	0.90	–
LANDSCAPE AREA	6,095	0.14	0.30	0.042
TOTAL	54,741	1.26	0.87	1.09

RATIONAL METHOD Q=CiA

PEAK $FLOW_{10\text{-YEAR-PD}}$ = (0.87)(1.70)(1.26) = 1.86 CFS

PEAK $FLOW_{30\text{-YEAR-PD}}$ = (0.87)(2.10)(1.26) = 2.30 CFS

PEAK $FLOW_{100\text{-YEAR-PD}}$ = (0.87)(2.50)(1.26) = 2.74 CFS

DETENTION VOLUME

$V_{DET\ REQUIRED} = (Q_{PD} - Q_{EX})\frac{1}{2}T_C$

$V_{DET\ REQUIRED}$ = (2.30 CFS – 0.82 CFS)(½)(10 MIN)(60 SEC/MIN)

$V_{DET\ REQUIRED}$ = 1,329 CF

$V_{DET\ PROVIDED}$ = 1,433 CF (DETENTION PROVIDED BY 42" SD – 195 LF LONG)

SEE DETAIL 7/C11.0 FOR EFFECTIVE DETENTION AREA

AREA# 1 SIZING – FLOW THRU PLANTER (ROOF AREA)

FLOW THRU PLANTER WAS SIZED USING THE COMBINATION FLOW AND VOLUME METHOD PER SECTION 5.1 OF THE SAN MATEO COUNTY C.3 MANUAL. FULL CALCULATIONS INCLUDED PRELIMINARY ENGINEERING STUDY.

PROVIDED TREATMENT BY FLOW-THROUGH PLANTER

TOTAL DRAINAGE MANAGEMENT AREA = 40,920 SF

TREATMENT PLANTER AREA = 1,268 SF (3.1%)

PONDING DEPTH = 6.09 IN

AREA# 4 SIZING – FLOW THRU PLANTER (WALK AREA)

FLOW THRU PLANTER WAS SIZED USING THE COMBINATION FLOW AND VOLUME METHOD PER SECTION 5.1 OF THE SAN MATEO COUNTY C.3 MANUAL. FULL CALCULATIONS INCLUDED PRELIMINARY ENGINEERING STUDY.

PROVIDED TREATMENT BY FLOW-THROUGH PLANTER

TOTAL DRAINAGE MANAGEMENT AREA = 2,600 SF

TREATMENT PLANTER AREA = 88 SF (3.4%)

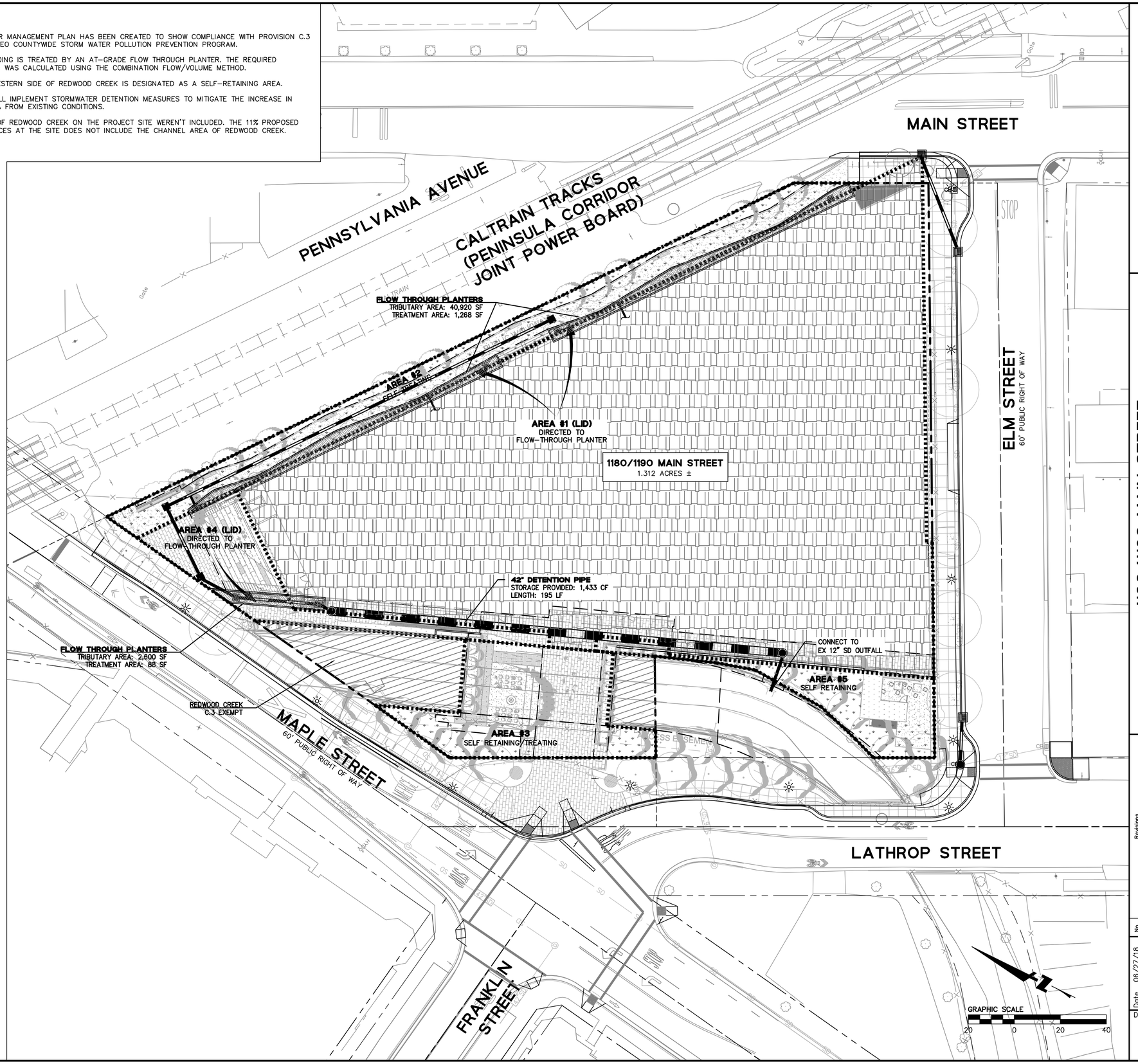
PONDING DEPTH = 3.81 IN

PROPOSED PERVIOUS SURFACES

LANDSCAPE = 6,095 SF

SITE AREA = 54,741 SF

PROPOSED PERVIOUS SURFACE = 11%



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www.bkf.com

1180/1190 MAIN STREET
TENTATIVE PARCEL MAP
CONCEPTUAL STORM WATER CONTROL PLAN

REDWOOD CITY — COUNTY OF SAN MATEO — CALIFORNIA

Revisions

No.					

Date 06/27/18
Scale 1" = 20'
Design PC
Drawn JYJ
Approved AAS
Job No 20170253

Drawing Number:
C9.0
9 OF 11

DRAWING NAME: \\Bkf-rc\data\2017\170253_1180_Main\ENG\02-TM\SHEETS\C9.0-MAPRSWMP.dwg
PLOT DATE: 06-27-18
PLOTTED BY: loes

ATTACHMENT 7

C.3 Checklist – San Mateo County

SAN MATEO COUNTYWIDE Water Pollution Prevention Program

CITY/COUNTY OF Redwood City

Community Development-Public Works **Dept.**

C.3 and C.6 Development Review Checklist

Address 1017 Middlefield Road, Redwood City
Phone 650-780-7000
Website www.redwoodcity.org

Project Information

I.A Enter Project Data (For "C.3 Regulated Projects," data will be reported in the municipality's stormwater Annual Report.)

Project Name: 1180/1190 Main Street — Case Number:
Project Address & Cross Street: 1180/1190 Main Street, Redwood City & Elm Street & Lathrop Street & Maple Street
Project APN: 053-147-060/053-147-07(— Project Watershed: Redwood Creek
Applicant Name: Premia 1180 Main, LLC — Project Phase No.
Applicant Phone: (650) 600-7430 — Applicant E-mail: michael@premiallc.com

I.A.1 Development Type: (check all that apply)

- ☐ Single Family Residential: A stand-alone home that is not part of a larger project.
- ☐ Single Family Residential: Two or more lot residential development.[1] # of units:
- ☐ Multi-Family Residential # of units:
- ☑ Commercial
- ☐ Industrial, Manufacturing
- ☐ Mixed-Use # of units:
- ☐ Streets, Roads[2], etc.
- ☐ Redevelopment' as defined by MRP: creating, adding and/or replacing exterior existing impervious surface on a site where past development has occurred.
- ☐ 'Special land use categories' as defined by MRP: (1) auto service facilities[3], (2) retail gasoline outlets, (3) restaurants, (4) uncovered parking area (stand-alone or part of a larger project)
- ☐ Institutions: schools, libraries, jails, etc.
- ☐ Parks and trails, camp grounds, other recreational
- ☐ Agricultural, wineries
- ☐ Kennels, Ranches
- ☐ Other, Please specify

Project Description (Also not any past or future phases of the project.)[4]: Redevelopment of a site that currently consists of a vegetated lot, concrete foundation, and existing office building. The proposed project includes a 3 story 110,000 GSF office buidling with 2 levels of below grade parking.

I.A.2 Total Area of Site: 1.26 acres

I.A.3 Total Area of land disturbed during construction : 1.26 acres (include clearing, grading, excavating and stockpile area)

I.A.4 Site slope: 1% %

I.A.5 Certification:

I certify that the information provided on this form is correct and acknowledge that, should the project exceed the amount of new and/or replaced impervious surface provided in this form, the as-built project may be subject to additional improvements.

☑ Attach Preliminary Calculations ☐ Attach Final Calculations ☐ Attach copy of site plan showing areas

Name of person completing the form: Patrick Connors, PE — Title: Project Engineer

Signature: — Date: 4/26/2018

Phone Number: (650) 482-6453 — E-mail: pconnors@bkf.com

1 Common Plans of Development (subdivisions or contiguous, commonly owned lots, for the construction of two or more homes developed within 1 year of each other) are not considered single family projects by the MRP.
2 Roadway projects creating 10,000 sq.ft. or more of contiguous impervious surface are subject to C.3 requirements if the roadway is new or being widened with additional traffic lanes.
3 See Standard Industrial Classification (SIC) codes here: www.flowstobay.org/documents/business/new-development/Notice_to_Applicants-LID_FINAL.doc
4 Project description examples: 5-story office building, industrial warehouse, residential with five 4-story buildings for 200 condominiums, etc.

I.B Is the project a "C.3 Regulated Project" per MRP Provision C.3.b?

I.B.1 Enter the amount of Impervious surface Retained, Replaced and/or Created by the project:

Table I.B.1 Impervious[5] and Pervious Surfaces

Type of Impervious Surface	I.B.1.a Pre-Project Impervious Surface (sq.ft.)	I.B.1.b Existing Impervious Surface to be Retained[6] (sq.ft.)	I.B.1.c Existing Impervious Surface to be Replaced[6] (sq.ft.)	I.B.1.d New Impervious Surface to be Created[6] (sq.ft.)	I.B.1.e Post-Project Impervious Surface (sq.ft.) (=b+c+d)
Roof area(s)	2,279	0	2,279	38,011	40290
Impervious[5] sidewalks, patios, paths, driveways, streets	5,344	0	5,344	3,012	8356
Impervious[5] uncovered parking[7]					0
Totals:	7623	0	7623	41023	48646
I.B.1.f - Total Impervious Surface Replaced and Created: ***(sum of totals for columns I.B.1.c and I.B.1.d):***			**48646**		

Type of Pervious Surface	Pre-Project Pervious Surface (sq.ft.)				Post-project Pervious Surface(sq.ft.)
Landscaping	47,118				6,095
Pervious Paving				**I.B.1.e.1**	
Green Roof					
Totals:	47118				6095
Total Site Area (Total Impervious + Total Pervious)	54741				54741

I.B.2 Please review and attach additional worksheets as required below using the Total Impervious Surface (IS) Replaced and Created in cell **I.B.1.f** from Table **I.B.1** above and other factors:

	Review Steps	Check One Yes	Check One No	Attach Worksheet
I.B.2.a	Does this project involve any earthwork? If YES, then Check Yes, and Complete Worksheet A. If NO, then go to I.B.2.b	✓		A
I.B.2.b	Is **I.B.1.f** greater than or equal to 2,500 sq.ft? If YES, then the Project is subject to Provision C.3.i. - complete Worksheets B, C & go to I.B.2.c. If NO, then Stop here - go to I.A.5 and complete Certification or ask municipal staff for Small Project Checklist.	✓		B, C
I.B.2.c	Is the total Existing IS to be Replaced (column **I.B.1.c**) 50 percent or more of the total Pre-Project IS (column **I.B.1.a**)? If YES, site design, source control and treatment requirements apply to the whole site. Continue to I.B.2.d If NO, these requirements apply only to the impervious surface created and/or replaced. Continue to I.B.2.d	✓		
I.B.2.d	Is this project a Special Land Use Category (**I.A.1**) and is **I.B.1.f** greater than or equal to 5,000 sq.ft? If YES, project is a C.3 Regulated Project. Fill out Worksheet D. Then continue to I.B.2.f. If NO, go to I.B.2.e		✓	D
I.B.2.e	Is **I.B.1.f** greater than or equal to 10,000 sq.ft? If YES, project is a C.3 Regulated Project - complete Worksheet D. Then continue to I.B.2.f. If NO, then skip to I.B.2.g.	✓		D
I.B.2.f	Is **I.B.1.f** greater than or equal to 43,560 sq.ft? If YES, project may be subject to Hydromodification Management requirements - complete Worksheet E then go to I.B.2.g. If NO, then go to I.B.2.g.	✓		E
I.B.2.g	Is **I.A.3** greater than or equal to 1 acre? If YES, check box, obtain coverage under CA Const. General Permit & submit Notice of Intent to municipality - go to I.B.2.h. If NO, then go to I.B.2.h. For more information see: www.swrcb.ca.gov/water_issues/programs/stormwater/construction.shtml	✓		
I.B.2.h	Is this a Special Project or does it have the potential to be a Special Project? If YES, complete Worksheet F - then continue to I.B.2.i. If NO, go to I.B.2.i.		✓	F
I.B.2.i	Is this project a High Priority Site? (Determined by the Municipality. High Priority Sites can include those located within 100 ft. of a sensitive habitat, an Area of Special Biological Significance, a body of water, or **starting 7/1/16** on sites disturbing >=5,000 sq.ft. with slopes >=15% **(see I.A.4)** [or per municipal criteria/map.] Subject to monthly inspections from Oct 1 to April 30.) If YES, complete section G-2 on Worksheet G - then continue to I.B.2.j. If NO, then go to I.B.2.j		✓	G
I.B.2.j	For Municipal Staff Use Only: Are you using Alternative Certification for the project review? If YES, then fill out section G-1 on Worksheet G. Fill out other sections of Worksheet G as appropriate. See cell **I.B.1.e.1** above - Is the project installing 3,000 square feet or more of pervious paving? If YES, then fill out section G-3 on Worksheet G. Add to Municipal Inspection Lists (C.3 and C.3.h)			G

5 Per the MRP, pavement that meets the following definition of pervious pavement is NOT an impervious surface. Pervious pavement is defined as pavement that stores and infiltrates rainfall at a rate equal to immediately surrounding unpaved, landscaped areas, or that stores and infiltrates the rainfall runoff volume described in Provision C.3.

6 "Retained" means to leave existing impervious surfaces in place; "Replaced" means to install new impervious surface where existing impervious surface is removed anywhere on the same property; and "Created" means the amount of new impervious surface being proposed which exceeds the total existing amount of impervious surface at the property.

7 Uncovered parking includes the top level of a parking structure.

Worksheet A

C6 – Construction Stormwater BMPs

Identify Plan sheet showing the appropriate construction Best Management Practices (BMPs) used on this project:
(Applies to all projects with earthwork)

Yes	Plan Sheet	Best Management Practice (BMP)
☑		Control and prevent the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, wash water or sediments, rinse water from architectural copper, and non-stormwater discharges to storm drains and watercourses.
☑		Store, handle, and dispose of construction materials/wastes properly to prevent contact with stormwater.
☑		Do not clean, fuel, or maintain vehicles on-site, except in a designated area where wash water is contained and treated.
☑		Train and provide instruction to all employees/subcontractors re: construction BMPs.
☑		Protect all storm drain inlets in vicinity of site using sediment controls such as berms, fiber rolls, or filters.
☑		Limit construction access routes and stabilize designated access points.
☑		Attach the San Mateo Countywide Water Pollution Prevention Program's construction BMP plan sheet to project plans and require contractor to implement the applicable BMPs on the plan sheet.
☑		Use temporary erosion controls to stabilize all denuded areas until permanent erosion controls are established.
☑		Delineate with field markers clearing limits, easements, setbacks, sensitive or critical areas, buffer zones, trees, and drainage courses.
☑		Provide notes, specifications, or attachments describing the following: ■ Construction, operation and maintenance of erosion and sediment controls, include inspection frequency; ■ Methods and schedule for grading, excavation, filling, clearing of vegetation, and storage and disposal of excavated or cleared material; ■ Specifications for vegetative cover & mulch, include methods and schedules for planting and fertilization; ■ Provisions for temporary and/or permanent irrigation.
☐		Perform clearing and earth moving activities only during dry weather.
☑		Use sediment controls or filtration to remove sediment when dewatering and obtain all necessary permits.
☑		Trap sediment on-site, using BMPs such as sediment basins or traps, earthen dikes or berms, silt fences, check dams, soil blankets or mats, covers for soil stock piles, etc.
☑		Divert on-site runoff around exposed areas; divert off-site runoff around the site (e.g., swales and dikes).
☑		Protect adjacent properties and undisturbed areas from construction impacts using vegetative buffer strips, sediment barriers or filters, dikes, mulching, or other measures as appropriate.

Worksheet B

C3 – Source Controls

Select appropriate source controls and identify the detail/plan sheet where these elements are shown.

Yes	Detail/Plan Sheet No.	Features that require source control measures	Source Control Measures (Refer to Local Source Control List for detailed requirements)
☑		Storm Drain	Mark on-site inlets with the words "No Dumping! Flows to Bay" or equivalent.
☑		Floor Drains	Plumb interior floor drains to sanitary sewer [or prohibit].
☑		Parking garage	Plumb interior parking garage floor drains to sanitary sewer.[8]
☑		Landscaping	■ Retain existing vegetation as practicable. ■ Select diverse species appropriate to the site. Include plants that are pest- and/or disease-resistant, drought-tolerant, and/or attract beneficial insects. ■ Minimize use of pesticides and quick-release fertilizers. ■ Use efficient irrigation system; design to minimize runoff.
☐		Pool/Spa/Fountain	Provide connection to the sanitary sewer to facilitate draining.[8]
☑		Food Service Equipment (non-residential)	Provide sink or other area for equipment cleaning, which is: ■ Connected to a grease interceptor prior to sanitary sewer discharge.[8] ■ Large enough for the largest mat or piece of equipment to be cleaned. ■ Indoors or in an outdoor roofed area designed to prevent stormwater run-on and run-off, and signed to require equipment washing in this area.
☑		Refuse Areas	■ Provide a roofed and enclosed area for dumpsters, recycling containers, etc., designed to prevent stormwater run-on and runoff. ■ Connect any drains in or beneath dumpsters, compactors, and tallow bin areas serving food service facilities to the sanitary sewer.[8]
☐		Outdoor Process Activities[9]	Perform process activities either indoors or in roofed outdoor area, designed to prevent stormwater run-on and runoff, and to drain to the sanitary sewer.[8]
☐		Outdoor Equipment/ Materials Storage	■ Cover the area or design to avoid pollutant contact with stormwater runoff. ■ Locate area only on paved and contained areas. ■ Roof storage areas that will contain non-hazardous liquids, drain to sanitary sewer[8], and contain by berms or similar.
☐		Vehicle/ Equipment Cleaning	■ Roofed, pave and berm wash area to prevent stormwater run-on and runoff, plumb to the sanitary sewer8, and sign as a designated wash area. ■ Commercial car wash facilities shall discharge to the sanitary sewer.[8]
☐		Vehicle/ Equipment Repair and Maintenance	■ Designate repair/maintenance area indoors, or an outdoors area designed to prevent stormwater run-on and runoff and provide secondary containment. Do not install drains in the secondary containment areas. ■ No floor drains unless pretreated prior to discharge to the sanitary sewer.[8] ■ Connect containers or sinks used for parts cleaning to the sanitary sewer.[8]
☐		Fuel Dispensing Areas	■ Fueling areas shall have impermeable surface that is a) minimally graded to prevent ponding and b) separated from the rest of the site by a grade break. ■ Canopy shall extend at least 10 ft. in each direction from each pump and drain away from fueling area.
☑		Loading Docks	■ Cover and/or grade to minimize run-on to and runoff from the loading area. ■ Position downspouts to direct stormwater away from the loading area. ■ Drain water from loading dock areas to the sanitary sewer.[8] ■ Install door skirts between the trailers and the building.
☑		Fire Sprinklers	Design for discharge of fire sprinkler test water to landscape or sanitary sewer.[8]
☑		Miscellaneous Drain or Wash Water	■ Drain condensate of air conditioning units to landscaping. Large air conditioning units may connect to the sanitary sewer.[8] ■ Roof drains from equipment drain to landscaped area where practicable. ■ Drain boiler drain lines, roof top equipment, all wash water to sanitary sewer.[8]
☐		Architectural Copper Rinse Water	■ Drain rinse water to landscaping, discharge to sanitary sewer[8], or collect and dispose properly offsite. See flyer "Requirements for Architectural Copper."

8 Any connection to the sanitary sewer system is subject to sanitary district approval.

9 Businesses that may have outdoor process activities/equipment include machine shops, auto repair, industries with pretreatment facilities.

Worksheet C

Low Impact Development – Site Design Measures

Select Appropriate Site Design Measures *(Required for C.3 Regulated Projects; all other projects are encouraged to implement site design measures, which may be required at municipality discretion.) Projects that create and/or replace 2,500 – 10,000 sq.ft. of impervious surface, and stand-alone single family homes that create/replace 2,500 sq.ft. or more of impervious surface, must include* ***one of Site Design Measures a through f*** *(Provision C.3.i requirements).*[10] *Larger projects must also include applicable Site Design Measures g through i. Consult with municipal staff about requirements for your project.*

Select appropriate site design measures and Identify the Plan Sheet where these elements are shown.

Yes	Plan Sheet No.	
☐		a. Direct roof runoff into cisterns or rain barrels and use rainwater for irrigation or other non-potable use.
☑		b. Direct roof runoff onto vegetated areas.
☑		c. Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas.
☐		d. Direct runoff from driveways and/or uncovered parking lots onto vegetated areas.
☐ ☐		e. Construct sidewalks, walkways, and/or patios with pervious or permeable surfaces.Use the specifications in the C3 Technical Guidance (Version 4.1) downloadable at www.flowstobay.org/newdevelopment.
☐		f. Construct bike lanes, driveways, and/or uncovered parking lots with pervious surfaces.Use the specifications in the C3 Technical Guidance (Version 4.1) downloadable at www.flowstobay.org/newdevelopment.
		g. Limit disturbance of natural water bodies and drainage systems; minimize compaction of highly permeable soils; protect slopes and channels; and minimize impacts from stormwater and urban runoff on the biological integrity of natural drainage systems and water bodies;
☐		h. Conserve natural areas, including existing trees, other vegetation and soils.
☐		i. Minimize impervious surfaces.

Regulated Projects can also consider the following site design measures to reduce treatment system sizing:

Yes	Plan Sheet No.	
☑		j. Self-treating area (see Section 4.2 of the C.3 Technical Guidance)
☑		k. Self-retaining area (see Section 4.3 of the C.3 Technical Guidance)
☐		l. Plant or preserve interceptor trees (Section 4.1, C.3 Technical Guidance)

10 See MRP Provision C.3.a.i.(6) for non-C.3 Regulated Projects, C.3.c.i.(2)(a) for Regulated Projects, C.3.i for projects that create/replace 2,500 to 10,000 sq.ft. of impervious surface and stand-alone single family homes that create/replace 2,500 sq.ft. or more of impervious surface.

Worksheet D

C3 Regulated Project - Stormwater Treatment Measures

Check all applicable boxes and indicate the treatment measure(s) included in the project.

Yes

☐ Attach Worksheet F and Calculations

Is the project a **Special Project**?[11]
If yes, consult with municipal staff about the need to evaluate the feasibility and infeasibility of 100% LID treatment. Indicate the type of non-LID treatment to be used, the hydraulic sizing method , and percentage of the amount of runoff specified in Provision C.3.d that is treated:

Non-LID Treatment Measures:	Hydraulic sizing method[12]			% of C.3.d amount of runoff treated
☐ Media Filter	☐ 2.a	☐ 2.b	☐ 2.c	_____ %
☐ Tree well Filter	☐ 2.a	☐ 2.b	☐ 2.c	_____ %

☐

Is the project using infiltration systems? The MRP no longer requires the use or analysis of the feasibility of infiltration, but infiltration systems are encouraged and may be beneficial depending on the project. Indicate the infiltration measures to be used, and hydraulic sizing method:

Infiltration Measures:	Hydraulic sizing method[12]			
☐ Bioinfiltration[13]	☐ 1.a	☐ 1.b	☐ 2.c	☐ 3
☐ Infiltration Trench	☐ 1.a	☐ 1.b		
☐ Other (specifiy):				

☐

Is the project harvesting and using rainwater?
The MRP no longer requires the use or analysis of the feasibility of rainwater harvesting, but it rainwater harvesting and use is encouraged and may be beneficial depending on the project.

Rainwater Harvesting/Use Measures:	Hydraulic sizing method[12]	
☐ Rainwater Harvesting for indoor non-potable water use	☐ 1.a	☐ 1.b
☐ Rainwater Harvesting for landscape irrigation use	☐ 1.a	☐ 1.b

☑

Is the project installing biotreatment measures?

Indicate the measures to be used, and the hydraulic sizing method:

Biotreatment Measures:	Hydraulic sizing method[12]	
☐ Bioretention area	☐ 2.c	☐ 3
☑ Flow-through planter	☐ 2.c	☑ 3
☐ Other (specifiy):		

A copy of the long term Operations and Maintenance (O&M) Agreement and Plan for this project will be required. Please contact the NPDES Representative of the applicable municipality for an agreement template and consult the C.3 Technical Guidance at www.flowstobay.org for maintenance plan templates for specific facility types.

11 Special Projects are smart growth, high density, or transit-oriented developments with the criteria defined in Provision C.3.e.ii.(2), (3) or (4) (see Worksheet F).
12 Indicate which of the following Provision C.3.d.i hydraulic sizing methods were used. Volume based approaches: 1(a) Urban Runoff Quality Management approach, or 1(b) 80% capture approach (recommended volume-based approach). Flow-based approaches: 2(a) 10% of 50-year peak flow approach, 2(b) 2 times the 85th percentile rainfall intensity approach, or 2(c) 0.2-Inch-per-hour intensity approach (recommended flow-based approach - also known as the 4% rule). Combination flow and volume-based approach: 3.
13 See Section 6.1 of the C.3 Technical Guidance for conditions in which bioretention areas provide bioinfiltration.

Worksheet E
Hydromodification Management

E-1 Is the project a Hydromodification[14] Management (HM) Project?

E-1.1 Is the total impervious area increased over the pre-project condition?

- ☑ Yes. Continue to E-1.2
- ☐ No. The project is NOT required to incorporate HM Measures. Go to Item E-1.4 and check "No."

E-1.2 Is the site located in an HM Control Area per the HM Control Areas map (Appendix H of the C.3 Technical Guidance)?

- ☐ Yes. Continue to E-1.3
- ☑ No. Attach map, indicating project location. The project is NOT required to incorporate HM Measures. Skip to Item E-1.4 and check "No."

E-1.3 Has an engineer or qualified environmental professional determined that runoff from the project flows only through a hardened channel or enclosed pipe along its entire length before emptying into a waterway in the exempt area?

- ☐ Yes. Attach map of facility. Go to Item E-1.4 and check "Yes."
- ☐ No. Attach map, indicating project location. The project is NOT required to incorporate HM Measures. Skip to Item E-1.4 and check "No."

E-1.4 Is the project a Hydromodification Management Project?

- ☐ Yes. The project is subject to HM requirements in Provision C.3.g of the Municipal Regional Stormwater Permit.
- ☐ No. The project is EXEMPT from HM requirements.

► If the project is subject to the HM requirements, incorporate in the project flow duration control measures designed such that post-project discharge rates and durations match pre-project discharge rates and durations.

► The Bay Area Hydrology Model (BAHM) has been developed to help size flow duration controls. See www.bayareahydrologymodel.org. Guidance is provided in Chapter 7 of the C.3 Technical Guidance.

E-2 Incorporate HM Controls (if required)

Are the applicable items provided with the Plans?

Yes	No	NA	
☐	☐	☐	Site plans with pre- and post-project impervious surface areas, surface flow directions of entire site, locations of flow duration controls and site design measures per HM site design requirement
☐	☐	☐	Soils report or other site-specific document showing soil type(s) on site
☐	☐	☐	If project uses the Bay Area Hydrology Model (BAHM), a list of model inputs and outputs.
☐	☐	☐	If project uses custom modeling, a summary of the modeling calculations with corresponding graph showing curve matching (existing, post-project, and post-project with HM controls curves), goodness of fit, and (allowable) low flow rate.
☐	☐	☐	If project uses the Impracticability Provision, a listing of all applicable costs and a brief description of the alternative HM project (name, location, date of start up, entity responsible for maintenance).
☐	☐	☐	If the project uses alternatives to the default BAHM approach or settings, a written description and rationale.

14 Hydromodification is the change in a site's runoff hydrograph, including increases in flows and durations that results when land is developed (made more impervious). The effects of hydromodification include, but are not limited to, increased bed and bank erosion of receiving streams, loss of habitat, increased sediment transport and/or deposition, and increased flooding. Hydromodification control measures are designed to reduce these effects.

Worksheet F
Special Projects

Complete this worksheet for projects that appear to meet the definition of "Special Project", per Provision C.3.e.ii of the Municipal Regional Stormwater Permit (MRP). The form assists in determining whether a project meets Special Project criteria, and the percentage of low impact development (LID) treatment reduction credit. Special Projects that implement less than 100% LID treatment must provide a narrative discussion of the feasibility or infeasibility of 100% LID treatment. See Appendix J of the C.3 Technical Guidance Handbook (download at www.flowstobay.org) for more information.

F-1

"Special Project" Determination (Check the boxes to determine if the project meets any of the following categories.)

Special Project Category "A"

Does the project have ALL of the following characteristics?

- ☐ Located in a municipality's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian-oriented commercial district, or historic preservation site and/or district;
- ☐ Creates and/or replaces 0.5 acres or less of impervious surface;
- ☐ Includes no surface parking, except for incidental parking for emergency vehicle access, ADA access, and passenger or freight loading zones;
- ☐ Has at least 85% coverage of the entire site by permanent structures. The remaining 15% portion of the site may be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping and stormwater treatment.

☐ No (continue)

☐ Yes – Complete Section F-2 below

Special Project Category "B"

Does the project have ALL of the following characteristics?

- ☐ Located in a municipality's designated central business district, downtown core area or downtown core zoning district, neighborhood business district or comparable pedestrian-oriented commercial district, or historic preservation site and/or district[15];
- ☐ Creates and/or replaces more than 0.5 acres of impervious area and less than 2.0 acres;
- ☐ Includes no surface parking, except for incidental parking for emergency access, ADA access, and passenger or freight loading zones;
- ☐ Has at least 85% coverage of the entire site by permanent structures. The remaining 15% portion of the site may be used for safety access, parking structure entrances, trash and recycling service, utility access, pedestrian connections, public uses, landscaping and stormwater treatment;
- ☐ Minimum density of either 50 dwelling units per acre (for residential projects) or a Floor Area Ratio (FAR) of 2:1 (for commercial projects) - mixed use projects may use either criterion. **Note Change on 7/1/16**[16]

☐ No (continue) ☐ Yes – Complete Section F-2 below

Special Project Category "C"

Does the project have ALL of the following characteristics?

- ☐ At least 50% of the project area is within 1/2 mile of an existing or planned transit hub[17] or 100% within a planned Priority Development Area[18];
- ☐ The project is characterized as a non-auto-related use[19]; and
- ☐ Minimum density of either 25 dwelling units per acre (for residential projects) or a Floor Area Ratio (FAR) of 2:1 (for commercial projects) - mixed use projects may use either criterion. **Note Change on 7/1/16**[16]

☑ No (continue) ☐ Yes – Complete Section F-2 below

15 And built as part of a municipality's stated objective to preserve/enhance a pedestrian-oriented type of urban design.

16 **Effective 7/1/16**, the MRP establishes definitions for "Gross Density"(GD) & FAR. GD is defined as, "the total number of residential units divided by the acreage of the entire site area, including land occupied by public right-of-ways, recreational, civic, commercial and other non-residential uses." FAR is defined as," the Ratio of the total floor area on all floors of all buildings at a project site (except structures, floors, or floor areas dedicated to parking) to the total project site area.

17 "Transit hub" is defined as a rail, light rail, or commuter rail station, ferry terminal, or bus transfer station served by three or more bus routes. (A bus stop with no supporting services does not qualify.)

18 A "planned Priority Development Area" is an infill development area formally designated by the Association of Bay Area Government's / Metropolitan Transportation Commission's FOCUS regional planning program.

19 Category C specifically excludes stand-alone surface parking lots; car dealerships; auto and truck rental facilities with onsite surface storage; fast-food restaurants, banks or pharmacies with drive-through lanes; gas stations; car washes; auto repair and service facilities; or other auto-related project unrelated to the concept of transit oriented development.

F-2 LID Treatment Reduction Credit Calculation

(If more than one category applies, choose only one of the applicable categories and fill out the table for that category.)

Category	Impervious Area Created/Replaced (sq. ft.)	Site Coverage (%)	Project Density[16] or FAR[16]	Density/Criteria	Allowable Credit (%)	Applied Credit (%)
A			N.A.	N.A.	100%	
B				Res ≥ 50 DU/ac or FAR ≥ 2:1	50%	
				Res ≥ 75 DU/ac or FAR ≥ 3:1	75%	
				Res ≥ 100 DU/ac or FAR ≥ 4:1	100%	
C				**Location credit (select one)[20] :**		
				Within ¼ mile of transit hub	50%	
				Within ½ mile of transit hub	25%	
				Within a planned PDA	25%	
				Density credit (select one):		
				Res ≥ 30 DU/ac or FAR ≥ 2:1	10%	
				Res ≥ 60 DU/ac or FAR ≥ 4:1	20%	
				Res ≥ 100 DU/ac or FAR ≥ 6:1	30%	
				Parking credit (select one):		
				≤ 10% at-grade surface parking[21]	10%	
				No surface parking	20%	
				TOTAL TOD CREDIT =		0%

F-3 Narrative Discussion of the Feasibility/Infeasibility of 100% LID Treatment:

If project will implement less than 100% LID, prepare a discussion of the feasibility or infeasibility of 100% LID treatment, as described in Appendix K of the C.3 Technical Guidance.

F-4 Select Certified Non-LID Treatment Measures:

If the project will include non-LID treatment measures, select a treatment measure certified for "Basic" General Use Level Designation (GULD) by the Washington State Department of Ecology's Technical Assessment Protocol – Ecology (TAPE). Guidance is provided in Appendix K of the C.3 Technical Guidance (download at www.flowstobay.org). [22]

20 To qualify for the location credit, at least 50% of the project's site must be located within the ¼ mile or ½ mile radius of an existing or planned transit hub, as defined on page 1, footnote 2. A planned transit hub is a station on the MTC's Regional Transit Expansion Program list, per MTC's Resolution 3434 (revised April 2006), which is a regional priority funding plan for future transit stations in the San Francisco Bay Area. To qualify for the PDA location credit, 100% of the project site must be located within a PDA, as defined on page 1, footnote 3.

21 The at-grade surface parking must be treated with LID treatment measures.

22 TAPE certification is used in order to satisfy Special Project's reporting requirements in the MRP.

Worksheet G
(For municipal staff use only)

G-1 **Alternative Certification:** Were the treatment and/or HM control sizing and design reviewed by a qualified third-party professional that is not a member of the project team or agency staff?

☐ Yes ☐ No Name of Reviewer: _____

G-2

High Priority Site: High Priority Sites can include those located in or within 100 feet of a sensitive habitat, an Area of Special Biological Significance (ASBS), a body of water, or **starting 7/1/16** on "hillside projects" disturbing >=5,000 sq.ft. of land and with steep slopes (of >=15% - see cell **I.A.4** - or as identified by municipal criteria or map). These sites are subject to monthly inspections from Oct 1 to April 30. See MRP Provision C.6.e.ii.(2).

☐ Yes ☐ No If yes, then add site to Staff's Monthly Rainy Season Construction Site Inspection List

G-3

Inspections of Sites with Pervious Paving: **Starting 7/1/16**, Regulated projects that are installing 3,000 sq.ft. or more of pervious paving (see cell **I.B.1.e.1**) (excluding private-use patios in single family homes, townhomes, or condominiums) must have the paving system inspected by the jurisdiction upon completion of the installation and the site must be added to the jurisdiction's list of sites needing inspections at least once every five years – see provision C.3.h. Pervious pavement systems include pervious concrete, pervious asphalt, pervious pavers and grid pavers etc. and are described in the C3 Technical Guidance (Version 4.1) downloadable at: www.flowstobay.org/newdevelopment.

☐ Yes ☐ No If yes, then add site to Staff's Lists for Construction and O&M inspections (C.3 and C.3.h)

Operations and Maintenance (O&M) Submittals

G-4 Stormwater Treatment Measure and/HM Control Owner or Operator's Information:

Name: _____

Address: _____

Phone: _____ Email: _____

► Applicant must call for inspection and receive inspection within 45 days of installation of treatment measures and/or hydromodification management controls.

The following questions apply to C.3 Regulated Projects and Hydromodification Management Projects.

		Yes	No	N/A
G-4.1	Was maintenance plan submitted?	☐	☐	☐
G-4.2	Was maintenance plan approved?	☐	☐	☐
G-4.3	Was maintenance agreement submitted? (Date executed: _____)	☐	☐	☐

► *Attach the executed maintenance agreement as an appendix to this checklist.*

G-5 **Annual Operations and Maintenance (O&M) Submittals (for municipal staff use only):**

For C.3 Regulated Projects and Hydromodification Management Projects, indicate the dates on which the Applicant submitted annual reports for project O&M:

_____

G-6 **Comments (for municipal staff use only):**

G-7 NOTES (for municipal staff use only):

Project Info Notes: _____

Worksheet A Notes: _____

Worksheet B Notes: _____

Worksheet C Notes: _____

Worksheet D Notes: _____

Worksheet E Notes: _____

Worksheet F Notes: _____

G-8 Project Close-Out (for municipal staff use only):

		Yes	No	N/A
8.1	Were final Conditions of Approval met?	☐	☐	
8.2	Was initial inspection of the completed treatment/HM measure(s) conducted? (Date of inspection: _____)	☐	☐	☐
8.3	Was maintenance plan submitted? (Date executed: _____)	☐	☐	☐
8.4	Was project information provided to staff responsible for O&M verification inspections? (Date provided to inspection staff: _____)	☐	☐	☐

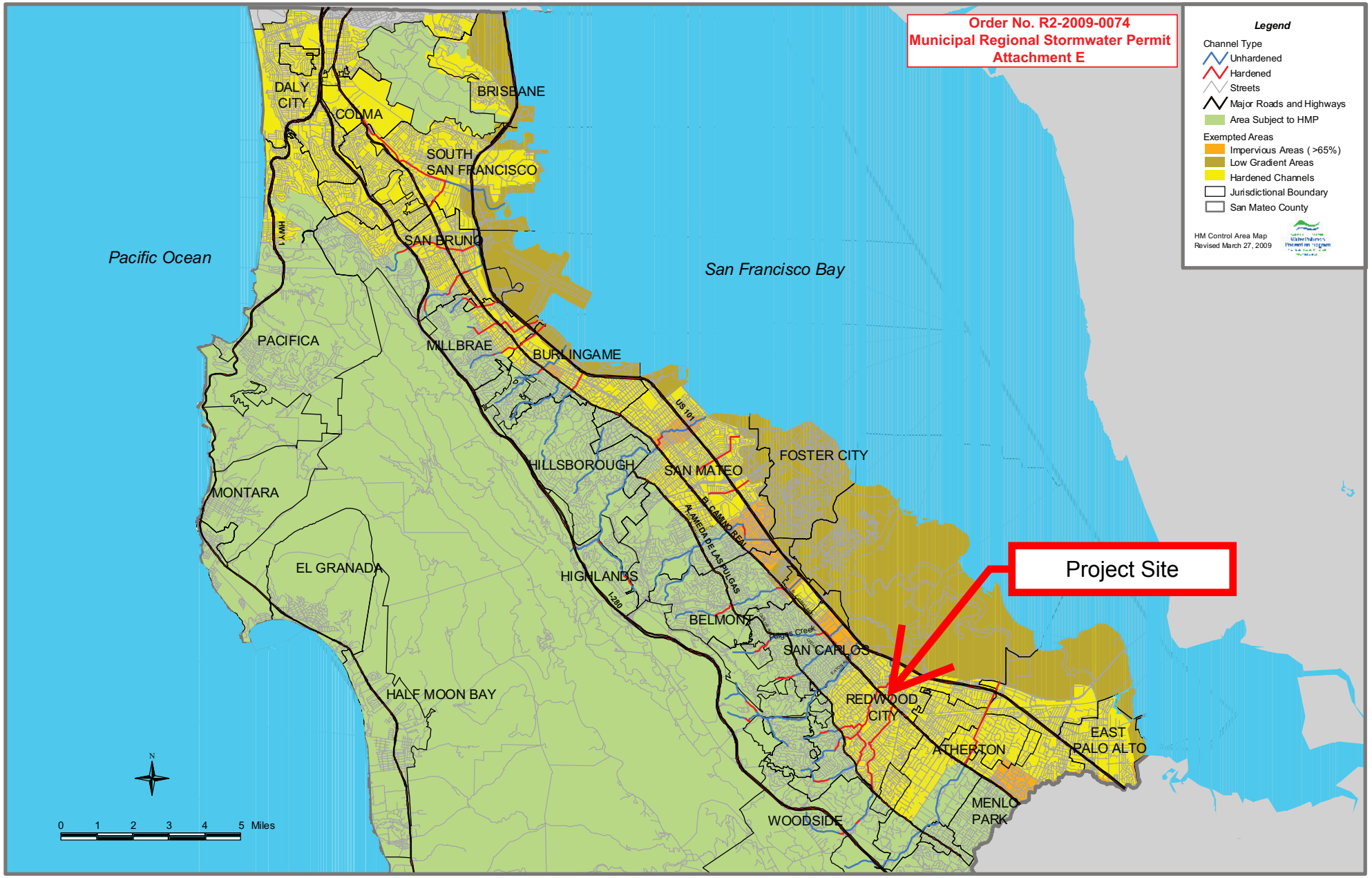
G-9 Project Close-Out (Continued -- for municipal staff use only):

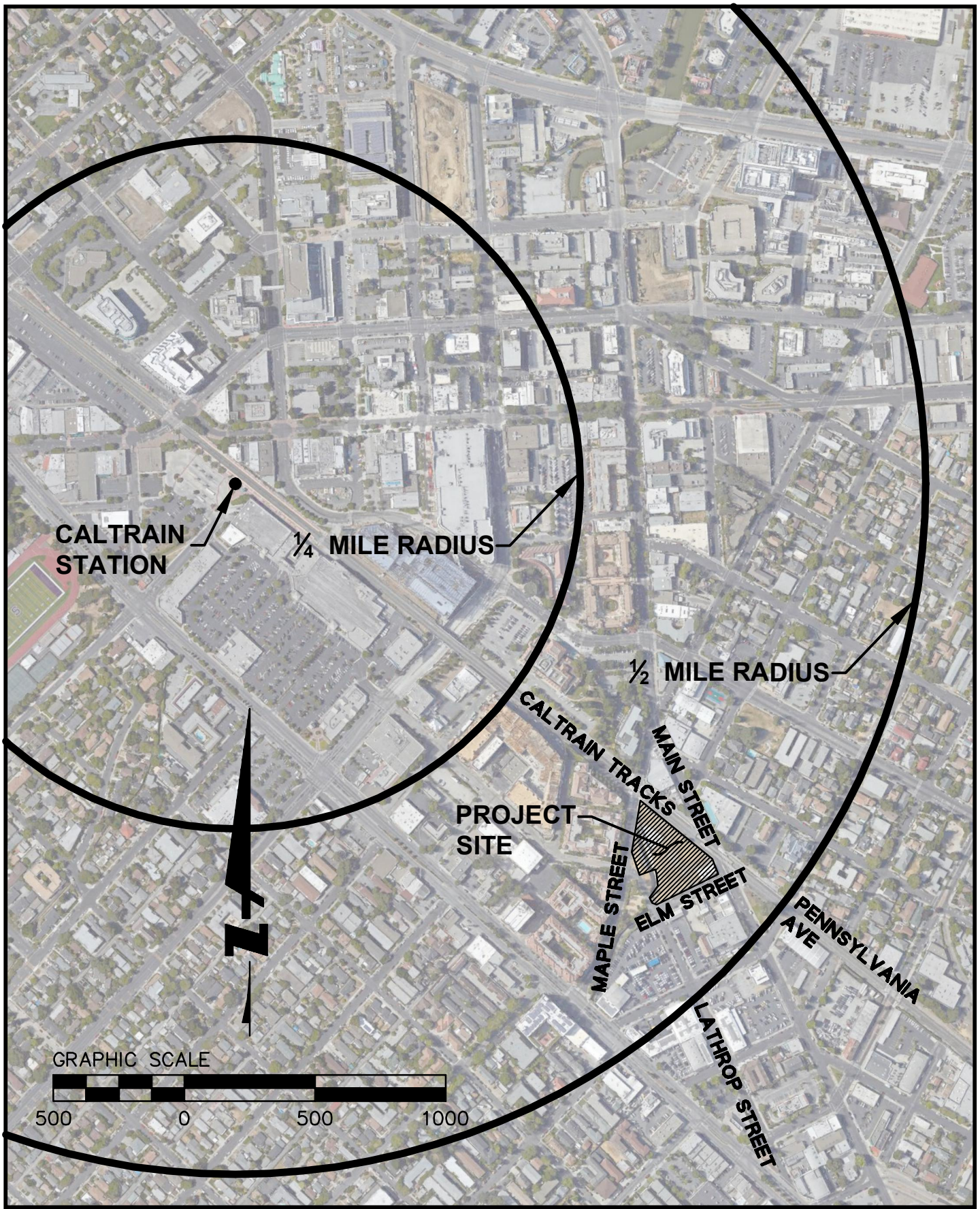
Name of staff confirming project is closed out: _____

Signature: _____ Date: _____

Name of O&M staff receiving information: _____

Signature: _____ Date: _____


Order No. R2-2009-0074
Municipal Regional Stormwater Permit
Attachment E
Legend
Channel Type
Unhardened
Hardened
Streets
Major Roads and Highways
Area Subject to HMP
Exempted Areas
Impervious Areas (>65%)
Low Gradient Areas
Hardened Channels
Jurisdictional Boundary
San Mateo County
HM Control Area Map
Revised March 27, 2009
Pacific Ocean
San Francisco Bay
DALY CITY
COLMA
BRISBANE
SOUTH SAN FRANCISCO
SAN BRUNO
HWY 1
PACIFICA
MILLBRAE
BURLINGAME
US 101
HILLSBOROUGH
SAN MATEO
FOSTER CITY
MONTARA
EL GRANADA
HIGHLANDS
I-280
EL CAMINO REAL
ALAMEDA DE LAS PULGAS
BELMONT
SAN CARLOS
HALF MOON BAY
REDWOOD CITY
ATHERTON
EAST PALO ALTO
MENLO PARK
WOODSIDE
Project Site
N
0 1 2 3 4 5 Miles



DRAWING NAME: K:\2017\170253_1180_Main\ENG\EXHIBITS\18_0222_Transit Exhibit\18_0222 TRANSIT EXHIBIT.dwg
PLOT DATE: 02-22-18 PLOTTED BY: junj

BkF
ENGINEERS / SURVEYORS / PLANNERS
255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
650/482-6300
650/482-6399 (FAX)

1180/1190 MAIN STREET TRANSIT MAP

Drawn JYJ | Checked | Approved
Job No. 20170253 | Date 02/22/18 | Sheet 1 of 1

ATTACHMENT 8

FEMA Maps

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 10N. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the USDA National Agriculture Imagery Program (NAIP). This information was photogrammetrically compiled at a scale of 1:24,000 from aerial photography dated 2005.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A: Cross section line
- 23 — 23: Transect line
- Culvert, Flume, Penstock or Aqueduct
- Road or Railroad Bridge
- Footbridge
- 97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- $^{4}76^{000}$E — 1000-meter Universal Transverse Mercator grid values, Zone 10
- 600000 FT — 5000-foot grid ticks: California State Plane coordinate system, Zone II (FIPSZONE 0402), Lambert Conformal Conic Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL
OCTOBER 16, 2012

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0301E

FIRM

FLOOD INSURANCE RATE MAP

SAN MATEO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 301 OF 510

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

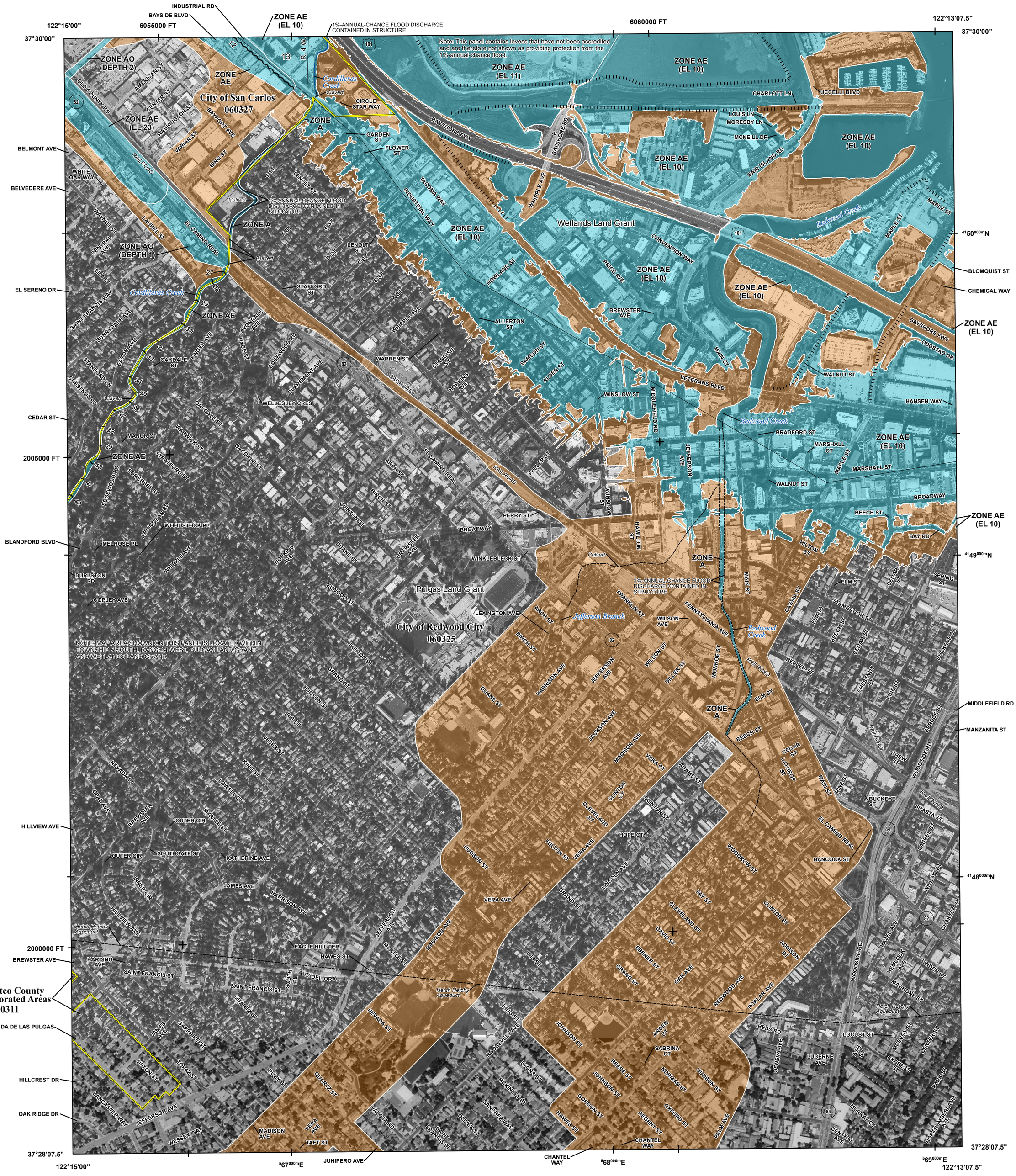
COMMUNITY	NUMBER	PANEL	SUFFIX
REDWOOD CITY, CITY OF	060325	0301	E
SAN CARLOS, CITY OF	060327	0301	E
SAN MATEO COUNTY	060311	0301	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 06081C0301E

EFFECTIVE DATE OCTOBER 16, 2012

Federal Emergency Management Agency



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes *Zone X*

OTHER AREAS
- NO SCREEN — Areas of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert or Storm Sewer
- Accredited or Provisionally Accredited Levee, Dike or Floodwall
- Non-accredited Levee, Dike or Floodwall
- E 18.2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation (BFE)
- 8 — Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 — Base Flood Elevation Line (BFE)

OTHER FEATURES
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was derived from USGS LiDAR dated 2010 and Coastal California digital imagery dated 2011. USDA NAIP imagery dated 2012 is used in areas not covered by the Coastal California digital imagery.

SCALE

N

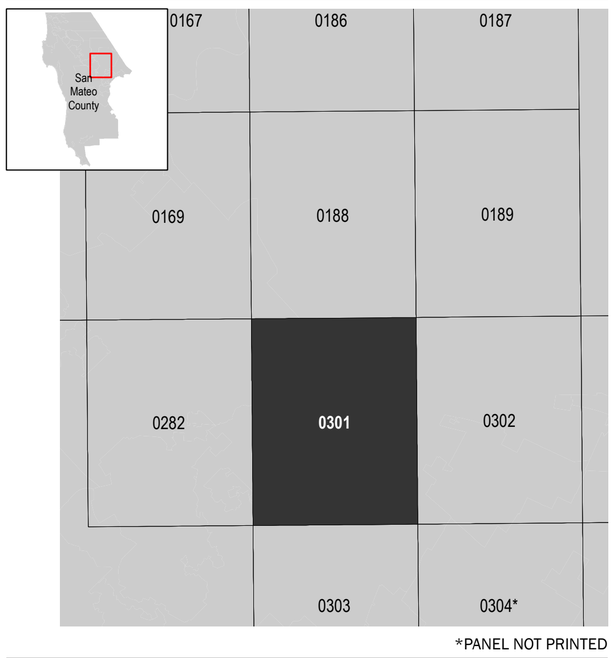
Map Projection:
Universal Transverse Mercator Zone 10N; North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 750 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



*PANEL NOT PRINTED

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

SAN MATEO COUNTY, CALIFORNIA

and Incorporated Areas

PANEL 301 OF 510

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
REDWOOD CITY, CITY OF	060325	0301	F
SAN CARLOS, CITY OF	060327	0301	F
SAN MATEO COUNTY	060311	0301	F

PRELIMINARY
8/13/2015

VERSION NUMBER
2.3.2.0

MAP NUMBER
06081C0301F

MAP REVISED

BkF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

ATTACHMENT 9

Utility Block Maps and Record Drawings

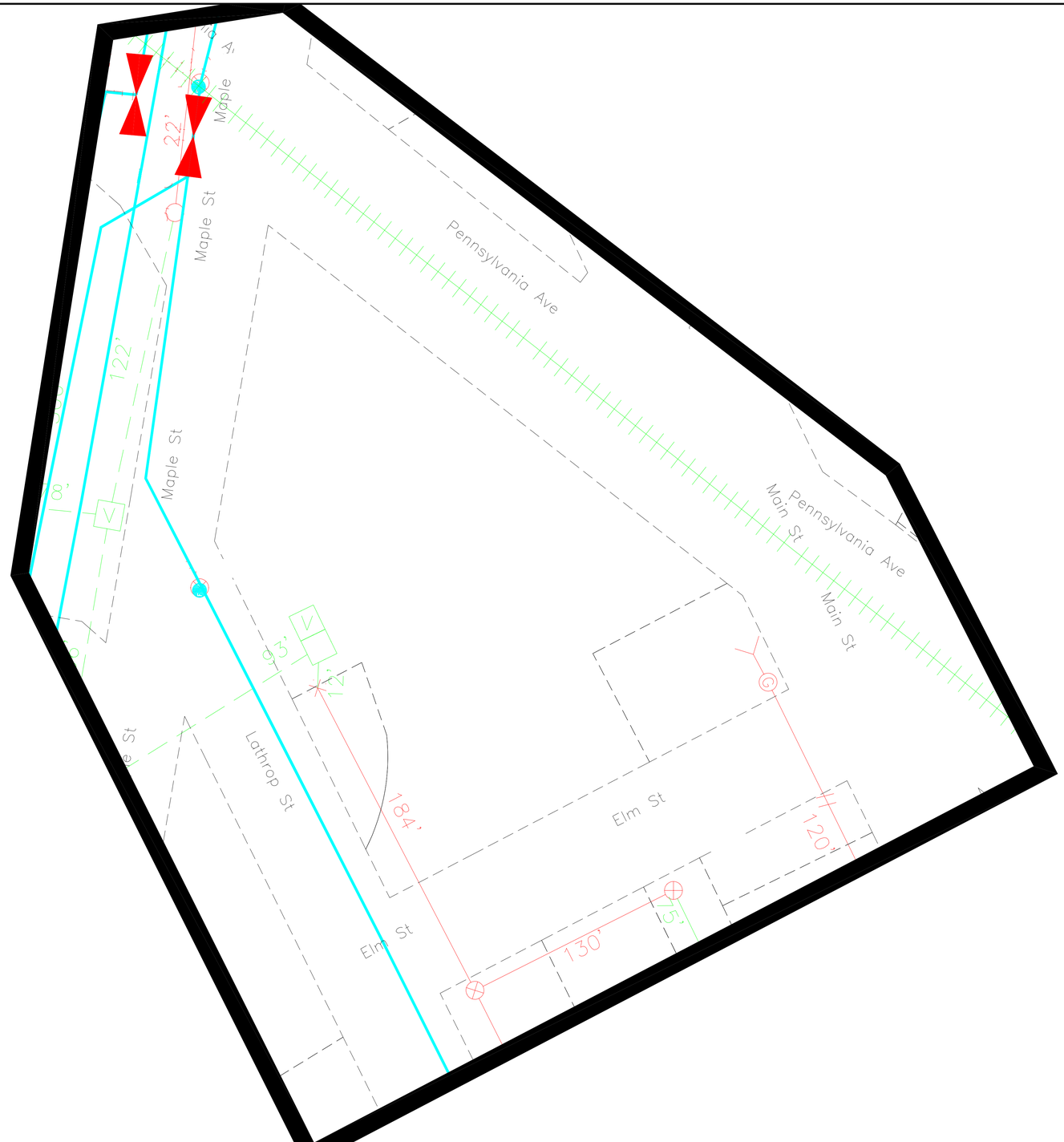
LEGEND

100'
UNDERGROUND TRENCH / VAULT

100'
OVERHEAD STRAND / POLE

FIBER CABLE

SPLICE ENCLOSURE



Rev	Date	Description	Rev	Date	Description	Rev	Date	Description
01	8/1/17	FACILITY REQUEST						

Dwg. Title:

FACILITY REQUEST
1180 MAIN STREET
FRBT / REDWOOD CITY, CA

comcast
MARKET AREA

Pacific Gas & Electric Company

County: San Mateo
Division: PENINSULA



LAT: 37.482964

Distribution Map M&C

1 inch = 100 feet

0 100 200 400 Feet

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Created on: 2017_09_03

D0906

DATE:	# POLES/ENCL:	HOURS:	☐ OH INSPECT ☐ OH PATROL ☐ UG INSPECT ☐ UG PATROL
			INSPECTOR:
			ORDER:
			SUPV REVIEW:
			DATE:
TOTAL			

D0901

LONG:-122.221069

D0810

D0907

D0911

LAT: 37.473819

LONG:-122.229385

N

LEGEND

Distribution Main

PressureClassification

- High Pressure
- Semi High Pressure
- Low Pressure

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PACIFIC GAS & ELECTRIC COMPANY
GAS DISTRIBUTION MAP
NAD 1927 StatePlane California III FIPS 0403

SCALE : 1 inch = 100 feet

100 0 100 200 300 Feet

Plat Map Number : 3279-G2

MAP OFFICE : SCL

MAP LAST UPDATED: 9/6/2017

DRAWN : UC4PRDWIN

MAP FOR REFERENCE ONLY

3279-F2

N 362,554

E 1,500,860

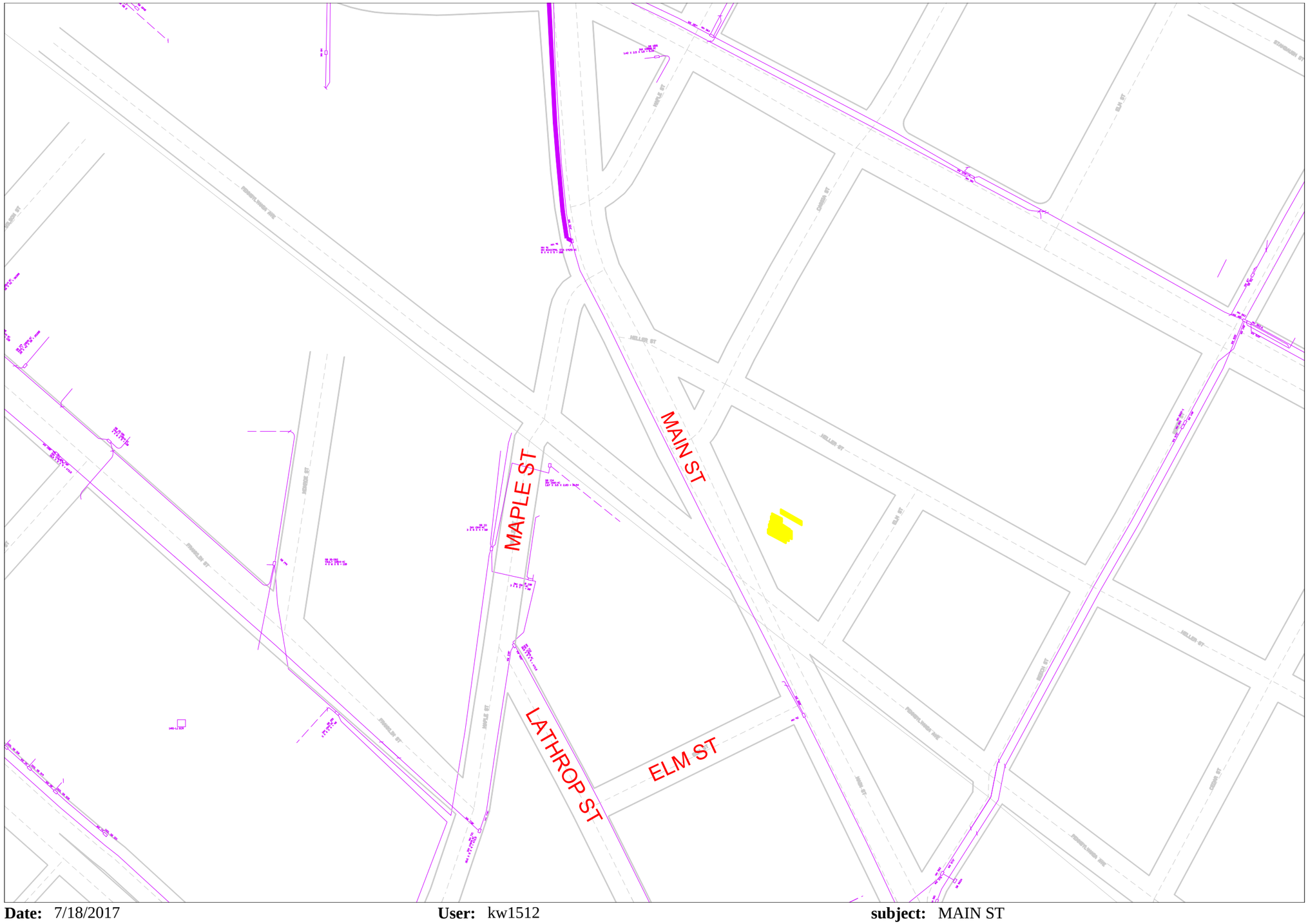
3279-G1

3279-G3

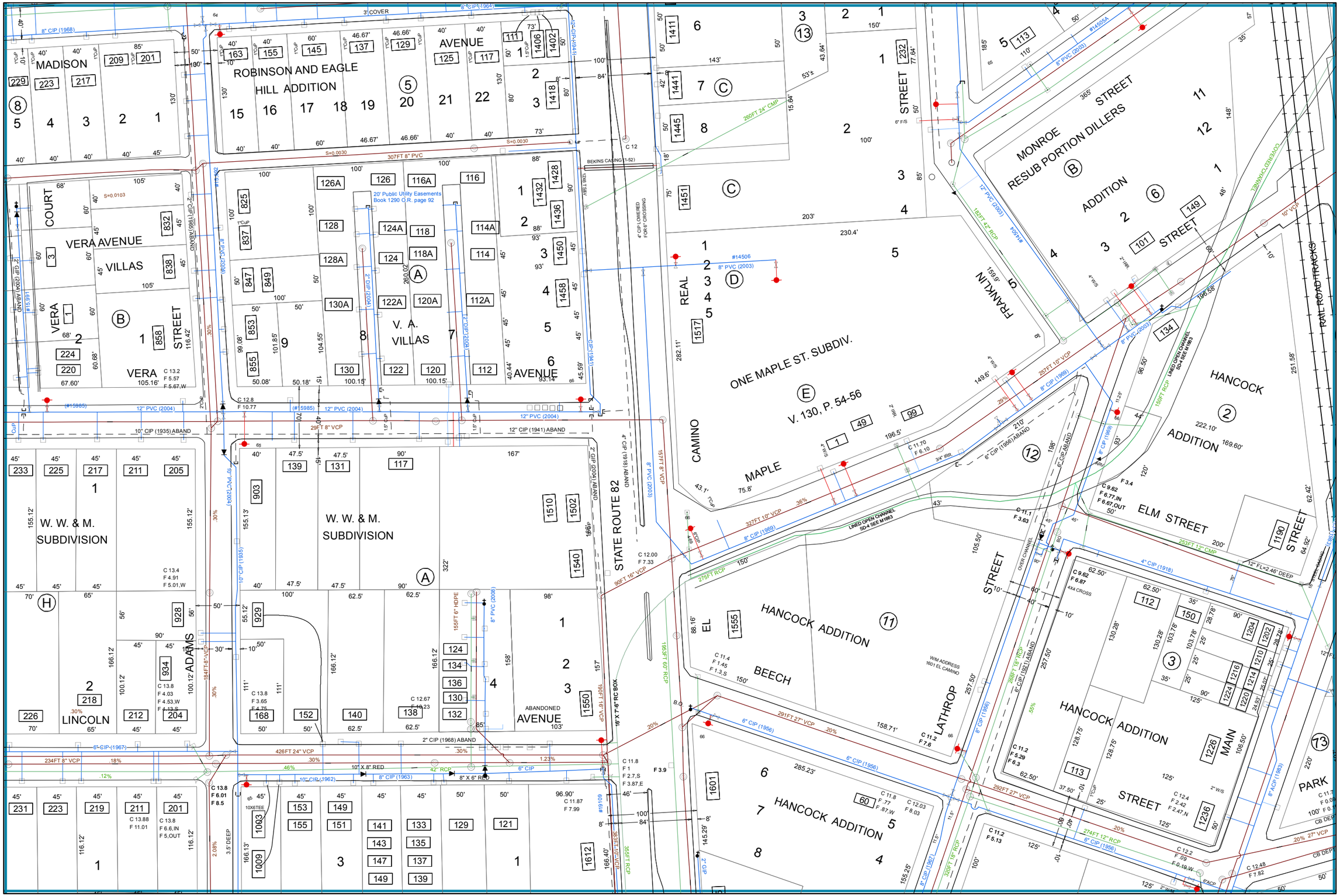
N 359,244

E 1,498,553

3279-H2



Date: 7/18/2017 **User:** kw1512 **subject:** MAIN ST
city of: REDWOOD CITY **dwg #:** 1 RDCY-01 YELLOW LEGEND : COPPER
purple legend: solid line=conduit,dashed line=cust.Solid sqr+manhole/splice box, Dashed sqr=MH?SB **green legend:** solidb/bj=buried/joint buried cabl
Notes: pwc : RDCY-01 REF 6094
Field View



REDWOOD CITY MAINTAINED UNDERGROUND UTILITIES

STRUCTURE SYMBOLS

- Catch Basin
- Curb Inlet
- Drop Inlet
- Siphon
- Area Drain
- SD Manholes
- SD Cap
- SD Junction
- Storm Filter
- Dewater
- Discharge Point
- Inlet Point
- Outfall
- Slide Gate
- SD Valve
- SD Pump Station
- Production Well
- Pressure Reducing Station
- Sample Station
- Test Station
- Hydrant
- Fire Connection
- Cathodic Protection Anode
- Water Meter
- Butterfly Valve
- Gate Valve
- W Pump Station
- Reservoir
- Water Tank
- Water Cap
- Water Coupling
- Cross
- Reducer
- Tee
- Unknown
- Wet Tap
- Air Release
- Blowoff
- Double Check
- Pressure Reducing
- R P Backflow
- Simple Check
- SS Manhole
- SS Pump Station
- SS Lift Station
- SS Air Release
- SS Cap
- Cleanout
- SS Coupling
- Lamp Hole

WATER MAIN SYMBOLS

Storm Drain
- Force Main
- Gravity Main
- Culvert
- Connector
- Open Channel
- Covered Channel
- Abandoned
- Water Laterals
- ARV
- Distribution
- Domestic
- Fire Connection
- Hydrant Line
- Irrigation
- UNKNOWN
- Abandoned
- Block Book Grid

Water Mains
- Distribution
- Irrigation
- Transmission
- Abandoned
- Sewer Mains
- Force Main
- Gravity Main
- Abandoned
- Non-City
- Sewer Laterals
- Active
- Abandoned
- Recycled Water
- Distribution
- Blowoff Line
- Irrigation
- Distribution
- ARV

FOR REFERENCE ONLY. THE CITY OF REDWOOD CITY ASSUMES NO LIABILITY FOR ERRORS OR OMISSIONS IN THE INFORMATION SHOWN ON THESE MAPS. ALL UTILITIES SHOULD BE FIELD VERIFIED.

F06	F08	F10
G06	G08	G10
H06	H08	H10

REDWOOD CITY MAINTAINED UNDERGROUND UTILITIES

0 50 100 150 200 Feet

STRUCTURE SYMBOLS

- Catch Basin
- Curb Inlet
- Drop Inlet
- Siphon
- Area Drain
- SD Manholes
- SD Cap
- SD Junction
- Storm Filter
- Dewater
- Discharge Point
- Inlet Point
- Outfall
- Slide Gate
- SD Valve
- SD Pump Station
- Production Well
- Pressure Reducing Station
- Sample Station
- Test Station
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- Fire Connection
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- Water Meter
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- Gate Valve
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- R P Backflow
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- SS Pump Station
- SS Lift Station
- SS Air Release
- SS Cap
- Cleanout
- SS Coupling
- Lamp Hole

WATER MAIN SYMBOLS

- Storm Drain
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- Gravity Main
- Culvert
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- Open Channel
- Covered Channel
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- Water Laterals
- ARV
- Distribution
- Domestic
- Fire Connection
- Hydrant Line
- Irrigation
- UNKNOWN
- Abandoned
- Block Book Grid
- Water Mains
- Distribution
- Irrigation
- Transmission
- Abandoned
- Sewer Mains
- Force Main
- Gravity Main
- Abandoned
- Non-City
- Sewer Laterals
- Active
- Abandoned
- Recycled Water
- Distribution
- Blowoff Line
- Irrigation
- Distribution
- ARV

Redwood City California Founded 1867

FOR REFERENCE ONLY. THE CITY OF REDWOOD CITY ASSUMES NO LIABILITY FOR ERRORS OR OMISSIONS IN THE INFORMATION SHOWN ON THESE MAPS. ALL UTILITIES SHOULD BE FIELD VERIFIED.

F08	F10	F12
G08	G10	G12
H08	H10	H12

BkF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

ATTACHMENT 10

Tentative Map

© BKF Engineers

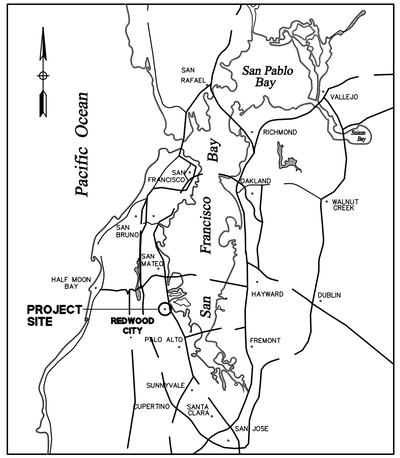
TENTATIVE PARCEL MAP

1180/1190 MAIN STREET

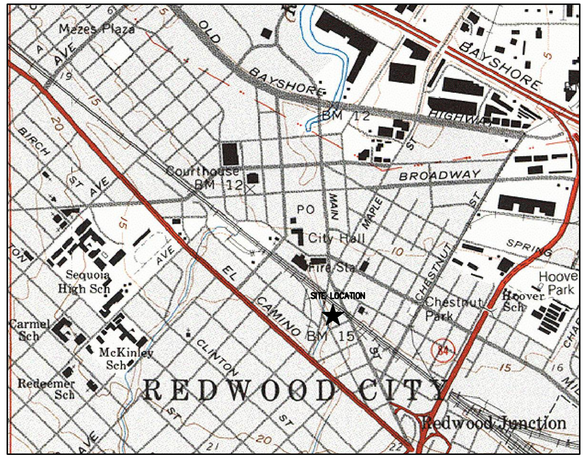
1180/1190 MAIN STREET, REDWOOD CITY, CALIFORNIA

SHEET INDEX

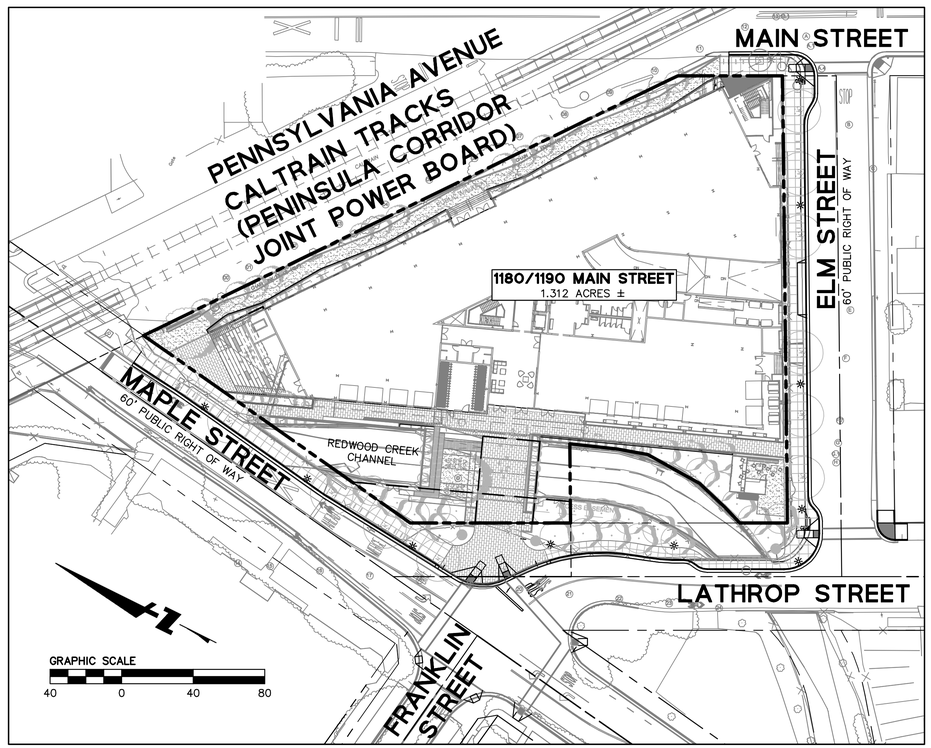
SHEET NO	DESCRIPTION
C1.0	TITLE SHEET
C2.0	NOTES, LEGEND, ABBREVIATIONS, LINE AND CURVE TABLES
C3.0	EXISTING CONDITIONS PLAN
C4.0	DEMOLITION PLAN
C5.0	PROPOSED BOUNDARY & PARCELIZATION
C6.0	CONCEPTUAL SITE PLAN
C7.0	CONCEPTUAL GRADING PLAN
C8.0	CONCEPTUAL UTILITY PLAN
C9.0	CONCEPTUAL STORM WATER CONTROL PLAN
C10.0	FIRE ACCESS PLAN
C11.0	TYPICAL CROSS SECTIONS & DETAILS



VICINITY MAP
NTS



LOCATION MAP
SCALE: 1" = 1000'



SITE PLAN
SCALE: 1" = 40'

PROJECT DATA

OWNER:	PREMIA 1180 MAIN, LLC 801 HAMILTON STREET REDWOOD CITY, CALIFORNIA 94063 MICHAEL HALOW (650) 600-7430
ARCHITECT:	BRICK., INC 1266 66TH STREET, SUITE 1 EMERYVILLE, CA 94608 (510) 516-0167
LANDSCAPE ARCHITECT:	RANA CREEK DESIGN 27875 BERWICK DRIVE, SUITE A CARMEL, CA 93923 (831) 659-3820
ENGINEER:	BKF ENGINEERS 255 SHORELINE DRIVE, SUITE 200 REDWOOD CITY, CA 94065 (650) 482-6300
WATER SUPPLY:	CITY OF REDWOOD CITY
FIRE PROTECTION:	REDWOOD CITY FIRE DEPARTMENT
SEWAGE DISPOSAL:	CITY OF REDWOOD CITY
STORM DRAIN:	CITY OF REDWOOD CITY
GAS & ELECTRIC:	PG&E
TELEPHONE:	VARIOUS PROVIDERS
CABLE:	VARIOUS PROVIDERS

BENCHMARK

BENCH MARK BM60

BEING A BRASS DISC IN THE TOP OF CURB, LOCATED AT MAIN STREET AND MAPLE STREET, MID-POINT OF CURVE OF CENTER MEDIAN, IN FRONT OF 410 MAPLE STREET, REDWOOD CITY.

ELEVATION = 15.310 FEET, BASED ON CITY OF REDWOOD CITY DATUM.

BASIS OF BEARING

THE BEARING NORTH 81°13'49" WEST OF THE CENTER LINE OF FRANKLIN STREET, BETWEEN THE FOUND MONUMENTS, AS SHOWN ON THAT CERTAIN PARCEL MAP ENTITLED "PARCEL MAP NO. 2010-01" FILED FOR RECORD ON MARCH 22, 2011 IN BOOK 79 OF PARCEL MAPS AT PAGES 74 THROUGH 76 INCLUSIVE, SAN MATEO COUNTY RECORDS, WAS TAKEN AS THE BASIS OF BEARINGS FOR THIS SURVEY.

MAPPING STATEMENT

1. THIS PROJECT WILL BE A MERGER OF 2 PARCELS INTO 1 PARCEL.
2. PROJECT WILL BE VACATING EXISTING EASEMENTS ON THE PROPERTY.
3. PROJECT WILL BE DEDICATING NEW EASEMENTS ON THE PROPERTY.

ENGINEER & SURVEYOR'S STATEMENT

THIS TENTATIVE MAP SUBMITTAL HAS BEEN PREPARED BY ME OR UNDER MY DIRECTION IN ACCORDANCE WITH STANDARD SURVEYING PRACTICE.

JOHN KOROYAN — DATE 6/27/2018
P.L.S. #8883
BKF ENGINEERS

LICENSED LAND SURVEYOR — JOHN KOROYAN — No. 8883 — STATE OF CALIFORNIA

THIS TENTATIVE MAP SUBMITTAL HAS BEEN PREPARED BY ME OR UNDER MY DIRECTION IN ACCORDANCE WITH STANDARD ENGINEERING PRACTICE.

ASHLEY A. STANLEY, P.E. — DATE 6/27/2018
PROJECT MANAGER
P.E. #74181
BKF ENGINEERS

REGISTERED PROFESSIONAL ENGINEER — ASHLEY A. STANLEY — No. 74181 — CIVIL — STATE OF CALIFORNIA

BKF 100 YEARS
ENGINEERS . SURVEYORS . PLANNERS
255 SHORELINE DR., SUITE 200
REDWOOD CITY, CA 94065
(650) 482-6300
www.bkf.com

1180/1190 MAIN STREET
TENTATIVE PARCEL MAP
TITLE SHEET
COUNTY OF SAN MATEO CALIFORNIA
REDWOOD CITY

No.	Revisions

Date 06/27/18
Scale AS SHOWN
Design PC
Drawn JYJ
Approved AAS
Job No 20170253

Drawing Number:
C1.0
1 OF 11

DRAWING NAME: \\Bkf-rc\data\2017\170253_1180_Main\ENG\02-TM\SHEETS\C1.0-MATITLE.dwg
PLOT DATE: 06-27-18 PLOTTED BY: Ioes

© BKF Engineers

GENERAL NOTES

1. TENTATIVE MAP: THIS TENTATIVE MAP IS BEING FILED IN ACCORDANCE WITH CHAPTER 3, ARTICLE 2, SECTION 66452 AND CHAPTER 4.5 OF THE SUBDIVISION MAP ACT.
2. PARCEL MAP: ONE SEPARATE PARCEL MAP WILL BE FILED FOR THIS PROJECT.
3. BOUNDARY: BOUNDARY INFORMATION IS BASED ON SURVEY DATA PREPARED BY BKF.
4. SOURCE OF TOPOGRAPHY: EXISTING TOPOGRAPHY SHOWN IS BASED ON A FIELD TOPOGRAPHIC SURVEY PREPARED BY BKF ENGINEERS DATED JULY 24, 2017 BY JOHN KOROYAN P.L.S. #8883.
5. RECORD INFORMATION: RECORD OWNERSHIP AND EASEMENT INFORMATION WAS TAKEN FROM THE FOLLOWING TITLE REPORTS:
   A. TITLE REPORT 1: ORDER NO. 0227019645-MP ISSUED BY OLD REPUBLIC TITLE COMPANY (APN 053-147-060 & 053-147-070 1180 & 1190 MAIN STREET), DATED MAY 10, 2017 AT 7:30 AM.
6. GRADING: SITE GRADES AND BUILDING / GARAGE FINISHED FLOOR ELEVATIONS ARE SUBJECT TO FINAL ENGINEERING DESIGN AND GEOTECHNICAL ENGINEER'S REVIEW AND APPROVAL.
7. UTILITIES: UTILITY SIZING, LOCATIONS, AND GRADES ARE SUBJECT TO FINAL ENGINEERING DESIGN, GEOTECHNICAL ENGINEERING AND RESPECTIVE UTILITY AGENCY REVIEW AND APPROVAL.
   A. EXISTING UTILITIES SHOWN ARE FROM FIELD OBSERVATION AND RECORD DRAWINGS AND ARE NOT MEANT TO BE A FULL CATALOG OF ACTUAL CONDITIONS.
   B. EXISTING ON-SITE UTILITIES SHOWN ARE TO BE REMOVED UNLESS OTHERWISE NOTED ON THE PLANS.
   C. THE WATER DISTRIBUTION SYSTEM WILL BE DESIGNED AND CONSTRUCTED PER REDWOOD CITY STANDARD SPECIFICATIONS & DETAILS, WHERE APPLICABLE.
   D. THE SANITARY SEWER SYSTEM WILL BE DESIGNED AND CONSTRUCTED PER REDWOOD CITY STANDARD SPECIFICATIONS AND DETAILS, WHERE APPLICABLE.
   E. THE STORM DRAIN SYSTEM WILL BE DESIGNED AND CONSTRUCTED PER REDWOOD CITY STANDARD SPECIFICATIONS AND DETAILS, WHERE APPLICABLE.
8. FEMA DESIGNATED FLOOD ZONE: THE PROJECT IS OUTSIDE THE 100 YEAR FLOOD ZONE ACCORDING TO FEMA MAP NUMBER 06081C0301E PANEL 301 OF 510, DATED OCTOBER 16, 2012. THE PROJECT SITE IS CLASSIFIED AS "ZONE X" – AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD. THE DRAINAGE CHANNEL FLOWING THROUGH THE PROJECT SITE IS CLASSIFIED AS "ZONE A" – 1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CHANNEL.
9. LANDSCAPE PLAN: LANDSCAPE PLAN SHALL BE SUBMITTED UNDER SEPARATE COVER.
10. GEOTECHNICAL REPORT: A GEOTECHNICAL REPORT SHALL BE SUBMITTED UNDER SEPARATE COVER.

LEGEND

	PROPOSED	EXISTING
PROPERTY LINE		
ADJACENT PROPERTY LINE		
STORM DRAIN LINE	18"SD	SD 18"SD SD
SANITARY SEWER LINE	6"SS	SS 6"SS SS
WATER LINE	4"W	W 4"W W
FIRE SERVICE LINE	FS	
RECYCLED WATER	PR RW	
COMMUNICATION LINE		COMM COMM COMM COMM
SANITARY SEWER MANHOLE		Ⓢ
STORM DRAIN MANHOLE		Ⓓ
TELEPHONE MANHOLE		Ⓣ
FIRE HYDRANT		
FIRE DEPARTMENT CONNECTION		
BLOW OFF VALVE		
CURB INLET		
SPOT ELEVATION	×101	×101
TRANSFORMER	T	
BUILDING LINE		
FENCE AS NOTED		
CENTERLINE		
EASEMENT LINE		
ELECTRICAL	E	
JOINT TRENCH	PR JT	
TELEPHONE	T	T T T T
OVERHEAD WIRES		OH OH OH OH
GAS	G	GAS GAS GAS GAS
ELECTROLIER		
TRAFFIC SIGNAL		
PARKING METER	PM#1	
STREET LIGHT		
TREE (AS NOTED)		
SIGN AS NOTED		
FOUND MONUMENT AS NOTED		
CATHODIC PROTECTION TEST STATION		
GUY POLE		
JOINT POLE		
WATER VALVE		

SYMBOL LEGEND

SYMBOL	DESCRIPTION
1 / 11.0	DETAIL NO. 1 ON SHEET C11.0
A / 10.0	DETAIL SECTION A ON SHEET C10.0
A-1 / RWC	DETAIL A-1 PER CITY OF REDWOOD CITY STANDARD DETAILS

ABBREVIATIONS

AC	ASPHALTIC CONCRETE
BW	BACK OF WALK
CTV	CABLE TELEVISION
CB	CATCH BASIN
CL	CENTERLINE
CLF	CHAIN LINK FENCE
CONC	CONCRETE
COR	CORNER
DI	DROP INLET
DCDA	DOUBLE CHECK DETECTOR ASSEMBLY
E	EAST
EASE	EASEMENT
EB	ELECTRICAL BOX
ELEC	ELECTRIC
E.V.A.E.	EMERGENCY VEHICLE ACCESS EASEMENT
EX.	EXCEPTION
FL	FLOW LINE
FND	FOUND
GR	GRATE
INV	INVERT
IP	IRON PIPE
IRR	IRRIGATION
JT	JOINT TRENCH
LG	LIP OF GUTTER
MH	MANHOLE
O.R.	OFFICIAL RECORDS
OH	OVERHANG
PVC	POLYVINLYCHLORIDE
PL	PROPERTY LINE
P.A.E.	PRIVATE ACCESS EASEMENT
P.S.D.E.	PRIVATE STORM DRAIN EASEMENT
P.S.E.	PUBLIC SERVICE EASEMENT
RCP	REINFORCED CONCRETE PIPE
S	SOUTH
SD	STORM DRAIN
SE	SOUTHEAST
SS	SANITARY SEWER
SW	SIDEWALK
S.D.E.	STORM DRAIN EASEMENT
ST	STREET
TMH	TELEPHONE MANHOLE
TC	TOP OF CURB
TC/FC	TOP OF CURB @ FACE OF CURB
TSB	TRAFFIC SIGNAL BOX
UTIL	UTILITY
VLT	VAULT
W	WATER
WM	WATER METER
WS	WATER SERVICE
W/	WITH
TYP	TYPICAL
UNK	UNKNOWN
IN	INSIDE SUBJECT BOUNDARY
OUT	OUTSIDE SUBJECT BOUNDARY
(T)	TOTAL DISTANCE VALUE

LINE AND CURVE TABLES

SEE SHEET C5.0 FOR HORIZONTAL CONTROLS.

PAE EASEMENT			
Number	Length	Radius	Line/Chord Direction
C9	8.45	20.00	N47° 36' 26"W
L96	26.75		N59° 42' 52"W
C10	1.94	9.50	N53° 52' 23"W
L97	48.31		N48° 01' 54"W
C11	1.74	10.50	N52° 46' 02"W
L98	34.72		N57° 30' 10"W
C12	1.98	9.50	N51° 32' 13"W
L99	22.85		N45° 34' 16"W
L100	25.05		N52° 21' 48"W
L101	37.62		N55° 49' 09"W
C13	1.34	9.50	N51° 46' 11"W
L102	37.71		N47° 43' 13"W
C14	1.59	10.50	N52° 03' 33"W
L103	36.75		N56° 23' 53"W
C15	2.00	9.50	N50° 22' 49"W
L104	17.78		N44° 21' 45"W
C16	3.59	10.50	N54° 08' 50"W
L105	12.18		N63° 56' 33"W
L106	38.67		S38° 14' 53"W
L107	7.55		N21° 46' 35"W

PAE EASEMENT			
Number	Length	Radius	Line/Chord Direction
L108	54.01		N08° 50' 35"E
L109	13.35		S52° 16' 49"E
L79	1.55		S36° 05' 22"W
L80	20.96		S52° 09' 34"E
L81	1.73		S37° 41' 44"W
L82	8.95		S59° 19' 44"E
L83	6.27		S54° 09' 29"E
L84	17.93		S44° 24' 18"E
L85	36.91		S56° 26' 26"E
L86	2.80		S52° 06' 06"E
L87	37.82		S47° 45' 46"E
L88	50.22		S55° 51' 26"E
L89	1.67		S51° 18' 34"E
L90	35.38		S46° 45' 43"E
L91	34.86		S57° 32' 43"E
L92	3.05		S52° 48' 34"E
L93	48.47		S48° 04' 26"E
L94	20.05		S59° 48' 54"E
L95	18.05		S26° 20' 51"E

PAE EASEMENT			
Number	Length	Radius	Line/Chord Direction
L54	138.37		N21° 02' 36"W
L55	48.19		S68° 43' 09"W
L72	38.19		N26° 20' 17"W
L73	9.16		N68° 21' 08"E
L71	32.00		N20° 57' 15"W
L70	3.19		N69° 13' 33"E
L56	5.70		N20° 35' 48"W
L57	2.93		N69° 15' 09"E
L58	10.77		S20° 49' 10"E
L59	36.50		N69° 00' 19"E
L60	4.95		S21° 31' 45"E
L61	9.86		N68° 10' 59"E
L62	29.24		S21° 11' 04"E
L63	5.18		N71° 00' 49"E
L64	54.44		S21° 04' 22"E
L65	4.06		S68° 46' 23"W
L66	0.54		N21° 13' 37"W
L67	2.11		S68° 53' 31"W
L68	114.05		S21° 08' 54"E
L69	9.39		S63° 02' 33"W

Maintenance Easement			
Number	Length	Radius	Line/Chord Direction
L74	68.38		S26° 20' 17"E
L75	21.23		S26° 20' 17"E
L76	11.95		N63° 02' 11"E
L77	122.49		N21° 13' 37"W
L78	39.75		S08° 46' 11"W

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1180/1190 MAIN STREET
TENTATIVE PARCEL MAP
NOTES, LEGEND, AND ABBREVIATIONS

REDWOOD CITY COUNTY OF SAN MATEO CALIFORNIA

Revisions	No.

Date 06/27/18
Scale AS SHOWN
Design PC
Drawn JYJ
Approved AAS
Job No 20170253

Drawing Number:
C2.0
2 OF 11

DRAWING NAME: \\Bkf-rc\data\2017\170253_1180_Main\ENG\02-TM\SHEETS\C2.0-MANOTES.dwg
PLOT DATE: 06-26-18
PLOTTED BY: loes

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BASIS OF BEARINGS:

THE BEARING NORTH 81°13'49" WEST OF THE CENTER LINE OF FRANKLIN STREET, BETWEEN THE FOUND MONUMENTS, AS SHOWN ON THAT CERTAIN PARCEL MAP ENTITLED "PARCEL MAP NO. 2010-01" FILED FOR RECORD ON MARCH 22, 2011 IN BOOK 79 OF PARCEL MAPS AT PAGES 74 THROUGH 76 INCLUSIVE, SAN MATEO COUNTY RECORDS, WAS TAKEN AS THE BASIS OF BEARINGS FOR THIS SURVEY.

BASIS OF ELEVATIONS:

BENCH MARK BM60

BEING A BRASS DISC IN THE TOP OF CURB, LOCATED AT MAIN STREET AND MAPLE STREET, MID-POINT OF CURVE OF CENTER MEDIAN, IN FRONT OF 410 MAPLE STREET, REDWOOD CITY.

ELEVATION = 15.310 FEET, BASED ON CITY OF REDWOOD CITY DATUM.

EASEMENT DISPOSITION TABLE

TITLE REPORT EXC/REF #:	DOCUMENT	DESCRIPTION	TO THE BENEFIT OF:	TO BE VACATED (YES/NO)
5	5314 O.R.174	STORM DRAIN EASEMENT	CITY OF REDWOOD CITY	NO
7	83045813	DRAINAGE EASEMENT	CITY OF REDWOOD CITY	NO
9	79 PM 74-76	EMERGENCY VEHICLE ACCESS EASEMENT (E.V.A.E.)	PUBLIC USE	YES
9	79 PM 74-76	PRIVATE ACCESS EASEMENT (P.A.E.)	LOT 2	YES**
9	79 PM 74-76	PRIVATE STORM DRAIN EASEMENT (P.S.D.E.)	LOT 2	YES**
9	79 PM 74-76	PUBLIC SERVICE EASEMENT (P.S.E.)	PUBLIC USE	YES***
9	79 PM 74-76	TRASH ENCLOSURE EASEMENT	LOT 2	YES**

◇5 INDICATES EASEMENT PER PRELIMINARY TITLE REPORT PREPARED BY OLD REPUBLIC TITLE COMPANY ORDER NO: 0227019645-MP, WITH AN EFFECTIVE DATE OF 05/10/2017 7:30 AM (NUMBER MATCHES EXCEPTION/REFERENCE # IN FIRST COLUMN OF ABOVE TABLE)

** EXISTING EASEMENT BENEFITING LOT 2 TO BE VACATED PER MAP.

*** EXISTING P.S.E. TO BE VACATED PER SEPARATE INSTRUMENT

PENNSYLVANIA AVENUE

CALTRAIN TRACKS (PENINSULA CORRIDOR JOINT POWER BOARD)

MAIN STREET

MAPLE STREET 60' PUBLIC RIGHT OF WAY

ELM STREET 60' PUBLIC RIGHT OF WAY

LATHROP STREET

FRANKLIN STREET

LOT 1
79 PM 74-76
1.186 ACRES ±

LOT 2
79 PM 74-76
0.126 ACRES ±

LOT 3 (1 MAPS 80)

LOT 1 (131 MAPS 33)

NOTE: THIS SITE HAS A TEMPORARY CONSTRUCTION FENCE AROUND THE PROPERTY

◇9 TRASH ENCLOSURE EASEMETNT 79 PM 74-76

◇9 25' P.A.E., 79 PM 74-76

◇9 P.S.D.E., 79 PM 74-76

◇9 E.V.A.E., 79 PM 74-76

◇9 P.S.E., 79 PM 74-76

◇5 32' CITY OF RWC S.D.E., 5314 O.R. 174

◇7 CITY OF RWC EASEMENT FOR DRAINAGE PURPOSES, DOC. 83045813

FOUND 3/4" IP WITH TAG "LS 5797" PER 79 PM 74-76

FOUND 3/4" IP WITH PLUG "RCE 7548" PER 79 PM 74-76

FOUND STANDARD CITY MONUMENT PER 79 PM 74-76 & 130 M 54-56

CHAIN LINK FENCE (CLF)

S52°15'44"E 331.92' (T)

327.19'

N52°15'44"W 34.29'

N08°46'11"E 182.18'

N08°46'11"E 285.69' (T)

208.28'

N81°13'49"W 289.94'

S26°20'51"E 58.61'

S26°20'51"E 30.00'

S63°02'11"W 85.91'

S63°02'33"W 87.30

S26°57'49"E 62.88'

S63°02'33"W 249.91' (T)

S63°02'33"E 279.92'

S63°02'33"W 162.61'

N63°02'33"E 442.53' (T)

S63°02'11"W 44.16'

S63°02'11"W 30.00'

N26°20'17"W 89.61'

N26°20'17"W 26.55'

N26°20'17"W 250.61' (T)

99.43'

151.18'

57.41'

GRAPHIC SCALE
20 0 20 40

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1180/1190 MAIN STREET
TENTATIVE PARCEL MAP
EXISTING CONDITIONS PLAN

REDWOOD CITY COUNTY OF SAN MATEO CALIFORNIA

No.	Revisions

Date 06/27/18
Scale 1" = 20'
Design PC
Drawn JYJ
Approved AAS
Job No 20170253

Drawing Number:
C3.0
3 OF 11

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LEGEND:

- EXISTING FACILITY TO BE REMOVED
- AC SAWCUT (1' MIN)/ FULL DEPTH AC REMOVAL
- REMOVE EXISTING SIDEWALK, CURB, AND GUTTER
- CLEAR & GRUB/REMOVE EXISTING LANDSCAPE/VEGETATION
- DEMOLISH EXISTING BUILDING/FOUNDATION
- SAWCUT LINE/LIMIT OF WORK
- DAYLIGHT LINE/LIMIT OF GRADING
- PIPE CAP

MAIN STREET

PENNSYLVANIA AVENUE

CALTRAIN TRACKS
(PENINSULA CORRIDOR
JOINT POWER BOARD)

UNDERGROUND
EX OH UTILITIES

EXISTING TREE
TO BE REMOVED

CHAIN LINK FENCE (GLP)

LOT 2
79 PM 74-76
0.126 ACRES ±

LOT 1
79 PM 74-76
1.186 ACRES ±

NOTE: THIS SITE HAS A TEMPORARY CONSTRUCTION FENCE AROUND THE PROPERTY

ELM STREET
60' PUBLIC RIGHT OF WAY

MAPLE STREET
60' PUBLIC RIGHT OF WAY

EXISTING WALL
TO REMAIN

EXISTING TREE
TO BE REMOVED

EXISTING BRIDGE
ABUTMENTS TO REMAIN

EXISTING 4" WATER MAIN
TO BE CUT AND CAPPED.
ABANDON IN PLACE

EXISTING TREE
TO BE REMOVED

UNDERGROUND
EX OH UTILITIES

LATHROP STREET

EXISTING STREET LIGHT
TO BE REMOVED

EXISTING STRIPING
TO BE ADJUSTED

EXISTING TREE
TO BE REMOVED

EXISTING LEFT
TURN STRIPING
TO BE REMOVED

REMOVE
CONCRETE
FOR
PROPOSED
ADA RAMP

FRANKLIN
STREET

GRAPHIC SCALE
20 0 20 40

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1180/1190 MAIN STREET
TENTATIVE PARCEL MAP
DEMOLITION PLAN
COUNTY OF SAN MATEO
CALIFORNIA
REDWOOD CITY

Revisions

No.	

Date 06/27/18
Scale 1" = 20'
Design PC
Drawn JYJ
Approved AAS
Job No 20170253

Drawing Number:
C4.0
4 OF 11

DRAWING NAME: \\Bkf-rc\data\2017\170253_1180_Main\ENG\02-TM\SHEETS\C4.0-MAPRDM.dwg
PLOT DATE: 06-26-18
PLOTTED BY: loes

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LEGEND:

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- EASEMENT LINE
- CENTERLINE
- PUBLIC ACCESS EASEMENT (P.A.E.)
- EMERGENCY VEHICLE ACCESS EASEMENT (E.V.A.E.)
- MAINTENANCE EASEMENT

NOTES:

1. THE TWO EXISTING LOTS WILL BE MERGED INTO A SINGLE DEVELOPMENT PARCEL.
2. AN ACCESS EASEMENT WILL BE PROVIDED ON THE STREET SIDE OF THE CREEK TO ALLOW THE CITY OF REDWOOD CITY ACCESS TO REDWOOD CREEK FOR MAINTENANCE.
3. SEE SHEET C2.0 FOR LINE AND CURVE TABLES.
4. SEE SHEET C2.0 FOR ABBREVIATIONS.

MAIN STREET

PENNSYLVANIA AVENUE

CALTRAIN TRACKS
(PENINSULA CORRIDOR
JOINT POWER BOARD)

S26°20'51"E 58.61'

S26°20'51"E 30.00'

FOUND 3/4" IP WITH TAG "LS 5797" PER 79 PM 74-76

S52°15'44"E 331.92' (T)
327.19'

ELM STREET
60' PUBLIC RIGHT OF WAY

S63°02'33"W 87.30'

S63°02'33"W 249.91' (T)

N63°02'33"E 279.92'

S63°02'33"W 162.61'

LOT 3
(1 MAPS 80)

1180/1190 MAIN STREET
1.312 ACRES ±

PUBLIC ACCESS EASEMENT (P.A.E.)

FOUND 3/4" IP WITH PLUG "RCE 7548" PER 79 PM 74-76

N52°15'44"W 34.29'

MAPLE STREET
60' PUBLIC RIGHT OF WAY

N08°46'11"E 182.18'

N08°46'11"E 265.69' (T)
208.28'

LOT 1
(13 MAPS 9)

PROPOSED 65' WIDE (VARIES) PUBLIC ACCESS EASEMENT (P.A.E.)

PROPOSED 28' WIDE E.V.A.E.

32' CITY OF RWC S.D.E. 5314 O.R. 174

P.A.E.

PR 10' WIDE STORM DRAIN EASEMENT GRANTED BY CITY OF RWC TO PROJECT

CITY OF RWC EASEMENT FOR DRAINAGE PURPOSES, DOC. 83045813

14.16'

S63°02'11"W

S63°02'11"W 30.00'

N26°20'17"W 89.61'

N26°20'17"W 26.55'

PROPOSED MAINTENANCE EASEMENT IN FAVOR OF REDWOOD CITY

99.43'

151.18'

N26°20'17"W 250.61' (T)

LATHROP STREET

57.41'

FOUND STANDARD CITY MONUMENT PER 79 PM 74-76 & 130 M 54-56

N61°13'48"W 289.94'

FRANKLIN STREET

GRAPHIC SCALE
20 0 20 40

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1180/1190 MAIN STREET
TENTATIVE PARCEL MAP
PROPOSED BOUNDARY & PARCELIZATION

REDWOOD CITY COUNTY OF SAN MATEO CALIFORNIA

No.	Revisions

Date 06/27/18
Scale 1" = 20'
Design PC
Drawn JYJ
Approved AAS
Job No 20170253

Drawing Number:
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5 OF 11

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HORIZONTAL CONTROL LEGEND

FULL DEPTH AC PAVEMENT

SAWCUT LINE/LIMIT OF WORK

NOTES:

1. SEE LANDSCAPE DRAWINGS FOR TREE AND PLANTING LAYOUT.
2. SEE ARCHITECTURAL DRAWINGS FOR BUILDING LAYOUT.

PENNSYLVANIA AVENUE

CALTRAIN TRACKS
(PENINSULA CORRIDOR
JOINT POWER BOARD)

MAIN STREET

EXISTING STREET LIGHT AND STREET TREE CONSTRUCTED AS PART OF CITY OF REDWOOD CITY PROJECT

CURB RAMP

CROSS WALK

EXISTING CURB RAMP CONSTRUCTED AS PART OF CITY OF REDWOOD CITY IMPROVEMENT PROJECTS

CITY STANDARD CURB AND GUTTER

FLOW-THRU PLANTER 630 SF

8' PATH

PUBLIC WALKWAY

PUBLIC ACCESS EASEMENT (P.A.E.)

FLOW-THRU PLANTER 636 SF

PEDESTRIAN SCALE STREET LIGHT (TYP)

PROPOSED SIDEWALK

1180/1190 MAIN STREET
1.312 ACRES ±

CITY STANDARD DRIVEWAY

TRASH

ELM STREET
60' PUBLIC RIGHT OF WAY

PROPOSED SIDEWALK

PEDESTRIAN SCALE STREET LIGHT (TYP)

MAPLE STREET
60' PUBLIC RIGHT OF WAY

EXISTING WALL TO REMAIN

EXTENSION OF WALL TO PR BRIDGE

32' CITY OF RWC S.D.E. 5314 O.R. 174

PROPOSED 65' WIDE (VARIES) PUBLIC ACCESS EASEMENT (P.A.E.)

PROPOSED 26' WIDE E.V.A.E.

P.A.E.

PR WALL 4' MAX HT

EXISTING CHANNEL TO REMAIN

PR 10' WIDE STORM DRAIN EASEMENT GRANTED BY CITY OF RWC TO PROJECT

CITY OF RWC EASEMENT FOR DRAINAGE PURPOSES, DOC. 83045813

CITY STANDARD CURB AND GUTTER

PR CURB RAMP

CROSSWALK

FIRE LANE NO PARKING SIGNS

PROPOSED MAINTENANCE EASEMENT IN FAVOR OF REDWOOD CITY

BEGIN RED PAINTED ROLLED CURB

END DEDICATED CLASS II BIKE LANE. BEGIN SHARED CLASS III BIKE ROUTE.

CITY STANDARD CURB AND GUTTER

FIRE LANE NO PARKING SIGN

PROPOSED CURB RAMP

CITY STANDARD CURB AND GUTTER

PROPOSED SIDEWALK

PEDESTRIAN SCALE STREET LIGHT (TYP)

BEGIN RED PAINTED ROLLED CURB

SHARROW

LATHROP STREET

STOP PAVEMENT MARKING

STOP SIGN

CROSSWALK

FOUND STANDARD CITY MONUMENT PER 79 PM 74-76 & 130 M 54-56

CROSSWALK

STOP LINE

CROSSWALK

EX CROSSWALK

EX CURB AND GUTTER TO REMAIN

PROPOSED CURB RAMP

STOP SIGN

STOP PAVEMENT MARKING

EX CURB RAMP

EX CURB RAMP

PROPOSED CURB RAMP

FRANKLIN STREET

GRAPHIC SCALE
20 0 20 40

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1180/1190 MAIN STREET
TENTATIVE PARCEL MAP
CONCEPTUAL SITE PLAN

COUNTY OF SAN MATEO
CALIFORNIA

REDWOOD CITY

No.	Revisions

Date 06/27/18
Scale 1" = 20'
Design PC
Drawn JYJ
Approved AAS
Job No 20170253

Drawing Number:
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6 OF 11

DRAWING NAME: \\Bkf-rc\data\2017\170253_1180_Main\ENG\02-TM\SHEETS\C6.0-MAPRHZ.dwg
PLOT DATE: 06-27-18
PLOTTED BY: loes

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NOTES:

1. THE ELEVATIONS SHOWN ON THIS GRADING PLAN ARE BASED UPON CITY OF REDWOOD CITY DATUM (NAVD 88).
2. THE PROJECT IS OUTSIDE THE 100 YEAR FLOOD ZONE ACCORDING TO FEMA MAP NUMBER 06081C0301E PANEL 301 OF 510, DATED OCTOBER 16, 2012. THE PROJECT SITE IS CLASSIFIED AS "ZONE X" – AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD. THE DRAINAGE CHANNEL FLOWING THROUGH THE PROJECT SITE IS CLASSIFIED AS "ZONE A" – 1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CHANNEL.
3. GRADING ELEVATIONS, FINISHED FLOOR ELEVATIONS, AND SAWCUT LIMITS ARE PRELIMINARY AND SUBJECT TO FINAL ENGINEERING DESIGN AND GEOTECHNICAL ENGINEER REVIEW AND APPROVAL.
4. EXISTING UTILITY STRUCTURES REMAINING IN PLACE TO BE ADJUSTED TO FINAL GRADE.

PENNSYLVANIA AVENUE

CALTRAIN TRACKS
(PENINSULA CORRIDOR
JOINT POWER BOARD)

MAIN STREET

ELM STREET
60' PUBLIC RIGHT OF WAY

MAPLE STREET
60' PUBLIC RIGHT OF WAY

LATHROP STREET

FRANKLIN STREET

PUBLIC WALKWAY

1180/1190 MAIN STREET
1.312 ACRES ±

FF LEVEL 1
18.40

MATCH EX
TC 16.2±
FL 16.1±

TC 16.37
FL 15.87

EX 16.7±

RIM
17.50

PLANTER
TW 18.00
FG 17.00

FG
16.0±

FG 18.40

TC 16.45
FL 15.95

TC/FL 15.91

FG 16.41

TC 16.36
FL 15.86

SDCB
TC 16.23
FL–LP 15.73

TC 16.29
FL 15.79

TC 16.52
FL–HP 16.02

BW AT PL
16.43

TC 16.44
FL 15.94

TC 16.39
FL 15.89

BW AT PL
16.31

TC 16.30
FL 15.80

TC 16.21
FL 15.71

BW 16.04

TC 16.05
FL 15.55

FLUSH FOR
CAFE
ENTRY
ACCESS

FG 16.04

TC 15.97
FL 15.47

TC 15.92
FL 15.42

SDCB
TC 15.79
FL–LP 15.29

EX TO
REMAIN
DI
GR 15.17
INV OUT 13.74

TC 15.93
FL 15.43
FG 16.00

TC/FL 15.50

TC 16.07
FL 15.57

EX
15.90

BW
16.15

BW
15.70

BW
15.55

RIM
15.50

FG
18.40

FG
18.34

4' HIGH WALL

BRIDGE STRUCTURE
OVER CHANNEL

TRANSITION FROM
4' TO 6" HIGH WALL

6" HIGH
WALL

FG 18.27

FG 17.64

FG 17.34

FG 17.12

MATCH EX
TC 15.27
FL 15.88

TC 15.91
FL 15.41

TC 15.47
FL 14.97

TC 15.24
FL 14.74

EX TO
REMAIN
SDMH/CB
RIM 15.04
INV IN 10.8
INV OUT 8.0

SDCB
TC 14.88
FL–LP 14.38

SDCB
TC 15.43
FL 14.99

EX TO
REMAIN
SDMH
RIM 15.56
INV IN 7.2
INV OUT 6.2

TC 16.68
FL 16.18

SDCB
TC 15.52
FL 15.02

TC 16.49
FL 15.99

TC 16.55
FL 16.05

LEGEND

GRAPHIC SCALE
20 0 20 40

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1180/1190 MAIN STREET
TENTATIVE PARCEL MAP
CONCEPTUAL GRADING PLAN

REDWOOD CITY
COUNTY OF SAN MATEO
CALIFORNIA

No.	Revisions

Date 06/27/18
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Job No 20170253

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7 OF 11

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UTILITY LEGEND:

PR	PROPOSED
6"SS	PR SANITARY SEWER
4"W	PR DOMESTIC WATER
18"SD	PR STORM DRAIN
PR JT	PR JOINT TRENCH
PR RW	PR RECYCLED WATER SERVICE
FH	PR FIRE HYDRANT
	PR SEWER MANHOLE
CO	PR CLEAN OUT
	PR STORM DRAIN MANHOLE
	PR STORM DRAIN INLET
WM	PR WATER METER
WV	PR WATER VALVE
FDC	PR FIRE DEPARTMENT CONNECTION

PENNSYLVANIA AVENUE

CALTRAIN TRACKS
(PENINSULA CORRIDOR
JOINT POWER BOARD)

MAIN STREET

ELM STREET
60' PUBLIC RIGHT OF WAY

MAPLE STREET
60' PUBLIC RIGHT OF WAY

LATHROP STREET

FRANKLIN STREET

1180/1190 MAIN STREET
1.312 ACRES ±

CONNECT TO EX 8" DOMESTIC WATER MAIN

REMOVE EX SDDI AND PIPE

SDDI
TG 15.87
INV 13.54

SDDI
TG 15.73
INV 13.33

OVERFLOW
RIM 17.50
INV 13.63

BUBBLE-UP
RIM 16.50
INV 15.50

CONNECT TO BLDG SD
INV 15.40

SDJB
RIM 16.07
INV 12.53

OVERFLOW
INV 13.11

PLANTER
RIM 18.00
FG 18.50

OVERFLOW
RIM 17.50
INV 13.83

PR BUILDING FED STANDPIPE

P.A.E. EASEMENT

BUBBLE-UP
INV 15.30

CONNECT TO BLDG SD
INV 15.40

SDJB
RIM 16.0±
INV 11.60

12" SD PVC 10.5%

PVC 12" SD 10.5%

OVERFLOW
RIM 17.50
INV 13.08

SDJB
RIM 15.6±
INV 11.44

SDDI
RIM 15.6±
INV 11.35

SDDI
RIM 18.00
INV 11.22

SDMH
RIM 18.40
INV 11.17

12" SD

0.25% HDPE 42" SD

32' CITY OF RWC S.D.E. 5314 O.R. 174

PROPOSED 65' WIDE (VARIES) PUBLIC ACCESS EASEMENT (P.A.E.)

P.A.E.

SDMH
INTEGRAL WEIR W/ ORIFICE
RIM 18.40
INV 10.67

CONNECT TO EX 12" SD OUFALL
INV OUT 10.58

CITY OF RWC EASEMENT FOR DRAINAGE PURPOSES, DOC. 83045813

SDMH 6FT
RIM 15.65±
INV 11.7±

PROPOSED MAINTENANCE EASEMENT IN FAVOR OF REDWOOD CITY

EX 8" EXTEND W MAIN

6" FW POC
RPDA INSIDE BLDG

4" W POC
RPBFP INSIDE BLDG

4" RW POC
RPBFP INSIDE BLDG

6" W ABANDONED

CONNECT TO EX SS MAIN WITH NEW SMH

REPLACE EX 4" DOMESTIC WATER MAIN WITH NEW 8" DOMESTIC WATER MAIN

SDDI
TG 15.29
INV 11.98

REMOVE EX DI
REPLACE WITH SDMH CONNECT NEW 12"SD

CONNECT TO EX 8" DOMESTIC WATER MAIN

GRAPHIC SCALE
20 0 20 40

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1180/1190 MAIN STREET
TENTATIVE PARCEL MAP
CONCEPTUAL UTILITY PLAN

REDWOOD CITY COUNTY OF SAN MATEO CALIFORNIA

No.	Revisions

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8 OF 11

DRAWING NAME: \\Bkf-rc\data\2017\170253_1180_Main\ENG\02-TM\SHEETS\C8.0-MAPRUTIL.dwg
PLOT DATE: 06-27-18 PLOTTED BY: loes

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LEGEND

- PROPOSED ROOF (IMPERVIOUS)
- PROPOSED ON-SITE PAVEMENT (IMPERVIOUS)
- PROPOSED LANDSCAPING (PERVIOUS)
- PROPOSED BIORETENTION (PERVIOUS)
- EXISTING CHANNEL AREA OF REDWOOD CREEK (NOT INCLUDED IN CALCULATIONS)
- STORMWATER MANAGEMENT AREA BOUNDARY

NOTES

1. THIS STORMWATER MANAGEMENT PLAN HAS BEEN CREATED TO SHOW COMPLIANCE WITH PROVISION C.3 OF THE SAN MATEO COUNTYWIDE STORM WATER POLLUTION PREVENTION PROGRAM.
2. THE OFFICE BUILDING IS TREATED BY AN AT-GRADE FLOW THROUGH PLANTER. THE REQUIRED TREATMENT AREA WAS CALCULATED USING THE COMBINATION FLOW/VOLUME METHOD.
3. AREA ON THE WESTERN SIDE OF REDWOOD CREEK IS DESIGNATED AS A SELF-RETAINING AREA.
4. THIS PROJECT WILL IMPLEMENT STORMWATER DETENTION MEASURES TO MITIGATE THE INCREASE IN IMPERVIOUS AREA FROM EXISTING CONDITIONS.
5. CHANNEL AREA OF REDWOOD CREEK ON THE PROJECT SITE WEREN'T INCLUDED. THE 11% PROPOSED PERVIOUS SURFACES AT THE SITE DOES NOT INCLUDE THE CHANNEL AREA OF REDWOOD CREEK.

DESIGN RAINFALL INTENSITIES

T_C = 10 MIN

$i_{10\text{-YEAR}}$ = 1.70 in/hr

$i_{30\text{-YEAR}}$ = 2.10 in/hr

$i_{100\text{-YEAR}}$ = 2.50 in/hr

PRE-DEVELOPMENT HYDROLOGY				
SURFACE	AREA (SF)	AREA (AC)	COEFF.	C*A
BUILDING ROOFS	2,279	0.05	0.95	0.048
ASPHALT PAVEMENT	–	–	–	–
CONCRETE PAVEMENT	5,344	0.12	0.90	0.11
LANDSCAPE AREA	47,118	1.09	0.30	0.33
TOTAL	54,741	1.26	0.39	0.49

RATIONAL METHOD Q=CiA

PEAK $FLOW_{10\text{-YEAR-EX}}$ = (0.39)(1.70)(1.26) = 0.82 CFS

PEAK $FLOW_{30\text{-YEAR-EX}}$ = (0.39)(2.10)(1.26) = 1.02 CFS

PEAK $FLOW_{100\text{-YEAR-EX}}$ = (0.39)(2.50)(1.26) = 1.21 CFS

POST-DEVELOPMENT HYDROLOGY				
SURFACE	AREA (SF)	AREA (AC)	COEFF.	C*A
BUILDING ROOFS	40,920	0.94	0.95	0.893
ASPHALT PAVEMENT	7,726	0.18	0.90	0.162
CONCRETE PAVEMENT	–	–	0.90	–
LANDSCAPE AREA	6,095	0.14	0.30	0.042
TOTAL	54,741	1.26	0.87	1.09

RATIONAL METHOD Q=CiA

PEAK $FLOW_{10\text{-YEAR-PD}}$ = (0.87)(1.70)(1.26) = 1.86 CFS

PEAK $FLOW_{30\text{-YEAR-PD}}$ = (0.87)(2.10)(1.26) = 2.30 CFS

PEAK $FLOW_{100\text{-YEAR-PD}}$ = (0.87)(2.50)(1.26) = 2.74 CFS

DETENTION VOLUME

$V_{DET\ REQUIRED} = (Q_{PD} - Q_{EX})\frac{1}{2}T_C$

$V_{DET\ REQUIRED}$ = (2.30 CFS – 0.82 CFS)(½)(10 MIN)(60 SEC/MIN)

$V_{DET\ REQUIRED}$ = 1,329 CF

$V_{DET\ PROVIDED}$ = 1,433 CF (DETENTION PROVIDED BY 42" SD – 195 LF LONG)

SEE DETAIL 7/C11.0 FOR EFFECTIVE DETENTION AREA

AREA# 1 SIZING – FLOW THRU PLANTER (ROOF AREA)

FLOW THRU PLANTER WAS SIZED USING THE COMBINATION FLOW AND VOLUME METHOD PER SECTION 5.1 OF THE SAN MATEO COUNTY C.3 MANUAL. FULL CALCULATIONS INCLUDED PRELIMINARY ENGINEERING STUDY.

PROVIDED TREATMENT BY FLOW-THROUGH PLANTER

TOTAL DRAINAGE MANAGEMENT AREA = 40,920 SF

TREATMENT PLANTER AREA = 1,268 SF (3.1%)

PONDING DEPTH = 6.09 IN

AREA# 4 SIZING – FLOW THRU PLANTER (WALK AREA)

FLOW THRU PLANTER WAS SIZED USING THE COMBINATION FLOW AND VOLUME METHOD PER SECTION 5.1 OF THE SAN MATEO COUNTY C.3 MANUAL. FULL CALCULATIONS INCLUDED PRELIMINARY ENGINEERING STUDY.

PROVIDED TREATMENT BY FLOW-THROUGH PLANTER

TOTAL DRAINAGE MANAGEMENT AREA = 2,600 SF

TREATMENT PLANTER AREA = 88 SF (3.4%)

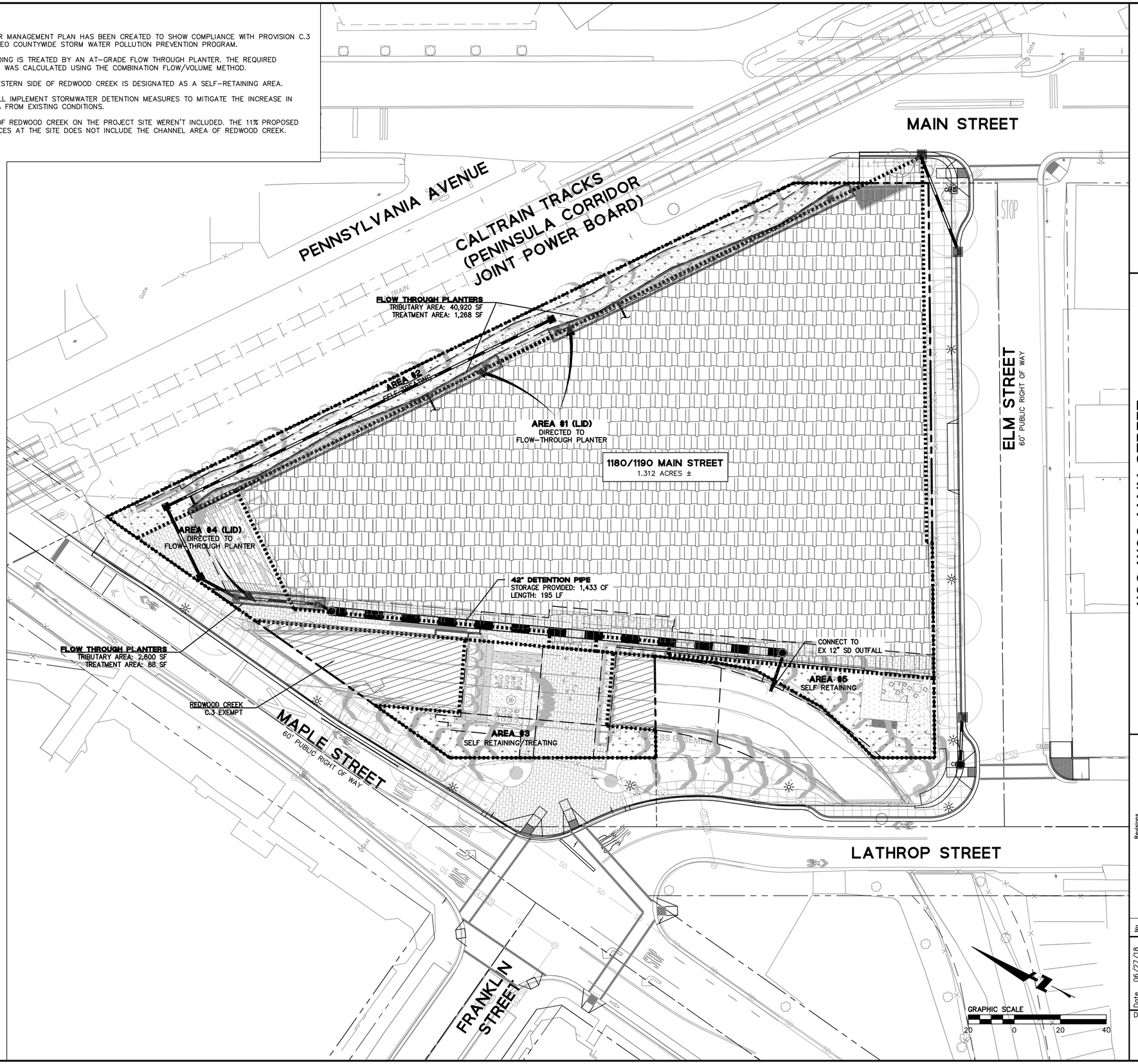
PONDING DEPTH = 3.81 IN

PROPOSED PERVIOUS SURFACES

LANDSCAPE = 6,095 SF

SITE AREA = 54,741 SF

PROPOSED PERVIOUS SURFACE = 11%



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1180/1190 MAIN STREET
TENTATIVE PARCEL MAP
CONCEPTUAL STORM WATER CONTROL PLAN

REDWOOD CITY — COUNTY OF SAN MATEO — CALIFORNIA

Revisions

No.					

Date 06/27/18
Scale 1" = 20'
Design PC
Drawn JYJ
Approved AAS
Job No 20170253

Drawing Number:
C9.0
9 OF 11

DRAWING NAME: \\Bkf-rc\data\2017\170253_1180_Main\ENG\02-TM\SHEETS\C9.0-MAPRSWMP.dwg
PLOT DATE: 06-27-18
PLOTTED BY: loes

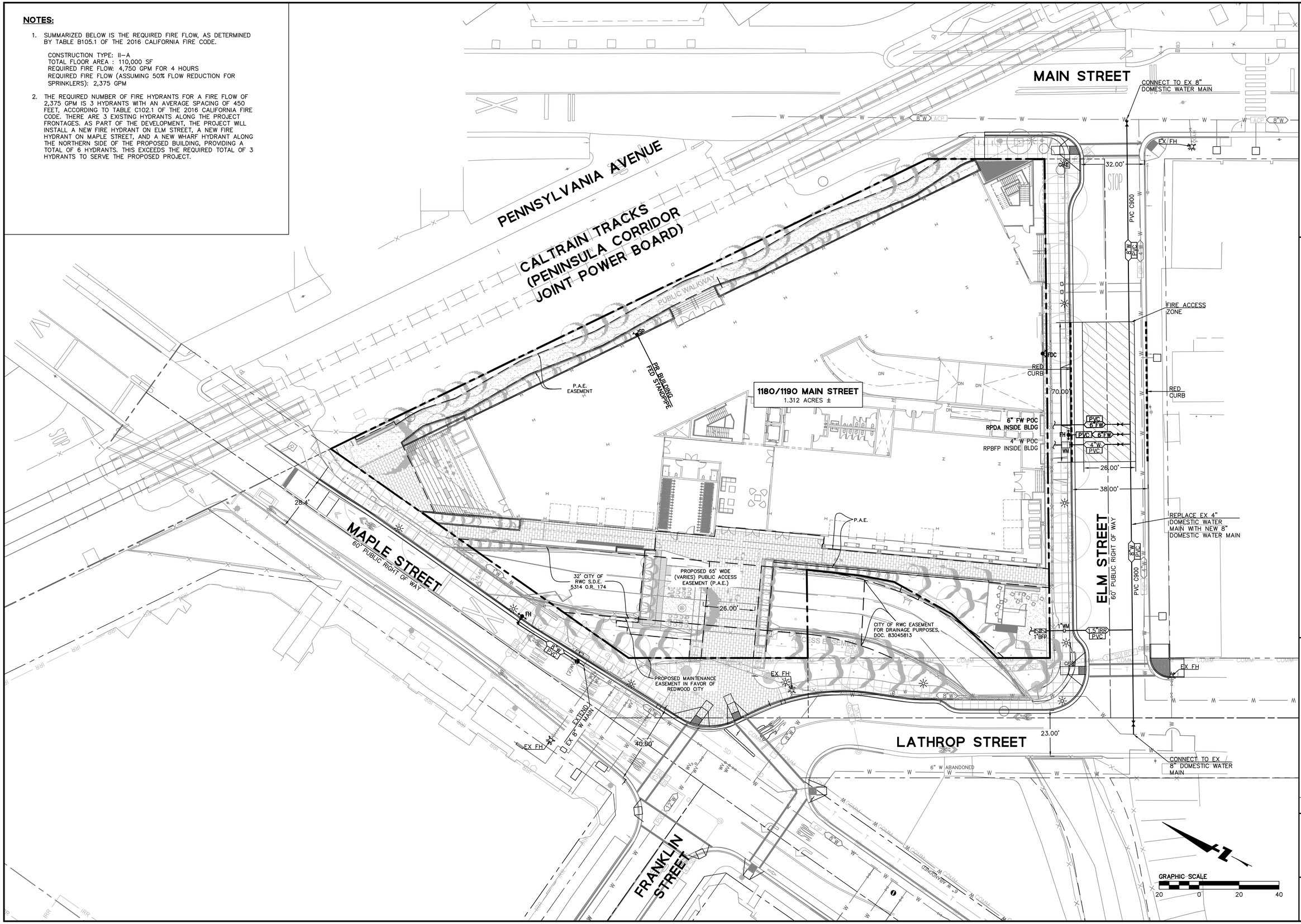
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NOTES:

1. SUMMARIZED BELOW IS THE REQUIRED FIRE FLOW, AS DETERMINED BY TABLE B105.1 OF THE 2016 CALIFORNIA FIRE CODE.

   CONSTRUCTION TYPE: II–A
   TOTAL FLOOR AREA : 110,000 SF
   REQUIRED FIRE FLOW: 4,750 GPM FOR 4 HOURS
   REQUIRED FIRE FLOW (ASSUMING 50% FLOW REDUCTION FOR SPRINKLERS): 2,375 GPM

2. THE REQUIRED NUMBER OF FIRE HYDRANTS FOR A FIRE FLOW OF 2,375 GPM IS 3 HYDRANTS WITH AN AVERAGE SPACING OF 450 FEET, ACCORDING TO TABLE C102.1 OF THE 2016 CALIFORNIA FIRE CODE. THERE ARE 3 EXISTING HYDRANTS ALONG THE PROJECT FRONTAGES. AS PART OF THE DEVELOPMENT, THE PROJECT WILL INSTALL A NEW FIRE HYDRANT ON ELM STREET, A NEW FIRE HYDRANT ON MAPLE STREET, AND A NEW WHARF HYDRANT ALONG THE NORTHERN SIDE OF THE PROPOSED BUILDING, PROVIDING A TOTAL OF 6 HYDRANTS. THIS EXCEEDS THE REQUIRED TOTAL OF 3 HYDRANTS TO SERVE THE PROPOSED PROJECT.



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TENTATIVE PARCEL MAP
FIRE ACCESS PLAN

COUNTY OF SAN MATEO
CALIFORNIA

REDWOOD CITY

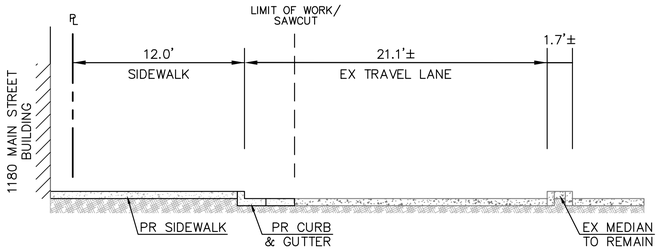
No.	Revisions

Date 06/27/18
Scale 1" = 20'
Design PC
Drawn JYJ
Approved AAS
Job No 20170253

Drawing Number:
C10.0
10 OF 11

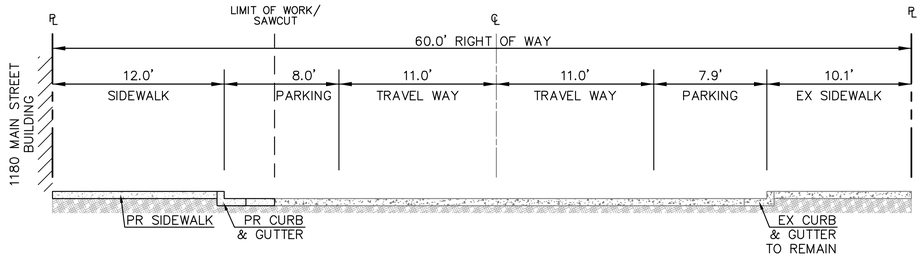
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PLOT DATE: 06-27-18 PLOTTED BY: loes

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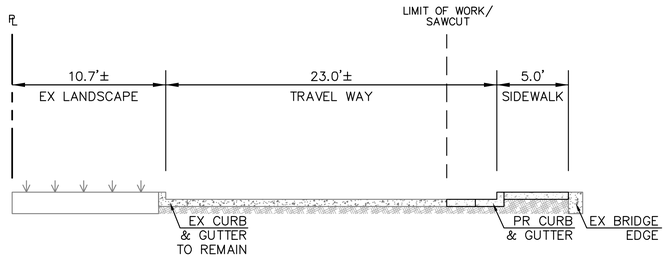
1 TYPICAL MAIN STREET SECTION

SCALE: 1"=5'



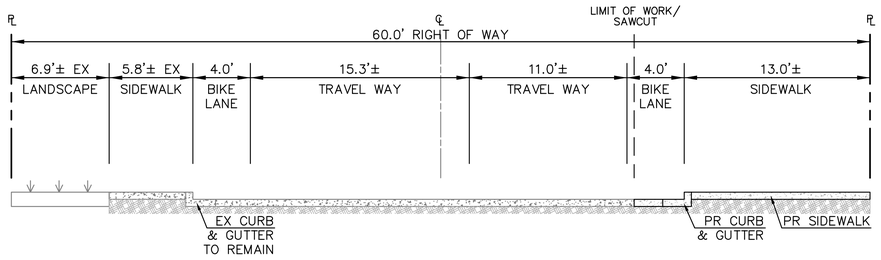
2 TYPICAL ELM STREET SECTION

SCALE: 1"=5'



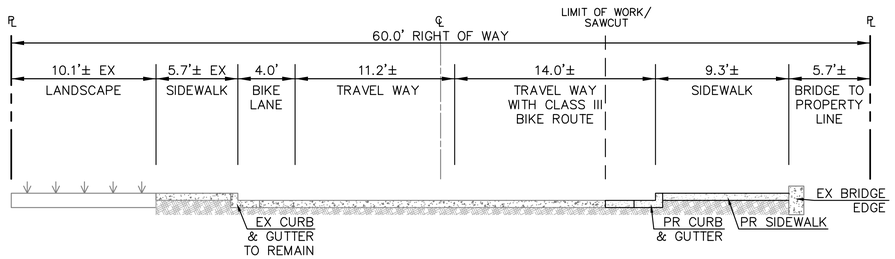
3 TYPICAL LATHROP STREET SECTION

SCALE: 1"=5'



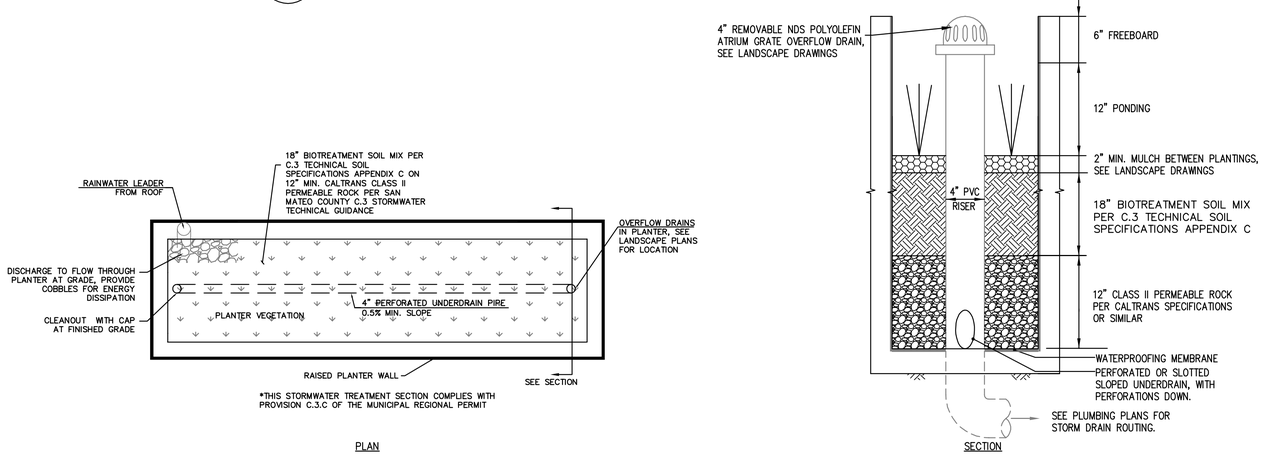
4 TYPICAL MAPLE STREET SECTION

SCALE: 1"=5'



5 TYPICAL MAPLE STREET SECTION

SCALE: 1"=5'

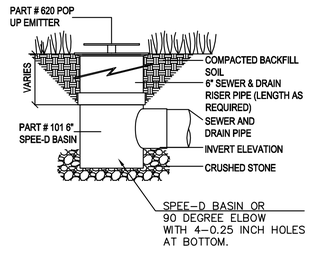


6 BIO-RETENTION/FLOW-THROUGH PLANTER

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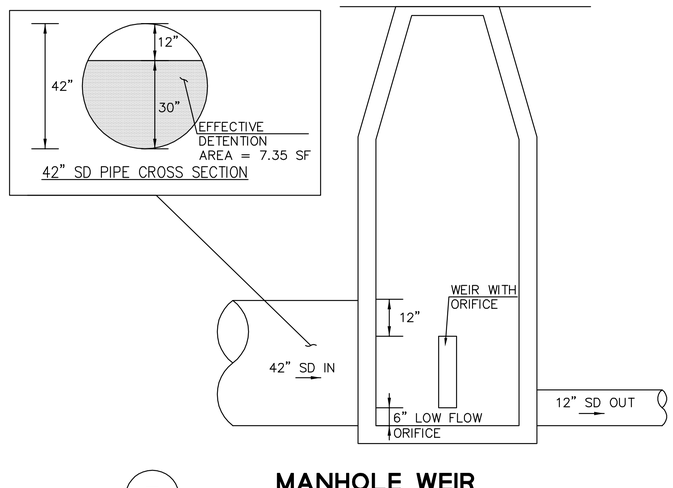


DRAINAGE EMITTER
TYPICAL POP-UP DRAINAGE EMITTER (SPEE-D BASIN)

REVISION DATE 8-24-2015

8 NDS POP-UP DRAINAGE EMITTERS

NTS



7 MANHOLE WEIR

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1180/1190 MAIN STREET
TENTATIVE PARCEL MAP
TYPICAL CROSS SECTIONS & DETAILS

REDWOOD CITY — COUNTY OF SAN MATEO — CALIFORNIA

No.	Revisions

Date 06/27/18
Scale AS NOTED
Design PC
Drawn JYJ
Approved AAS
Job No 20170253

Drawing Number:
C11.0
11 OF 11

DRAWING NAME: \\Bkf-rc\data\2017\170253_1180_Main\ENG\02-TM\SHEETS\C11.0-MAPRXS.dwg
PLOT DATE: 06-26-18 PLOTTED BY: loes

Appendix B AIR ASSUMPTIONS/MODELING

1180 Main - San Mateo County, Annual

1180 Main

San Mateo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	109.38	1000sqft	1.06	109,375.00	0
Enclosed Parking with Elevator	375.00	Space	0.00	70,610.00	0
Other Non-Asphalt Surfaces	0.03	Acre	0.03	1,306.80	0
City Park	0.22	Acre	0.22	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project Description

Bridge - Other Non-Asphalt Surfaces

Construction Phase - Project Description construction schedule

Off-road Equipment - Added trenchers for offsite work

Off-road Equipment - Added Excavators

Trips and VMT - Peak construction period

Demolition -

Grading -

Architectural Coating - low VOC paints

Vehicle Trips - Zero trips for park - local use

Trip rate from TIS and no Sat or Sun trips

Water And Wastewater - From Engineering calculations

Construction Off-road Equipment Mitigation - mitigation

Mobile Land Use Mitigation -

Mobile Commute Mitigation -

Area Mitigation - low voc

Energy Mitigation -

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	150	100
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	200.00	398.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	4.00	88.00
tblGrading	MaterialExported	0.00	35,000.00
tblLandUse	LandUseSquareFeet	109,380.00	109,375.00
tblLandUse	LandUseSquareFeet	150,000.00	70,610.00
tblLandUse	LandUseSquareFeet	9,583.20	10,000.00
tblLandUse	LotAcreage	2.51	1.06
tblLandUse	LotAcreage	3.37	0.00
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	2.46	0.00
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	1.05	0.00
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	11.03	9.09
tblWater	IndoorWaterUseRate	19,440,517.36	5,219,500.00
tblWater	OutdoorWaterUseRate	11,915,155.80	159,505.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Year	tons/yr										MT/yr					
2019	0.2126	2.5690	1.5381	4.2500e-003	0.2906	0.0906	0.3812	0.1321	0.0849	0.2170	0.0000	401.9681	401.9681	0.0728	0.0000	403.7869
2020	0.3243	2.5865	2.2033	4.7700e-003	0.0976	0.1192	0.2168	0.0266	0.1145	0.1411	0.0000	417.3101	417.3101	0.0587	0.0000	418.7785
2021	0.6802	0.7804	0.7189	1.5500e-003	0.0313	0.0341	0.0653	8.5000e-003	0.0327	0.0412	0.0000	135.9671	135.9671	0.0195	0.0000	136.4550
Maximum	**0.6802**	**2.5865**	**2.2033**	**4.7700e-003**	**0.2906**	**0.1192**	**0.3812**	**0.1321**	**0.1145**	**0.2170**	**0.0000**	**417.3101**	**417.3101**	**0.0728**	**0.0000**	**418.7785**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0632	1.0956	1.6062	4.2500e-003	0.1655	9.4600e-003	0.1749	0.0689	9.2900e-003	0.0782	0.0000	401.9679	401.9679	0.0728	0.0000	403.7867
2020	0.0805	0.9815	2.1910	4.7700e-003	0.0976	7.0000e-003	0.1046	0.0266	6.8600e-003	0.0335	0.0000	417.3098	417.3098	0.0587	0.0000	418.7782
2021	0.6134	0.3260	0.7276	1.5500e-003	0.0313	3.7500e-003	0.0350	8.5000e-003	3.6100e-003	0.0121	0.0000	135.9670	135.9670	0.0195	0.0000	136.4549
Maximum	**0.6134**	**1.0956**	**2.1910**	**4.7700e-003**	**0.1655**	**9.4600e-003**	**0.1749**	**0.0689**	**9.2900e-003**	**0.0782**	**0.0000**	**417.3098**	**417.3098**	**0.0728**	**0.0000**	**418.7782**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**37.79**	**59.52**	**-1.45**	**0.00**	**29.83**	**91.71**	**52.58**	**37.79**	**91.48**	**68.99**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-13-2019**	**8-12-2019**	1.1641	0.4722
2	**8-13-2019**	**11-12-2019**	1.1780	0.5251
3	**11-13-2019**	**2-12-2020**	0.7647	0.2752
4	**2-13-2020**	**5-12-2020**	0.7138	0.2602
5	**5-13-2020**	**8-12-2020**	0.7278	0.2641

6	**8-13-2020**	**11-12-2020**	0.7294	0.2657
7	**11-13-2020**	**2-12-2021**	0.7023	0.2613
8	**2-13-2021**	**5-12-2021**	0.7635	0.4381
9	**5-13-2021**	**8-12-2021**	0.3821	0.3821
		Highest	1.1780	0.5251

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4909	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6600e-003	8.6600e-003	2.0000e-005	0.0000	9.2300e-003
Energy	0.0114	0.1036	0.0871	6.2000e-004		7.8800e-003	7.8800e-003		7.8800e-003	7.8800e-003	0.0000	630.2887	630.2887	0.0256	6.9100e-003	632.9867
Mobile	0.1764	0.5455	2.0189	6.8600e-003	0.6292	5.8500e-003	0.6350	0.1691	5.4600e-003	0.1745	0.0000	627.4315	627.4315	0.0229	0.0000	628.0042
Waste						0.0000	0.0000		0.0000	0.0000	20.6523	0.0000	20.6523	1.2205	0.0000	51.1652
Water						0.0000	0.0000		0.0000	0.0000	1.6559	8.6454	10.3013	0.1705	4.1000e-003	15.7839
Total	**0.6786**	**0.6492**	**2.1104**	**7.4800e-003**	**0.6292**	**0.0138**	**0.6429**	**0.1691**	**0.0134**	**0.1824**	**22.3082**	**1,266.3743**	**1,288.6825**	**1.4395**	**0.0110**	**1,327.9493**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4267	4.0000e-005	4.4100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.5400e-003	8.5400e-003	2.0000e-005	0.0000	9.1000e-003

Energy	0.0114	0.1036	0.0871	6.2000e-004		7.8800e-003	7.8800e-003		7.8800e-003	7.8800e-003	0.0000	630.2887	630.2887	0.0256	6.9100e-003	632.9867
Mobile	0.1466	0.3961	1.3896	4.0600e-003	0.3624	3.6700e-003	0.3661	0.0974	3.4300e-003	0.1008	0.0000	371.7067	371.7067	0.0147	0.0000	372.0733
Waste						0.0000	0.0000		0.0000	0.0000	10.3262	0.0000	10.3262	0.6103	0.0000	25.5826
Water						0.0000	0.0000		0.0000	0.0000	1.3247	6.9760	8.3007	0.1364	3.2800e-003	12.6870
Total	**0.5847**	**0.4998**	**1.4810**	**4.6800e-003**	**0.3624**	**0.0116**	**0.3740**	**0.0974**	**0.0113**	**0.1087**	**11.6509**	**1,008.9799**	**1,020.6308**	**0.7869**	**0.0102**	**1,043.3388**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**13.84**	**23.01**	**29.82**	**37.43**	**42.39**	**15.85**	**41.83**	**42.39**	**15.19**	**40.41**	**47.77**	**20.33**	**20.80**	**45.34**	**7.45**	**21.43**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/13/2019	6/11/2019	5	22	
2	Site Preparation	Site Preparation	6/12/2019	6/13/2019	5	2	
3	Grading	Grading	6/14/2019	10/15/2019	5	88	
4	Building Construction	Building Construction	10/16/2019	4/23/2021	5	398	
5	Paving	Paving	4/24/2021	5/7/2021	5	10	
6	Architectural Coating	Architectural Coating	5/8/2021	5/21/2021	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 33

Acres of Paving: 0.03

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 164,063; Non-Residential Outdoor: 54,688; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73

Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Trenchers	1	2.60	78	0.50
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	33.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	5	13.00	0.00	4,375.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	69.00	31.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Architectural Coating		1	14.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.5400e-003	0.0000	3.5400e-003	5.4000e-004	0.0000	5.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0253	0.2494	0.1638	2.7000e-004		0.0142	0.0142		0.0132	0.0132	0.0000	23.5577	23.5577	6.0000e-003	0.0000	23.7077
Total	**0.0253**	**0.2494**	**0.1638**	**2.7000e-004**	**3.5400e-003**	**0.0142**	**0.0177**	**5.4000e-004**	**0.0132**	**0.0138**	**0.0000**	**23.5577**	**23.5577**	**6.0000e-003**	**0.0000**	**23.7077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	5.7600e-003	2.2200e-003	1.0000e-005	2.8000e-004	2.0000e-005	3.0000e-004	8.0000e-005	2.0000e-005	1.0000e-004	0.0000	1.3979	1.3979	1.7000e-004	0.0000	1.4022
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	3.0000e-004	3.0700e-003	1.0000e-005	1.1300e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.1000e-004	0.0000	0.9682	0.9682	2.0000e-005	0.0000	0.9687
Total	**5.9000e-004**	**6.0600e-003**	**5.2900e-003**	**2.0000e-005**	**1.4100e-003**	**3.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.1000e-004**	**0.0000**	**2.3660**	**2.3660**	**1.9000e-004**	**0.0000**	**2.3708**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.5900e-003	0.0000	1.5900e-003	2.4000e-004	0.0000	2.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.4900e-003	0.0499	0.1602	2.7000e-004		2.8400e-003	2.8400e-003		2.8400e-003	2.8400e-003	0.0000	23.5577	23.5577	6.0000e-003	0.0000	23.7076
Total	**7.4900e-003**	**0.0499**	**0.1602**	**2.7000e-004**	**1.5900e-003**	**2.8400e-003**	**4.4300e-003**	**2.4000e-004**	**2.8400e-003**	**3.0800e-003**	**0.0000**	**23.5577**	**23.5577**	**6.0000e-003**	**0.0000**	**23.7076**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	5.7600e-003	2.2200e-003	1.0000e-005	2.8000e-004	2.0000e-005	3.0000e-004	8.0000e-005	2.0000e-005	1.0000e-004	0.0000	1.3979	1.3979	1.7000e-004	0.0000	1.4022
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	3.0000e-004	3.0700e-003	1.0000e-005	1.1300e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.1000e-004	0.0000	0.9682	0.9682	2.0000e-005	0.0000	0.9687
Total	**5.9000e-004**	**6.0600e-003**	**5.2900e-003**	**2.0000e-005**	**1.4100e-003**	**3.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.1000e-004**	**0.0000**	**2.3660**	**2.3660**	**1.9000e-004**	**0.0000**	**2.3708**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7100e-003	0.0195	7.8900e-003	2.0000e-005		8.8000e-004	8.8000e-004		8.1000e-004	8.1000e-004	0.0000	1.5467	1.5467	4.9000e-004	0.0000	1.5589
Total	**1.7100e-003**	**0.0195**	**7.8900e-003**	**2.0000e-005**	**5.8000e-003**	**8.8000e-004**	**6.6800e-003**	**2.9500e-003**	**8.1000e-004**	**3.7600e-003**	**0.0000**	**1.5467**	**1.5467**	**4.9000e-004**	**0.0000**	**1.5589**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0542	0.0542	0.0000	0.0000	0.0542
Total	**2.0000e-005**	**2.0000e-005**	**1.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0542**	**0.0542**	**0.0000**	**0.0000**	**0.0542**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.6100e-003	0.0000	2.6100e-003	1.3300e-003	0.0000	1.3300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	2.1000e-004	9.1000e-004	8.6700e-003	2.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	1.5467	1.5467	4.9000e-004	0.0000	1.5589
Total	**2.1000e-004**	**9.1000e-004**	**8.6700e-003**	**2.0000e-005**	**2.6100e-003**	**3.0000e-005**	**2.6400e-003**	**1.3300e-003**	**3.0000e-005**	**1.3600e-003**	**0.0000**	**1.5467**	**1.5467**	**4.9000e-004**	**0.0000**	**1.5589**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	2.0000e-005	1.7000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0542	0.0542	0.0000	0.0000	0.0542
Total	**2.0000e-005**	**2.0000e-005**	**1.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0542**	**0.0542**	**0.0000**	**0.0000**	**0.0542**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2182	0.0000	0.2182	0.1114	0.0000	0.1114	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0854	0.9416	0.5779	1.0700e-003		0.0438	0.0438		0.0403	0.0403	0.0000	96.5428	96.5428	0.0306	0.0000	97.3065
Total	**0.0854**	**0.9416**	**0.5779**	**1.0700e-003**	**0.2182**	**0.0438**	**0.2620**	**0.1114**	**0.0403**	**0.1517**	**0.0000**	**96.5428**	**96.5428**	**0.0306**	**0.0000**	**97.3065**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0219	0.7640	0.2938	1.8100e-003	0.0366	3.0400e-003	0.0396	0.0101	2.9100e-003	0.0130	0.0000	185.3250	185.3250	0.0226	0.0000	185.8905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6900e-003	1.1900e-003	0.0123	4.0000e-005	4.5000e-003	3.0000e-005	4.5300e-003	1.2000e-003	3.0000e-005	1.2200e-003	0.0000	3.8726	3.8726	8.0000e-005	0.0000	3.8747
Total	**0.0236**	**0.7651**	**0.3061**	**1.8500e-003**	**0.0411**	**3.0700e-003**	**0.0442**	**0.0113**	**2.9400e-003**	**0.0142**	**0.0000**	**189.1976**	**189.1976**	**0.0227**	**0.0000**	**189.7652**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0982	0.0000	0.0982	0.0501	0.0000	0.0501	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0132	0.0571	0.6596	1.0700e-003		1.7600e-003	1.7600e-003		1.7600e-003	1.7600e-003	0.0000	96.5427	96.5427	0.0306	0.0000	97.3063
Total	**0.0132**	**0.0571**	**0.6596**	**1.0700e-003**	**0.0982**	**1.7600e-003**	**0.1000**	**0.0501**	**1.7600e-003**	**0.0519**	**0.0000**	**96.5427**	**96.5427**	**0.0306**	**0.0000**	**97.3063**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0219	0.7640	0.2938	1.8100e-003	0.0366	3.0400e-003	0.0396	0.0101	2.9100e-003	0.0130	0.0000	185.3250	185.3250	0.0226	0.0000	185.8905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6900e-003	1.1900e-003	0.0123	4.0000e-005	4.5000e-003	3.0000e-005	4.5300e-003	1.2000e-003	3.0000e-005	1.2200e-003	0.0000	3.8726	3.8726	8.0000e-005	0.0000	3.8747
Total	**0.0236**	**0.7651**	**0.3061**	**1.8500e-003**	**0.0411**	**3.0700e-003**	**0.0442**	**0.0113**	**2.9400e-003**	**0.0142**	**0.0000**	**189.1976**	**189.1976**	**0.0227**	**0.0000**	**189.7652**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0664	0.4745	0.3945	6.4000e-004		0.0278	0.0278		0.0268	0.0268	0.0000	53.0517	53.0517	0.0105	0.0000	53.3150
Total	**0.0664**	**0.4745**	**0.3945**	**6.4000e-004**		**0.0278**	**0.0278**		**0.0268**	**0.0268**	**0.0000**	**53.0517**	**53.0517**	**0.0105**	**0.0000**	**53.3150**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0500e-003	0.1089	0.0418	2.3000e-004	5.5600e-003	7.5000e-004	6.3100e-003	1.6100e-003	7.2000e-004	2.3300e-003	0.0000	22.8048	22.8048	2.0100e-003	0.0000	22.8551
Worker	5.6100e-003	3.9500e-003	0.0407	1.4000e-004	0.0149	1.0000e-004	0.0150	3.9800e-003	9.0000e-005	4.0600e-003	0.0000	12.8467	12.8467	2.8000e-004	0.0000	12.8536
Total	**9.6600e-003**	**0.1128**	**0.0825**	**3.7000e-004**	**0.0205**	**8.5000e-004**	**0.0213**	**5.5900e-003**	**8.1000e-004**	**6.3900e-003**	**0.0000**	**35.6515**	**35.6515**	**2.2900e-003**	**0.0000**	**35.7087**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.4300e-003	0.1037	0.3837	6.4000e-004		8.8000e-004	8.8000e-004		8.8000e-004	8.8000e-004	0.0000	53.0516	53.0516	0.0105	0.0000	53.3150
Total	**8.4300e-003**	**0.1037**	**0.3837**	**6.4000e-004**		**8.8000e-004**	**8.8000e-004**		**8.8000e-004**	**8.8000e-004**	**0.0000**	**53.0516**	**53.0516**	**0.0105**	**0.0000**	**53.3150**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0500e-003	0.1089	0.0418	2.3000e-004	5.5600e-003	7.5000e-004	6.3100e-003	1.6100e-003	7.2000e-004	2.3300e-003	0.0000	22.8048	22.8048	2.0100e-003	0.0000	22.8551
Worker	5.6100e-003	3.9500e-003	0.0407	1.4000e-004	0.0149	1.0000e-004	0.0150	3.9800e-003	9.0000e-005	4.0600e-003	0.0000	12.8467	12.8467	2.8000e-004	0.0000	12.8536
Total	**9.6600e-003**	**0.1128**	**0.0825**	**3.7000e-004**	**0.0205**	**8.5000e-004**	**0.0213**	**5.5900e-003**	**8.1000e-004**	**6.3900e-003**	**0.0000**	**35.6515**	**35.6515**	**2.2900e-003**	**0.0000**	**35.7087**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2839	2.0989	1.8399	3.0300e-003		0.1164	0.1164		0.1119	0.1119	0.0000	250.4428	250.4428	0.0482	0.0000	251.6486
Total	**0.2839**	**2.0989**	**1.8399**	**3.0300e-003**		**0.1164**	**0.1164**		**0.1119**	**0.1119**	**0.0000**	**250.4428**	**250.4428**	**0.0482**	**0.0000**	**251.6486**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0157	0.4709	0.1875	1.0800e-003	0.0265	2.3500e-003	0.0288	7.6600e-003	2.2500e-003	9.9000e-003	0.0000	107.6140	107.6140	9.3500e-003	0.0000	107.8478
Worker	0.0247	0.0167	0.1759	6.5000e-004	0.0712	4.5000e-004	0.0716	0.0189	4.1000e-004	0.0194	0.0000	59.2533	59.2533	1.1600e-003	0.0000	59.2822
Total	**0.0404**	**0.4876**	**0.3634**	**1.7300e-003**	**0.0976**	**2.8000e-003**	**0.1004**	**0.0266**	**2.6600e-003**	**0.0293**	**0.0000**	**166.8673**	**166.8673**	**0.0105**	**0.0000**	**167.1299**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0401	0.4939	1.8276	3.0300e-003		4.2000e-003	4.2000e-003		4.2000e-003	4.2000e-003	0.0000	250.4425	250.4425	0.0482	0.0000	251.6483

Total	**0.0401**	**0.4939**	**1.8276**	**3.0300e-003**		**4.2000e-003**	**4.2000e-003**		**4.2000e-003**	**4.2000e-003**	**0.0000**	**250.4425**	**250.4425**	**0.0482**	**0.0000**	**251.6483**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0157	0.4709	0.1875	1.0800e-003	0.0265	2.3500e-003	0.0288	7.6600e-003	2.2500e-003	9.9000e-003	0.0000	107.6140	107.6140	9.3500e-003	0.0000	107.8478
Worker	0.0247	0.0167	0.1759	6.5000e-004	0.0712	4.5000e-004	0.0716	0.0189	4.1000e-004	0.0194	0.0000	59.2533	59.2533	1.1600e-003	0.0000	59.2822
Total	**0.0404**	**0.4876**	**0.3634**	**1.7300e-003**	**0.0976**	**2.8000e-003**	**0.1004**	**0.0266**	**2.6600e-003**	**0.0293**	**0.0000**	**166.8673**	**166.8673**	**0.0105**	**0.0000**	**167.1299**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0784	0.5985	0.5567	9.4000e-004		0.0311	0.0311		0.0299	0.0299	0.0000	77.4305	77.4305	0.0144	0.0000	77.7902
Total	**0.0784**	**0.5985**	**0.5567**	**9.4000e-004**		**0.0311**	**0.0311**		**0.0299**	**0.0299**	**0.0000**	**77.4305**	**77.4305**	**0.0144**	**0.0000**	**77.7902**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0100e-003	0.1308	0.0561	3.3000e-004	8.1800e-003	3.0000e-004	8.4800e-003	2.3700e-003	2.9000e-004	2.6500e-003	0.0000	32.8568	32.8568	2.8400e-003	0.0000	32.9278
Worker	7.1200e-003	4.6300e-003	0.0502	2.0000e-004	0.0220	1.3000e-004	0.0221	5.8500e-003	1.2000e-004	5.9800e-003	0.0000	17.6671	17.6671	3.2000e-004	0.0000	17.6751
Total	**0.0111**	**0.1354**	**0.1063**	**5.3000e-004**	**0.0302**	**4.3000e-004**	**0.0306**	**8.2200e-003**	**4.1000e-004**	**8.6300e-003**	**0.0000**	**50.5240**	**50.5240**	**3.1600e-003**	**0.0000**	**50.6030**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0124	0.1527	0.5650	9.4000e-004		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003	0.0000	77.4304	77.4304	0.0144	0.0000	77.7901
Total	**0.0124**	**0.1527**	**0.5650**	**9.4000e-004**		**1.3000e-003**	**1.3000e-003**		**1.3000e-003**	**1.3000e-003**	**0.0000**	**77.4304**	**77.4304**	**0.0144**	**0.0000**	**77.7901**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0100e-003	0.1308	0.0561	3.3000e-004	8.1800e-003	3.0000e-004	8.4800e-003	2.3700e-003	2.9000e-004	2.6500e-003	0.0000	32.8568	32.8568	2.8400e-003	0.0000	32.9278
Worker	7.1200e-003	4.6300e-003	0.0502	2.0000e-004	0.0220	1.3000e-004	0.0221	5.8500e-003	1.2000e-004	5.9800e-003	0.0000	17.6671	17.6671	3.2000e-004	0.0000	17.6751
Total	**0.0111**	**0.1354**	**0.1063**	**5.3000e-004**	**0.0302**	**4.3000e-004**	**0.0306**	**8.2200e-003**	**4.1000e-004**	**8.6300e-003**	**0.0000**	**50.5240**	**50.5240**	**3.1600e-003**	**0.0000**	**50.6030**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.8700e-003	0.0387	0.0443	7.0000e-005		2.0800e-003	2.0800e-003		1.9100e-003	1.9100e-003	0.0000	5.8825	5.8825	1.8600e-003	0.0000	5.9291
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.8700e-003**	**0.0387**	**0.0443**	**7.0000e-005**		**2.0800e-003**	**2.0800e-003**		**1.9100e-003**	**1.9100e-003**	**0.0000**	**5.8825**	**5.8825**	**1.8600e-003**	**0.0000**	**5.9291**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.1000e-004	1.1700e-003	0.0000	5.1000e-004	0.0000	5.1000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4109	0.4109	1.0000e-005	0.0000	0.4111
Total	**1.7000e-004**	**1.1000e-004**	**1.1700e-003**	**0.0000**	**5.1000e-004**	**0.0000**	**5.1000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4109**	**0.4109**	**1.0000e-005**	**0.0000**	**0.4111**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.1200e-003	0.0301	0.0447	7.0000e-005		1.5400e-003	1.5400e-003		1.4300e-003	1.4300e-003	0.0000	5.8825	5.8825	1.8600e-003	0.0000	5.9291
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.1200e-003**	**0.0301**	**0.0447**	**7.0000e-005**		**1.5400e-003**	**1.5400e-003**		**1.4300e-003**	**1.4300e-003**	**0.0000**	**5.8825**	**5.8825**	**1.8600e-003**	**0.0000**	**5.9291**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.1000e-004	1.1700e-003	0.0000	5.1000e-004	0.0000	5.1000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4109	0.4109	1.0000e-005	0.0000	0.4111
Total	**1.7000e-004**	**1.1000e-004**	**1.1700e-003**	**0.0000**	**5.1000e-004**	**0.0000**	**5.1000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4109**	**0.4109**	**1.0000e-005**	**0.0000**	**0.4111**

3.7 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5853					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0900e-003	7.6300e-003	9.0900e-003	1.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.2766	1.2766	9.0000e-005	0.0000	1.2788
Total	**0.5864**	**7.6300e-003**	**9.0900e-003**	**1.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**1.2766**	**1.2766**	**9.0000e-005**	**0.0000**	**1.2788**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.2000e-004	1.2600e-003	0.0000	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4426	0.4426	1.0000e-005	0.0000	0.4428
Total	**1.8000e-004**	**1.2000e-004**	**1.2600e-003**	**0.0000**	**5.5000e-004**	**0.0000**	**5.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4426**	**0.4426**	**1.0000e-005**	**0.0000**	**0.4428**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5853					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	1.0900e-003	7.6300e-003	9.0900e-003	1.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.2766	1.2766	9.0000e-005	0.0000	1.2788
Total	**0.5864**	**7.6300e-003**	**9.0900e-003**	**1.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**1.2766**	**1.2766**	**9.0000e-005**	**0.0000**	**1.2788**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.2000e-004	1.2600e-003	0.0000	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4426	0.4426	1.0000e-005	0.0000	0.4428
Total	**1.8000e-004**	**1.2000e-004**	**1.2600e-003**	**0.0000**	**5.5000e-004**	**0.0000**	**5.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4426**	**0.4426**	**1.0000e-005**	**0.0000**	**0.4428**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Diversity

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

Implement Trip Reduction Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1466	0.3961	1.3896	4.0600e-003	0.3624	3.6700e-003	0.3661	0.0974	3.4300e-003	0.1008	0.0000	371.7067	371.7067	0.0147	0.0000	372.0733
Unmitigated	0.1764	0.5455	2.0189	6.8600e-003	0.6292	5.8500e-003	0.6350	0.1691	5.4600e-003	0.1745	0.0000	627.4315	627.4315	0.0229	0.0000	628.0042

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	994.26	0.00	0.00	1,697,175	977,657
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	994.26	0.00	0.00	1,697,175	977,657

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.482816	0.049967	0.258264	0.138365	0.017696	0.006700	0.022365	0.006431	0.004044	0.003214	0.008927	0.000452	0.000759
Enclosed Parking with Elevator	0.482816	0.049967	0.258264	0.138365	0.017696	0.006700	0.022365	0.006431	0.004044	0.003214	0.008927	0.000452	0.000759
General Office Building	0.482816	0.049967	0.258264	0.138365	0.017696	0.006700	0.022365	0.006431	0.004044	0.003214	0.008927	0.000452	0.000759
Other Non-Asphalt Surfaces	0.482816	0.049967	0.258264	0.138365	0.017696	0.006700	0.022365	0.006431	0.004044	0.003214	0.008927	0.000452	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	517.4659	517.4659	0.0234	4.8400e-003	519.4935
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	517.4659	517.4659	0.0234	4.8400e-003	519.4935
NaturalGas Mitigated	0.0114	0.1036	0.0871	6.2000e-004		7.8800e-003	7.8800e-003		7.8800e-003	7.8800e-003	0.0000	112.8228	112.8228	2.1600e-003	2.0700e-003	113.4932
NaturalGas Unmitigated	0.0114	0.1036	0.0871	6.2000e-004		7.8800e-003	7.8800e-003		7.8800e-003	7.8800e-003	0.0000	112.8228	112.8228	2.1600e-003	2.0700e-003	113.4932

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	2.11422e+006	0.0114	0.1036	0.0871	6.2000e-004		7.8800e-003	7.8800e-003		7.8800e-003	7.8800e-003	0.0000	112.8228	112.8228	2.1600e-003	2.0700e-003	113.4932
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0114**	**0.1036**	**0.0871**	**6.2000e-004**		**7.8800e-003**	**7.8800e-003**		**7.8800e-003**	**7.8800e-003**	**0.0000**	**112.8228**	**112.8228**	**2.1600e-003**	**2.0700e-003**	**113.4932**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	2.11422e+006	0.0114	0.1036	0.0871	6.2000e-004		7.8800e-003	7.8800e-003		7.8800e-003	7.8800e-003	0.0000	112.8228	112.8228	2.1600e-003	2.0700e-003	113.4932
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0114**	**0.1036**	**0.0871**	**6.2000e-004**		**7.8800e-003**	**7.8800e-003**		**7.8800e-003**	**7.8800e-003**	**0.0000**	**112.8228**	**112.8228**	**2.1600e-003**	**2.0700e-003**	**113.4932**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	413775	120.3718	5.4400e-003	1.1300e-003	120.8434
General Office Building	1.365e+006	397.0942	0.0180	3.7100e-003	398.6501
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**517.4659**	**0.0234**	**4.8400e-003**	**519.4935**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	413775	120.3718	5.4400e-003	1.1300e-003	120.8434
General Office Building	1.365e+006	397.0942	0.0180	3.7100e-003	398.6501
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**517.4659**	**0.0234**	**4.8400e-003**	**519.4935**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Mitigated	0.4267	4.0000e-005	4.4100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.5400e-003	8.5400e-003	2.0000e-005	0.0000	9.1000e-003
Unmitigated	0.4909	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6600e-003	8.6600e-003	2.0000e-005	0.0000	9.2300e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0585					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4319					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.2000e-004	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6600e-003	8.6600e-003	2.0000e-005	0.0000	9.2300e-003
Total	**0.4909**	**4.0000e-005**	**4.4700e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6600e-003**	**8.6600e-003**	**2.0000e-005**	**0.0000**	**9.2300e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0264					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.1000e-004	4.0000e-005	4.4100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.5400e-003	8.5400e-003	2.0000e-005	0.0000	9.1000e-003
Total	**0.4267**	**4.0000e-005**	**4.4100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.5400e-003**	**8.5400e-003**	**2.0000e-005**	**0.0000**	**9.1000e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	8.3007	0.1364	3.2800e-003	12.6870
Unmitigated	10.3013	0.1705	4.1000e-003	15.7839

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.262126	0.2669	1.0000e-005	0.0000	0.2679
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	5.2195 / 0.159505	10.0344	0.1705	4.0900e-003	15.5160
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**10.3013**	**0.1705**	**4.0900e-003**	**15.7839**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.246136	0.2506	1.0000e-005	0.0000	0.2516
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	4.1756 / 0.149775	8.0501	0.1364	3.2800e-003	12.4354
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**8.3007**	**0.1364**	**3.2800e-003**	**12.6870**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	10.3262	0.6103	0.0000	25.5826
Unmitigated	20.6523	1.2205	0.0000	51.1652

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.02	4.0600e-003	2.4000e-004	0.0000	0.0101
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	101.72	20.6482	1.2203	0.0000	51.1551
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**20.6523**	**1.2205**	**0.0000**	**51.1652**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.01	2.0300e-003	1.2000e-004	0.0000	5.0300e-003
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	50.86	10.3241	0.6101	0.0000	25.5776
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**10.3262**	**0.6103**	**0.0000**	**25.5826**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

1180 Main - San Mateo County, Winter

1180 Main

San Mateo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	109.38	1000sqft	1.06	109,375.00	0
Enclosed Parking with Elevator	375.00	Space	0.00	70,610.00	0
Other Non-Asphalt Surfaces	0.03	Acre	0.03	1,306.80	0
City Park	0.22	Acre	0.22	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project Description

Bridge - Other Non-Asphalt Surfaces

Construction Phase - Project Description construction schedule

Off-road Equipment - Added trenchers for offsite work

Off-road Equipment - Added Excavators

Trips and VMT - Peak construction period

Demolition -

Grading -

Architectural Coating - low VOC paints

Vehicle Trips - Zero trips for park - local use

Trip rate from TIS and no Sat or Sun trips

Water And Wastewater - From Engineering calculations

Construction Off-road Equipment Mitigation - mitigation

Mobile Land Use Mitigation -

Mobile Commute Mitigation -

Area Mitigation - low voc

Energy Mitigation -

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	150	50
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	150	100
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	200.00	398.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	4.00	88.00
tblGrading	MaterialExported	0.00	35,000.00
tblLandUse	LandUseSquareFeet	109,380.00	109,375.00
tblLandUse	LandUseSquareFeet	150,000.00	70,610.00
tblLandUse	LandUseSquareFeet	9,583.20	10,000.00
tblLandUse	LotAcreage	2.51	1.06
tblLandUse	LotAcreage	3.37	0.00
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	2.46	0.00
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	1.05	0.00
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	11.03	9.09
tblWater	IndoorWaterUseRate	19,440,517.36	5,219,500.00
tblWater	OutdoorWaterUseRate	11,915,155.80	159,505.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Area	2.6920	4.6000e-004	0.0497	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Energy	0.0625	0.5679	0.4770	3.4100e-003		0.0432	0.0432		0.0432	0.0432		681.4565	681.4565	0.0131	0.0125	685.5060
Mobile	1.3691	4.3249	16.2749	0.0526	5.0467	0.0451	5.0919	1.3514	0.0422	1.3935		5,306.5000	5,306.5000	0.1980		5,311.4501
Total	**4.1235**	**4.8933**	**16.8016**	**0.0561**	**5.0467**	**0.0885**	**5.1352**	**1.3514**	**0.0855**	**1.4369**		**5,988.0625**	**5,988.0625**	**0.2114**	**0.0125**	**5,997.0692**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.3405	4.5000e-004	0.0491	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1046	0.1046	2.8000e-004		0.1115
Energy	0.0625	0.5679	0.4770	3.4100e-003		0.0432	0.0432		0.0432	0.0432		681.4565	681.4565	0.0131	0.0125	685.5060
Mobile	1.1371	3.1260	11.3575	0.0312	2.9072	0.0284	2.9355	0.7785	0.0265	0.8049		3,142.2311	3,142.2311	0.1277		3,145.4241
Total	**3.5401**	**3.6944**	**11.8835**	**0.0346**	**2.9072**	**0.0717**	**2.9789**	**0.7785**	**0.0698**	**0.8483**		**3,823.7922**	**3,823.7922**	**0.1411**	**0.0125**	**3,831.0417**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**14.15**	**24.50**	**29.27**	**38.27**	**42.40**	**18.98**	**41.99**	**42.40**	**18.36**	**40.97**	**0.00**	**36.14**	**36.14**	**33.26**	**0.00**	**36.12**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Diversity

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

Implement Trip Reduction Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.1371	3.1260	11.3575	0.0312	2.9072	0.0284	2.9355	0.7785	0.0265	0.8049		3,142.2311	3,142.2311	0.1277		3,145.4241
Unmitigated	1.3691	4.3249	16.2749	0.0526	5.0467	0.0451	5.0919	1.3514	0.0422	1.3935		5,306.5000	5,306.5000	0.1980		5,311.4501

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	994.26	0.00	0.00	1,697,175	977,657
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	994.26	0.00	0.00	1,697,175	977,657

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.482816	0.049967	0.258264	0.138365	0.017696	0.006700	0.022365	0.006431	0.004044	0.003214	0.008927	0.000452	0.000759
Enclosed Parking with Elevator	0.482816	0.049967	0.258264	0.138365	0.017696	0.006700	0.022365	0.006431	0.004044	0.003214	0.008927	0.000452	0.000759
General Office Building	0.482816	0.049967	0.258264	0.138365	0.017696	0.006700	0.022365	0.006431	0.004044	0.003214	0.008927	0.000452	0.000759
Other Non-Asphalt Surfaces	0.482816	0.049967	0.258264	0.138365	0.017696	0.006700	0.022365	0.006431	0.004044	0.003214	0.008927	0.000452	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0625	0.5679	0.4770	3.4100e-003		0.0432	0.0432		0.0432	0.0432		681.4565	681.4565	0.0131	0.0125	685.5060
NaturalGas Unmitigated	0.0625	0.5679	0.4770	3.4100e-003		0.0432	0.0432		0.0432	0.0432		681.4565	681.4565	0.0131	0.0125	685.5060

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	5792.38	0.0625	0.5679	0.4770	3.4100e-003		0.0432	0.0432		0.0432	0.0432		681.4565	681.4565	0.0131	0.0125	685.5060
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0625**	**0.5679**	**0.4770**	**3.4100e-003**		**0.0432**	**0.0432**		**0.0432**	**0.0432**		**681.4565**	**681.4565**	**0.0131**	**0.0125**	**685.5060**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	5.79238	0.0625	0.5679	0.4770	3.4100e-003		0.0432	0.0432		0.0432	0.0432		681.4565	681.4565	0.0131	0.0125	685.5060
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0625**	**0.5679**	**0.4770**	**3.4100e-003**		**0.0432**	**0.0432**		**0.0432**	**0.0432**		**681.4565**	**681.4565**	**0.0131**	**0.0125**	**685.5060**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.3405	4.5000e-004	0.0491	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1046	0.1046	2.8000e-004		0.1115

Unmitigated	2.6920	4.6000e-004	0.0497	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3207					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.3666					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.6400e-003	4.6000e-004	0.0497	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Total	**2.6920**	**4.6000e-004**	**0.0497**	**0.0000**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**		**0.1131**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1444					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.1916					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5600e-003	4.5000e-004	0.0491	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1046	0.1046	2.8000e-004		0.1115
Total	**2.3405**	**4.5000e-004**	**0.0491**	**0.0000**		**1.7000e-004**	**1.7000e-004**		**1.7000e-004**	**1.7000e-004**		**0.1046**	**0.1046**	**2.8000e-004**		**0.1115**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

1180 Main

San Mateo County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	0.75	0.62	0.00	0.00	0.94	0.94	0.00	0.00	0.00	0.00	0.00	0.00
Demolition	0.69	0.76	0.02	0.00	0.80	0.78	0.00	0.00	0.00	0.00	0.00	0.00
Grading	0.66	0.52	-0.09	0.00	0.90	0.89	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.19	0.22	-0.01	0.00	0.26	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	0.87	0.95	-0.10	0.00	0.97	0.96	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	No Change	0	1	No Change	0.00
Cement and Mortar Mixers	Diesel	No Change	0	1	No Change	0.00
Concrete/Industrial Saws	Diesel	No Change	0	1	No Change	0.00
Cranes	Diesel	Tier 4 Final	1	1	No Change	0.00
Excavators	Diesel	Tier 4 Final	2	2	No Change	0.00
Forklifts	Diesel	Tier 4 Final	1	1	No Change	0.00
Generator Sets	Diesel	Tier 4 Final	1	1	No Change	0.00

Graders	Diesel	Tier 4 Final	2	2	No Change	0.00
Pavers	Diesel	No Change	0	1	No Change	0.00
Paving Equipment	Diesel	No Change	0	1	No Change	0.00
Rollers	Diesel	No Change	0	1	No Change	0.00
Rubber Tired Dozers	Diesel	Tier 4 Final	3	3	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	7	7	No Change	0.00
Trenchers	Diesel	Tier 4 Final	1	1	No Change	0.00
Welders	Diesel	Tier 4 Final	3	3	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	1.09000E-003	7.63000E-003	9.09000E-003	1.00000E-005	4.70000E-004	4.70000E-004	0.00000E+000	1.27663E+000	1.27663E+000	9.00000E-005	0.00000E+000	1.27882E+000
Cement and Mortar Mixers	2.20000E-004	1.38000E-003	1.16000E-003	0.00000E+000	5.00000E-005	5.00000E-005	0.00000E+000	1.71850E-001	1.71850E-001	2.00000E-005	0.00000E+000	1.72300E-001
Concrete/Industrial Saws	5.08000E-003	3.94700E-002	4.07200E-002	7.00000E-005	2.52000E-003	2.52000E-003	0.00000E+000	5.91423E+000	5.91423E+000	4.20000E-004	0.00000E+000	5.92464E+000
Cranes	6.74800E-002	8.00910E-001	3.15360E-001	8.60000E-004	3.30700E-002	3.04200E-002	0.00000E+000	7.58896E+001	7.58896E+001	2.44700E-002	0.00000E+000	7.65014E+001
Excavators	2.29400E-002	2.36000E-001	2.87160E-001	4.50000E-004	1.13800E-002	1.04700E-002	0.00000E+000	4.08043E+001	4.08043E+001	1.29100E-002	0.00000E+000	4.11271E+001
Forklifts	2.13800E-002	1.92750E-001	1.76060E-001	2.30000E-004	1.43200E-002	1.31800E-002	0.00000E+000	2.01045E+001	2.01045E+001	6.48000E-003	0.00000E+000	2.02666E+001
Generator Sets	7.89600E-002	6.87820E-001	7.37040E-001	1.31000E-003	3.87100E-002	3.87100E-002	0.00000E+000	1.12476E+002	1.12476E+002	6.32000E-003	0.00000E+000	1.12634E+002
Graders	1.65500E-002	2.23710E-001	6.24900E-002	2.30000E-004	7.18000E-003	6.61000E-003	0.00000E+000	2.02840E+001	2.02840E+001	6.42000E-003	0.00000E+000	2.04445E+001
Pavers	9.20000E-004	9.73000E-003	1.08900E-002	2.00000E-005	4.70000E-004	4.30000E-004	0.00000E+000	1.54809E+000	1.54809E+000	5.00000E-004	0.00000E+000	1.56061E+000
Paving Equipment	9.60000E-004	9.70000E-003	1.27100E-002	2.00000E-005	4.80000E-004	4.40000E-004	0.00000E+000	1.78922E+000	1.78922E+000	5.80000E-004	0.00000E+000	1.80369E+000
Rollers	8.30000E-004	8.42000E-003	8.23000E-003	1.00000E-005	5.10000E-004	4.70000E-004	0.00000E+000	1.00846E+000	1.00846E+000	3.30000E-004	0.00000E+000	1.01662E+000
Rubber Tired Dozers	5.09100E-002	5.41840E-001	1.92250E-001	3.80000E-004	2.64200E-002	2.43100E-002	0.00000E+000	3.44173E+001	3.44173E+001	1.08900E-002	0.00000E+000	3.46896E+001
Tractors/Loaders/Backhoes	4.88900E-002	4.91560E-001	5.18370E-001	7.00000E-004	3.15600E-002	2.90400E-002	0.00000E+000	6.24458E+001	6.24458E+001	2.00100E-002	0.00000E+000	6.29461E+001
Trenchers	2.67900E-002	2.42880E-001	1.70130E-001	2.20000E-004	1.81100E-002	1.66600E-002	0.00000E+000	1.92332E+001	1.92332E+001	6.20000E-003	0.00000E+000	1.93882E+001
Welders	2.02990E-001	9.34860E-001	1.05237E+000	1.53000E-003	5.13800E-002	5.13800E-002	0.00000E+000	1.12368E+002	1.12368E+002	1.65100E-002	0.00000E+000	1.12780E+002

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Air Compressors	1.09000E-003	7.63000E-003	9.09000E-003	1.00000E-005	4.70000E-004	4.70000E-004	0.00000E+000	1.27663E+000	1.27663E+000	9.00000E-005	0.00000E+000	1.27882E+000
Cement and Mortar Mixers	2.20000E-004	1.38000E-003	1.16000E-003	0.00000E+000	5.00000E-005	5.00000E-005	0.00000E+000	1.71850E-001	1.71850E-001	2.00000E-005	0.00000E+000	1.72300E-001
Concrete/Industrial Saws	5.08000E-003	3.94700E-002	4.07200E-002	7.00000E-005	2.52000E-003	2.52000E-003	0.00000E+000	5.91422E+000	5.91422E+000	4.20000E-004	0.00000E+000	5.92463E+000
Cranes	1.05800E-002	4.58500E-002	3.87950E-001	8.60000E-004	1.41000E-003	1.41000E-003	0.00000E+000	7.58895E+001	7.58895E+001	2.44700E-002	0.00000E+000	7.65013E+001
Excavators	5.59000E-003	2.42300E-002	3.44790E-001	4.50000E-004	7.50000E-004	7.50000E-004	0.00000E+000	4.08043E+001	4.08043E+001	1.29100E-002	0.00000E+000	4.11270E+001
Forklifts	2.81000E-003	1.21800E-002	1.73360E-001	2.30000E-004	3.70000E-004	3.70000E-004	0.00000E+000	2.01045E+001	2.01045E+001	6.48000E-003	0.00000E+000	2.02666E+001
Generator Sets	1.30900E-002	5.67200E-002	8.07220E-001	1.31000E-003	1.75000E-003	1.75000E-003	0.00000E+000	1.12476E+002	1.12476E+002	6.32000E-003	0.00000E+000	1.12634E+002
Graders	2.76000E-003	1.19500E-002	1.01150E-001	2.30000E-004	3.70000E-004	3.70000E-004	0.00000E+000	2.02840E+001	2.02840E+001	6.42000E-003	0.00000E+000	2.04445E+001
Pavers	9.20000E-004	9.73000E-003	1.08900E-002	2.00000E-005	4.70000E-004	4.30000E-004	0.00000E+000	1.54809E+000	1.54809E+000	5.00000E-004	0.00000E+000	1.56061E+000
Paving Equipment	9.60000E-004	9.70000E-003	1.27100E-002	2.00000E-005	4.80000E-004	4.40000E-004	0.00000E+000	1.78922E+000	1.78922E+000	5.80000E-004	0.00000E+000	1.80369E+000
Rollers	8.30000E-004	8.42000E-003	8.23000E-003	1.00000E-005	5.10000E-004	4.70000E-004	0.00000E+000	1.00846E+000	1.00846E+000	3.30000E-004	0.00000E+000	1.01661E+000
Rubber Tired Dozers	4.69000E-003	2.03300E-002	1.72030E-001	3.80000E-004	6.30000E-004	6.30000E-004	0.00000E+000	3.44173E+001	3.44173E+001	1.08900E-002	0.00000E+000	3.46895E+001
Tractors/Loaders/Backhoes	8.61000E-003	3.73200E-002	5.31060E-001	7.00000E-004	1.15000E-003	1.15000E-003	0.00000E+000	6.24457E+001	6.24457E+001	2.00100E-002	0.00000E+000	6.29460E+001
Trenchers	2.67000E-003	1.15700E-002	1.64600E-001	2.20000E-004	3.60000E-004	3.60000E-004	0.00000E+000	1.92332E+001	1.92332E+001	6.20000E-003	0.00000E+000	1.93882E+001
Welders	2.61500E-002	5.99380E-001	8.93620E-001	1.53000E-003	1.74000E-003	1.74000E-003	0.00000E+000	1.12368E+002	1.12368E+002	1.65100E-002	0.00000E+000	1.12780E+002

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Percent Reduction											
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Cement and Mortar Mixers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Concrete/Industrial Saws	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.69084E-006	1.69084E-006	0.00000E+000	0.00000E+000	1.68787E-006
Cranes	8.43213E-001	9.42753E-001	-2.30181E-001	0.00000E+000	9.57363E-001	9.53649E-001	0.00000E+000	1.18593E-006	1.18593E-006	0.00000E+000	0.00000E+000	1.17645E-006
Excavators	7.56321E-001	8.97331E-001	-2.00690E-001	0.00000E+000	9.34095E-001	9.28367E-001	0.00000E+000	1.22536E-006	1.22536E-006	0.00000E+000	0.00000E+000	1.21574E-006

Forklifts	8.68569E-001	9.36809E-001	1.53357E-002	0.00000E+000	9.74162E-001	9.71927E-001	0.00000E+000	1.49220E-006	1.49220E-006	0.00000E+000	0.00000E+000	1.48027E-006
Generator Sets	8.34220E-001	9.17537E-001	-9.52187E-002	0.00000E+000	9.54792E-001	9.54792E-001	0.00000E+000	1.15580E-006	1.15580E-006	0.00000E+000	0.00000E+000	1.15418E-006
Graders	8.33233E-001	9.46583E-001	-6.18659E-001	0.00000E+000	9.48468E-001	9.44024E-001	0.00000E+000	1.47900E-006	1.47900E-006	0.00000E+000	0.00000E+000	1.46739E-006
Pavers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Rollers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	9.83652E-006
Rubber Tired Dozers	9.07877E-001	9.62480E-001	1.05176E-001	0.00000E+000	9.76154E-001	9.74085E-001	0.00000E+000	1.16221E-006	1.16221E-006	0.00000E+000	0.00000E+000	1.15309E-006
Tractors/Loaders/Backhoes	8.23890E-001	9.24078E-001	-2.44806E-002	0.00000E+000	9.63561E-001	9.60399E-001	0.00000E+000	1.12097E-006	1.12097E-006	0.00000E+000	0.00000E+000	1.11206E-006
Trenchers	9.00336E-001	9.52363E-001	3.25046E-002	0.00000E+000	9.80121E-001	9.78391E-001	0.00000E+000	1.55980E-006	1.55980E-006	0.00000E+000	0.00000E+000	1.03155E-006
Welders	8.71176E-001	3.58856E-001	1.50850E-001	0.00000E+000	9.66135E-001	9.66135E-001	0.00000E+000	1.24591E-006	1.24591E-006	0.00000E+000	0.00000E+000	1.15268E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
No	Replace Ground Cover of Area Disturbed	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
Yes	Water Exposed Area	PM10 Reduction	55.00	PM2.5 Reduction	55.00	Frequency (per day)	2.00
No	Unpaved Road Mitigation	Moisture Content %	0.00	Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00

Building Construction	Roads	0.15	0.04	0.15	0.04	0.00	0.00
Demolition	Fugitive Dust	0.00	0.00	0.00	0.00	0.55	0.56
Demolition	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Grading	Fugitive Dust	0.22	0.11	0.10	0.05	0.55	0.55
Grading	Roads	0.04	0.01	0.04	0.01	0.00	0.00
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Fugitive Dust	0.01	0.00	0.00	0.00	0.55	0.55
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	54.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	7.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	2.38	0.00	1.34	0.00	0.00	0.00	0.00	1.39	1.39	0.00	0.00	1.41
Mobile	16.89	27.38	31.17	40.82	37.26	37.18	0.00	40.76	40.76	35.97	0.00	40.75
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	20.00	19.31	19.42	20.00	19.80	19.62
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting: Urban

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00	0.00	0.00	
Yes	Land Use	Increase Diversity	0.13	0.37		
No	Land Use	Improve Walkability Design	0.00	0.00		
Yes	Land Use	Improve Destination Accessibility	0.19	0.50		
Yes	Land Use	Increase Transit Accessibility	0.12	0.38		
No	Land Use	Integrate Below Market Rate Housing	0.00	0.00		
	Land Use	Land Use SubTotal	0.38			
Yes	Neighborhood Enhancements	Improve Pedestrian Network	2.00	Project Site and Connecting Off-Site		
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.02			
Yes	Parking Policy Pricing	Limit Parking Supply	0.00	0.00		
No	Parking Policy Pricing	Unbundle Parking Costs	0.00	0.00		
No	Parking Policy Pricing	On-street Market Pricing	0.00	0.00		
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00	0.00		
No	Transit Improvements	Expand Transit Network	0.00	0.00		
No	Transit Improvements	Increase Transit Frequency	0.00		0.00	
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.39			
Yes	Commute	Implement Trip Reduction Program	6.20	100.00	Voluntary	
No	Commute	Transit Subsidy		0.00		
No	Commute	Implement Employee Parking "Cash Out"	7.70	0.00		
No	Commute	Workplace Parking Charge		0.00		

No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00	0.00		
No	Commute	Employee Vanpool/Shuttle	0.00	0.00	2.00	
No	Commute	Provide Ride Sharing Program	15.00	0.00		
	Commute	Commute Subtotal	0.06			
No	School Trip	Implement School Bus Program	0.00	0.00		
		Total VMT Reduction	0.43			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
Yes	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	150.00
Yes	Use Low VOC Paint (Non-residential Interior)	50.00
Yes	Use Low VOC Paint (Non-residential Exterior)	50.00
Yes	Use Low VOC Paint (Parking)	100.00
Yes	% Electric Lawnmower	3.00
Yes	% Electric Leafblower	3.00
Yes	% Electric Chainsaw	3.00

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		

No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Apply Water Conservation on Strategy	20.00	6.10
No	Use Reclaimed Water	0.00	0.00
No	Use Grey Water	0.00	
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction	0.00	
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape	0.00	0.00

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	50.00

Construction Results Summary

Unmitigated

	Tons per Year					
Year	**ROG**	**NOX**	**CO**	**SO2**	**Exhaust PM10**	**Exhaust PM2.5**
2019	0.21	2.57	1.54	0.00	0.09	0.08
2020	0.32	2.59	2.21	0.00	0.12	0.11
2021	0.68	0.78	0.72	0.00	0.03	0.03

Pounds per Ton 2000

Year	Work Days
2019	169
2020	240
2021	90

	Lbs/Year					
Year	**ROG**	**NOX**	**CO**	**SO2**	**Exhaust PM10**	**Exhaust PM2.5**
2019	425.4	5139.6	3077.4	8.5	181.4	169.8
2020	649.4	5181	4412	9.54	239	229.6
2021	1360.6	1563.2	1439.4	3.1	68.2	65.4

	Average Daily Pounds per Day					
Year	**ROG**	**NOX**	**CO**	**SO2**	**Exhaust PM10**	**Exhaust PM2.5**
2019	2.52	30.41	18.21	0.05	1.07	1.00
2020	2.71	21.59	18.38	0.04	1.00	0.96
2021	15.12	17.37	15.99	0.03	0.76	0.73

Construction Results Summary

Mitigated

	Tons per Year					
Year	**ROG**	**NOX**	**CO**	**SO2**	**Exhaust PM10**	**Exhaust PM2.5**
2019	0.06	1.10	1.61	0.00	0.00946	0.0093
2020	0.08	0.98	2.19	0.00	0.00700	0.0069
2021	0.61	0.33	0.73	0.00	0.00375	0.0036

Pounds per Ton 2000

Year	Work Days
2019	162
2020	250
2021	118

	Lbs/Year					
Year	**ROG**	**NOX**	**CO**	**SO2**	**Exhaust PM10**	**Exhaust PM2.5**
2019	126.4	2191.2	3212.4	8.5	18.92	18.58
2020	161	1963	4382	9.54	14	13.72
2021	1226.8	652	1455.2	3.1	7.5	7.22

	Average Daily Pounds per Day					
Year	**ROG**	**NOX**	**CO**	**SO2**	**Exhaust PM10**	**Exhaust PM2.5**
2019	0.78	13.53	19.83	0.05	0.12	0.11
2020	0.64	7.85	17.53	0.04	0.06	0.05
2021	10.40	5.53	12.33	0.03	0.06	0.06

AIR QUALITY TECHNICAL REPORT
1180 Main Street
Redwood City, Ca

Project Number
201901001

Date
January 20, 2019

Prepared for
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ACRONYMS AND ABBREVIATIONS

AERMOD	Atmospheric Dispersion Modeling System
AQTR	Air Quality Technical Report
ARB	Air Resources Board
ASF	Age Sensitivity Factor
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
CalEEMod	California Emission Estimator Model
CAPCOA	California Air Pollution Control Officer's Association
CEQA	California Environmental Quality Act
CPF	Cancer Potency Factor
cREL	Chronic Reference Exposure Level
DPM	Diesel Particulate Matter
DPF	Diesel Particulate Filters
g/s	Gram Per Second
HRA	Health Risk Assessment
lbs	Pounds
MEI	Maximally Exposed Individual
MEISR	Maximally Exposed Individual Sensitive Receptor
NED	National Elevation Dataset
OEHHA	Office of Environmental Health Hazard Assessment
$PM_{2.5}$	Particulate Matter Less Than 2.5 Micrometers in Aerodynamic Diameter
PM_{10}	Particulate Matter Less Than 10 Micrometers in Diameter
TACs	Toxic Air Contaminants
TSD	Technical Support Document
USEPA	US Environmental Protection Agency
USGS	United States Geological Survey
VMT	Vehicle Mile Traveled
$\mu g/m_3$	Microgram per Cubic Meter

1 Introduction

A completed a health risk assessment (HRA) and air pollutant emission analysis for the proposed commercial building project located at 1180 Main Street in the City of Redwood. The project location and a detailed vicinity map are shown in Figure 1.

1.1 Project Understanding

Premia Capital (applicant) is proposing to develop the 1180 Main Street Office in the City of Redwood City, California. The proposed project would be developed on two adjacent parcels identified as Assessor Parcel Numbers (APNs) 053-147-060 and 053-147-070 located at 1180 and 1190 Main Street near the City's downtown area. The project site is approximately 1.31 acres and partially developed with a concrete foundation and a vacant one-story commercial building. The proposed project would construct a three-story commercial office building of 109,375 square feet with a two-level underground parking garage and on-site amenities including a shipping container café and a public park of 10,000 square feet. The Proposed Project is located (refer to **Figure 1**).

This HRA includes an assessment of the project's construction emission and a screening level analysis of stationary sources emissions from land uses in the vicinity of the project site using tools provided by the Bay Area Air Quality Management District (BAAQMD). The analysis also includes an air dispersion analysis of the railroad emission. This HRA considered the site-specific meteorological conditions and the proximity of the project site to the adjacent railway and local roadways to determine the potential risk to future workers at the project site from emissions, including diesel particulate matter (DPM). Figure 2 shows a conceptual site plan for the proposed project.

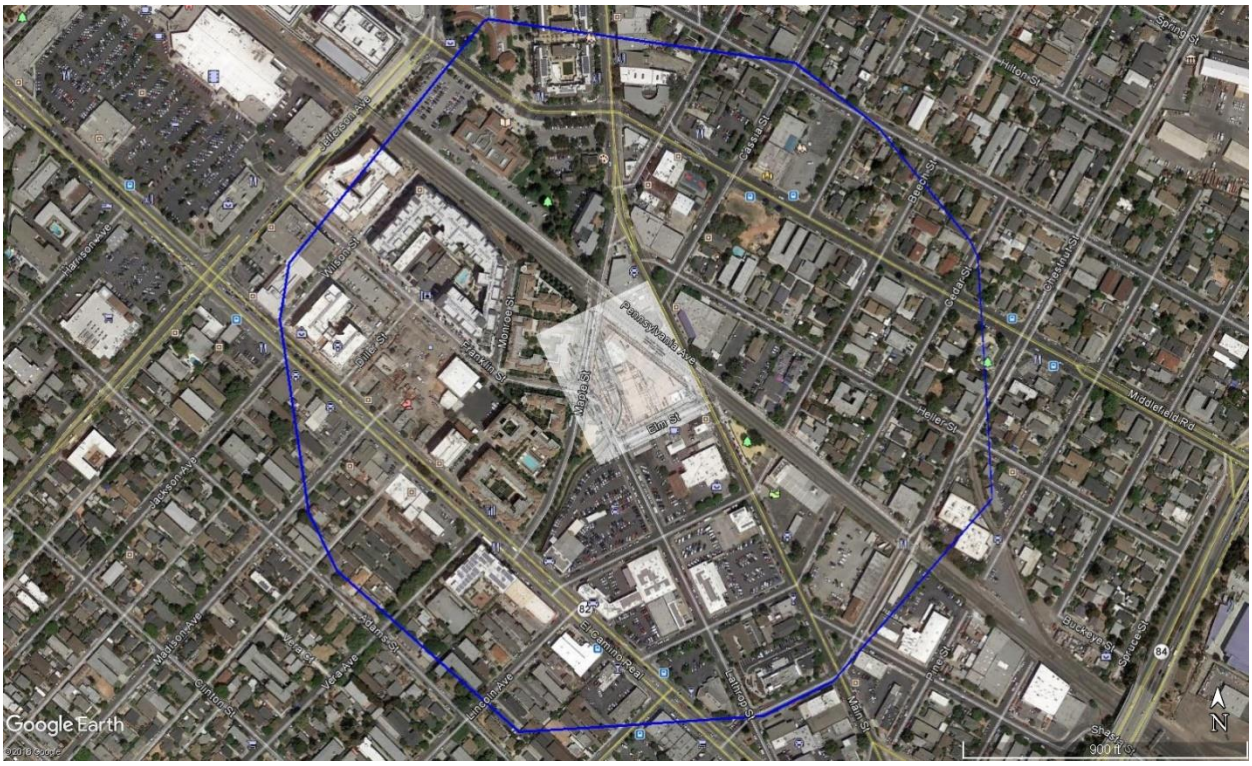


Figure 1 - Project Vicinity & 1000ft Buffer

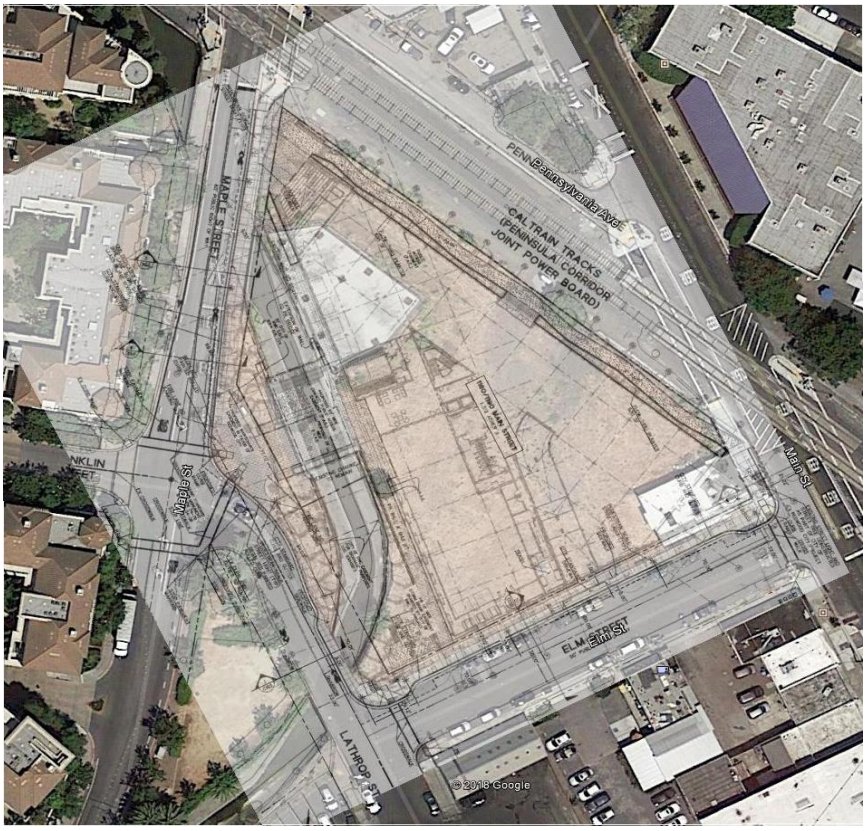


Figure 2 - Site Plan

1.1.1 Construction

The proposed project would demolish the existing structures and construct a three-story commercial office building of 109,375 square feet with a two-level underground parking garage and on-site amenities including a shipping container café and a public park of 10,000 square feet.

Construction would occur over a consecutive two year period (~24 months), with approximately 530 working days[1] during which construction activities using off-road and onroad equipment would be conducted.

1.1.2 Operations

The Proposed Project is not proposed to have stationary equipment, at this time. If any stationary sources is proposed it would be permitted with the Bay Area Air Quality Management District (BAAQMD) and would have to comply with applicable Best Available Control Technology (BACT) and BACT for Toxics requirements (BAAQMD 2010 Project operations are expected to begin in May 2021 ("Project build-out").

1.2 Objective

The purpose of the air quality analysis is to assess potential criteria pollutant and health impacts that would result from construction and operation of the Proposed Project, consistent with guidelines and methodologies from the BAAQMD, California Air Resources Board (ARB), California Office of Environmental Health Hazard Assessment (OEHHA), and the US Environmental Protection Agency (USEPA). Consistent with the methods recommended in those guidelines, the HRA evaluated the estimated excess lifetime cancer risk and particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$) concentrations associated with diesel exhaust that would be emitted by on-site construction activities and diesel exhaust emitted from vehicles associated with operational traffic.

1.3 Significance Criteria

The BAAQMD has established a maximum threshold for land use projects that have the potential to expose sensitive receptors (including residential areas) or the general public to substantial levels of toxic air contaminants.

The BAAQMD thresholds of significance for toxic air contaminants for single sources are:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million; or
- Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index greater than 1 for the MEI.

The BAAQMD thresholds of significance under cumulative conditions (all sources) are:

- A cancer risk level greater than 100 in a million;
- A non-cancer risk (chronic or acute) hazard index greater than 10.0; or
- Annual average PM2.5 of greater than 0.8 micrograms per cubic meter.

1.4 Methodology

Determining how hazardous a substance is depends on many factors, including the amount of the substance in the air, how it enters the body, how long the exposure lasts, and what organs in the body are affected. One major way hazardous substances might enter the body is through inhalation of either gases or particulates. Many gases and very small particles that penetrate deeply into the lungs are potentially harmful and can contribute to a variety of health problems. Exhaust from diesel engines is a major source of harmful airborne particles. The inhalation of diesel exhaust particulates is associated with both cancer and non-cancer health effects.

California's Office of Environmental Health Hazard Assessment (OEHHA) has determined that long-term exposure to diesel exhaust particulates poses the highest cancer risk of any toxic air contaminant (TAC) it has evaluated. Exposure to diesel exhaust can also have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheaded-ness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks.

Fortunately, improvements to diesel fuel and diesel engines have already reduced emissions of some of the contaminants. When fully implemented these improvements result in a 75 percent reduction in particle emissions from diesel-powered trucks and other equipment today as compared to year 2000 levels and an 85 percent reduction is expected by 2020. Similarly, improvements have been made to significantly reduce TAC emissions from gasoline-powered vehicles. These improvements are anticipated to continue into the foreseeable future.

The Proposed Project will have off-road construction emissions and operational traffic DPM emissions. Consistent with the following guidance documents below the cancer risks from Diesel Particulate Matter (DPM), in addition to $PM_{2.5}$ concentrations were estimated.

The HRA was conducted consistent with the following guidance:

- Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA 2015);
- BAAQMD Recommended Methods for Screening and Modeling Local Risks and Hazards (BAAQMD 2012a);
- BAAQMD CEQA Air Quality Guidelines (BAAQMD 2012b);
- California Air Pollution Control Officer's Association (CAPCOA) Health Risk Assessment for Proposed Land Use Projects (CAPCOA 2009).

2 EMISSIONS ESTIMATION METHODS

As detailed below, the Proposed Project construction emissions for off-road sources were calculated using the California Emission Estimator Model (CalEEMod), respectively. Sources of construction emissions include off-road equipment exhaust and on-road equipment exhaust. Sources of operational emissions include traffic and other nearby sources. The Proposed Project Construction and operational

TAC emissions, discussed below, analyzed in this report are consistent with the BAAQMD CEQA Guidelines.

2.1 Construction Emissions

For construction, only DPM is considered as all construction equipment are assumed to be diesel-fueled. All DPM emissions are conservatively assumed to be equal to Respirable Particulate Matter Less than 10 Micrometers in Aerodynamic Diameter (PM_{10}) and Respirable Particulate Matter Less than 2.5 Micrometers in Aerodynamic Diameter ($PM_{2.5}$).

During construction, short-term degradation of air quality may occur due to the release of particulate matter emissions generated by demolition, excavation, grading, hauling, and other activities. Emissions from construction equipment are also anticipated and would include criteria pollutants, and TACs such as diesel exhaust particulate matter.

2.1.1 Off-road Equipment

Construction emission were provided by Stantec for both Unmitigated and Mitigated scenario, refer to Table A and B respectively. CalEEMod output is included in Appendix A.

Table A - Unmitigated Construction Emissions

Year	PM_{10} tons-yr.	Lbs.-yr.
2019	0.0906	181.2
2020	0.1192	238.4
2021	0.0341	68.2

Table B - Mitigated Construction Emissions

Year	PM_{10} tons-yr.	Lbs.-yr.
2019	9.46E-03	18.92
2020	7.00E-03	14
2021	3.75E-03	7.5

2.2 Operational Emissions

2.2.1 Mobile Sources

Vehicles on the roadway emit TACs from the combustion of fuel and were evaluated in the risk assessment to on-site receptors. Based on the BAAQMD CEQA Guidance, traffic of less than 10,000 vehicles per day is considered a low-impact source (BAAQMD 2012a). Only one surface street within 1000ft of the project site is equal to or exceeds this level. However, to ensure a complete evaluation was performed other nearby surface streets were included in the evaluation. The BAAQMD Screening Calculator[1] was used along with ESRI's online traffic count layer to estimate the impact from traffic near the project site

[1] http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools

3 AIR CONCENTRATIONS ESTIMATION METHODS

The methodologies used to evaluate emissions for the Proposed Project construction and operations were based on the most recent BAAQMD Recommended Methods for Screening and Modeling Local Risks and Hazards (BAAQMD 2012a).

3.1.1 Model Selection and Parameters

Consistent with the BAAQMD, near-field air dispersion modeling of DPM and $PM_{2.5}$ from Proposed Project construction and operational sources was conducted using the USEPA's atmospheric dispersion modeling system (AERMOD). At each receptor location, the model generated average air concentrations (or air dispersion factors as unit emissions) that result from emissions from multiple sources.

Air dispersion models such as AERMOD require a variety of inputs including source parameters, meteorological parameters, topographical information, and receptor parameters.

Meteorological data: Air dispersion modeling applications require the use of meteorological data that ideally are spatially and temporally representative of conditions in the immediate vicinity of the site under consideration. For this HRA, CARB's San Carlos meteorological data for year 2009-2014 was used
Terrain considerations: Elevation data was imported from the National Elevation Dataset (NED) maintained by the United States Geological Survey (USGS). The Project site graded elevation was used for all on-site receptors. An important consideration in an air dispersion modeling analysis is the selection of rural or urban dispersion coefficients. Based on the urban area in which the Project site is located, urban dispersion coefficients were used.
Emission rates*:* Emissions were modeled using the χ/Q ("chi over cue") method, such that each phase had unit emission rates (i.e., 1 gram per second [g/s] for volume sources or 1 g/s per square meter [m_2] for area sources), and the model estimated dispersion factors (with units of microgram per cubic meter [$\mu g/m_3$]/[g/s]). For the HRA, the annual average ambient air concentrations were determined by multiplying the annual average dispersion factors from AERMOD ($\mu g/m_3$) by the annual average emission rates (g/s). For simplicity, the model assumed a constant emission rate for every day of the year.
Source parameters: Source location and parameters are necessary to model the dispersion of air emissions. Construction emissions, a polygon area source was used to outline the construction area. For Operational, emissions from the nearby railway was modeled as line volume and the offsite traffic used BAAQMD's Screening Calculator.

3.2 Modeled Sources

For construction, the duration of the construction period is anticipated to be 24 months. At any given time there will be multiple emission sources associated with construction equipment within the construction zone. The construction area was modeled as an area source encompassing the entire Project site. The Project boundary is shown in Figure 2. Figure 1 shows the modeling extent. A release height of ~3.5 meters was used, with an initial vertical dimension of 1.5 meters.

Operational traffic was modeled as adjacent volume sources. The release height and initial vertical dimension was assumed to be 0 meters and the lateral dimensions were used based on actual roadway width. Operational traffic, based on data provided by ESRI, was modeled up to 1,000 Feet from the Project site.

***Receptors*:** In order to evaluate health impacts to on-site and off-site receptors, For both construction operational, receptors were modeled at a height of 0 meters above terrain height which will provides the max concentration. As discussed previously, maximum average annual dispersion factors were estimated for each receptor location. Figure 3 shows the off-site sensitive receptors modeled for construction phases. Figure 4 shows the off-site non-residential receptors modeled for construction phases. Figure 5 shows the on-site receptors modeled for operational phases.

The AERMOD modeling files for the Proposed Project construction and operation are included in Appendix B.



Figure 3 - Residential Receptors



Figure 4 – Non-Residential Receptors

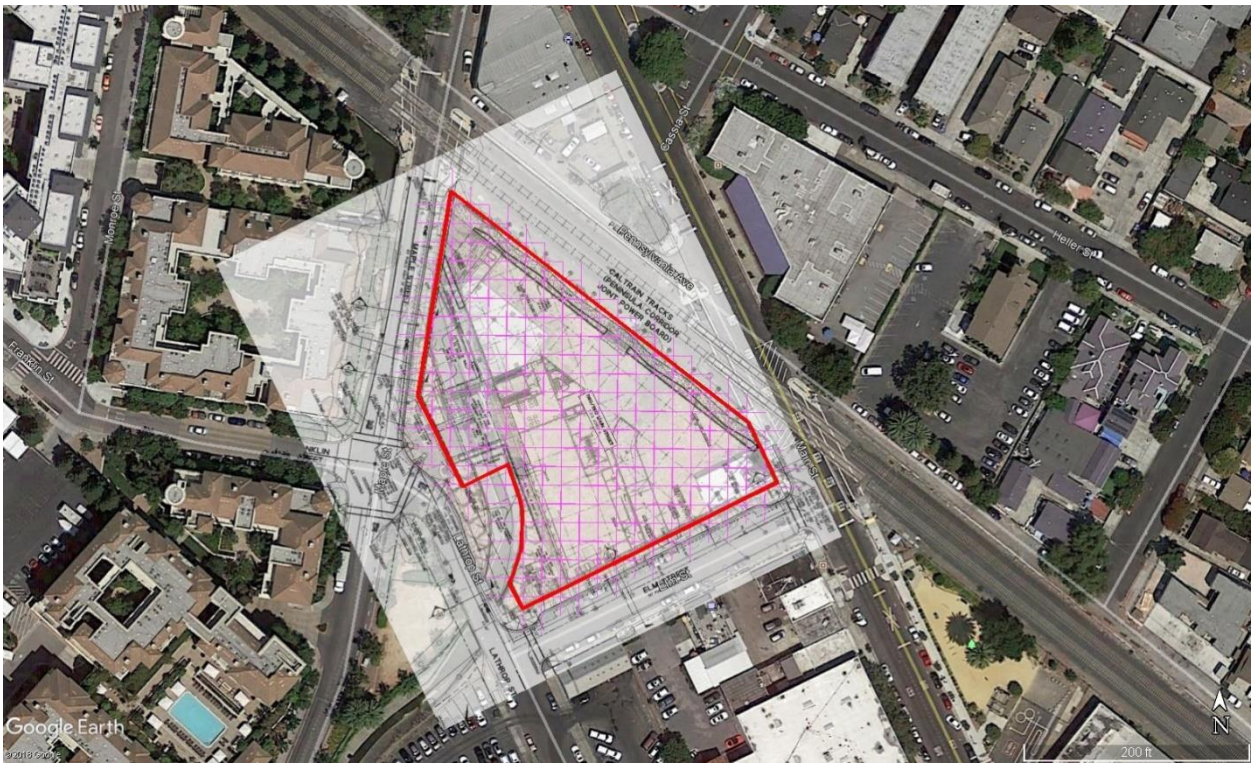


Figure 5 - Onsite Receptors

4 RISK CHARACTERIZATION METHODS

In February 2015, OEHHA released the updated Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA 2015), which combines information from previously-released and adopted technical support documents to delineate OEHHA's revised risk assessment methodologies based on current science. This updated Guidance Manual supersedes the 2003 Guidance Manual (OEHHA 2003) that previously provided methodologies for conducting health risk assessments under the Air Toxics Hot Spots Program (AB2588). Details of this methodology are discussed below.

4.1.1 Sources Evaluated

Evaluation of the excess lifetime cancer risks and $PM_{2.5}$ concentrations were estimated for the listed emission sources, which reflect the largest estimated impacts from Proposed Project construction and operations.

- Use of diesel construction equipment.
- Nearby stationary sources and operational traffic.

4.2 Exposure Assessment

The methodology under OEHHA 2015 Hot Spots Guidelines is as follows:

***Potentially Exposed Populations*:** This analysis evaluated off-site resident children commencing at the time of Proposed Project construction and on-site 25-year worker commencing at the time of Proposed Project operations based on OEHHA 2015 Hot Spots Guidelines.

***Exposure Assumptions*:** The exposure parameters used to estimate excess lifetime cancer risks for all potentially exposed populations for the construction scenario and operation only scenario for this analysis were obtained using risk assessment guidelines from OEHHA (2015) and BAAQMD (2016a), unless otherwise noted.

***Calculation of Intake*:** The dose estimated for each exposure pathway is a function of the concentration of a chemical and the intake of that chemical. The intake factor for inhalation, IF_{inh}, can be calculated as follows:

$$IF_{inh} = [DBR * FAH * EF * ED * CF]/ AT$$

Where:
IF_{inh} = Intake Factor for Inhalation (m_3/kg-day)
DBR = Daily Breathing Rate (L/kg-day)
FAH = Frequency of time at Home (unitless)
EF = Exposure Frequency (days/year)
ED = Exposure Duration (years)
AT = Averaging Time (days)
CF = Conversion Factor, 0.001 (m_3/L)

The chemical intake or dose is estimated by multiplying the inhalation intake factor, IF_{inh}, by the chemical concentration in air, C_i. When coupled with the chemical concentration, this calculation is mathematically equivalent to the dose algorithm given in the current OEHHA Hot Spots guidance (OEHHA 2015).

4.3 Toxicity Assessment

The toxicity assessment characterizes the relationship between the magnitude of exposure and the nature and magnitude of adverse health effects that may result from such exposure. For purposes of calculating exposure criteria to be used in risk assessments, adverse health effects are classified into two broad categories – cancer and non-cancer endpoints. Toxicity values that are used to estimate the likelihood of adverse effects occurring in humans at different exposure levels are identified as part of the toxicity assessment component of a risk assessment.

4.4 Age Sensitivity Factors

The estimated excess lifetime cancer risks for a resident child were adjusted using age sensitivity factors (ASFs) that account for an "anticipated special sensitivity to carcinogens" of infants and children as recommended in the OEHHA Technical Support Document (TSD) (Cal/EPA 2009) and OEHHA 2015 Hot Spots guidance (OEHHA 2015). Cancer risk estimates were weighted by a factor of 10 for exposures that occur from the third trimester of pregnancy to two years of age and by a factor of three for exposures that occur from two years through 15 years of age. No weighting factor (i.e., an Age Sensitivity Factor [ASF] of one, which is equivalent to no adjustment) was applied to ages 16 and older.

4.5 Risk Characterization

4.5.1 Estimation of Cancer Risks

Excess lifetime cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens. The estimated risk is expressed as a unitless probability. The cancer risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF).

The equation used to calculate the potential excess lifetime cancer risk for the inhalation pathway is as follows:

$$Risk_{inh} = C_i \times CF \times IF_{inh} \times CPF_i \times ASF$$

Where:

$Risk_{inh}$ = Cancer Risk; the incremental probability of an individual developing cancer as a result of inhalation exposure to a particular potential carcinogen (unitless)
C_i = Annual Average Air Concentration for $Chemical_i$ ($\mu g/m_3$)
CF = Conversion Factor (mg/µg)
IF_{inh} = Intake Factor for Inhalation (m_3/kg-day)
CPF_i = Cancer Potency Factor for $Chemical_i$ (mg chemical/kg body weight-day)$^{-1}$
ASF = Age Sensitivity Factor (unitless)

4.6 Cumulative Risk and $PM_{2.5}$ Concentration

A cumulative cancer risks and $PM_{2.5}$ concentrations from the Proposed Project and the background sources in the surrounding area at the on-site and off-site Project MEISR's was also conducted.

4.6.1 Background Source Contributions to Cumulative Risks and $PM_{2.5}$

Sources to be included in the cumulative assessment are permitted stationary sources and emissions from major roadways. As defined by BAAQMD, roadways with traffic greater than 10,000 vehicles per day and within 1000 feet of the project site should be included, refer to Table C. The BAAQMD also provided the screening cancer risks for stationary sources and tool used to adjust those risk values based on distance, refer to Table D.

Table C – Nearby Surface Streets

Street Name	# of Vehicles	Distance (ft)
Maple Street	3746	20
Beech St	3835	359
Main St	7143	20
El Camino Real	36000	505

Table D - BAAQMD Nearby Stationary Sources

BAAQMD ID #	Name
13509	Pacific Bell
16454	Quest Collision Center
4796	Cook's Auto Body
11443	H N Lockwood Inc
17462	City of Redwood City #5546

5 RESULTS FROM PROJECT ANALYSIS

This HRA evaluates construction period health risk to off-site receptors and stationary and mobile source emissions and their related health risk impacts for future receptor of the project. According to the BAAQMD, a project would result in a significant impact if it would individually expose sensitive receptors to TACs resulting in an increased cancer risk greater than 10.0 in 1 million, an increased non-cancer risk of greater than 1.0 on the hazard index (chronic or acute), or an annual average ambient PM2.5 increase greater than 0.3 micrograms per liter (µg/m3).

A significant cumulative impact would occur if the project, in combination with other projects located within a 1,000-foot radius of the project site, would expose sensitive receptors to TACs resulting in an increased cancer risk greater than 100.0 in one million, an increased non-cancer risk of greater than 10.0 on the hazard index (chronic), or an ambient PM2.5 increase greater than 0.8 µg/m3 on an annual average basis.

5.1 Construction

The project site is located in an urban area within 100 feet from existing residential uses that could be exposed to diesel emission exhaust during the construction period. To estimate the potential cancer risk associated with construction of the proposed project from equipment exhaust (including diesel particulate matter), a dispersion model was used to translate an emission rate from the source location to a concentration at the receptor location of interest (i.e., a nearby residence and worksites). Dispersion modeling varies from a simpler, more conservative screening-level analysis to a more complex and refined detailed analysis. This refined assessment was conducted using CARB exposure methodology with the air dispersion modeling performed using the United States Environmental Protection Agency (EPA) dispersion model AERMOD. The model provides a detailed estimate of exhaust concentrations based on site and source geometry, source emissions strength, distance from the source to the receptor, and meteorological data from the San Carlos Airport. Results of the analysis are shown in Table E (Unmitigated) and Figures 6, 7, and 8. Table F (Mitigated) and Figures 9, 10, and 11 indicate construction of the project would not expose nearby sensitive receptors to substantial pollutant concentrations.

Table E - Unmitigated Health Risks from Project Construction to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million	**Chronic Inhalation Hazard Index**	**Acute Inhalation Hazard Index**	**Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)**
Maximum Exposed Individual Location (Residential)	105	7.99E-02	0.0	0.38
Maximum Exposed Individual Location (Worksite)	4.76	1.80E-01	0.0	
Threshold	**10.0**	**1.0**	**1.0**	**0.30**

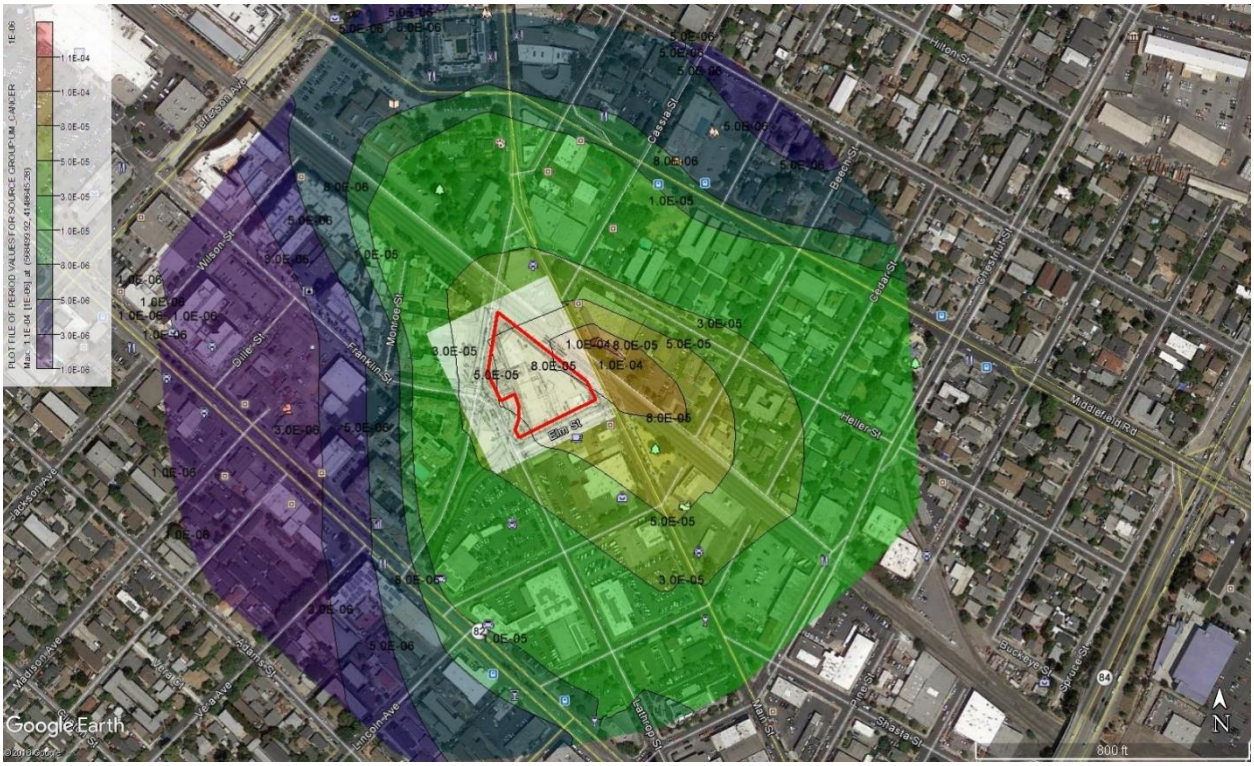


Figure 6 - Unmitigated Cancer Risk

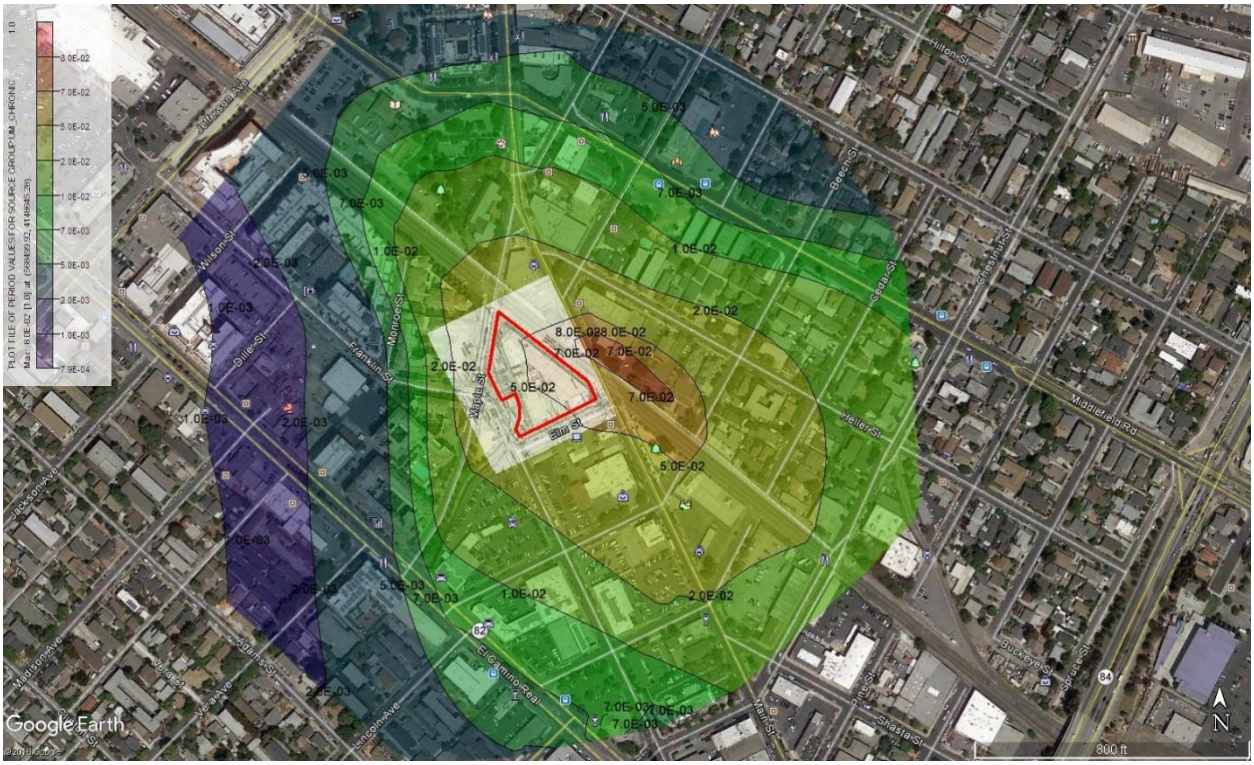


Figure 7 - Unmitigated Chronic HI

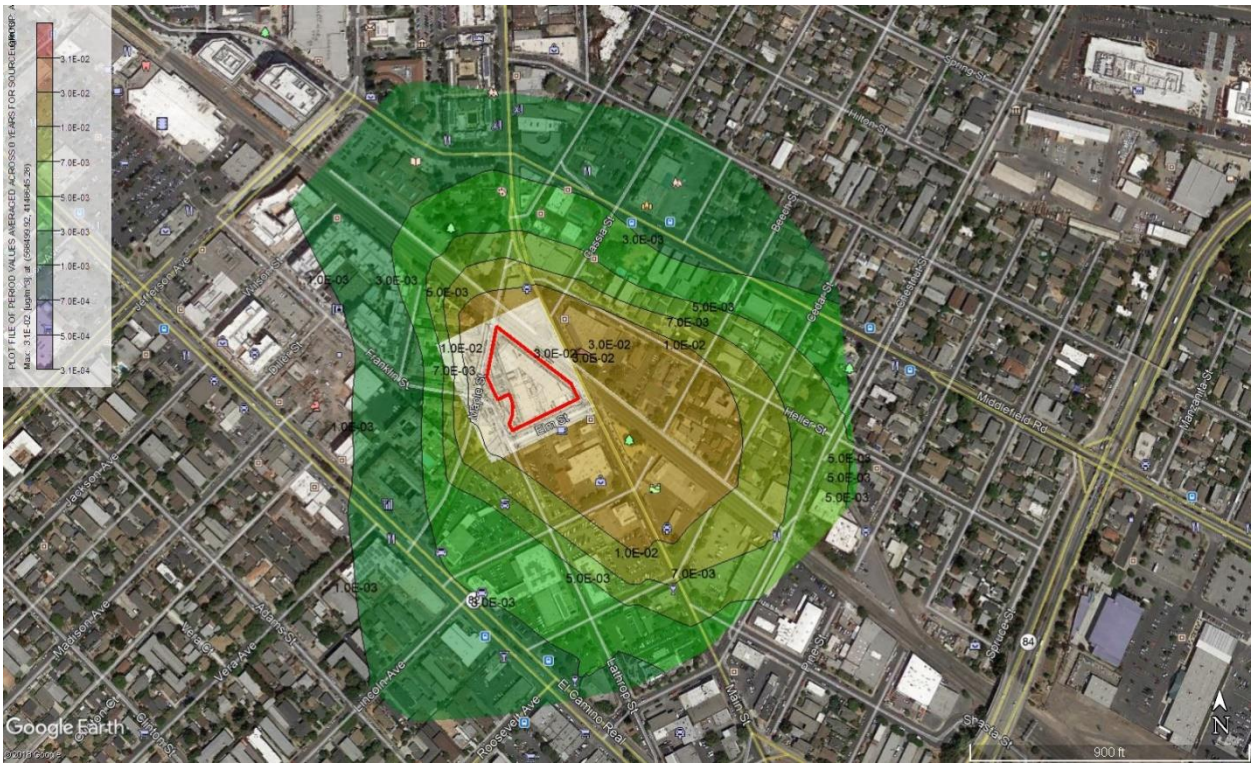


Figure 8 - Unmitigated PM2.5 Concentration

Table F - Mitigated Health Risks from Project Construction to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)
Maximum Exposed Individual Location (Residential)	8.42	6.34E-03	0.0	0.03
Maximum Exposed Individual Location (Worksite)	0.4	1.43E-02	0.0	
Threshold	**10.0**	**1.0**	**1.0**	**0.30**

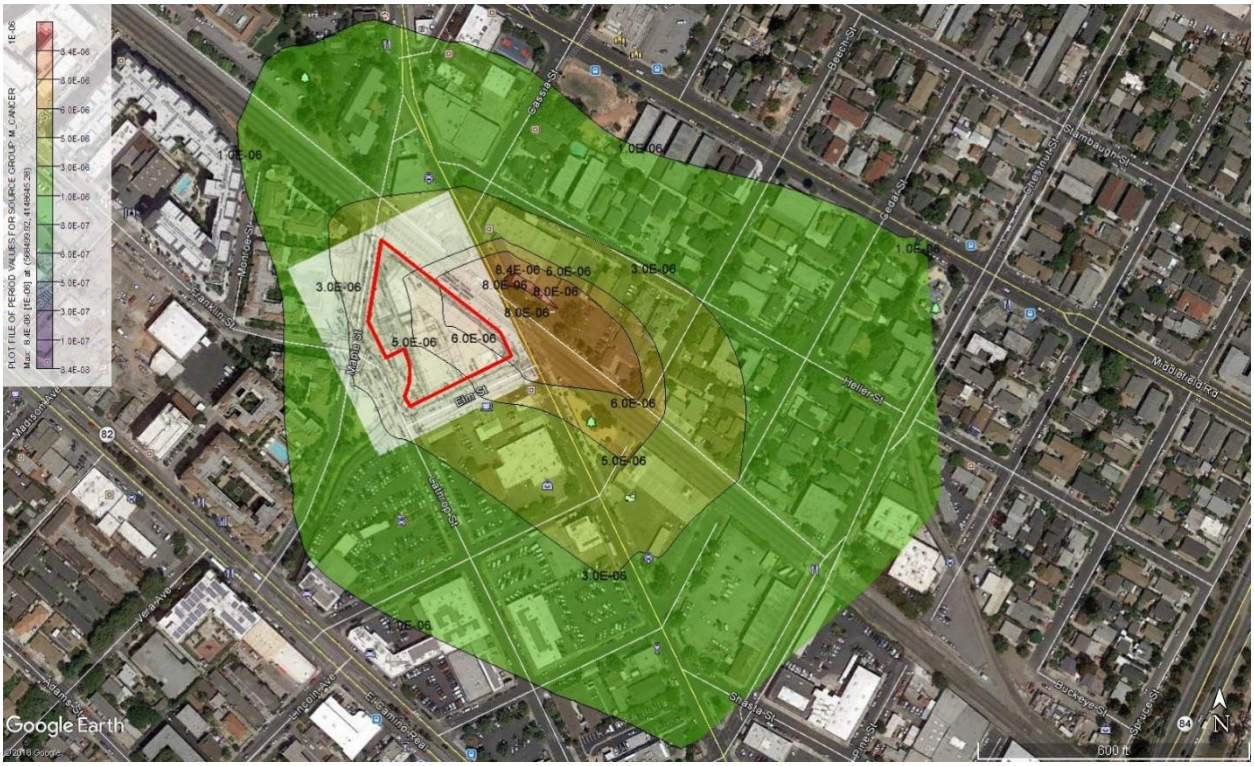


Figure 9 - Mitigated Cancer Risk

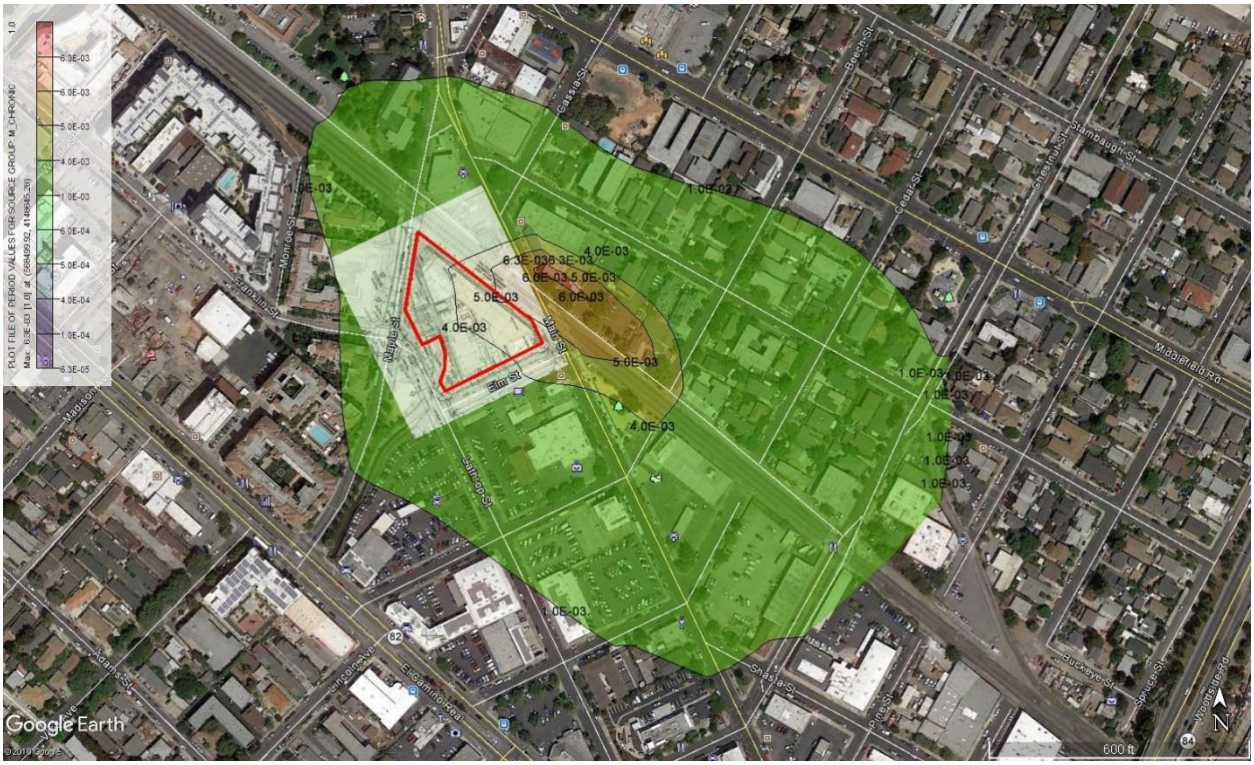


Figure 10 - Mitigated Chronic HI

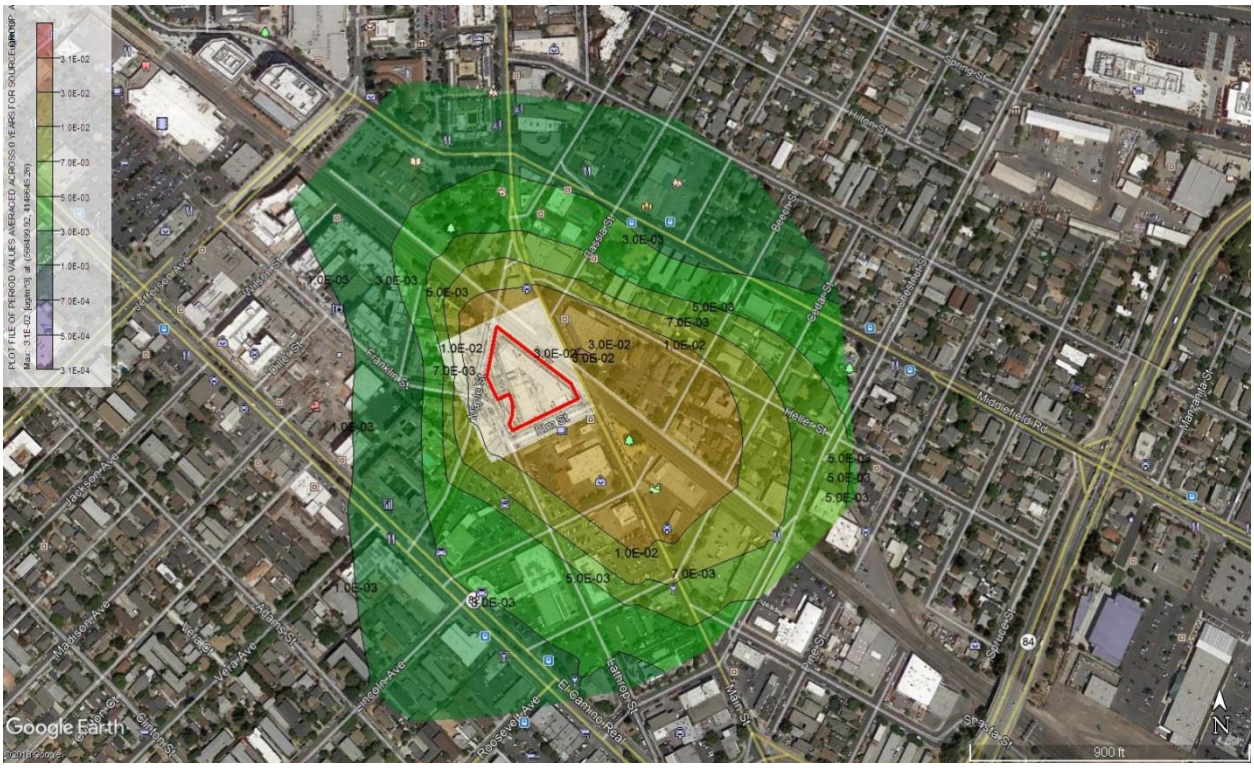


Figure 11 - Mitigated PM2.5 Concentration

5.2 Stationary Sources

The stationary source analysis evaluated the risk levels from permitted sources in the project vicinity, using the toxic air contaminant emissions reported to the BAAQMD by the stationary sources identified in the project vicinity. The BAAQMD indicates five sources of emissions that are within 1,000 feet of the project site; including three gas stations, one generator, and one auto body shop. Following BAAQMD guidance, the stationary sources were scaled for distance using the BAAQMD Diesel Internal Combustion (IC) Engine Distance Multiplier Tool. The results of the stationary source analysis are presented in Table G. As shown in Table G, the highest risk would be 5.37 in one million, which would not exceed the BAAQMD cancer risk threshold of 10 in one million. The hazard index would be 0.02, which is below the threshold of 1.0. The results of the analysis also indicate that PM2.5 concentration would not exceed the BAAQMD significance threshold of 0.3 µg/m3. The BAAQMD's cumulative threshold of cancer risk greater than 100.0 in one million, an increased non-cancer risk of greater than 10.0 on the hazard index (chronic), or an ambient PM2.5 increase greater than 0.8 µg/m3 on an annual average basis would not be exceeded.

Table G - Stationary Sources

Plant ID	Stationary Source	Distance (feet)	Adjusted Adult Carcinogenic Risk (in one million)	$PM_{2.5}$ ($\mu g/m^3$)	Hazard
13509	Pacific Bell	738	4.33	0.110	0.022
16454	Quest Collision Center		0.00	0.000	0.000
4796	Cook's Auto Body		0.00	0.013	0.003
11443	H&N Lockwood Inc		0.00	0.000	0.000
17462	City of Redwood City #5546	532	5.37	0.012	0.019
Maximum Single Source Risks			**5.37**	**0.11**	**0.02**
BAAQMD Single Source Threshold			10 in one million	0.30	1.000
Exceeds Threshold?			No	No	No
Total Risk			**9.70**	**0.14**	**0.04**
BAAQMD Cumulative Threshold			100 in one million	0.80	10.0
Exceeds Threshold?			No	No	No

5.3 Mobile Sources

To estimate the potential cancer risk associated with the proposed project from diesel vehicle exhaust, the BAAQMD Screening Calculator was used. The Screening calculator estimates risk for a 70-year period. Since the proposed project has a mix of offices and public area risk for both areas were estimated. This was done by calculating the percent contribution each age bin contributes to the overall 70-yr risk. Table H below provides the contribution each age bin has to the overall risk by age bin. These percentage were then used to adjust the 70-yr risk provide the screening tool.

Table H - Percent Contribution by Age Group

	3rd Tri.	0<2 yrs	2<9 yrs	2<16 yrs	16<30 yrs	16-70 yrs
Exposure Duration (years)	0.25	2	7	14	14	54
Age Sensitivity Factor	10	10	3	3	1	1
% Contribution (70 yr)	2.11	16.88	17.72	35.44	11.81	45.57
% Contribution Worker (25 / 40 Yr)					21.10	33.76

Table I - Mobile Sources

Street Name	# of Vehicles	Distance From Site (ft)	Risk (Screening Tool) (70yr)	Worker Adjusted Risk	PM 2.5 (ug/m3)
Maple Street	3,746	20	3.48	0.73	0.081
Beech St	3,835	359	0.6	0.13	0.013
Main St	7,143	20	3.26	0.69	0.074
El Camino Real	36,000	505	5.7	1.20	0.129

6 CUMULATIVE ANALYSIS

6.1 6.1 Cumulative Risks and Hazards

The cumulative analysis sums all sources of emissions in the vicinity of the project site including stationary source and mobile sources. The cumulative cancer risk, hazard index, acute index and PM2.5 concentrations are shown in Table J. Results of the cumulative analysis indicate the proposed project would not expose future residents of the project site to significant cumulative health risks.

Table J - Cumulative Risk from All Sources

Source	Carcinogenic Inhalation Health Risk	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index	$PM_{2.5}$
Maple Street	3.48			0.081
Beech St	0.6			0.013
Main St	3.26			0.074
El Camino Real	5.7			0.129
Pacific Bell	4.33	0.022		0.110
Quest Collision Center	0.00	0.000		0.000
Cook's Auto Body	0.00	0.003		0.013
H&N Lockwood Inc	0.00	0.000		0.000
City of Redwood City #5546	5.37	0.019		0.012
Railway	0.0045			0.002
Total	22.75	0.044	0	0.434
Cumulative Threshold	100.0	10.0	10.0	0.80
Exceed? (yes/no)	**No**	**No**	**No**	**No**

Appendix A
CalEEMod Output

See previous results from AQ analysis

Appendix B
AERMOD Inputs

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** Lakes Environmental Software Inc.
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Appendix C BIOLOGICAL SURVEY MEMO

Stantec

Memo

To:	William Chui, City of Redwood City	From:	Andrew Sorci 1340 Treat Blvd. Suite 300, Walnut Creek, CA 94597
File:	1180 Main Street Biological Survey Memo	Date:	January 17, 2019

Reference: 1180 Main Street Biological Survey Memo

Stantec conducted a reconnaissance-level biological survey for the proposed 1180 Main Street Office Project (project) in northeast Redwood City, San Mateo County, California (Figure 1). The site is located between Maple Street, Lathrop Street, Elm Street, Main Street, and the Caltrain railroad alignment (Figure 2). The site is currently a vacant lot containing an incomplete building foundation, a concrete culvert, and a concrete channel containing Redwood Creek. The proposed project involves the construction and operation of a 109,375 square-foot commercial office building of three-stories, two levels of underground parking, and landscaped open spaces. The project site would combine two parcels, at 1180 Main Street and 1190 Main Street, for a total of 57,111 square feet (1.312 acres).

The evaluation included database queries and a field survey conducted to evaluate the potential for special-status wildlife or plants to occur on the site and concluded that although the site is within the range of several special-status species, the site does not contain suitable habitat and those species would not be likely to occur.

1 Methods

Stantec reviewed existing information on biotic resources known in the vicinity of the project site. The following sources were reviewed:

- California Department of Fish and Game (CDFW) BIOS Natural Diversity Database (CNDDB) (CDFW 2018a) within 2 miles of the project site;
- CDFW RareFind 5 Natural Diversity Database (CNDDB) (CDFG 2018b) within 2 miles of the project site;
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) (USFWS 2018) within 2 miles of the project site; and
- California Native Plant Society (CNPS) online version of the Inventory of Rare and Endangered Plants of California (CNPS 2018) within 2 miles of the project site.

A 2-mile buffer around the project site included portions of the following U.S. Geological Survey (USGS) quadrangles: Palo Alto, Woodside, Redwood Point, and San Mateo.

Based on the results of the database queries, Stantec compiled a list of the special-status species that would be evaluated for a potential to occur in the project site.

A reconnaissance-level field survey was conducted by Stantec biologist Andrew Sorci on November 14, 2018, to assess the existing habitat suitability for special-status species. The field survey was conducted within a Study Area that included the proposed project site plus a 250-foot buffer.

2 Land Cover Types

The project site is vacant, except for an existing office building no longer in use. All parcels surrounding the project site are completely developed, and include apartment buildings, houses, businesses, and parking lots. There are train tracks running northwest-southeast, directly to the east of the project site.

Developed: There is one vacant building on the southeast corner of the project site, and a concrete building foundation in the northern part of the parcel.

Wild oats grassland: The majority of the project site consists of non-native grassland, plant cover. Dominant species include wild oats (*Avena* sp.), black mustard (*Brassica nigra*), fennel (*Foeniculum vulgare*), and yellow star thistle (*Centaurea solstitialis*).

Redwood Creek: There is a concrete lined canal running through the western portion of the project site. There were several inches of water in the canal at the time of the survey. The creek measures approximately 25 feet between banks and is at least ten feet deep.

3 Special-status Plant Species

A list of special-status plant species documented or with suitable habitat within 2 miles of the project site was compiled by conducting a search of the CNDDB and reviewing the USFWS IPaC (Table 1). Suitable habitat for those species identified would be typified by low disturbance. Due to the disturbed and developed nature of the project site, and prevalence of non-native grassland habitat on the project parcel, there is a low or no potential for any special-status plant species to occur.

Table 1. Special-status plant species with potential to occur within the Project Site.

Scientific Name	Common Name	Status[1] (Federal, State, CNPS)	Blooming Period	Communities	Elevation (ft.)	Potential[2] to Occur in the Project Site
Acanthomintha duttonii	San Mateo thorn-mint	FE, SE, 1B.1	April –June	• Chaparral • Valley and foothill grassland	150 – 900	**Low potential to occur.** Project site is highly disturbed, consisting of non-native grassland habitat.
Amsinckia lunaris	bent-flowered fiddleneck	1B.2	March – June	•Chenopod scrub •Cismontane woodland •Valley and foothill grassland	10 – 1,500	**Low potential to occur.** Project site is highly disturbed, consisting of non-native grassland habitat. Nearest CNDDB occurrence likely extirpated due to development.
Chloropyron maritimum ssp. *palustre*	Point Reyes salty bird's-beak	FE, SE, 1B.2	June-October	• Marshes and swamps	0-30	**No potential to occur.** Project site is highly disturbed and no suitable aquatic habitat is present.
Cirsium fontinales var. *fontinales*	fountain thistle	FE, SE, 1B.1	May-Oct	• Meadows and seeps • Chaparral (openings) • Cismontane woodland • Valley and foothill grassland	100-525	**Low potential to occur.** Project site is highly disturbed, consisting of non-native grassland habitat. Nearest CNDDB occurrence located 1.8 miles southwest of the project site within Stulsaft Park.
Eriophyllum latilobum	San Mateo woolly sunflower	FE, SE, 1B.1	May-June	• Cismontane woodland (often serpentinite, on roadcuts) • Coastal scrub • Lower montane coniferous forest	145-1,085	**No potential to occur.** Project site is highly disturbed and no suitable woodland habitat is present.

Table 1. Special-status plant species with potential to occur within the Project Site.

Scientific Name	Common Name	Status[1] (Federal, State, CNPS)	Blooming Period	Communities	Elevation (ft.)	Potential[2] to Occur in the Project Site
Hesperolinon congestum	Marin dwarf flax	FT, ST, 1B.1	April-June	• Chaparral • Valley and foothill grassland	15-1,110	**Low potential to occur**. Project site is highly disturbed, consisting of non-native grassland habitat. Nearest CNDDB occurrence located 1.9 miles southwest of the project site within Stulsaft Park.
Pentachaeta bellidiflora	white-rayed pentachaeta	FE, SE, 1B.1	March-May	• Cismontane woodland • Valley and foothill grassland (often serpentinite)	100-2,000	**Low potential to occur.** Project site is highly disturbed, consisting of non-native grassland habitat.
Trifolium amoenum	showy Indian clover	FE, 1B.1	April-June	• Coastal bluff scrub • Valley and foothill grassland	15-1,245	**Low potential to occur.** Project site is highly disturbed, consisting of non-native grassland habitat.

Notes:

[1.] Conservation status definitions are as follows:

USFWS designations:

- FE Endangered: any species in danger of extinction throughout all or a significant portion of its range
- FT Threatened: any species likely to become endangered within the foreseeable future

CDFW designations:

- SE Endangered: any species in danger of extinction throughout all or a significant portion of its range
- ST Threatened: any species likely to become endangered within the foreseeable future

CNPS designations:

- 1A Species presumed extinct in California
- 1B Plants rare, threatened or endangered in California and elsewhere
- 2 Plants rare, threatened or endangered in California, but more common elsewhere

CNPS threat categories:

- .1 Seriously endangered in California
- .2 Fairly endangered in California

Table 1. Special-status plant species with potential to occur within the Project Site.

Scientific Name	Common Name	Status[1] (Federal, State, CNPS)	Blooming Period	Communities	Elevation (ft.)	Potential[2] to Occur in the Project Site

.3 Not very endangered in California.

[2] The likelihood of occurrence (low, moderate, high) is based on habitat requirements (such as, substrate, hydrology, vegetation community, and disturbance factors) and range, applied by using the following general guidelines:

Low: Habitat within the Study Area and/or project vicinity satisfies very few of the species' requirements and/or the range of the species overlaps with the vicinity of the Study Area, but not with the Study Area itself. The species' presence within the Study Area is unlikely.

Moderate: Habitat within the Study Area and/or Study Area vicinity meets some of the species' requirements, and known locations for the species are found in the vicinity of the Study Area. Presence of the species within the Study Area is moderately likely.

High: Habitat within the Study Area and/or Study Area vicinity meets most or all of the species' requirements, and known locations for the species are found within proximity to the Study Area. Presence of the species within the Study Area is highly likely.

4 Special-status Wildlife Species

Special-status wildlife species were defined in accordance with the CEQA Guidelines, Section 15380, and included species that are:

- Listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act;
- Listed or candidates for listing as threatened or endangered under the California Endangered Species Act;
- Designated as Species of Special Concern by the CDFW;
- Included on the CDFW “Special Animals” list (CDFW 2018c); or otherwise meet the definition of rare, threatened, or endangered, as described in the CEQA Guidelines, Section 15380.

Special-status wildlife species documented or with suitable habitat within 2 miles of the project site are summarized in Table 2. The project site does not include designated critical habitat, and there is no critical habitat within 2 miles.

Table 2. Special-status wildlife species with potential to occur in the Project Vicinity.

Scientific Name	Common Name	Status[1] Federal, State	Habitat Requirements	Potential[2] to Occur in the Study Area
Insects				
Callophrys mossii bayensis	San Bruno elfin butterfly	FE	Found on rocky outcrops and cliffs in coastal scrub habitats where its larval food plant (stonecrop, *Sedum spathulifolium*) is present.	**No potential to occur.** Project site is highly disturbed and does not provide habitat for host plant.
Euphydryas editha bayensis	Bay checkerspot butterfly	FT	Relies on habitat found on serpentine soils, where its primary host plant, dwarf plantain (*Plantago erecta*), and secondary host plant, purple owl's clover (*Castilleja densiflora*) *grow*.	**No potential to occur.** Project site is highly disturbed and does not contain any serpentine soils that support the host plants.
Fish				
Hypomesus transpacificus	Delta smelt	FT, SE	Found in the Sacramento–San Joaquin Delta, seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt. Most often occurs at salinities < 2ppt.	**No potential to occur.** No suitable aquatic habitat in the project site. Project site is located outside of the range for this species.
Amphibians				
Ambystoma californiense	California tiger salamander	FT, ST	Vernal pools and/or seasonal water sources; requires underground refuges in adjacent upland areas, especially ground squirrel burrows.	**No potential to occur**. There is no suitable aquatic breeding habitat within the project site. The project site does not have ground squirrel activity nor active burrow systems which would provide suitable upland habitat for this species.
Rana draytonii	California red-legged frog	FT, SSC	Breeds in ponds and pools in slow-moving streams with emergent vegetation; adjacent upland habitats are often used for temporary refuges or dispersal movements.	**Low potential to occur.** The canal located on the western portion of the project site is concrete-lined with steep, high walls, providing no suitable habitat for this species. There is also no suitable upland habitat present in the vicinity of the canal.

Table 2. Special-status wildlife species with potential to occur in the Project Vicinity.

Scientific Name	Common Name	Status[1] Federal, State	Habitat Requirements	Potential[2] to Occur in the Study Area
Reptiles				
Thamnophis sirtalis tetrataenia	San Francisco garter snake	FE, SE, FP	Prefers freshwater marshes and low gradient streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic of the garter snakes in California.	**Low potential to occur.** The canal running through the project site may provide limited dispersal opportunity, however, given the restricted channel and lack of vegetated banks, the urban development of the surrounding area, and a lack of suitable upland habitat, it is highly unlikely that this species will occur in the project site.
Birds				
Brachyramphus marmoratus	Marbled murrelet	FT, SE	This species has been known to roost in redwood and Douglas fir forested areas. It requires dense, mature forests where it nests in tall trees, building nests of moss and lichen.	**No potential to occur.** There is no suitable breeding habitat or nesting habitat present in the project site.
Charadrius nivosus nivosus	Western snowy plover	FT, SSC	This species nests in flat open areas with sand or saline substrates, including sparsely vegetated sand beaches, dry salt flats in lagoons or similar habitat.	**No potential to occur**. The project site is highly disturbed and isolated from any potential nesting or foraging habitat. Nearest CNDDB occurrence 1.6 miles north of the project site in the Smith Slough area.
Coccyzus americanus	Yellow-billed cuckoo	FT, SE	This species uses wooded habitats with dense cover and water nearby. This could include woodlands with low, scrubby vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes. Nests are placed on horizontal branches or in the forks of trees from 3 – 90 feet above the ground.	**No potential to occur.** The project site is highly disturbed and does not provide suitable forested, riparian habitat.

Table 2. Special-status wildlife species with potential to occur in the Project Vicinity.

Scientific Name	Common Name	Status[1] Federal, State	Habitat Requirements	Potential[2] to Occur in the Study Area
Coturnicops noveboracensis	Yellow rail	SSC	This species requires sedge marshes and meadows with shallow standing water, with dense vegetation for breeding. They are known to overwinter in wet meadows and tidal marshes.	**No potential to occur.** There is no suitable marsh habitat in the project site. Nearest CNDDB occurrence is located 0.9 mile northeast of the project site.
Falco peregrinus anatum	American peregrine falcon	FP	They breed in woodland, forest, and coastal habitats. Riparian areas and coastal and inland wetlands are important habitats s yearlong, especially in nonbreeding seasons. It will breed near wetlands, lakes, rivers, or other water on high cliffs, banks, dunes, and mounds. Peregrine falcons will also nest on human structures, and occasionally use trees or snag cavities or old raptor nests.	**No potential to occur.** There is no suitable nesting or foraging habitat in the project site.
Melospiza melodia pusillula	Alameda song sparrow	SSC	This species inhabits tidal salt marsh habitat, with adequate riparian vegetation for nesting sites, song perches and concealment from predators.	**No potential to occur.** The project site is highly disturbed, does not contain suitable marsh habitat and is isolated from any suitable habitat by urban development. Nearest CNDDB occurrence 1.3 miles north of the project site, in the Smith Slough area.
Rallus obsoletus obsoletus	California Ridgeway's rail	FE, SE, FP	This species inhabits saltwater marshes, with dense vegetation, consisting of pickleweed and cordgrass.	**No potential to occur**. The project site is highly disturbed, does not contain suitable marsh habitat and is isolated by urban development from any suitable habitat. Nearest CNDDB occurrence 1.5 miles north of the project site in the Smith Slough Area.
Sterna antillarum browni	California least tern	FE, SE, FP	Typically found nesting in colonies on open beaches, free of vegetation. This species primarily forages in near shore ocean waters.	**No potential to occur.** The project site is highly disturbed and there is no suitable coastal habitat present. Nearest CNDDB occurrence located 2 miles northeast of the project site, in the Don Edwards SF Bay National Wildlife Refuge.

Table 2. Special-status wildlife species with potential to occur in the Project Vicinity.

Scientific Name	Common Name	Status[1] Federal, State	Habitat Requirements	Potential[2] to Occur in the Study Area
Mammals				
Reithrodontomys raviventris	Salt-marsh harvest mouse	FE, SE, FP	Prefers dry open stages of most shrub, forest, and herbaceous habitats. Requires sufficient food (feeds mostly on burrowing rodents), friable soils and open, uncultivated ground.	**No potential to occur.** Lack of suitable habitat within the project site as there is little-to-no ground squirrel activity or other burrowing rodents in the area.

Notes:

[1]. Status designations:

Federal

FE	Listed as Endangered under the federal Endangered Species Act
FT	Listed as Threatened under the federal Endangered Species Act
BCC	Birds of Conservation Concern

State of California

FP	California Fish and Game Code Fully Protected Species
SE	California Fish and Game Code Endangered Species
SSC	California Fish and Wildlife Species of Special Concern

[2] The likelihood of occurrence (low, moderate, high) is based on habitat requirements (such as, substrate, hydrology, vegetation community, and disturbance factors) and range, applied by using the following general guidelines:

Low: Habitat within the project site and/or project vicinity satisfies very few of the species' requirements and/or the range of the species overlaps with the vicinity of the project site, but not with the project site itself. The species' presence within the project site is unlikely.

Moderate: Habitat within the project site and/or project site vicinity meets some of the species' requirements, and known locations for the species are found in the vicinity of the project site. Presence of the species within the project site is moderately likely.

High: Habitat within the project site and/or project site vicinity meets most or all of the species' requirements, and known locations for the species are found within proximity to the project site. Presence of the species within the project site is highly likely.

5 Recommendations

The project site is highly disturbed by previous development and provides no suitable habitat for special-status plants or wildlife; no special-status species were observed during the November 2018 site visit. There was no burrowing mammal activity, or burrows, observed during the site visit, which eliminates the potential refuges that some special-status species in the Bay Area require as a habitat feature. Sparse trees and shrubs within the project site may provide suitable nesting habitat for birds, so nesting bird surveys are recommended prior to construction if construction occurs within the nesting bird season, typically February 15 to August 31.

6 References

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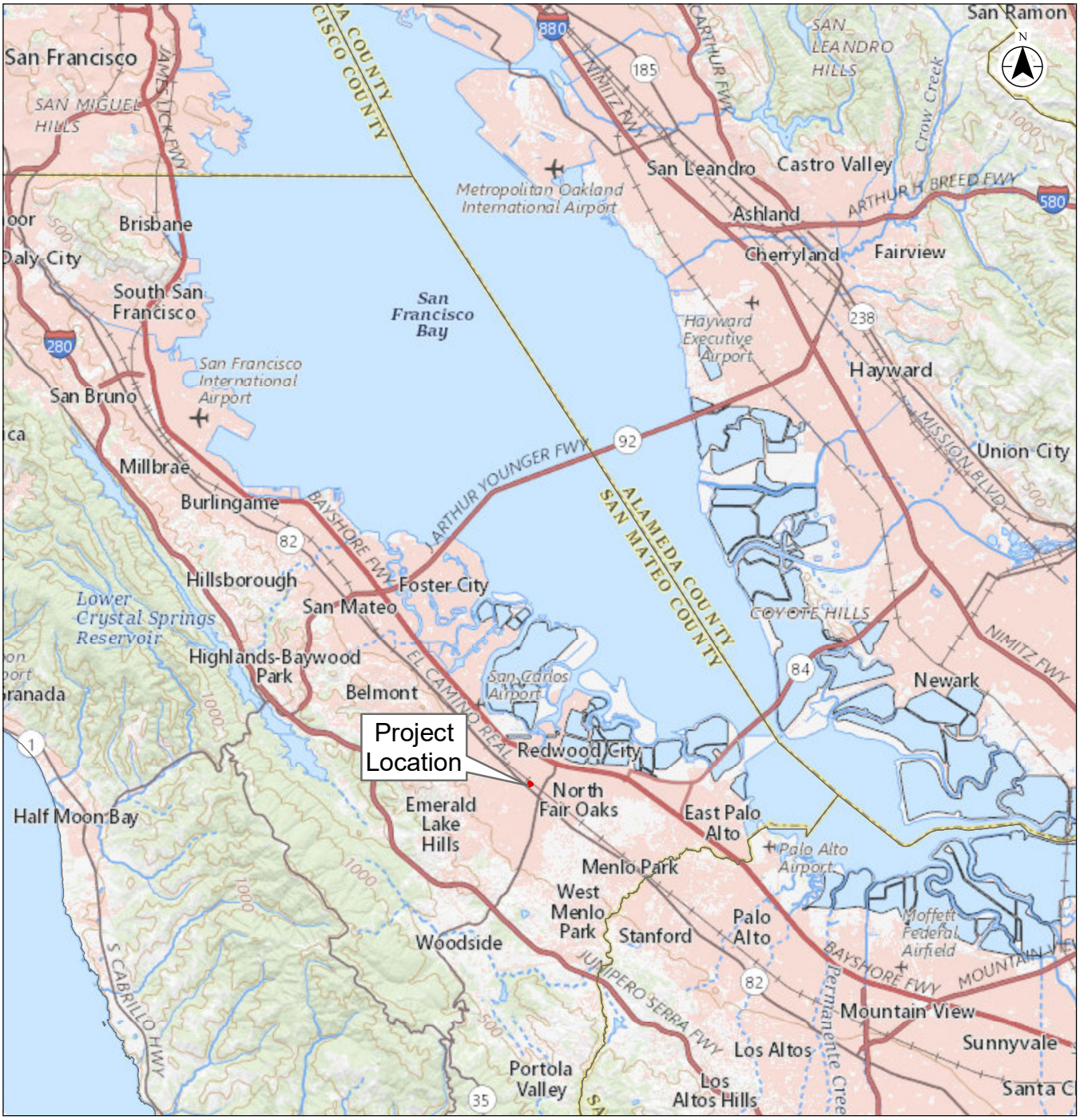
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Project Site

0 2.5 5 Miles

1:250,000 (at original document size of 8.5x11)

Stantec

Project Location
T05.05, R03.0W, Sec19
USGS 7.5min Quad: Palo Alto

185704315
Prepared by WC on 2018-11-21
Technical Review by JD on 2018-11-21
Independent Review by AS on 2018-11-21

Client/Project

City of Redwood City
1180 Main Street Office Project

Figure No.
1

Title
Project Location Map

Notes

1. Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
2. Service Layer Credit: Esri online services, Nov. 2018

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Approximate Project Site

Redwood Creek

0 75 150 Feet

1:1,200 (at original document size of 8.5x11)

Stantec

Project Location
T05.05, R03.0W, Sec19
USGS 7.5min Quad: Palo Alto

185704315
Prepared by WC on 2018-11-21
Technical Review by JD on 2018-11-21
Independent Review by AS on 2018-11-21

Client/Project

City of Redwood City
1180 Main Street Office Project

Figure No.
2

Title
Survey Area Map

Notes
1. Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
2. Service Layer Credit: Bing online services, Nov. 2018

Appendix D CULTURAL RESOURCES INVENTORY & EVALUATION REPORT

1180 Main Street Project, Cultural Resources Inventory and Evaluation Report, Redwood City, San Mateo County, California

Prepared for:

Premia Capital, LLC
801 Hamilton Street
Redwood City, CA

Prepared by:

Stantec Consulting Services, Inc.

January 18, 2019

This document entitled 1180 Main Street Project, Cultural Resources Inventory and Evaluation Report, Redwood City, San Mateo County, California was prepared by Stantec Inc. ("Stantec") for the account of Premia Capital, LLC (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by Joanne L Grant
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Joanne Grant, Archaeologist, MA, RPA

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John A. Nadolski, M.A.

Approved by _____
(signature)
Enter Name

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FIGURE 1- PROJECT VICINITY

FIGURE 2- PROJECT LOCATION (AERIAL)

FIGURE 3- PROJECT LOCATION (TOPOGRAPHIC)

FIGURE 4- AREA SURVEYED

Acronyms and Abbreviations

APN	Assessor's Parcel Number
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
City	Redwood City
CRHR	California Register of Historical Resources
DPR	Department of Parks and Recreation
EIR	Environmental Impact Report
MLD	Most Likely Descendent
NAHC	Native American Heritage Commission
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
OHP	Office of Historic Preservation
PRC	Public Resources Code
Project	1180 Main Street Project
RR	Railroad
SHHRD	Stambaugh-Heller Historical Residential District
USGS	U.S. Geological Survey



1.0 PROJECT DESCRIPTION

Premia Capital (applicant) is proposing to develop the 1180 Main Street Office Project (proposed project) in the City of Redwood City, California (City). The proposed project would be developed on two adjacent parcels identified as Assessor Parcel Numbers (APNs) 053-147-060 and 053-147-070 located at 1180 and 1190 Main Street near the City's downtown area (see Appendix A; Figures 1, 2, and 3). The project site is approximately 1.31 acres and is partially developed, with a concrete foundation and a vacant one-story commercial building. The proposed project would demolish the existing structures and construct a three-story commercial office building of 109,375 square feet with a two-level underground parking garage and on-site amenities, including a shipping container café and a public park of 10,000 square feet.

The project is located near the City's downtown area; adjacent to Elm Street, Lathrop Street, Maple Street, Main Street, and the Caltrain corridor. It is approximately 0.5 mile west of the Redwood City Caltrain station on James Avenue. Regional access is provided by U.S. Highway 101, approximately one mile north of the project site, and Highway 84, approximately 0.5 mile east of the project location.

2.0 RECORDS SEARCH AND LITERATURE REVIEW

2.1 RECORDS SEARCH

Stantec conducted a records search of the project location and a surrounding ¼-mile radius at the Northwest Information Center (NWIC) (NWIC File No. 18-0981) of the California Historic Resources Information Center (CHRIS) on November 27, 2018 (Appendix B). As an affiliate of the State of California Office of Historic Preservation (OHP), the NWIC is the official state repository of cultural resource records and reports for the region that includes San Mateo County. The records search included a review of previous studies, records, and maps on file, as well as the following resources:

- California Inventory of Historic Resources (California Department of Parks and Recreation) for San Mateo County;
- California Historical Landmarks (California OHP);
- Historic Property Data File (California OHP) for Redwood City;
- The Redwood City Historic Resources Inventory.

The records search identified seven previous cultural resource studies conducted within or adjacent to the project location (see Table 1), and an additional 16 archaeological studies conducted within ¼-mile of the project location (see Table 2).

Table 1: Previous Cultural Resources Studies Conducted within the Project Location

Report No.	Author(s)	Year	Report Title	Study Notes
S-11396	BioSystems Analysis, Inc.	1989	Technical Report of Cultural Resources Studies for the Proposed WTG-WEST, Inc., Los Angeles to San Francisco and Sacramento, California: Fiber Optic Cable Project	Covered the entire project area. No resources were identified in the project area as a result of this study.
S-17993	Woodward-Clyde Consultants	1995	Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project	Covers the northeast half of the project area. No resources were identified in the project area as a result of this study.
S-23064	Basin Research Associates, Inc.	1999	Archaeological Resources Review for Initial Study, Franklin Street Project, City of Redwood City, San Mateo County, California	Adjacent to western edge of project area. No resources were identified in the project area as a result of this study.
S-23065	Basin Research Associates, Inc.	1999	Historic Architectural Evaluation Report, Franklin Street Project, City of Redwood City, San Mateo County, California	Adjacent to western edge of project area. No resources were identified in the project area as a result of this study.

Report No.	Author(s)	Year	Report Title	Study Notes
S-26045	Mooney & Associates	2000	Cultural Resources Reconnaissance Survey and Inventory Report for the Metromedia Fiberoptic Cable Project, San Francisco Bay Area and Los Angeles Basin Networks	Covers the northeastern project area. No resources were identified in the project area as a result of this study.
S-39604	Far Western Anthropological Research Group, Inc.	2012	Archaeological Survey Report for the Dumbarton Rail Corridor Project, San Mateo and Alameda Counties, California	Adjacent to northeastern edge of project area. No resources were identified in the project area as a result of this study.
S-43525	JRP Historical Consulting Services	2002	Draft Inventory and Evaluation of Historic Resources, Caltrain Electrification Program, San Francisco to Gilroy (MP 0.0 to 77.4)	Adjacent to northeastern edge of project area. No resources were identified in the project area as a result of this study.

Table 2: Previous Cultural Resources Studies Conducted within ¼-mile of the Project Location

Report No.	Author(s)	Year	Report Title	Study Notes
S-11881	Basin Research Associates, Inc.	1990	Historic Property Survey Report, Chestnut Street Reconstruction Project, El Camino Real and Veterans Boulevard, Redwood City, San Mateo County, California	Inventoried built environment resources approximately 1000 feet southeast of the project area.
S-24244	Archaeological Resource Management	2001	Archaeological Mitigation Program for the Irvine Apartment Communities Project on Franklin Street in Redwood City, California	Provided a mitigation program for an area approximately 50 feet west of the project area; no resources were identified.
S-25174	Pacific Legacy, Inc.	2002	Cultural Resources Report for San Bruno to Mountain View Internodal Level 3 Fiber Optics Project in San Mateo and Santa Clara Counties	Linear study along El Camino Real; no resources were identified within ¼-mile of the project area.
S-29657	Far Western Anthropological Research Group, Inc.	2002	Archaeological Inventory for the Caltrain Electrification Program Alternative in San Francisco, San Mateo, and Santa Clara Counties, California	Linear study along the Caltrain Corridor; no resources were identified within ¼-mile of the project area.
S-30602	Basin Research Associates, Inc.	2004	Culvert Project - in Support of Proposed Downtown Retail/ Cinema Project, City Hall Vicinity, Redwood City, San Mateo County, Archaeological Monitoring Closure Report (letter report)	Linear study approximately ¼-mile north of the project area; no resources were identified.
S-30603	Basin Research Associates, Inc.	2004	Underground Parking Project, in Support of Proposed Downtown Retail/Cinema Project, City Hall Vicinity, Redwood City, San Mateo County, Archaeological Monitoring Closure Report (letter report)	Monitored an area approximately ¼-mile northwest of the project area; historic-area debris was identified but not formally recorded.



Report No.	Author(s)	Year	Report Title	Study Notes
S-33061	SWCA Environmental Consultants	2006	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project, State of California	Monitored an area approximately 400 feet north of the project area; no resources were identified within ¼-mile of the project area.
S-33188	Basin Research Associates, Inc.	2006	Archaeological Assessment -- Mental Health Association Project, 104 Cedar Street (APN 053-188-050) and 112 Cedar Street (APN 053-188-060), City of Redwood City, San Mateo County (letter report)	Inventoried an area approximately 700 feet south of the project area; no resources were identified.
S-38063	LSA Associates, Inc.	2009	Smart Corridors Geoarchaeological Sensitivity Research (letter report)	Inventoried an area approximately ¼-southeast of the project area; no resources were identified.
S-39104	Far Western Anthropological Research Group, Inc.	2012	Archaeological Investigations for the State Route 82 Signal Interconnect and Intersection Modification Project, San Mateo County, California, 04-SMA-82 PM 0.0/15.9, EA 04-24992	Inventoried areas approximately ¼-mile west and southeast of the project area. P-41-002293 was recorded during this study.
S-39469	LSA Associates, Inc.	2012	Historical Resources Compliance Report for the San Mateo County SMART Corridors Project, Segment III, Redwood City, Atherton, Menlo Park, East Palo Alto, and Palo Alto, San Mateo County & Santa Clara County	Inventoried a linear area approximately ¼-mile north of the project area. No resources were identified within ¼-mile of the project area.
S-39666	Michael Brandman Associates	2012	Cultural Resources Records Search and Site Visit Results for T-Mobile West LLC Candidate SFO3612A (SF612 Security Public Storage), 1451 El Camino Real, Redwood City, San Mateo County (letter report)	Inventoried an area approximately 550 feet southwest of the project area. No resources were identified.
S-40363	Archives and Architecture	2013	Report Reviewing the Impacts of Demolition, 28 Diller Street, Redwood City, San Mateo County (Assessor's Parcel 053-176-150)	Reviewed impacts to the demolition of a property at 28 Diller Street (P-41-000504).
S-46250	R. Brandi	2015	Documentation of 103 Wilson Street, Redwood City, California, Mitigation of the Jefferson Street Project	Documented 103 Wilson St (P-41-000501).
S-47794	C. Losee	2016	Cultural Resources Investigation for AT&T Mobility CCL01089 "Jefferson - El Camino" 1121 Jefferson Avenue, Redwood City, San Mateo County, California 94063 (letter report)	Investigated 1121 Jefferson Avenue (P-41-002468) for a cellular tower. No archaeological resources were identified.
S-47904	S. De Shazo	2016	Historic Resource Evaluation of the Property Located 508 Chestnut Drive, Redwood City, San Mateo County	Evaluated 508 Chestnut Drive (P-41-001353).

The NWIC did not identify any previously recorded cultural resources in or adjacent to the project location. However, 41 resources have been recorded within ¼-mile of the project location (Table 3). Two of these

resources (P-41-000506/CA-SMA-358/H and P-41-002293/CA-SMA-397H) are archaeological sites, and the remaining 39 are historic-era buildings, structures, and/or elements of the Stambaugh-Heller Historical Residential District (SHHRD) (P-41-002422).

P-41-000506/CA-SMA-358/H was first recorded in 2001 as part of a telecommunications project (Brown 2001). The resource was described as a large scatter of historic and prehistoric/protohistoric artifacts and contained both a surface and subsurface component (Brown 2001). Artifacts encountered included chert debitage, nails, glass fragments, butchered (mammal) bone, and marine shell. It was noted that the entire site has been disturbed by historic and modern construction activities, possibly as early as the 1850s; however, the possibility of intact subsurface deposits "is still possible" (Brown 2001).

The site was revisited in 2010 during an archaeological survey conducted for the San Francisco to San Jose segment of the proposed California High-Speed Train project (Martinez, Moore, and Zelazo 2010). Martinez, Moore, and Zelazo (2010) recommended CA-SMA-358/H as eligible for listing on the National Register of Historic Places (NRHP) under Criterion D as it is likely to yield information regarding important questions in prehistory and history.

P-41-002293/CA-SMA-397H consists of a historic-era debris scatter containing ceramic and glass fragments and construction debris, indicating a date range spanning from the 1840s-1920s. It has not been evaluated for NRHP or California Register of Historical Resources (CRHR) eligibility.

The SHHRD (P-41-002422) is a roughly six-block area in Redwood City containing residences and a church built between approximately 1860 and 1915. The western boundary of the SHHRD extends approximately 180 feet east of the project location. The 21 contributing buildings to the SHHRD presented below (Table 3) are primarily one- and two-story homes (WSA 2017).

Table 3: Cultural Resources within ¼-mile of the Project Location (Resources Associated with the SHHRD)

Primary Number/ Trinomial	Time Period	Description	Evaluation
P-41-000750	Historic	Building, contributor to district 406 Stambaugh St.	Contributor to NRHP-eligible SHHRD
P-41-000751	Historic	Building, element of district 1503 Middlefield Rd.	Contributor to NRHP-eligible SHHRD
P-41-000752	Historic	Building, element of district 1417 Middlefield Rd.	Contributor to NRHP-eligible SHHRD
P-41-000753	Historic	Building 414 Heller St. (probably 402 Heller St. in district forms)	Contributor to NRHP-eligible SHHRD
P-41-000765	Historic	Building, element of district 403 Stambaugh St	Contributor to NRHP-eligible SHHRD
P-41-000766	Historic	Building, element of district 418 Stambaugh St	Contributor to NRHP-eligible SHHRD
P-41-000767	Historic	Building, element of district	Contributor to NRHP-eligible SHHRD

Primary Number/ Trinomial	Time Period	Description	Evaluation
		427 Stambaugh St	
P-41-000768	Historic	Building, element of district 504 Stambaugh St	Contributor to NRHP-eligible SHHRD
P-41-000769	Historic	Building, element of district 1405 Middlefield Rd	Contributor to NRHP-eligible SHHRD
P-41-000770	Historic	Building 1304 Middlefield Rd, Dr. Ross Residence	Contributor to NRHP-eligible SHHRD
P-41-000771	Historic	Building, element of district 446 Heller St	Contributor to NRHP-eligible SHHRD
P-41-000772	Historic	Building, element of district 423 Beech St	Contributor to NRHP-eligible SHHRD
P-41-000785	Historic	Building, element of district 397 Stambaugh St	Contributor to NRHP-eligible SHHRD
P-41-000786	Historic	Building, element of district 424 Stambaugh St	Contributor to NRHP-eligible SHHRD
P-41-000787	Historic	Building, element of district 439 Stambaugh St.	Contributor to NRHP-eligible SHHRD
P-41-002422	Historic	District	Form for the entire SHHRD
P-41-002424	Historic	Building, element of district 420 Heller St	Contributor to NRHP-eligible SHHRD
P-41-002425	Historic	Building, element of district 1511 Middlefield Rd	Contributor to NRHP-eligible SHHRD
P-41-002426	Historic	Building, element of district 1519 Middlefield Road	Contributor to NRHP-eligible SHHRD
P-41-002427	Historic	Building, element of district 1520 Middlefield Rd	Contributor to NRHP-eligible SHHRD
P-41-002428	Historic	Building, element of district 411 Stambaugh St	Contributor to NRHP-eligible SHHRD
P-41-002462	Historic	Building 411 Stambaugh St	Contributor to NRHP-eligible SHHRD

The following table presents the 20 resources identified within ¼-mile of the project location that are not components of the SHHRD.

Table 4: Cultural Resources within ¼-mile of the Project Location (Resources Not Associated with the SHHRD)

Primary Number/ Trinomial	Time Period	Description	Evaluation
P-41-000421	Historic	San Francisco & San Jose Railway	Not eligible for NRHP/CRHR listing.
P-41-000501	Historic	Building 103 Wilson St.	Not eligible for the CRHR under Criteria A, B, and C.
P-41-000502	Historic	Building 111 Franklin St.	Not eligible for NRHP/CRHR listing.
P-41-000503	Historic	Building 127 Franklin St.	Not eligible for NRHP/CRHR listing.
P-41-000504	Historic	Building 28 Diller St.	Not eligible for NRHP/CRHR listing.
P-41-000505	Historic	Building 1445-47 El Camino Real	Not eligible for NRHP/CRHR listing.
P-41-000506/ CA-SMA-358/H	Historic/ Prehistoric	A multi-component site with shell, glass, and ceramic fragments; also nails and bone	Recommended as eligible for NRHP listing under Criterion D.
P-41-000758	Historic	Building 901 Main St, Holmquist Hardware Building	Appears eligible for NRHP as an individual property through survey evaluation
P-41-000759	Historic	Building 1044 Middlefield Road, Fire Station #1	Appears eligible for NRHP as an individual property through survey evaluation
P-41-000788	Historic	Building 416 Heller St, the Parish House	Unevaluated
P-41-000789	Historic	Building 116 Stambaugh St, the George Residence	Unknown
P-41-001350	Historic	Building 321 Chestnut Street	Not eligible for NRHP/CRHR listing
P-41-001351	Historic	Building 329 Chestnut Street	Not eligible for NRHP/CRHR listing
P-41-001353	Historic	Building 508 Chestnut Street	Not eligible for NRHP/CRHR listing
P-41-002192	Historic	Road El Camino Real	Unevaluated
P-41-002293/CA-SMA-397H	Historic	A historic-era debris scatter containing ceramic and glass fragments and construction debris	Unevaluated
P-41-002464	Historic	Structure Signal Bridge at Chestnut St (MP 26.03)	Not eligible for NRHP/CRHR listing
P-41-002468	Historic	Pacific Telephone Exchange Building	Not eligible for NRHP/CRHR listing
P-41-002490	Historic	Building	Not eligible for NRHP/CRHR listing

Primary Number/ Trinomial	Time Period	Description	Evaluation
		1303 Main St	
P-41-002542	Historic	Building 315 Beech St	Not eligible for NRHP/CRHR listing

2.2 LITERATURE REVIEW

In addition to the formal records search, Stantec reviewed the following resources:

- Nationwide Environmental Tile Research (NETR) database for available aerial imagery and topographic maps of the project location (NETR 2019);
- United States Geologic Survey (USGS) historic topographic maps, Palo Alto Quadrangle (USGS 2019).

These resources provided additional context for researching and evaluating the built-environment resource recorded during the field survey (see Section 3.0, Field Survey) and the results of this map and aerial imagery review can be found in that section.

Stantec also reviewed the *Cultural, Biological, and Paleontological Resources Assessment Report, 1180 Main Street Project, Redwood City, San Mateo County, California* (WSA 2017). This report, provided to Stantec by the client (Premia), was prepared as part of the due diligence efforts in advance of environmental documents for the present project. The archaeological assessment included an archival and records search of the proposed project area and a surrounding ¼-mile radius at the NWIC, a Sacred Lands File search at the Native American Heritage Commission (NAHC), and a pedestrian archaeological survey (WSA 2017). The data provided in that report served as a confirmation of the data obtained independently for the present study. The results of the NWIC records search completed for that project were nearly identical to the results received for the present study (several more built environment resources have been recorded within ¼-mile of the project area since then; but no resources were identified within the project area). No new or previously recorded archaeological resources were encountered within the project area during the pedestrian survey completed for that project (WSA 2017). The conclusions and recommendations provided later in this report reflect those provided in this earlier study.

3.0 FIELD SURVEY

3.1.1 Methods

On November 13, 2018 Stantec Archaeologist Joanne Grant conducted an intensive archaeological pedestrian survey of the entire project location (see Figure 4). The project location is roughly triangle-shaped and is bounded by the Caltrain Railroad (RR) tracks along the northeastern edge, Main Street along the southeastern edge, Elm Street along the southern edge, Lathrop Street along the southwestern edge, and Maple Street along the northwestern edge.

The survey consisted of walking roughly parallel 10-meter-wide transects in an east-west direction, beginning at the northern tip of the parcel (near Maple Street and the RR tracks). During the field survey, the entire project location was examined for the presence of historic or prehistoric site indicators. Historic site indicators include, but are not limited to, glass and ceramic fragments, metal objects, milled and split lumber, and the remnants of structures or features such as building foundations, fence posts, and discrete trash deposits such as wells, privy pits, or dumps. Prehistoric site indicators include, but are not limited to, obsidian or chert flakes, grinding and mashing implements (i.e. groundstone, mortars, pestles, handstones, and millingstones), bone, and discolored soils, which could contain lithics, bone, shell, other organics, and/or fire-affected rocks (burned or unburned); shell, flaked stone, ground stone, or human bone. The archaeologist investigated rodent burrows for any indicators of color/texture changes that could indicate buried deposits and employed periodic trowel and boot scrapings to clear small patches of vegetation in areas with poor ground visibility.

Documentation of the site included digital photographs of the entire survey area, the surrounding neighborhood, and ground surface. Appendix C of this report contains photographs taken during the field survey.

Vegetation in the project location consisted primarily of non-native grassland and plant cover. Dominant species include wild oats (*Avena* sp.), black mustard (*Brassica nigra*), fennel (*Foeniculum vulgare*), and yellow star thistle (*Centaurea solstitialis*). Ground visibility was generally good (approximately 75%), with dried grasses and low-lying shrubbery obscuring portions of the surface, particularly in the southern portion of the project area. Trowel and boot scrapes revealed the soil to be dry and crumbly silt, with approximately 20% gravelly inclusions. The soil color throughout the project area was dark yellowish brown, and the Munsell readings were either 10YR 4/4 or 10YR 4/6. Modern trash such as food/plastic wrappers, various bottles/bottle fragments, and concrete/construction debris were observed throughout the project area.

An irregular shaped, rebar reinforced concrete foundation is situated along the eastern side of the channelized creek, at the northernmost point of the project location, close to Maple Street. This foundation is modern and not studied as part of the effort. According to the property owner, this pad was constructed approximately 10 years ago (Arteaga personal communication November 14, 2018).

3.1.2 Findings

No prehistoric or historic-era archaeological resources, or indicators of buried cultural deposits, were identified during the archaeological field survey. The built environment resources on the project parcel are discussed below:

1190 Main Street

A single-story building, 1190 Main Street, is located on the southeast corner of the property, at the intersection of Elm and Main Streets. Research indicates that it was constructed in 1952 (WSA 2017). It appears to have been used as a commercial space, with a showroom space facing Main Street (the building is now vacant). This building is slated for demolition as part of this project. Although the building is over 50 years of age, it has not been evaluated, due to the City's policy of not evaluating post-war buildings. Should the historic eligibility of the building need to be determined, it will be done under a separate task.

Channelized Section of Redwood Creek

A channelized, concrete-lined segment of Redwood Creek flows along the western end of the presently-vacant parcel. No additional features or artifacts were found in association with this resource. The channelized creek is gunite concrete-lined, with angled sides at roughly 45 degrees. The gunite concrete-lined banks exhibit cracking, with weeds growing in some areas. A large palm bush is growing alongside the canal at the point where it travels beneath Lathrop Street. Outside of the project boundaries, the canal flows under Maple Street to the north, and flows under Lathrop Street to the southwest. A two-rail, wood fence is located along the canal crest. The modification changing Redwood Creek from a natural waterway to an engineered, concrete lined channel occurred between 1961 and 1968 (NETR 2019). The original concrete lining has been replaced periodically over the years as routine maintenance. Due to the age of the channelized, concrete lined creek, it was recorded on a Department of Parks and Recreation (DPR) form as 1180RC-1 (Appendix D).

Redwood Creek is an approximately 10-mile long perennial stream that discharges into South San Francisco Bay. In 1851, it was discovered that the creek emptied directly into a naturally deep channel of water that, in turn, flowed into San Francisco Bay. Shortly afterwards, logging companies started using the creek to move the redwood logs (hence the name Redwood Creek) from the peninsula hills down to this deep-water channel. From this channel, the logs were transported to San Francisco, where they were ultimately milled into lumber (Redwood City Local History 2019; Redwood City History 2017).

Historically, the 1897 Sanborn map, as well as the 1897 USGS topographic map, shows Redwood Creek as flowing partially through the project location, from approximately 40 feet southwest of Maple Street, and exiting the project location at the intersection of Maple Street and Elm Street (Sanborn Map and Publishing Company 1897; USGS 1897). The 1897 Sanborn map also shows a foot bridge crossing the creek on Elm Street (Sanborn Map and Publishing Company 1897). By 1919, an additional wooden bridge was built across Redwood Creek at Maple Street (Sanborn Map and Publishing Company 1919). The creek and crossing remained relatively unchanged until the late 1940s, when a concrete bridge was identified as crossing over Redwood Creek at Lathrop and Maple Streets in 1950 (Sanborn Map and Publishing

Company 1950). In 1960, the creek remained largely as it had been; however, by 1968, the creek had been improved with concrete lining and channelized (NETR 2019). Redwood Creek continues to flow through Redwood City; however, throughout much of this urban area, it is through underground pipes (Kyle 2002), including south of the project location at El Camino Real, and north of the project location at Maple Street.

CRHR Determination of Eligibility

Under the California Environmental Quality Act (CEQA), public agencies must consider the effects of their actions on both "historical resources" and "unique archaeological resources." In addition to assessing whether historical resources potentially impacted by a proposed project are listed or have been identified in a survey process (Public Resources Code [PRC] 5024.1 [g]), lead agencies have a responsibility to evaluate them against the CRHR criteria prior to making a finding as to a proposed project's impacts to historical resources (PRC Section 21084.1 and California Code of Regulations (CCR) Section 15064.5 [a][3]). Following CCR Section 15064.5 (a) a historical resource is defined as any object, building, structure, site, area, place, record, or manuscript that:

Is historically or archeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political or cultural annals of California; and meets any of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2. Is associated with the lives of persons important in our past;

3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. Has yielded, or may be likely to yield, information important in prehistory or history.

To be considered a historical resource for the purpose of CEQA, the resource must also have integrity, which is the authenticity of a resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Resources, therefore, must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. It must also be judged with reference to the particular criteria under which a resource is eligible for listing in the CRHR (CCR 14 Section 4852[c]).

The channelized canal appears ineligible for the CRHR under Criteria 1, 2, 3, and 4. Research has not uncovered any evidence to suggest that the channelized canal is associated with a significant event or individual (CRHR Criteria 1 and 2), embodies distinctive characteristics of type, period, region, or method of construction, has high artistic value, or represents the work of a master (CRHR Criterion 3), or has recognized data potential (Criterion 4). Although Redwood Creek played an important role in the exportation of lumber and other products (such as grains and livestock) in the mid-late 1800s, the channelization of the canal within the project location in the mid-1960s occurred well outside of this potential period of



significance. The channelized canal's features appear to be a standardized design for concrete-lined, channelized creeks. It appears to have been maintained and modified regularly since it was originally constructed in the 1960s. Although the channelized creek retains its integrity of location, setting, feeling, and association (the canal is in the same location, and its primary purpose as supporting a natural drainage network through an urban area remains), the canal has lost integrity of design, workmanship, and materials, as it has been subject to modifications and maintenance over the years, including the replacement of its original concrete lining. In all, the resource appears to lack significance of all criteria and is therefore ineligible for the CRHR.

4.0 CONCLUSIONS AND RECOMMENDATIONS

No prehistoric or historic-era archaeological resources, or indicators of buried cultural deposits, were identified in the project location. The City does not require documentation and/or evaluation of 1190 Main Street, the building on the property. The channelized creek appears to be ineligible for the CRHR under all criteria.

There is the possibility, however, that subsurface prehistoric or historic-era resources could be identified during project implementation. Prehistoric resources could be associated with nearby CA-SMA-358/H, as the boundaries for this resource could extend beyond what has previously been documented. Historic-era resources could be associated with the previous buildings and structures, including Redwood Creek, that once stood in the project location.

Although the project is not anticipated to have an impact on any known or potentially buried archaeological resources, subsurface construction activities such as trenching and grading associated with the proposed project could potentially damage or destroy previously undiscovered historical resources and/or unique archaeological resources. Stantec proposes the following inadvertent discovery procedures be followed if cultural resources are encountered during project-related construction activities.

4.1 INADVERTENT DISCOVERY PROCEDURES

4.1.1 Archaeological Deposits

If cultural resources (e.g., sites or artifacts) are encountered during ground disturbance or subsurface construction activities (e.g., trenching, grading), all construction activities within a 100-foot radius of the identified resource shall cease until a, archaeologist who meets the Secretary of the Interior's Standards and Guidelines for Professional Qualifications in archaeology and/ or history evaluates the resource for its significance and records the resource on the appropriate State DPR 523 series forms. If the qualified archaeologist determines that the cultural resource appears eligible for inclusion on the CRHR, the archaeologist shall develop a plan for the treatment of the resource. This shall contain appropriate mitigation measures, including avoidance, preservation in place, data recovery excavation, or other appropriate measures outlined in PRC Section 21083.2.

4.1.2 Human Remains

There are no known human remains within the project area, and no indications that the project location has been used for burial purposes in the past. Therefore, it is unlikely that human remains would be encountered during construction. However, ground disturbance and subsurface construction activities such as trenching and grading associated with the proposed project could potentially disturb previously undiscovered human burial sites. If ground-disturbing activities uncover previously unknown human remains, Section 7050.5 of the California Health and Safety Code applies, and the following procedures shall be followed.

There shall be no further excavation or disturbance of the area where the human remains were found or within 100 feet of the find until the San Mateo County Coroner and the appropriate City representative are contacted. Duly authorized representatives of the Coroner and the City shall be permitted onto the project site and shall take all actions consistent with Health and Safety Code Section 7050.5 and Government Code Sections 27460, et seq. Excavation or disturbance of the area where the human remains were found or within 100 feet of the find shall not be permitted to re-commence until the Coroner determines that the remains are not subject to the provisions of law concerning investigation of the circumstances, manner, and cause of any death.

If the Coroner determines the remains are Native American, the Coroner shall contact the NAHC within 24 hours, and the NAHC shall identify the person or persons it believes to be the "most likely descendant" (MLD) of the deceased Native American. The MLD may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98. If the MLD does not make recommendations within 48 hours, the landowner shall reinter the remains in an area of the property secure from further disturbance. If the landowner does not accept the MLD's recommendations, the owner or the MLD may request mediation by NAHC.

5.0 REFERENCES

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1897 Palo Alto Quadrangle, 1:62500 (surveyed 1897, reprinted 1979. Washington, D.C.

1899 Palo Alto Quadrangle, 1:62500 (surveyed 1899, reprinted 1901, 1906, 1911, 1920, 1923, 1930, 1937,1944,1979. Washington, D.C.

1943 Palo Alto Quadrangle, Grid Zone "G", 1:62500 (surveyed 1943). Washington, D.C.

1948 Palo Alto Quadrangle, 1:62500 (surveyed 1948). Washington, D.C.

1953 Palo Alto Quadrangle, 1:62500 (surveyed 1948, reprinted 1955). Washington, D.C.

1961 Palo Alto Quadrangle, 7.5 Minute Series (surveyed 1961, reprinted 1962, 1963, 1965, 1966, 1969, 1974). Washington, D.C.

1991 Palo Alto Quadrangle, 7.5 Minute Series (surveyed 1991, reprinted 1995). Washington, D.C.

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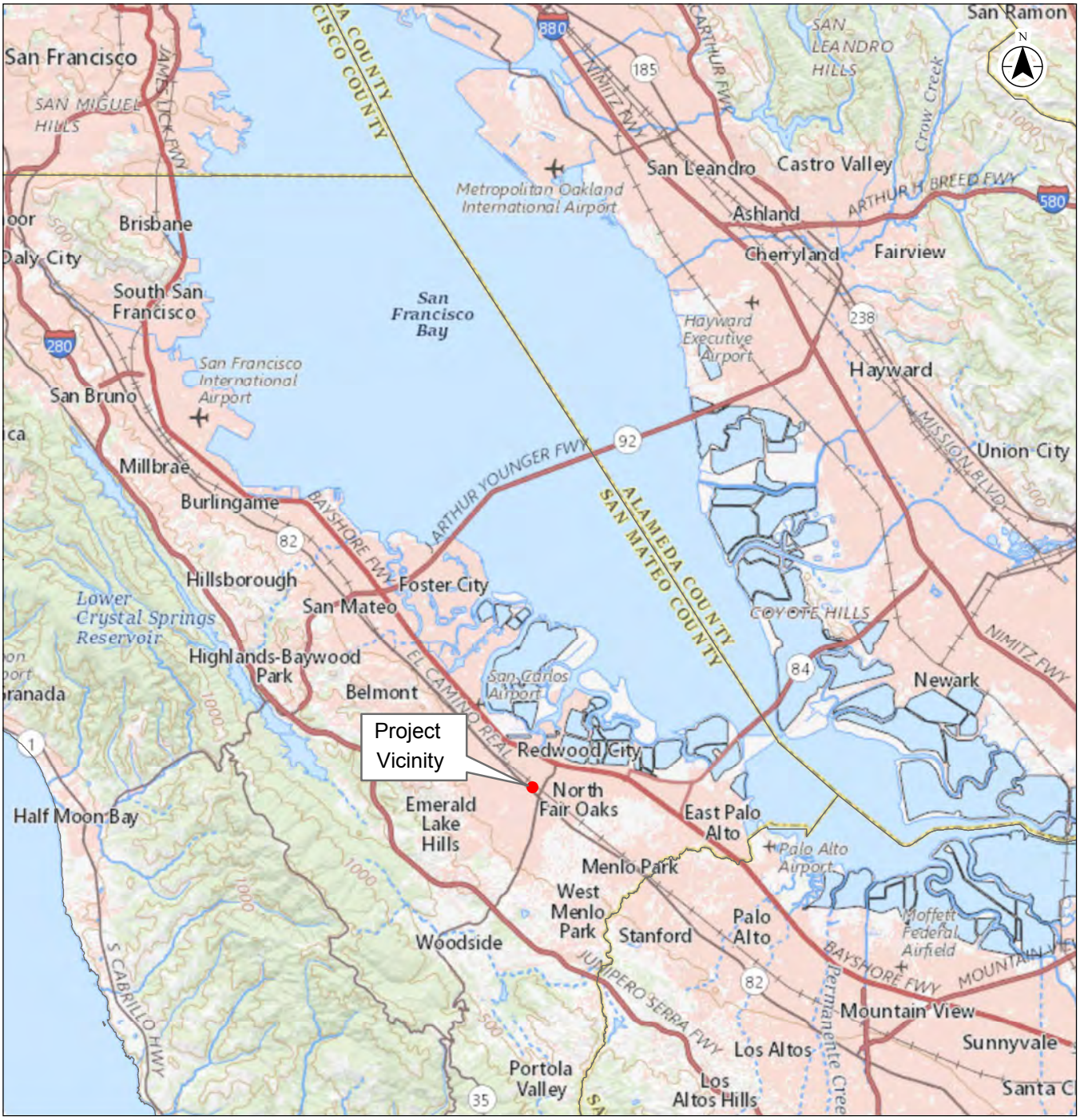
1180 MAIN STREET PROJECT, CULTURAL RESOURCES INVENTORY AND EVALUATION REPORT, REDWOOD CITY, SAN MATEO COUNTY, CALIFORNIA

Appendix A Project Figures
April 24, 2019

APPENDICIES

Appendix A PROJECT FIGURES

V:\1857\Active\185704315\03_data\gis_cad\gis\mxd\Fig1_ProjectVicinity.mxd Revised: 2018-12-07 By: pglendenning





Notes

1. Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
2. Service Layer Credit: Esri online services, Nov. 2018

● Project Vicinity

0 2.5 5 Miles

1:250,000 (at original document size of 8.5x11)

Stantec

Project Location
T05.0S, R03.0W, Sec19
USGS 7.5min Quad: Palo Alto

185704315
Prepared by WC on 2018-12-07
Technical Review by JG on 2018-12-07
Independent Review by JD on 2018-12-07

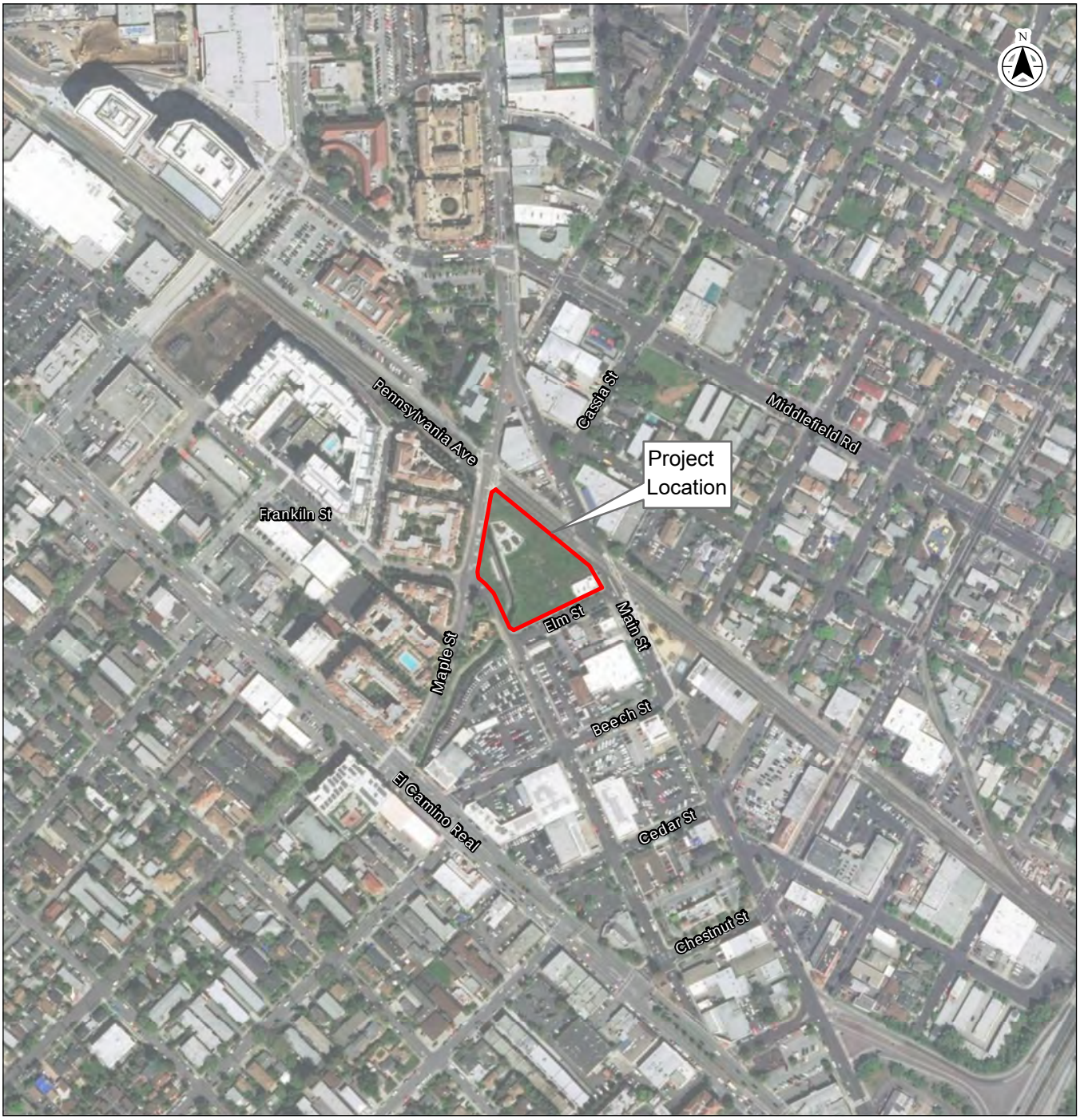
Client/Project

City of Redwood City
1180 Main Street Office Project

Figure No.
1

Title
Project Vicinity

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Project Location

0 0.05 0.1 Miles

1:5,000 (at original document size of 8.5x11)

Stantec

Project Location
185704315
T05.0S, R03.0W, Sec19
USGS 7.5min Quad: Palo Alto
Prepared by WC on 2018-12-07
Technical Review by JG on 2018-12-07
Independent Review by JD on 2018-12-07

Client/Project

City of Redwood City
1180 Main Street Office Project

Figure No.
2

Title
Project Location

Notes

1. Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
2. Service Layer Credit: Esri online services, Nov. 2018

V:\185704315\Active\185704315.03_data\gis_cad\gis\mxd\cultural\Fig3_Project_Location.mxd Revised: 2019-01-15 By: pglendening





Project Location

0 0.25 0.5 Miles

1:24,000 (at original document size of 8.5x11)

Stantec

Project Location
T05.05, R03.0W, Sec19
USGS 7.5min Quad: Palo Alto

185704315
Prepared by PG on 2019-01-15
Technical Review by JG on 2019-01-15
Independent Review by WC on 2018-12-07

Client/Project

City of Redwood City
1180 Main Street Office Project

Figure No.
3

Title
Project Location

Notes

1. Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
2. Service Layer Credit: Esri online services, Nov. 2018

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Project Location
Canal
Area Surveyed

0 0.035 0.07 Miles

1:3,500 (at original document size of 8.5x11)

Stantec

Project Location
T05.05, R03.0W, Sec19
USGS 7.5min Quad: Palo Alto

185704315
Prepared by PG on 2019-01-15
Technical Review by JG on 2019-01-15
Independent Review by WC on 2018-12-07

Client/Project

City of Redwood City
1180 Main Street Office Project

Figure No.
4

Title
Area Surveyed

Notes

1. Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
2. Service Layer Credit: Esri online services, Nov. 2018

Appendix B NWIC DATA - CONFIDENTIAL

Appendix C SURVEY PHOTOGRAPHS

Appendix A: Survey Photographs



Photograph 1. 152° Southeast, overview of northern portion of project area, with concrete pad in distance.



Photograph 2. 183° South, concrete pad.



Photograph 3. 340° North, concrete pad, with vegetation against the rebar frame lining the perimeter of the pad.



Photograph 4. 185° South, concrete-lined canal on west side of project area.



Photograph 5. 116° Southeast, view of ground surface and mixed ground visibility.



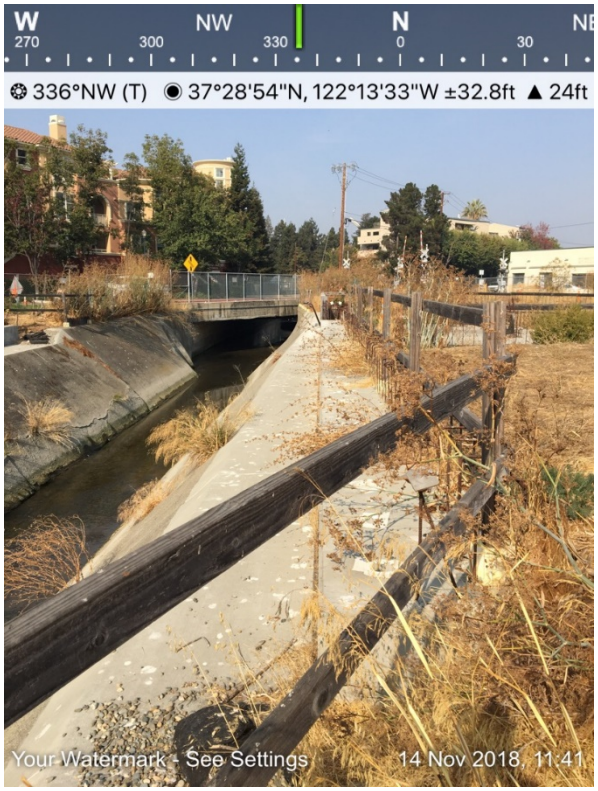
Photograph 6. 64° Northeast, view of southeastern portion of project area, with 1190 Main Street in background.



Photograph 7. 147° Southeast, view of southeastern portion of project area, with 1190 Main Street in background.



Photograph 8. 3° North, view to concrete-lined canal partially obscured by fence and vegetation.



Photograph 9. 336° Northwest, concrete canal.



Photograph 10. 318° Northwest, concrete canal.



Photograph 11. 98° East, view of ground surface with poor visibility.

Appendix D DPR Form for 1180RC-1
4/24/2019 12:00:00 AM

Appendix D DPR FORM FOR 1180RC-1

State of California - The Resources Agency Primary #
DEPARTMENT OF PARKS AND RECREATION HRI #

PRIMARY RECORD

Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** (Assigned by recorder) 1180RC-1
P1. Other Identifier: Channelized Redwood Creek

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County** San Mateo
and (P2c, P2e, and P2b or P2d.)

***b. USGS 7.5' Quad** Palo Alto **Date** 1997 T 5S; R3W **Sec** 19; Mt. Diablo **B.M.**

c. Address 1180 Main Street City Redwood City Zip 94063

d. UTM: Zone, 10N North End: 568406mE/ 4148646mN South End: 568424mE/ 4148561mN

e. Other Locational Data: From El Camino Real, veer right onto Main Street. Follow Main Street until its intersection with Elm Street. Take a left on Elm Street. The creek is visible in the west side of the parcel, north of Elm Street (1180 Main Street).

***P3a. Description:** The resource consists of a channelized, concrete-lined segment of Redwood Creek that flows along the western end of the presently-vacant parcel located at 1180 Main Street, Redwood City. The channelized creek is gunite concrete-lined, with angled sides at roughly 45 degrees. The gunite concrete-lined banks exhibit cracking, with weeds growing in some areas. A large palm bush is growing alongside the canal at the point where it travels beneath Lathrop Street. A two-rail, wood fence is located along the canal crest. Recent improvements include new concrete benches at the top of the canal banks and rebar set in board forms. Outside of the project boundaries, the canal flows under Maple Street to the north, and flows under Lathrop Street to the southwest.

***P3b.Resource Attributes:** HP20 (Canal/Aqueduct)

***P4.Resources Present:** ☒ Structure



P5b. Description of Photo: View 185° South to the concrete-lined canal Maple Street is approximately 65 feet to the west. November 14, 2018. Accession #4.

***P6. Date Constructed/Age and Source:**
☒ Historic ☐ Prehistoric ☐ Both
Ca. 1965 (NETR 2019)

***P7. Owner and Address:**
City of Redwood City
1017 Middlefield Road
Redwood City, CA 94063

***P8. Recorded by:** Joanne Grant, Stantec Consulting Services, Inc., 1340 Treat Boulevard, Walnut Creek, CA 94597-7966

***P9. Date Recorded:** November 14, 2018

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation**: Stantec Consulting Services, Inc. 2018. 1180 Main Street Project, Cultural Resources Technical Report, Redwood City, San Mateo County, California. Prepared for: Premia Capital, LLC, 801 Hamilton Street, Redwood City, California.

***Attachments:** ☐NONE ☒ Location Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐ Archaeological Record ☐District Record ☒ Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List)

State of California –The Resources Agency Primary # _____
DEPARTMENT OF PARKS AND RECREATION HRI#

BUILDING, STRUCTURE, AND OBJECT RECORD

***Resource Name or #** (Assigned by recorder) 1180RC-1 ***NRHP Status Code** _____
Page 2 **of** 6

B1. Historic Name: None
B2. Common Name: Channelized segment of Redwood Creek B3. Original Use: water conveyance
B4. Present Use: water conveyance ***B5. Architectural Style:** Utilitarian
***B6. Construction History:** (Construction date, alterations, and date of alterations) The modification changing Redwood Creek from a natural waterway to an engineered, concrete lined channel occurred between 1961 and 1968 (NETR 2019).

***B7. Moved?** ×No ☐Yes ☐Unknown **Date:** _____ **Original Location:** _____
***B8. Related Features:** None

B9a. Architect: Unknown b. Builder: Unknown
***B10. Significance: Theme** Logging **Area** San Mateo County

Period of Significance 1968-present **Property Type** Structure **Applicable Criteria** N/A
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

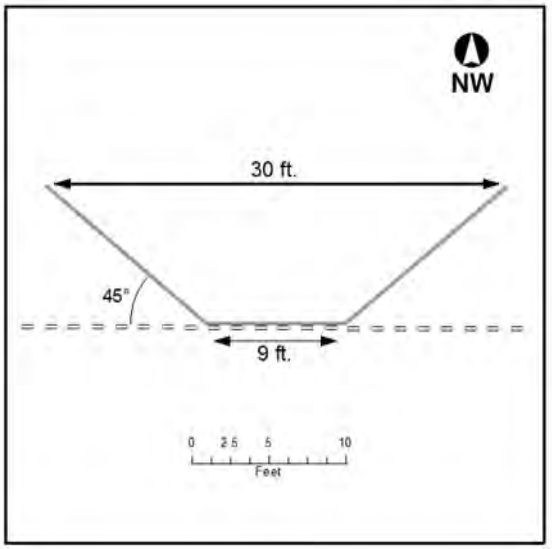
This evaluation finds that the channelized segment of Redwood Creek does appear to meet the criterion for listing in the California Register of Historical Resources (CRHR) for lack of significance. The resource has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the California Environmental Quality Act Guidelines (CEQA), using the criteria outlined in Section 5024.1 of the California Public Resources Code and does not appear to be a historical resource for the purpose of CEQA (see continuation sheet).

B11. Additional Resource Attributes: (List attributes and codes) _____
***B12. References:**

B13. Remarks:

***B14. Evaluator:** Joanne Grant, Stantec Consulting Services, Inc.
***Date of Evaluation:** January 14, 2019

(This space reserved for official comments.)



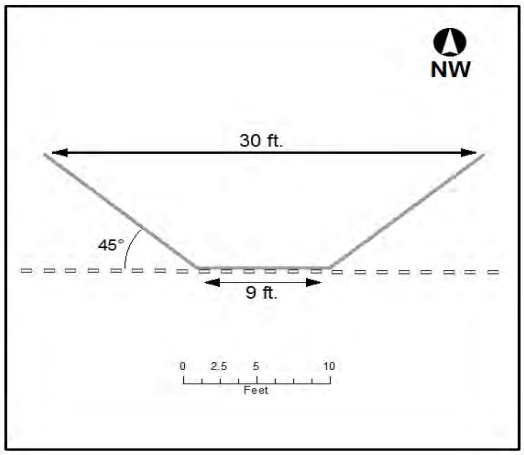
L1. Historic and/or Common Name: None

L2a. Portion Described: □ Entire Resource × Segment □ Point Observation **Designation:** 1180RC-1

b. Location of point or segment: The canal flows through the western end of the vacant parcel located at 1180 Main Street, Redwood City, Assessor Parcel Number (APN): 053-147-060. UTM: Zone, 10N North End: 568406mE/ 4148646mN South End: 568424mE/ 4148561mN

L3. Description: The resource consists of a channelized, concrete-lined segment of Redwood Creek that flows along the western end of the presently-vacant parcel located at 1180 Main Street, Redwood City. No additional features or artifacts were found in association with this resource. The channelized creek is gunite concrete-lined, with angled sides at roughly 45 degrees. The gunite concrete-lined banks exhibit cracking, with weeds growing in some areas. A large palm bush is growing alongside the canal at the point where it travels beneath Lathrop Street. A two-rail, wood fence is located along the canal crest. The modification changing Redwood Creek from a natural waterway to an engineered, concrete lined channel occurred between 1961 and 1968 (NETR 2019). The original concrete lining has been replaced periodically over the years as routine maintenance. Outside of the project boundaries, the canal flows under Maple Street to the north, and flows under Lathrop Street to the southwest.

L4e. Sketch of Cross-Section



L4. Dimensions:

a. Top Width 30 feet **b. Bottom Width** 9 feet

c. Height or Depth 9 feet **d. Length of Segment** 275 feet

L5. Associated Resources: None observed.

L6. Setting: The channelized creek is located on a 1.31 acre-parcel south of downtown Redwood City in a developed urban setting. It is situated with Elm Street to the southeast, Lathrop Street to the southwest, Maple Street to the northwest, and Caltrain railroad tracks to the northeast. Development surrounding the project site consists of mixed uses, including commercial to the north, high-density residential to the west, commercial and residential to the east, and automobile sales and service centers to the south.

L8a. Photograph, Map or Drawing



L7. Integrity Considerations: The channelized creek is in use, maintained, and modified. It retains its original use, appearance, and function as a channelized creek and has historic integrity in terms of setting, feeling, association, and location. (see Continuation Sheet)

L8b. Description of Photo, Map, or Drawing View 336° Northwest to the concrete-lined channelized creek. November 14, 2018. Accession #9.

L9. Remarks:

L10. Form Prepared by: Joanne Grant, Stantec Consulting Services, Inc., 1340 Treat Boulevard, Walnut Creek, CA 94597-7966

L11. Date: November 14, 2018

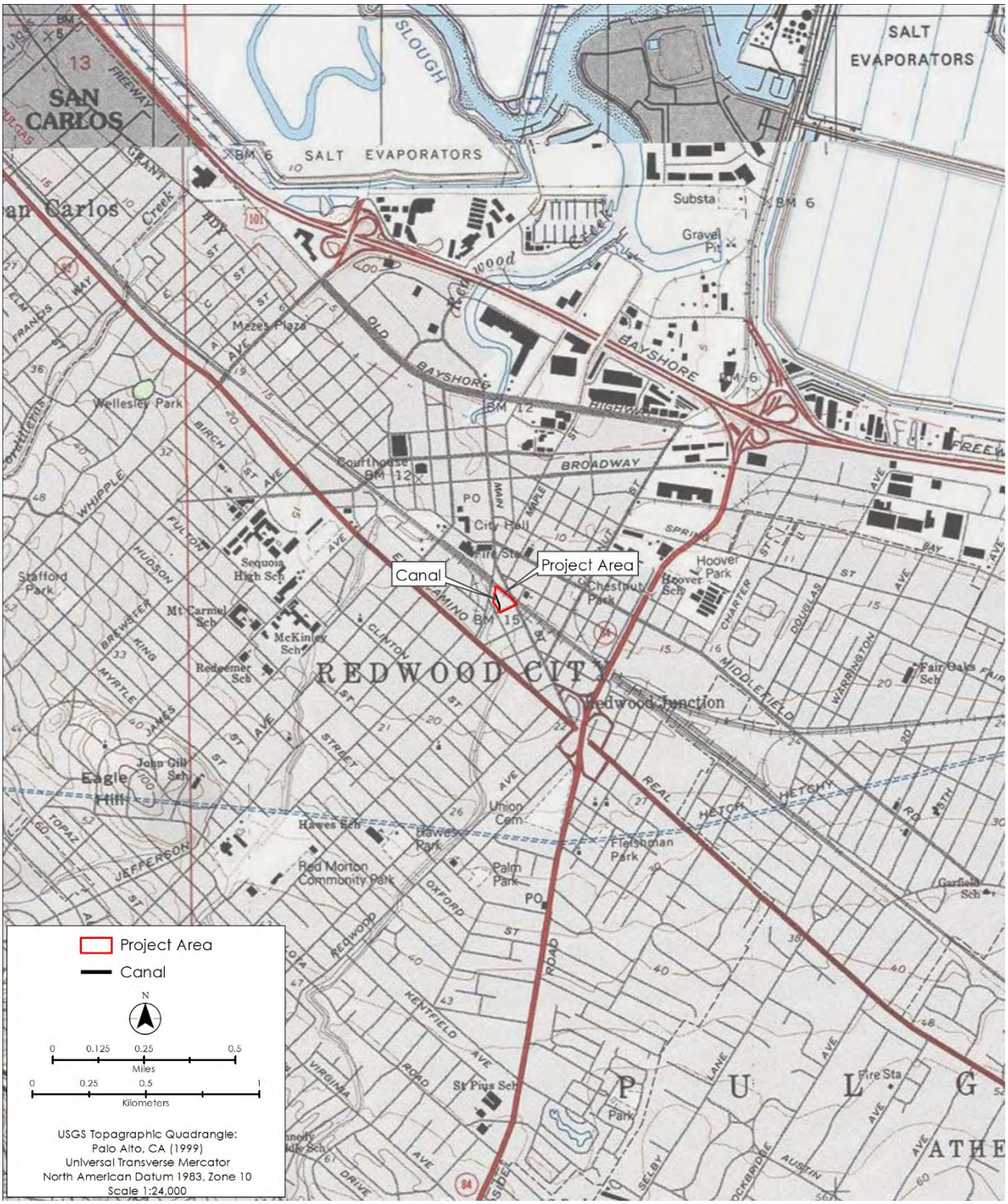
State of California X Natural Resources Agency Primary #
DEPARTMENT OF PARKS AND RECREATION HRI#

LOCATION MAP

Trinomial

Page 4 **of** 6 ***Resource Name or #** (Assigned by recorder) 1180RC-1

***Map Name:** Palo Alto, CA ***Scale:** 1:24,000 ***Date of map:** 1997



L7. Integrity Considerations (continued):

Redwood Creek is an approximately 10-mile long perennial stream that discharges into South San Francisco Bay. In 1851, people discovered that the creek emptied directly into a naturally deep channel of water that, in turn, flowed into San Francisco Bay. Shortly afterwards, logging companies started using the creek to move the redwood logs (hence the name Redwood Creek) from the peninsula hills down to this deep-water channel. From this channel, the logs were transported to San Francisco, where they were ultimately milled into lumber (Redwood City Local History 2019; Redwood City History 2017).

Historically, the 1897 Sanborn map, as well as the 1897 United States Geological Survey (USGS) topographic map, shows Redwood Creek as flowing partially through the project location, from approximately 40 feet southwest of Maple Street, and exiting the project location at the intersection of Maple Street and Elm Street (Sanborn Map and Publishing Company 1897; USGS 1897). The 1897 Sanborn map also shows a foot bridge crossing the creek on Elm Street (Sanborn Map and Publishing Company 1897). By 1919, an additional wooden bridge was built across Redwood Creek at Maple Street (Sanborn Map and Publishing Company 1919). The creek and crossing remained relatively unchanged until the late 1940s, when a concrete bridge was identified as crossing over Redwood Creek at Lathrop and Maple Streets in 1950 (Sanborn Map and Publishing Company 1950). In 1960, the creek remained largely as it had been; however, by 1968, the creek had been improved with concrete lining and channelized (NETR 2019). Redwood Creek continues to flow through Redwood City; however, throughout much of this urban area, it is through underground pipes (Kyle 2002), including south of the project location at El Camino Real, and north of the project location at Maple Street.

California Register of Historical Resources (CRHR) Determination of Eligibility

The channelized canal appears ineligible for the CRHR under Criteria 1, 2, 3, and 4. Research has not uncovered any evidence to suggest that the channelized canal is associated with a significant event or individual (CRHR Criteria 1 and 2), embodies distinctive characteristics of type, period, region, or method of construction, has high artistic value, or represents the work of a master (CRHR Criterion 3), or has recognized data potential (Criterion 4). Although Redwood Creek played an important role in the exportation of lumber and other products (such as grains and livestock) in the mid-late 1800s, the channelization of the canal in the mid-1960s occurred well outside of this potential period of significance. The channelized canal's features appear to be a standardized design for concrete-lined, channelized creeks. It appears to have been maintained and modified regularly since it was originally constructed in the 1960s. Although the channelized creek retains its integrity of location, setting, feeling, and association (the canal is in the same location, and its primary purpose as supporting a natural drainage network through an urban area remains), the canal has lost integrity of design, workmanship, and materials, as it has been subject to modifications and maintenance over the years, including the replacement of its original concrete lining. In all, the resource appears to lack significance of all criteria and is therefore ineligible for the CRHR.

References:

Kyle, D. 2002. *Historic Spots in California*. Fifth Edition. Stanford University Press, Stanford, California.

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Redwood City Local History. 2019. The History of Redwood City. Accessed January 15, 2019. https://www.rwc-localhistory.com/history-of-redwood-city

Sanborn Map and Publishing Company. 1897. Sanborn Map and Publishing Company, New York.

1919. Sanborn Map and Publishing Company, New York.

1950. [Insurance Maps of] Redwood City, San Mateo County, Calif.

WSA. 2017. *Cultural, Biological, and Paleontological Resources Assessment Report, 1180 Main Street Project, Redwood City, San Mateo County, California*. Prepared for: Premia Capital, LLC, Redwood City, California.

Appendix E 2017 PHASE I ENVIRONMENTAL SITE ASSESSMENT

brick.

Preliminary Phase I Environmental Assessment

1180 Main Street
Redwood City, CA 94063

AEI Consultants

July 31, 2017

Environmental
Due Diligence

Building Assessments

Site Investigation
& Remediation

Energy Performance
& Benchmarking

Industrial Hygiene

Construction
Risk Management

Zoning Analysis
Reports & ALTA
Surveys

PHASE I
ENVIRONMENTAL SITE ASSESSMENT

DRAFT

Property Identification:
Vacant Commercial
1180 and 1190 Main Street
Redwood City, San Mateo County, California 94063

AEI Project No. 374905

Prepared For:
Premia Capital
801 Hamilton Street
Redwood City, California 94063

Prepared By:
AEI Consultants
2500 Camino Diablo, Suite 100
Walnut Creek, California 94597-3940
(925) 746-6000

July 31, 2017

Premia Capital
801 Hamilton Street
Redwood City, California 94063

Subject: **PHASE I ENVIRONMENTAL SITE ASSESSMENT**
Vacant Commercial
1180 and 1190 Main Street, Redwood City, California 94063
AEI Project No. 374905

Dear Gloria Arteaga:

AEI Consultants is pleased to provide the Phase I Environmental Site Assessment (Phase I ESA) report of the above referenced address. This assessment was authorized and performed in accordance with the scope of services outlined in the proposal, the scope and limitations of ASTM Standard Practice E1527-13, and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (40 CFR Part 312).

We appreciate the opportunity to provide services to you. If you have any questions concerning this report, or if we may assist you in any other matter, please contact me at (678) 279-2820 or syekich@aeiconsultants.com.

Sincerely,

DRAFT

Steven Yekich
AEI Consultants

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PROJECT SUMMARY

Vacant Commercial
1180 and 1190 Main Street, Redwood City, San Mateo County, California 94063

Report Section		No Further Action	REC	CREC	HREC	Other Environmental Considerations	Recommended Action
2.1	Site Location and Description	✔					
2.2	Site and Vicinity Characteristics	✔					
3.1	Historical Summary	✔			✔		
4.0	Regulatory Agency Records Review	✔			✔		
5.0	Regulatory Database Records Review	✔			✔		
5.2	Vapor Migration	✔					
6.3	Previous Reports and Other Provided Documentation	✔			✔	✔	
7.1	Subject Property Reconnaissance Findings	✔					
7.2	Adjacent Property Reconnaissance Findings	✔					
8.1	Asbestos-Containing Building Materials					✔	Refer to Section 6.3 and NESHAP Survey
8.2	Lead-Based Paint					✔	Refer to Section 6.3., and consult with a certified Lead Risk Assessor
8.3	Radon	✔					
8.4	Drinking Water Sources and Lead in Drinking Water	✔					
8.5	Mold/Indoor Air Quality Issues	✔					

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LIST OF COMMONLY USED ABBREVIATIONS

Units	
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
pCi/L	PicoCuries per Liter
ppb	Parts per Billion
ppm	Parts per Million
Acronyms	
ACM	Asbestos-Containing Material
AHERA	Asbestos Hazard Emergency Response Act
APN	Assessor's Parcel Number
AST	Aboveground Storage Tank
AUL	Activity and Use Limitation
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System
COC	Contaminant of Concern
CREC	Controlled Recognized Environmental Condition
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
GPR	Ground-Penetrating Radar
HREC	Historical Recognized Environmental Condition
HVAC	Heating, Ventilation and Air Conditioning
HWS	Hazardous Waste Site
LBP	Lead-Based Paint
LCP	Lead Containing Paint
LLP	Landowner Liability Protection
LQG	Large Quantity Generator
LUST	Leaking Underground Storage Tank
MCL	Maximum Contaminant Level
MTBE	Methyl Tertiary Butyl Ether
ND	None Detected
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFA	No Further Action
NOV	Notice of Violation
NPL	National Priorities List
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
PCE	Perchloroethylene, Tetrachloroethylene, Tetrachloroethene, PERC
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
RP	Responsible Party
SDS	Safety Data Sheet
SEMS	Superfund Enterprise Management System
SQG	Small Quantity Generator
SVOC	Semi-Volatile Organic Compound
TCE	Trichloroethylene, Trichloroethene
TPH	Total Petroleum Hydrocarbons
TPHd	Total Petroleum Hydrocarbons (diesel range)
TPHg	Total Petroleum Hydrocarbons (gasoline range)
TPHo	Total Petroleum Hydrocarbons (oil range)
TRPH	Total Recoverable Petroleum Hydrocarbons
USDA	United States Department of Agriculture
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

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EXECUTIVE SUMMARY

AEI Consultants (AEI) was retained by Premia Capital to conduct a Phase I ESA in conformance with the proposal and the scope and limitations of ASTM Standard Practice E1527-13 and the EPA Standards and Practices for All Appropriate Inquiries (40 CFR Part 312) for the property located at 1180 and 1190 Main Street, Redwood City, San Mateo County, California. Any exceptions to, or deletions from, this practice are described in Sections 1.4, 1.5, and 1.6 of this report.

PROPERTY DESCRIPTION

PROPERTY INFORMATION	
Property Name	Vacant Commercial
Street Address(es)	1180 and 1190 Main Street
City	Redwood City
State	California
Location	In the middle of the intersections of Elm Street, Maple Street, Main Street, Pennsylvania Avenue and Lathrop Street
Vicinity Characteristics	Mixed commercial, residential and industrial
Approximate Site Acreage/Source	1.33/Assessor's Office
Property Type	Commercial/vacant
Subject Property Use(s)	Vacant commercial building and vacant land
Assessor Parcel Number(s)	053-147-060 and 053-147-070
SITE AND BUILDING INFORMATION	
Number of Buildings	One
Year(s) of Construction	Current building constructed in 1952
Number of Floors/Stories	One
Basement or Subgrade Area(s)	None identified
Number of Units	One
Building Area (SF)/Source	1,920/Mr. Louis Deziel, Property Owner
Building Description(s)	A single-story vacant commercial building
Building Occupant(s)	None identified
Additional Improvements	Vacant land, a building foundation, and a creek
Current On-site Operations	None identified
Current Use of Hazardous Substances	None identified
UTILITY PROVIDER INFORMATION	
Natural Gas Provider	PG&E
Electricity Provider	PG&E
Heating System Fuel Source	Natural gas
Cooling System Power Source	Electricity
Potable Water Provider or Source	City of Redwood City
Sewage Disposal Provider or Treatment System	City of Redwood City
REGULATORY INFORMATION	
Regulatory Database Listings	HAZNET (4), RGA LUST (2), SAN MATEO CO. BI (2), RCRA-SQG, LUST, HIST CORTESE, SWEEPS UST, FINDS, ECHO, EDR HIST AUTO; Refer to Section 5.1.
Institutional Controls	None identified
Engineering Controls	None identified

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Environmental Liens	None identified

Based on a review of historical sources, the subject property was identified to consist of the following: a commercial building occupied by Redwood City flour mill, two auxiliary buildings, and a slough in 1884; a commercial building occupied by WJ Bunn's feed mill containing a grain warehouse and an engine shop, as well as part of a creek in 1888 to 1897; a commercial building occupied by Cullen Company's grain warehouse, three dwellings, a hen house, auxiliary structures, and part of a creek in 1907; a commercial building occupied as a feed and fuel warehouse, as well as part of a creek, three dwellings, and auxiliary structures from 1919 to 1950. In 1952, the current commercial building was constructed and was occupied by the following tenants: a bail bonds company (1955), a dairy supply company (1960 to 1965), and No Draft Co, a window and door supply company (1976-2001). Since 2011, the building has remained unoccupied. In 1955, an auto repair building was constructed and remained on-site until 2011. The feed and fuel facility remained on-site until 1962, and in 1974, an additional commercial building was constructed and was occupied by Marcelli Lighting until it was demolished in 2011. A foundation for a new medical building was constructed in 2011, but the project was never finished and thus the subject property has remained vacant since that time.

The following historical addresses were associated with the subject property: 5-17, 602-620 Pennsylvania/Railroad Avenue; 12-22, 101-139, 608-610 Elm Street; 19 Mound Street; 120, 632, 1150 Main Street; 134-162 Maple Street; 144 Lathrop Street. These addresses were also researched as part of this assessment.

The immediately surrounding properties consist of the following:

Direction from Site	Tenant/Use (Address)	Regulatory Database Listing(s)
Northeast	Pennsylvania Avenue followed by: Cooks Collision (1104 Main Street) Unmarked commercial building (1112 Main Street)	EDR HIST AUTO, SAN MATEO CO. BI, RCRA-SQG (2), ENVIROSTOR, LUST, FINDS, ECHO (1104 Main Street)
East	Pennsylvania Avenue followed by: Wings Learning Center (1201 Main Street) San Jose Obrero (400 Heller Street)	RCRA-SQG, FINDS, ECHO, SAN MATEO CO. BI (1201 Main Street)
Southeast	Elm Street followed by: Main Street Park (no listed address) ATA Reprographics (1202 Main Street) Main & Elm Restaurant (112-150 Elm Street) Unmarked commercial building (101 Lathrop Street)	SAN MATEO CO. BI, EDR HIST AUTO (112-150 Elm Street)

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Direction from Site	Tenant/Use (Address)	Regulatory Database Listing(s)
Southwest	A creek canal (no listed address) Lathrop Street followed by: Vacant land/a creek canal (no listed address) Apartments (1-49 Maple Street)	None identified
Northwest	Maple Street followed by: Apartments (99-149 Maple Street) Apartments (1090 Main Street)	SAN MATEO CO BI., LUST, EDR HIST AUTO (99-149 Maple Street)

If the surrounding properties are listed in the regulatory database, please refer to Section 5.1 for discussion.

Based on groundwater monitoring data for a nearby site at 25 Maple Street (located approximately 0.08 mile southwest of the subject property) obtained from GeoTracker, the direction of groundwater flow beneath the subject property is inferred to be to the north and groundwater is presumed to be present at an estimated depth of 7 to 10 feet bgs.

FINDINGS

Recognized Environmental Condition (REC) is defined by the ASTM Standard Practice E1527-13 as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.

- AEI did not identify evidence of RECs during the course of this assessment.

Controlled Recognized Environmental Condition (CREC) is defined by the ASTM Standard Practice E1527-13 as a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.

- AEI did not identify evidence of CRECs during the course of this assessment.

Historical Recognized Environmental Condition (HREC) is defined by the ASTM Standard Practice E1527-13 as a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls.

- According to agency records, a 1,000 gallon diesel UST and a 580 gallon gasoline UST were removed from the subject property on September 9, 1994. Both USTs appeared to be in good condition. A shallow trench was also excavated along the route of the pipeline

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which lead to the dispenser location. 30 cubic yards of excavated soil were stockpiled. One soil sample was collected from beneath the fill end of the gasoline UST and two soil samples were collected from beneath the diesel UST. These samples were collected at depths of 8 feet. A soil sample was also collected from the location of the fuel dispenser at a depth of three feet. Two soil samples were also collected from the stockpiled soil. All of the samples were non-detect, with the exception of the sample collected from the dispenser area, which detected 30 mg/kg TPHd. The stockpiled samples were all non-detect with the exception of 0.0088 mg/kg toluene, 0.0058 mg/kg ethylbenzene and 0.027 mg/kg xylene. Because low concentrations of petroleum hydrocarbons were detected in the stockpiled soil, that soil could not be used as backfill. The stockpiled soil was spread out and allowed to aerate for two months. Resampling of the stockpiled soil occurred, which did not detect any BTEX and thus it was re-used as backfill. The SMCEHD stated that no additional excavation was required because the concentrations were relatively low and the piping and USTs looked in good shape, and issued an official closure letter in 1994.

- According to agency records, the subject property formerly had a 1,000 gallon waste oil UST and a 1,000 gallon gasoline UST that were removed from the property on January 14, 1994. Verification soil samples collected for the gasoline UST were found to contain no detectable hydrocarbons. One of the two soil samples collected for the waste oil UST was found to contain 810 ppm TPHd in addition to 17 ppb dichloromethane by EPA Methods 5030/8010. Re-analysis by EPA Method 8240 showed no detectable hydrocarbons. On February 9, 1994, the waste oil UST pit was overexcavated. A soil sample collected at the end of the overexcavation was found to contain no detectable hydrocarbons. Water was present in the pit and was sampled, with analysis showing only 530 ppb of TPHd, described by the laboratory as not typical of diesel. No TPHg, BTEX, oil and grease, or chlorinated hydrocarbons were detected in the water sample. The pit was pumped dry and no water recharged. The SMCEHD requested construction and sampling of a monitoring well. Groundwater sampling was conducted until 1995. The final "after cleanup" groundwater concentrations were listed as non-detect for TPHg, TPHd, BTEX, and 1,600 ppb of oil and grease in the case closure letter. On June 21, 1995 the SMCEHD and the RWQCB granted the site case closure with no further action required.

Additionally, four hydraulic lifts were removed from the interior of the former Chub's Auto Repair shop in 1994 and 1995. One of the lifts was reportedly leaking and therefore was removed before the other three. A soil sample was collected from the excavation pit, and a second sample was collected from the stockpile generated by the excavation, both of which detected elevated levels of oil and grease. Multiple sampling events and additional overexcavation of the pit were conducted. Groundwater was eventually encountered in the pit, and groundwater monitoring well MW-2 was installed. Multiple sampling events from MW-2 showed maximum levels of 12,000 ppm oil and grease in soil and 1,700 ppb oil and grease in groundwater. Approximately 800 gallons of groundwater were purges from MW-2. Sampling from MM-1 indicated that there was no perceptible gradient between MW-1 and MM-2 and thus no lateral migration of contaminants. The former lift release case was addressed in the 1995 case closure letter for the two USTs, although closure was specific to the USTs. However, the SCMEHD did cite the consultant's statement that the hydraulic lift release case should be closed.

Other Environmental Considerations warrant discussion, but do not qualify as RECs as defined by the ASTM Standard Practice E1527-13. These include, but are not limited to, de minimis conditions and/or environmental considerations such as the presence of ACMs, LBP, radon, mold, and lead in drinking water, which can affect the liabilities and financial obligations of the client, the health and safety of site occupants, and the value and marketability of the subject property.

- From September to December 2011, TRC conducted multiple soil sampling events to evaluate the current soil conditions at the site for potential reuse or landfill disposal related to future redevelopment activities. It was TRC's understanding that approximately 4,500 cubic yards of soil was to be excavated during construction activities at the site. The site was divided into three soil sampling areas. Area I was at the northernmost portion, with Area II in the center and Area II on the southern portion of the site. The analyses performed by TRC did not detect pesticides, VOC's, including gasoline-range hydrocarbons, BTEX nor MTBE in any of the samples analyzed. Analysis on the one composite soil sample collected from Area II detected Motor Oil Range Organics ranging from 59 to 1100 mg/Kg, and the Total Threshold Level Concentrations (TTLC) for lead was detected from 9.3 to 50 mg/Kg. Analysis of soil samples from Area III detected diesel and motor oil concentrations (190 mg/kg and 670 mg/kg respectively). The metal concentrations detected appear typical of naturally occurring background concentrations and are below Total Threshold Level Concentrations (TTLC), except for chromium and lead. The chromium and lead concentrations were reported at 130 mg/kg and 52 mg/kg respectively. Based on field observations during sampling, it appeared that the soil of Area III is similar to the Area II soil. TRC concluded that the site history and therefore the detected anomalous compounds and concentrations, are similar between the two site development sections and no additional soil quality characterization appeared to be required.
- Due to the age of the subject property building, there is a potential that LBP is present. AEI understands that renovation and/or demolition activities of the subject property buildings are planned. It should be noted that lead testing was previously performed, and discussed in Section 6.3. AEI recommends that the property owner consult with a certified Lead Risk Assessor to determine options for control of possible LBP hazards. Stringent local and State regulations may apply to LBP in association with building demolition/renovations and worker/occupant protection. It should be noted that construction activities that disturb materials or paints containing any amount of lead may be subject to certain requirements of the OSHA lead standard contained in 29 CFR 1910.1025 and 1926.62.
- According to the Mr. Deziel, demolition of the subject property building is planned for the near future. Regardless of building construction date, the EPA's NESHAP requires that a thorough asbestos survey be performed prior to demolition or renovation activities that may disturb ACMs. It should be noted that a NESHAP survey was previously performed, discussed in Section 6.3. This requirement may be enforced by federal, state and local regulatory agencies, and specifies that all suspect ACMs be sampled to determine the presence or absence of asbestos prior to any renovation or demolition activities which may disturb them to prevent potential exposure to workers, building occupants, and the environment. Similarly, OSHA regulations require that specific work practices be implemented when handling construction materials and debris that contain asbestos and/or lead-containing materials.

CONCLUSIONS, OPINIONS, AND RECOMMENDATIONS

We have performed a Phase I ESA in conformance with the scope and limitations of ASTM Standard Practice E1527-13 and the EPA Standards and Practices for All Appropriate Inquiries (40 CFR Part 312) of 1180 and 1190 Main Street, Redwood City, San Mateo County, California, the *subject property*. Any exceptions to, or deletions from, this practice are described in Sections 1.4, 1.5, and 1.6 of this report.

AEI did not identify evidence of RECs or CRECs in connection with the subject property during the course of this assessment. AEI recommends no further investigation for the subject property at this time.

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1.0 INTRODUCTION

This report documents the methods and findings of the Phase I ESA performed in conformance with the proposal and scope and limitations of ASTM Standard Practice E1527-13 and the EPA Standards and Practices for All Appropriate Inquiries (40 CFR Part 312) for the property located at 1180 and 1190 Main Street, Redwood City, San Mateo County, California (Appendix A: Figures and Appendix B: Property Photographs).

1.1 SCOPE OF WORK

The purpose of the Phase I ESA is to assist the client in identifying potential RECs, in accordance with ASTM E1527-13, associated with the presence of any hazardous substances or petroleum products, their use, storage, and disposal at and in the vicinity of the subject property. Property assessment activities focused on: 1) a review of federal, state, tribal, and local databases that identify and describe underground fuel tank sites, leaking underground fuel tank sites, hazardous waste generation sites, and hazardous waste storage and disposal facility sites within the ASTM approximate minimum search distance; 2) a property and surrounding site reconnaissance, and interviews with the past and present owners and current occupants and operators to identify potential environmental contamination; and 3) a review of historical sources to help ascertain previous land use at the site and in the surrounding area.

1.2 ADDITIONAL SERVICES

Other Environmental Considerations such as ACMs, LBP, lead in drinking water, radon, mold, and wetlands can result in business environmental risks for property owners which may disrupt current or planned operations or cash flow and are generally beyond the scope of a Phase I assessment as defined by ASTM E1527-13. Based upon the agreed-on scope of services this ESA did not include subsurface or other invasive assessments, business environmental risks, or other services not specifically identified and discussed herein.

1.3 SIGNIFICANT ASSUMPTIONS

The following assumptions are made by AEI in this report. AEI relied on information derived from secondary sources including governmental agencies, the client, designated representatives of the client, property contact, property owner, property owner representatives, computer databases, and personal interviews. AEI has reviewed and evaluated the thoroughness and reliability of the information derived from secondary sources including government agencies, the client, designated representatives of the client, property contact, property owner, property owner representatives, computer databases, or personal interviews. It appears that all information obtained from outside sources and reviewed for this assessment is thorough and reliable. However, AEI cannot guarantee the thoroughness or reliability of this information.

Groundwater flow, unless otherwise specified by on-site well data or well data from the subject property or nearby sites, is inferred from contour information depicted on the USGS topographic maps. AEI assumes the property has been correctly and accurately identified by the client, designated representative of the client, property contact, property owner, and property owner's representatives.

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1.4 LIMITATIONS

Property conditions, as well as local, state, tribal, and federal regulations can change significantly over time. Therefore, the recommendations and conclusions presented as a result of this assessment apply strictly to the environmental regulations and property conditions existing at the time the assessment was performed. Available information has been analyzed using currently accepted assessment techniques and it is believed that the inferences made are reasonably representative of the property. AEI makes no warranty, expressed or implied, except that the services have been performed in accordance with generally accepted environmental property assessment practices applicable at the time and location of the assessment.

Considerations identified by ASTM as beyond the scope of a Phase I ESA that may affect business environmental risk at a given property include the following: ACMs, radon, LBP, lead in drinking water, wetlands, regulatory compliance, cultural and historical resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, mold, and high voltage lines. These environmental issues or conditions may warrant assessment based on the type of the property transaction; however, they are considered non-scope issues under ASTM Standard Practice E1527-13.

If requested by the client, these non-scope issues are discussed herein. Otherwise, the purpose of this assessment is solely to satisfy one of the requirements for qualification of the innocent landowner defense, contiguous property owner or bona fide prospective purchaser under CERCLA. ASTM Standard Practice E1527-13 and the United States EPA Standards and Practices for All Appropriate Inquiries (40 CFR Part 312) constitute the "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" as defined in:

1. 42 U.S.C. § 9601(35)(B), referenced in the ASTM Standard Practice E1527-13.
2. Sections 101(35)(B) (ii) and (iii) of CERCLA and referenced in the EPA Standards and Practices for All Appropriate Inquiries (40 CFR Part 312).
3. 42 U.S.C. § 9601(40) and 42 U.S.C. § 9607(q).

The Phase I ESA is not, and should not be construed as, a warranty or guarantee about the presence or absence of environmental contaminants that may affect the property. Neither is the assessment intended to assure clear title to the property in question. The sole purpose of assessment into property title records is to ascertain a historical basis of prior land use. All findings, conclusions, and recommendations stated in this report are based upon facts, circumstances, and industry-accepted procedures for such services as they existed at the time this report was prepared (i.e., federal, state, and local laws, rules, regulations, market conditions, economic conditions, political climate, and other applicable matters). All findings, conclusions, and recommendations stated in this report are based on the data and information provided, current subject property use, and observations and conditions that existed on the date and time of the property reconnaissance.

Responses received from local, state, or federal agencies or other secondary sources of information after the issuance of this report may change certain facts, findings, conclusions, or circumstances to the report. A change in any fact, circumstance, or industry-accepted procedure upon which this report was based may adversely affect the findings, conclusions, and recommendations expressed in this report.

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AEI's limited radon screening, if included, is intended to provide a preliminary screening to evaluate the potential presence of elevated radon concentrations at the site. The proposed scope is not intended to define the full extent of the presence of radon at the subject property. As such, the results should be used for lending purposes only. The recommendations and conclusions presented as a result of the limited preliminary radon screening apply strictly to the property conditions existing at the time the sampling was performed. The sample analytical results are only valid for the time, place, and condition of the site at the time of collection and AEI does not warrant that the results will be repeatable or are representative of past or future conditions.

1.5 Limiting Conditions/Deviations

The performance of this Phase I ESA was limited by the following:

- Due to the size of the subject property, AEI performed a site inspection of the property utilizing a field technique of traversing the site in an attempt to provide an overlapping field of view. Due to the size of the property and the vegetation present on site, isolated areas of the site may have not been accessible for direct observation during AEI's inspection. Based on the vacant nature, this limitation is not expected to significantly alter the Findings of this assessment.
- The User did not complete the ASTM User Questionnaire or provide the User information to AEI. AEI assumes that qualification for the LLPs is being established by the User in documentation outside of this assessment.

1.6 Data Gaps and Data Failure

According to ASTM E1527-13, data gaps occur when the Environmental Professional is unable to obtain information required by the Standard, despite good faith efforts to gather such information. Pursuant to ASTM E1527-13, only significant data gaps, defined as those that affect the ability of the Environmental Professional to identify RECs, need to be documented.

Data failure is one type of data gap. According to ASTM E1527-13, data failure occurs when all of the standard historical sources that are reasonably ascertainable and likely to be useful have been reviewed and yet the objectives have not been met. Pursuant to ASTM E1527-13, historical sources are required to document property use back to the property's first developed use or back to 1940, whichever is earlier, or periods of five years or greater.

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1.6.1 DATA FAILURE

The following data failure was identified during the course of this assessment:

Data Failure	The earliest historical resource obtained during this assessment was a Sanborn map from 1884 indicating that the subject property was developed, as discussed below. The lack of historical sources for the subject property dating back to first developed use represents historical data source failure. In the 1884 Sanborn map, the subject property was developed with a commercial building occupied by Redwood City flour mill, two auxiliary buildings, and a slough . Thus, it is assumed that prior to 1884, the subject property would have been used for similar purposes, if not undeveloped. Therefore, this data failure is not expected to significantly alter the Findings of this assessment.
Information/Sources Consulted	City directories, Sanborn fire insurance maps, aerial photographs, agency records, previous reports, interviews

1.6.2 DATA GAPS

AEI did not identify significant data gaps which affected our ability to identify RECs.

1.7 RELIANCE

All reports, both verbal and written, are for the benefit of Premia Capital. This report has no other purpose and may not be relied upon by any other person or entity without the written consent of AEI. Either verbally or in writing, third parties may come into possession of this report or all or part of the information generated as a result of this work. In the absence of a written agreement with AEI granting such rights, no third parties shall have rights of recourse or recovery whatsoever under any course of action against AEI, its officers, employees, vendors, successors, or assigns. Reliance is provided in accordance with AEI's proposal and Standard Terms and Conditions executed by Premia Capital on July 8, 2017. The limitation of liability defined in the Terms and Conditions is the aggregate limit of AEI's liability to the client and all relying parties.

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2.0 SITE AND VICINITY DESCRIPTION

2.1 SITE LOCATION AND DESCRIPTION

PROPERTY INFORMATION	
Property Name	Vacant Commercial
Street Address(es)	1180 and 1190 Main Street
City	Redwood City
State	California
Location	In the middle of the intersections of Elm Street, Maple Street, Main Street, Pennsylvania Avenue and Lathrop Street
Vicinity Characteristics	Mixed commercial, residential and industrial
Approximate Site Acreage/Source	1.33/Assessor's Office
Property Type	Commercial/vacant
Subject Property Use(s)	Vacant commercial building and vacant land
Assessor Parcel Number(s)	053-147-060 and 053-147-070
SITE AND BUILDING INFORMATION	
Number of Buildings	One
Year(s) of Construction	Current building constructed in 1952
Number of Floors/Stories	One
Basement or Subgrade Area(s)	None identified
Number of Units	One
Building Area (SF)/Source	1,920/Mr. Louis Deziel, Property Owner
Building Description(s)	A single-story vacant commercial building
Building Occupant(s)	None identified
Additional Improvements	Vacant land, a building foundation, and a creek
Current On-site Operations	None identified
Current Use of Hazardous Substances	None identified
UTILITY PROVIDER INFORMATION	
Natural Gas Provider	PG&E
Electricity Provider	PG&E
Heating System Fuel Source	Natural gas
Cooling System Power Source	Electricity
Potable Water Provider or Source	City of Redwood City
Sewage Disposal Provider or Treatment System	City of Redwood City
REGULATORY INFORMATION	
Regulatory Database Listings	HAZNET (4), RGA LUST (2), SAN MATEO CO. BI (2), RCRA-SQG, LUST, HIST CORTESE, SWEEPS UST, FINDS, ECHO, EDR HIST AUTO; Refer to Section 5.1.
Institutional Controls	None identified
Engineering Controls	None identified
Environmental Liens	None identified

Utility provider information listed in the table above is provided by Mr. Louis Deziel, Property Owner, unless otherwise noted above.

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2.2 SITE AND VICINITY CHARACTERISTICS

The immediately surrounding properties consist of the following:

Direction from Site	Tenant/Use (Address)	Regulatory Database Listing(s)
Northeast	Pennsylvania Avenue followed by: Cooks Collision (1104 Main Street) Unmarked commercial building (1112 Main Street)	EDR HIST AUTO, SAN MATEO CO. BI, RCRA-SQG (2), ENVIROSTOR, LUST, FINDS, ECHO (1104 Main Street)
East	Pennsylvania Avenue followed by: Wings Learning Center (1201 Main Street) San Jose Obrero (400 Heller Street)	RCRA-SQG, FINDS, ECHO, SAN MATEO CO. BI (1201 Main Street)
Southeast	Elm Street followed by: Main Street Park (no listed address) ATA Reprographics (1202 Main Street) Main & Elm Restaurant (112-150 Elm Street) Unmarked commercial building (101 Lathrop Street)	SAN MATEO CO. BI, EDR HIST AUTO (112-150 Elm Street)
Southwest	A creek canal (no listed address) Lathrop Street followed by: Vacant land/a creek canal (no listed address) Apartments (1-49 Maple Street)	None identified
Northwest	Maple Street followed by: Apartments (99-149 Maple Street) Apartments (1090 Main Street)	SAN MATEO CO BI., LUST, EDR HIST AUTO (99-149 Maple Street)

If the surrounding properties are listed in the regulatory database, please refer to Section 5.1 for discussion.

2.3 PHYSICAL SETTING

Geology: Based on a review of the USDA Soil Survey for the area of the subject property, the soils in the vicinity of the subject property are classified as Urban Land. The Urban Land designation indicates that more than 85 percent of the original soils have been disturbed or covered by paved surfaces, buildings or other structures. Due to the variability of the soil material, on-site investigation would be required to determine the specific soil composition at the subject property.

USGS Topographic Map:	Palo Alto, California Quadrangle

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Nearest surface water to subject property:	Redwood Creek/0.5 mile north
Gradient Direction/Source:	North/GeoTracker
Estimated Depth to Groundwater/Source:	7 to 10 feet bgs/GeoTracker

Note: Groundwater flow direction can be influenced locally and regionally by the presence of local wetland features, surface topography, recharge and discharge areas, horizontal and vertical inconsistencies in the types and location of subsurface soils, and proximity to water pumping wells. Depth and gradient of the water table can change seasonally in response to variation in precipitation and recharge, and over time, in response to urban development such as storm water controls, impervious surfaces, pumping wells, cleanup activities, dewatering, seawater intrusion barrier projects near the coast, and other factors.

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3.0 HISTORICAL REVIEW OF SITE AND VICINITY

3.1 HISTORICAL SUMMARY

Reasonably ascertainable standard historical sources as outlined in ASTM Standard E1527-13 were used to determine previous uses and occupancies of the subject property that are likely to have led to RECs in connection with the subject property. A chronological summary of historical data found, including but not limited to aerial photographs, historical city directories, Sanborn fire insurance maps, and agency records, is as follows:

Date Range	Subject Property Description/Use	Source(s)
1884	Developed with a commercial building occupied by Redwood City flour mill, two auxiliary buildings, and a slough	Sanborn maps
1888-1897	Developed with a commercial building occupied by WJ Bunn's feed mill containing a grain warehouse and an engine shop, as well as part of a creek	Sanborn maps
1907	Developed with a commercial building occupied by Cullen Company's grain warehouse, three dwellings, a hen house, auxiliary structures, and part of a creek	Sanborn maps
1919-1950	Developed with a commercial building occupied as a feed and fuel warehouse, as well as part of a creek , three dwellings, and auxiliary structures	Sanborn maps, city directories, aerial photographs, previous reports
1952	Further developed with the current commercial building	Agency records
1955	Further developed with the auto repair building	Previous reports
1955-1962	Developed with a commercial building occupied as a feed and fuel warehouse, the auto repair building, the current commercial building, as well as part of a creek	Sanborn maps, city directories, aerial photographs, previous reports, agency records
1968-1974	Developed with the auto repair building, the current commercial building, as well as part of a creek	Sanborn maps, city directories, aerial photographs, previous reports, agency records
1974-2011	Developed with a commercial building occupied by Marcelli Lighting, the former auto repair building, the current commercial building, as well as part of a creek	City directories, aerial photographs, previous reports, agency records
2011-Present	Developed with the current commercial building, which remained vacant, and a portion of the creek. The other two buildings are no longer present	City directories, aerial photographs, previous reports, agency records

Based on a review of historical sources, the subject property was identified to consist of the following: a commercial building occupied by Redwood City flour mill, two auxiliary buildings, and a slough in 1884; a commercial building occupied by WJ Bunn's feed mill containing a grain warehouse and an engine shop, as well as part of a creek in 1888 to 1897; a commercial building occupied by Cullen Company's grain warehouse, three dwellings, a hen house, auxiliary structures, and part of a creek in 1907; a commercial building occupied as a feed and fuel warehouse, as well as part of a creek, three dwellings, and auxiliary structures from 1919

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to 1950. In 1952, the current commercial building was constructed and was occupied by the following tenants: a bail bonds company (1955), a dairy supply company (1960 to 1965), and No Draft Co, a window and door supply company (1976-2001). Since 2011, the building has remained unoccupied. In 1955, an auto repair building was constructed and remained on-site until 2011. The feed and fuel facility remained on-site until 1962, and in 1974, an additional commercial building was constructed and was occupied by Marcelli Lighting until it was demolished in 2011. A foundation for a new medical building was constructed in 2011, but the project was never finished and thus the subject property has remained vacant since that time.

The following historical addresses were associated with the subject property: 5-17, 602-620 Pennsylvania/Railroad Avenue; 12-22, 101-139, 608-610 Elm Street; 19 Mound Street; 120, 632, 1150 Main Street; 134-162 Maple Street; 144 Lathrop Street. These addresses were also researched as part of this assessment.

Environmental concerns associated with the former auto repair shops are further discussed in Section 4.1.

3.2 Aerial Photographs

AEI reviewed aerial photographs of the subject property and surrounding area. A search was made of the EDR collection of aerial photographs. Aerial photographs were reviewed for the following years:

Year(s)	Subject Property Description	Adjacent Site Descriptions
1943	Due to the poor quality of the image, detailed observation of site features was not possible; however, the subject property appears developed with buildings and with a creek	NORTHEAST: Railroad tracks and Pennsylvania Avenue followed by commercial buildings EAST: Railroad tracks and Main Street followed by commercial buildings SOUTHEAST: Elm Street followed by a parking lot, commercial buildings, and vacant land SOUTHWEST: A creek followed by residential and commercial buildings and vacant land NORTHWEST: Maple Street followed by vacant land and residential and commercial buildings
1948	Developed with multiple commercial buildings, vacant land, and a creek	NORTHEAST: Railroad tracks and Pennsylvania Avenue followed by one of the current commercial buildings and additional buildings EAST: Railroad tracks and Main Street followed by residential buildings SOUTHEAST: Elm Street followed by a parking lot, commercial buildings, and vacant land SOUTHWEST: Lathrop Street followed by a creek, commercial buildings and vacant land NORTHWEST: Maple Street followed by vacant land, residential and commercial buildings, and storage yards

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Year(s)	Subject Property Description	Adjacent Site Descriptions
1958	Developed with a large warehouse building next to a field and the current commercial building and a creek	NORTHEAST: No significant changes EAST: Railroad tracks and Main Street followed by a parking lot and small commercial building in the center SOUTHEAST: Elm Street followed by commercial buildings and vacant land SOUTHWEST: No significant changes NORTHWEST: Maple Street followed by commercial buildings and storage yards
1968	Developed with additional commercial buildings	NORTHEAST: No significant changes EAST: No significant changes SOUTHEAST: No significant changes SOUTHWEST: No significant changes NORTHWEST: No significant changes
1974, 1981	Due to the poor quality of the image, detailed observation of site features was not possible; however, there appears to be no significant changes	Due to the poor quality of the image, detailed observation of site features was not possible; however, there appears to be no significant changes
1991	Developed with two commercial buildings and the current commercial building with parking lots and a creek	NORTHEAST: Pennsylvania Avenue and railroad tracks followed by the current commercial buildings and parking lot EAST: Railroad tracks and Main Street followed by the current commercial buildings SOUTHEAST: Elm Street followed by the current commercial buildings and park SOUTHWEST: Lathrop Street followed by vacant land and a creek and commercial buildings NORTHWEST: Maple Street followed by the current residential building, commercial buildings and vacant land
1998	Due to the poor quality of the image, detailed observation of site features was not possible; however, there appears to be no significant changes	Due to the poor quality of the image, detailed observation of site features was not possible; however, there appears to be no significant changes
2005 2009 2010	No significant changes	NORTHEAST: No significant changes EAST: No significant changes SOUTHEAST: No significant changes SOUTHWEST: Lathrop Street followed by vacant land and a creek and the current residential building NORTHWEST: Maple Street followed by the current residential buildings
2012	Developed with the current commercial building, a building foundation, a creek and vacant land	NORTHEAST: No significant changes EAST: No significant changes SOUTHEAST: No significant changes SOUTHWEST: No significant changes NORTHWEST: No significant changes

AEI did not identify potential environmental concerns in association with the historical use of the subject property during the aerial photograph review.

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If available, copies of historical aerial photographs are provided in the report appendices.

3.3 Sanborn Fire Insurance Maps

Sanborn Fire Insurance maps were developed in the late 1800s and early 1900s for use as an assessment tool for fire insurance rates in urbanized areas. A search was made of the EDR collection of Sanborn Fire Insurance maps.

The following maps were reviewed:

Year(s)	Subject Property Description (Listed Address)	Adjacent Site Descriptions
1884	Developed with a commercial building occupied by Redwood City flour mill, two auxiliary buildings, and a slough	NORTHEAST: The South Pacific Railroad followed by a wagon shop, a dwelling, and two auxiliary buildings EAST: Mound Street followed by three sheds and five dwellings and a wagon shop SOUTHEAST: Area not depicted SOUTHWEST: Area not depicted NORTHWEST: Area not depicted
1888	Developed with a commercial building occupied by WJ Bunn's feed mill containing a grain warehouse and an engine shop, as well as part of a creek	NORTHEAST: Pennsylvania/Railroad Avenue and railroad tracks followed by four dwellings and auxiliary structures EAST: Railroad tracks and Mound Street followed by a blacksmith and wagon shop, a carriage warehouse, sheds and five dwellings, and a baptist church SOUTHEAST: Are not depicted SOUTHWEST: A portion of a creek (remaining area not depicted) NORTHWEST: Main Street and a creek followed by two dwellings and a shed
1891	Developed with a commercial building occupied by WJ Bunn's feed mill containing a grain warehouse, engine shop and office, as well as a dwelling, an auxiliary structure with an elevated tank, and a creek (15-17 Pennsylvania/Railroad Avenue, 19-22 Elm Street)	NORTHEAST: Pennsylvania/Railroad Avenue and railroad tracks followed by four dwellings, a grocery and storage room,and auxiliary structures EAST: No significant changes SOUTHEAST: Elm Street followed by vacant land, a dwelling, a well, woodworking warehouse, and an elevated water tank SOUTHWEST: Area not depicted NORTHWEST: No significant changes

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Year(s)	Subject Property Description (Listed Address)	Adjacent Site Descriptions
1897	No significant changes (1-18 Pennsylvania/ Railroad Avenue, 19-22 Elm Street)	NORTHEAST: No significant changes EAST: Pennsylvania/Railroad Avenue and railroad tracks followed by a blacksmith and wagon painting shop with a furnace, two sheds, three dwellings, a grocery store, auxiliary structures, Elm Street and a baptist church SOUTHEAST: No significant changes SOUTHWEST: Lathrop Street followed by a creek, commercial buildings occupied by "H. Beeger's D.", and Main Street NORTHWEST: Main Street followed by two dwellings, auxiliary structures and a Chinese wash house
1907	Developed with a commercial building occupied by Cullen Company's grain warehouse containing two sheds and an old boiler, as well as three dwellings, a hen house, auxiliary structures, and part of the Branch Redwood Creek (5-8 Pennsylvania/ Railroad Avenue, 608, 610 Elm Street, 19 Mound Street)	NORTHEAST: Pennsylvania/Railroad Avenue and railroad tracks followed by four dwellings, a phonograph shop, and auxiliary structures EAST: Pennsylvania/Railroad Avenue and railroad tracks followed by a blacksmith shop, multiple dwellings, two sheds, Elm Street and a baptist church SOUTHEAST: Elm Street followed by a shed, a vacant dwelling, and a park SOUTHWEST: Part of the Redwood Creek, a tennis court, a dwelling, and vacant land NORTHWEST: Main Street and a wooden bridge followed by two dwellings, auxiliary structures, and a Chinese laundry with drying planks
1919	A commercial building occupied as a Feed and Fuel warehouse, as well as part of Redwood creek, three dwellings, auxiliary structures, and a parking garage (602-620 Pennsylvania/Railroad Avenue, 120/632 Main Street, 101-139 Elm Street, 162 Maple Street)	NORTHEAST: Pennsylvania/Railroad Avenue and railroad tracks followed by four dwellings and an auto shop EAST: Pennsylvania/Railroad Avenue and railroad tracks followed by a blacksmith shop, an auto repair shop, a baptist church, Elm Street, six dwellings, and auxiliary structures SOUTHEAST: Elm Street followed by a dwelling and parking garage and a park with a hose building SOUTHWEST: Part of Redwood creek followed by a dwelling and vacant land NORTHWEST: Redwood creek followed by a dwelling and a Chinese laundry

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Year(s)	Subject Property Description (Listed Address)	Adjacent Site Descriptions
1950	Commercial buildings occupied as Ridgeway Feed and Fuel warehouse containing wood and coal shop, feed and grain warehouse, and hay. All other areas are vacant land in addition to a creek (620 Pennsylvania/ Railroad Avenue, 1150 Main Street, 139 Elm Street, 144 Lathrop Street)	NORTHEAST: Pennsylvania/Railroad Avenue and railroad tracks followed by a storage warehouse, a gas station, and a dwelling EAST: Pennsylvania/Railroad Avenue and railroad tracks followed by four dwellings and a methodist church SOUTHEAST: Elm Street followed by two dwellings and a park with an unmarked building SOUTHWEST: A portion of the creek, a concrete bridge, rooming house, and various auto repair shops and other industrial buildings NORTHWEST: Maple Street and a wooden bridge followed by three dwellings and a Chinese laundry
1962	Commercial buildings occupied as the Palmer Supply company warehouse containing a feed and grain warehouse, a wood shop and store, as well as an auto repair shop with concrete floors, spray painting, and a parking lot. The currrent commercial building is present and is depicted as a store. The creek is still present as well. (620 Railroad Avenue, 1180-1190 Main Street, 139 Elm Street, 144 Lathrop Street)	NORTHEAST: Pennsylvania/Railroad Avenue and railroad tracks followed by an auto service shop, a produce warehouse, a gas station and a store EAST: Pennsylvania/Railroad Avenue and railroad tracks followed by used auto sales lot, an office, auto washing building, Elm Street, a dwelling and a methodist church SOUTHEAST: Elm Street followed by a storage building, and three stores SOUTHWEST: A creek, a concrete bridge and Lathrop Street followed by vacant land and and various auto repair shops and other industrial buildings NORTHWEST: Maple Street followed by a sand and gravel storage, one dwelling, an office, a carburetor repair shop, auto repair with concrete floors, and an auto sales lot
1968	A commercial building occupied as an auto repair shop with concrete floors, spray painting, and a parking lot, as well as the current commercial building occupied as a store (1180-1190 Main Street, 139 Elm Street, 160 Maple Street)	NORTHEAST: No significant changes EAST: Pennsylvania/Railroad Avenue and railroad tracks followed by a gas station, a used auto sales lot with associated office and car washing area, Elm Street and a methodist church SOUTHEAST: No significant changes SOUTHWEST: No significant changes NORTHWEST: No significant changes

According to Sanborn maps, a Chinese Laundry facility occupied a northwestern adjacent property (1090 Main Street) from at least 1897 through 1950. This site was not listed in the EDR report as a release case. No other information was found regarding this business other than the Sanborn map listings and, as a result, it is not known whether dry cleaning was performed on site. Typically, Chinese laundry operations were hand-wash laundry facilities which did not operate dry cleaning machines. However, the potential still exists that chlorinated solvents, such

as PCE could have been applied for spot removal. This type of application can reduce the potential for significant impacts when compared to typical PCE-dry cleaning operations. Based on the lack of a documented release and the direction of groundwater flow, this site is not expected to represent a significant environmental concern.

According to Sanborn maps, a gas station was located on one of the northeastern adjacent properties (1104 Main Street) from at least 1950 to 1968. This site is listed as a closed LUST case and is further discussed in Section 5.1.

According to Sanborn maps, a gas station was located on one of the eastern adjacent properties (1201 Main Street) in at least 1968. This site was not listed on the regulatory database as a current or former UST site; however, based on the former use, it is apparent that USTs were located on site. The location of the former USTs at this site are unknown. Assessment of the subject property does not indicate that the subject property would be investigated as a source of this contamination, and therefore, it is unlikely that the subject property owner would be responsible for any cleanup costs associated with a release at this site. Based on the proximity of this site to the subject property, the inferred direction of groundwater flow, and the lack of a documented release, this site is not expected to represent a significant environmental concern.

If available, copies of historical Sanborn maps are provided in the report appendices.

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3.4 CITY DIRECTORIES

A search of historical city directories was conducted for the subject property utilizing Redwood City Library. The following table summarizes the results of the city directory search.

139 Elm Street

Year(s)	Address - Occupant Listed
1922	105 Elm Street - Residential tenant
1929-1930	105 Elm Street - Residential tenant 111 Elm Street - Vacant
1933, 1939, 1941-1942, 1946, 1950	105 Elm Street - Residential tenant 111 Elm Street - Residential tenant
1955, 1960-1961, 1965, 1976, 1980, 1985, 1990, 1995, 2001, 2006, 2010, 2016	Addresses not listed

144 Lathrop Street

Year(s)	Address - Occupant Listed
1922, 1929-1930, 1933, 1939, 1941-1942, 1946, 1950, 1955, 1960-1961, 1965, 1976, 1980, 1985, 1990, 1995, 2001, 2006, 2010, 2016	Address not listed

1150-1190 Main Street

Year(s)	Address - Occupant Listed
1922, 1929-1930, 1933, 1939, 1941-1942, 1946, 1950	Addresses not listed
1955	1180 Main Street - Denney Russ Auto Serv reprs, Denney Russ Bail Bonds
1960-1961	1180 Main Street - B&J Auto Repr, McKee's Dave Auto Repair 1190 Main Street - Wadler's Cash & Carry prod
1965	1180 Main Street - Gordon's Auto Center, Joes Auto Repair 1190 Main Street - Wadler's Cash & Carry dairy products
1976	1180 Main Street - Cambridge Auto Repair, Jays Towing Service 1190 Main Street - No Draft Company
1980, 1985, 1990, 1995, 2001	1180 Main Street - Chubs Auto Repair 1190 Main Street - No Draft Company
2006	1180 Main Street - Chubs Auto Repair
2010, 2016	1180 Main Street - XXXX

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134-160 Maple Street

Year(s)	Address - Occupant Listed
1922, 1929-1930	Addresses not listed
1933	160 Maple Street - Cullen Co feed and fuel
1939, 1941-1942, 1946	160 Maple Street - Kertz & Son feed and fuel
1950, 1955	160 Maple Street - Ridgeway feed and fuel
1960-1961	160 Maple Street - Palmer Supply feed and fuel
1965	160 Maple Street - Vacant
1976	Addresses not listed
1980, 1985, 1990, 1995, 2001	134 Maple Street - Marcelli Electric
2006, 2010, 2016	Addresses not listed

620 Railroad Avenue

Year(s)	Address - Occupant Listed
1922, 1929-1930, 1933, 1939, 1941-1942, 1946, 1950, 1955, 1960-1961, 1965, 1976, 1980, 1985, 1990, 1995, 2001, 2006, 2010, 2016	Addresses not listed

If listed above, XXXX indicates that the address is valid but there is no occupancy information available.

Environmental concerns associated with the former auto repair shops are further discussed in Section 4.1.

3.5 Historical Topographic Maps

In accordance with our approved scope of services, historical topographic maps were not reviewed as a part of this assessment.

3.6 Chain of Title

In accordance with our approved scope of services, a chain of title search was not performed as part of this assessment.

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4.0 REGULATORY AGENCY RECORDS REVIEW

Local and state agencies, such as environmental health departments, fire prevention bureaus, and building and planning departments are contacted to identify any current or previous reports of hazardous substance use, storage, and/or unauthorized releases that may have impacted the subject property. In addition, information pertaining to AULs, defined as legal or physical restrictions, or limitations on the use of, or access to, a site or facility, is requested.

4.1 LOCAL ENVIRONMENTAL HEALTH DEPARTMENT AND/OR STATE ENVIRONMENTAL AGENCY

On July 12, 2017, AEI contacted the San Mateo Environmental Health Department (SMCEHD) via email for information on the subject property. Files at this agency may contain information regarding hazardous substance storage and use, underground storage tanks, unauthorized releases of petroleum hydrocarbons or other contaminants that may affect the soil or groundwater in the area, wells and/or septic systems.

According to Ms. Jean De Tar, the following information was on file for the subject property:

134 Maple Street

Date	Occupant	Document Type	Document Notes/Violations
1996	Five Star Development	Internal document	No relevant information listed
1996, 1997	Five Star Development	Hazardous Waste Generator Inspection Report	Facility produced waste oil, waste thinner and waste solvent, no major violations noted
1997	Five Star Development	Standard Stormwater Facility Inspection Report Form	No violations noted
2004	Five Star Development	Official Inspection Report	Facility closed
1994	Marcelli Lighting	Application for Permit to Close USTs	Remove on 500 gallon gasoline UST and one 1,000 gallon diesel UST, both installed in 1979
1994	Nick Marcelli	Environmental Health Permit	Permit to removed two USTs

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Date	Occupant	Document Type	Document Notes/Violations
1994		Laboratory Results	A 1,000 gallon diesel UST and a 580 gallon gasoline UST were removed from the property on September 9, 1994. Both USTs appeared to be in good condition. A shallow trench was also excavated along the route of the pipeline which lead to the dispenser location. 30 cubic yards of excavated soil were stockpiled. One soil sample was collected from beneath the fill end of the gasoline UST and two soil samples were collected from beneath the diesel UST. These samples were collected at depths of 8 feet. A soil sample was also collected from the location of the fuel dispenser at a depth of three feet. Two soil samples were also collected from the stockpiled soil. All of the samples were non-detect, with the exception of the sample collected from the dispenser area, which detected 30 mg/kg TPHd. The stockpiled samples were all non-detect with the exception of 0.0088 mg/kg toluene, 0.0058 mg/kg ethylbenzene and 0.027 mg/kg xylene. Because low concentrations of petroleum hydrocarbons were detected in the stockpiled soil, that soil could not be used as backfill. The stockpiled soil was spread out and allowed to aerate for the months. Resampling of the stockpiled soil occurred, which did not detect any BTEX and thus was re-used as backfill. The SMCEHD stated that no additional excavation was required because the concentrations were relatively low and the piping and USTs looked in good shape.
1994	Marcelli Lighting	Permanent Tank Closure Inspection Sheet	Two USTs marked as closed
1994	Nick Marcelli	Closure Letter for USTs	This letter confirms the closure of two USTs. No further action is required.

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Date	Occupant	Document Type	Document Notes/Violations
1994	Chub's Auto Repair	Hydraulic Lift Sampling Results	A hydraulic lift was removed from the subject property. The lift was reportedly installed in 1984, and was formerly removed because it was noted to be leaking. A soil sample was collected from the excavation pit, and a second sample was collected from the stockpile generated by the excavation. Multiple sampling events and additional overexcavation of the pit were conducted. Groundwater was eventually encountered in the pit. Soil sampling showed a concentration of 12,000 ppm oil and grease in soil and 1.7 ppm oil and grease in groundwater.
1994	Larry Chubick	Environmental Health Permit/Redwood City Fire Department Permit	Permit to remove one UST and one UST discovered during excavation
1994	Chubick	Work Plan	Work plan to remove a waste oil UST. During excavation and removal of the known waste oil UST, an additional gasoline UST was discovered. Both tanks were removed on January 14, 1994. The waste oil tank was noted to have several holes. Soil sampling indicated that samples from the gasoline tank excavation were non-detect for the three samples collected. The waste oil tank samples showed elevated levels at the fill end of 810 mg/kg diesel as does the excavated materials. All other analysis of metals were non-detect. HVOCs were also sampled for, and all were non-detect with the exception of a soil sample from the waste oil tank pit, which showed 17 ug/kg dichloromethane. It was proposed that the fill end of the waste oil tank pit would be overexcavated. After excavation, a confirmation sample would be collected and analyzed for TPHd.

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Date	Occupant	Document Type	Document Notes/Violations
1994	Chub's Auto Repair	Monitor Well Construction, Development and Sampling	The subject property formerly had a 1,000 gallon waste oil UST and a 1,000 gallon gasoline UST that were removed from the property on January 14, 1994. Verification soil samples collected for the gasoline UST were found to contain no detectable hydrocarbons. One of the two soil samples collected for the waste oil UST was found to contain 810 ppm TPHd in addition to 17 ppb dichloromethane by EPA Methods 5030/8010. Re-analysis by EPA Method 8240 showed no detectable hydrocarbons. On February 9, 1994, the waste oil UST pit was overexcavated. A soil sample collected at the end of the overexcavation was found to contain no detectable hydrocarbons. Water was present in the pit and was sampled, with analysis showing only 530 ppb of TPHd, described by the laboratory as not typical of diesel. No TPHg, BTEX, oil and grease, or chlorinated hydrocarbons were detected in the water sample. The pit was pumped dry and no water recharged. The SMCEHD requested construction and sampling of a monitoring well.
1994	Chub's Auto Repair	Tank Removal Report	Documents tank removal, which is further discussed above
1994	Chub's Auto Repair	Monitor Well Construction Report	On May 5, 1994, a ground water and soil sample were collected from the newly constructed monitoring well MW-1. The soil sample did not contain any detectable TPH or BTEX. The groundwater sampling did not contain any TPHg, TPHd, BTEX or volatile organics.
1994	Chub's Auto Repair	Monitor Well Sampling Report	A second round of groundwater sampling was conducted on August 4, 1994. The sample from MW-1 did not contain any TPHd or BTEX.

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Date	Occupant	Document Type	Document Notes/Violations
1994	Chub's Auto Repair	Monitor Well Sampling Report	A third round of groundwater sampling was conducted on November 3, 1994. The sample from MW-1 did not contain any TPHd or BTEX.
1995	Chub's Auto Repair	Monitor Well Sampling Report	A fourth round of groundwater sampling was conducted on February 2, 1995. The sample from MW-1 did not contain any TPHd or BTEX. Based on these results, the consultant recommended case closure for the USTs.
1995	Chub's Auto Repair	Monitor Well Sampling Report for MW-2	On March 13, 1995, MW-2 was sampled and showed a concentration of 1.5 mg/L of oil and grease. Additionally, a total of 779 gallons were pumped from MW-2 with discharge to the sanitary sewer. Based on these results, the consultant recommended case closure for the lift.
1995	Chub's Auto Repair	Horizontal Hydraulic Gradient	Three hydraulic lifts were removed from the site on April 8, 1995. Soil samples were collected from beneath the lifts as part of their closure. Based on the sampling efforts, there is no perceptible gradient at the site.
1995	Chub's Auto Repair	Monitor Well Sampling Report for MW-1	On June 1, 1995, MW-1 was sampled and was non-detect for oil and grease. Based on these results, the consultant recommended case closure for the lift.
1995	Chub's Auto Repair	Case Closure Memorandum	This memo documents removal and sampling activities for the UST and the hydraulic lift. The case closure statements apply to the UST but the SMCEHD cited the consultant's statement that the hydraulic lift release case should be closed.
1995	Chub's Auto Repair	Monitor Well Sampling Report for MW-2	On May 5, 1995, MW-2 was sampled and showed a concentration of 1.6 mg/L of oil and grease. Based on these results, the consultant recommended case closure for the lift.

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Date	Occupant	Document Type	Document Notes/Violations
1995	Chub's Auto Repair	UST Case Closure Letter	This letter, dated June 21, 1995, confirms the completion of site investigation and remedial action of the 1,000 gallon waste oil UST and 1,000 gallon gasoline UST. No further action related to the USTs is required.

A 1,000 gallon diesel UST and a 580 gallon gasoline UST were removed from the property on September 9, 1994. Both USTs appeared to be in good condition. A shallow trench was also excavated along the route of the pipeline which lead to the dispenser location. 30 cubic yards of excavated soil were stockpiled. One soil sample was collected from beneath the fill end of the gasoline UST and two soil samples were collected from beneath the diesel UST. These samples were collected at depths of 8 feet. A soil sample was also collected from the location of the fuel dispenser at a depth of three feet. Two soil samples were also collected from the stockpiled soil. All of the samples were non-detect, with the exception of the sample collected from the dispenser area, which detected 30 mg/kg TPHd. The stockpiled samples were all non-detect with the exception of 0.0088 mg/kg toluene, 0.0058 mg/kg ethylbenzene and 0.027 mg/kg xylene. Because low concentrations of petroleum hydrocarbons were detected in the stockpiled soil, that soil could not be used as backfill. The stockpiled soil was spread out and allowed to aerate for two months. Resampling of the stockpiled soil occurred, which did not detect any BTEX and thus was re-used as backfill. The SMCEHD stated that no additional excavation was required because the concentrations were relatively low and the piping and USTs looked in good shape, and issued an official closure letter in 1994. Based on this information, these former USTs represent a HREC.

The subject property formerly had a 1,000 gallon waste oil UST and a 1,000 gallon gasoline UST that were removed from the property on January 14, 1994. Verification soil samples collected for the gasoline UST were found to contain no detectable hydrocarbons. One of the two soil samples collected for the waste oil UST was found to contain 810 ppm TPHd in addition to 17 ppb dichloromethane by EPA Methods 5030/8010. Re-analysis by EPA Method 8240 showed no detectable hydrocarbons. On February 9, 1994, the waste oil UST pit was overexcavated. A soil sample collected at the end of the overexcavation was found to contain no detectable hydrocarbons. Water was present in the pit and was sampled, with analysis showing only 530 ppb of TPHd, described by the laboratory as not typical of diesel. No TPHg, BTEX, oil and grease, or chlorinated hydrocarbons were detected in the water sample. The pit was pumped dry and no water recharged. The SMCEHD requested construction and sampling of a monitoring well. Groundwater sampling was conducted until 1995. The final "after cleanup" groundwater concentrations were listed as non-detect for TPHg, TPHd, BTEX, and 1,600 ppb of oil and grease in the case closure letter. On June 21, 1995 the SMCEHD and the RWQCB granted the site case closure with no further action required.

Additionally, four hydraulic lifts were removed from the interior of the former Chub's Auto Repair shop in 1994 and 1995. One of the lifts was reportedly leaking and therefore was removed before the other three. A soil sample was collected from the excavation pit, and a second sample was collected from the stockpile generated by the excavation, both of which detected elevated levels of oil and grease. Multiple sampling events and additional overexcavation of the pit were conducted. Groundwater was eventually encountered in the pit, and groundwater

monitoring well MW-2 was installed. Multiple sampling events from MW-2 showed maximum levels of 12,000 ppm oil and grease in soil and 1,700 ppb oil and grease in groundwater. Approximately 800 gallons of groundwater were purges from MW-2. Sampling from MM-1 indicated that there was no perceptible gradient between MW-1 and MM-2 and thus no lateral migration of contaminants. The former lift release case was addressed in the 1995 case closure letter for the two USTs, although closure was specific to the USTs. However, the SCMEHD did cite the consultant's statement that the hydraulic lift release case should be closed. Based on this information, the former USTs and hydraulic lift release cases represent a HREC.

Although hazardous substances and petroleum products were likely associated with the former auto repair operations conducted on the subject property from at least 1972 to 2006, no evidence of improper storage or handling of these materials was reported to the local regulatory agencies. The former auto repair building was demolished between 2010 and 2011. The subject property is not listed for any spills or releases in connection with the use or handling of these materials. Based on this information and the previous subsurface investigations conducted at the subject property, the former auto repair shops are not expected to represent a significant environmental concern.

4.2 Fire Department

On July 12, 2017, AEI contacted the Redwood City Fire Department (RCFD) via fax for information on the subject property to identify any evidence of previous or current hazardous substance usage, and/or for any historical information available for the subject property.

AEI spoke with Ms. Theresa Maluia, who indicated that there were no records on file for the subject property with the Redwood City Fire Department (RCFD).

4.3 Building Department

On July 26, 2017, AEI contacted the Redwood City Building Department (RCBD) via office visit for information on the subject property in order to identify historical tenants, features of concern and property use.

Please refer to the following table for a listing of permits reviewed:

1180-1190 Main Street

Year(s)	Owner/Applicant	Description of Permit and Building Use
1952	Russ Denney	Garage building addition
1955	R Denney	Addition to an office building
1959	HH Wadler	Addition to an existing commercial building and alteration, new milk sign
1973	John Burke	Application for a license to operate an auto repair cannot be given until the illegal spray booth under construction is resolved
1973	Cambridge Auto Repair Sales & Service Inc	BAAQMD permit for an auto spray booth
1986	Chubs Auto Repair	Install new tar and gravel roof
2001	Chubbs Auto	Remove existing lentil
2001	Steven Brugman	Building repair
2007	W.L. Butler	Tree removal

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Year(s)	Owner/Applicant	Description of Permit and Building Use
2011	Archbold Electric	Electrical service change
2011	Lathrop Parc Redwood City	Facade change to building

134-160 Maple Street

Year(s)	Owner/Applicant	Description of Permit and Building Use
1974	Rj Pierce	Proposed plan for Waterproof Chemicals Inc to occupy a building at 160 Maple Street. Waterproof's operations involve bringing in solvents and detergents by tank truck for underground storage. These materials are blneded only and filled into containers under 60 gallons and all combustible or flammable products are Paint Stores. There is no bulk sale of handling or any products. All solvent storage would be confined to the USTs or in a specific storage room. - **No other RWBD permits verify this tenant ever occupied the subject property**
1978	Marcelli	New office building/warehouse
1986	Jerry Heth	New brick wall
1966	JM Ridgeway	Demolish a commercial/warehouse building
2010	Lathrop Parc Redwood City	New building, bridge and resurface parking
2011	Lathrop Parc Redwood City	New skilled nursing facility, expired
2012	Lathrop Parc Redwood City	Lathrop PARC offsite improvements, utilities, etc., not finaled

Environmental concerns associated with the former auto repair shop are further discussed in Section 4.1

4.4 Planning Department

On July 26, 2017, AEI contacted the Redwood City Planning Department (RCPD) via office visit for information on the subject property in order to identify AULs associated with the subject property.

Evidence indicating the existence of AULs was not on file for the subject property with the Redwood City Planning Department (RCPD).

4.5 County Assessor Office

On July 26, 2017, AEI contacted the San Mateo County assessor's office via telephone for information on the subject property in order to determine the earliest recorded date of development and use.

According to the San Mateo County assessor's office, the current building at 1190 Main Street was constructed in 1952.

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4.6 Oil and Gas Wells/Pipelines

On July 27, 2017, AEI reviewed the Department of Oil and Gas & Geothermal Resources (DOGGR) maps and the National Pipeline Mapping System (NPMS) Public Map Viewer concerning the subject property and nearby properties. The maps contain information regarding oil and gas development.

According to the Department of Oil and Gas & Geothermal Resources (DOGGR) map, oil or gas wells are not located within 500 feet of the subject property. AEI did not identify evidence of environmental concerns during the map review.

According to the NPMS Public Map Viewer, pipelines are not located within 500 feet of the subject property. AEI did not identify evidence of environmental concerns during the map review.

4.7 Other Agencies Searched

On July 12, 2017, AEI contacted the **Bay Area Air Quality Management District (BAAQMD)** via email for information on the property. The BAAQMD maintains records related to permitted air emissions.

According to Ms. Rochelle Reed, no information was on file for the subject property.

On July 27, 2017, AEI accessed the **California Department of Toxic Substances Control (DTSC) Hazardous Waste Tracking System (HWTS)** online database for information pertaining to hazardous waste disposal associated with the subject property. The HWTS generates reports on hazardous waste shipments for generators, transporters, and treatment, storage or disposal facilities (TSDFs).

The following information was on file for the subject property:

Date	Occupant	Document Notes/Violations
1989	Chubs Auto Rpr	Produced less than 1.6 tons per year of unspecified organic liquid mixture from 1993 to 2000
1993	Chub's Auto Repair	Produced 0.41 tons of unspecified oil-containing waste and 1 tons of other empty containers
1994	Nick Marcelli	Produced less than 4 tons per year of unspecified oil-containing waste and other empty containers in 1993 and 1994
1995	Chubs Auto Repair	Produced less than 1.4 tons per year of unspecified organic liquid mixture from 2002 to 2007
2011	Marcelli Lighting	No detailed information listed
2012	Lathrop Park	No detailed information listed
2012	Lathrop Park Redwood City LLC	Produced 0.005 tons of other organic solids/lead waste in 2012

No release of any of these materials was reported to the regulatory agencies. No evidence of a hazardous material release or of interior potential subsurface conduits was observed during the property inspection. Based on the relatively short duration of time that these wastes were reported to be generated in the HWTS database which were disposed of off-site under waste manifest control and regulatory oversight, as well as the lack of observed interior potential

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subsurface conduits, the former use of these materials is not expected to constitute a significant environmental concern.

On July 27, 2017, AEI accessed the **California Department of Toxic Substances Control (DTSC) EnviroStor** database, which contains information of investigation, cleanup, permitting, and/or corrective actions that are planned, being conducted or have been completed under DTSC oversight.

No information was on file for the subject property.

On July 27, 2017, AEI accessed the **Regional Water Quality Control Board (RWQCB) GeoTracker** database, a data management system for managing sites that impact groundwater, especially those requiring groundwater cleanup [USTs, Department of Defense, Site Cleanup Program] as well as permitted facilities such as operating USTs and land disposal sites.

The subject property was listed as a closed release site in the GeoTracker database, which is further discussed in Section 4.1.

4.8 State Environmental Superliens and Property Transfer Laws

In accordance with our approved scope of services, AEI did not assess whether the subject property is subject to any state environmental superliens and/or property transfer laws.

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5.0 REGULATORY DATABASE RECORDS REVIEW

AEI contracted Environmental Data Resources, Inc. (EDR) to conduct a search of publicly available information from federal, state, tribal, and local databases containing known and suspected sites of environmental contamination and sites of potential environmental significance. Data gathered during the current regulatory database search is compiled by EDR into one regulatory database report. Location information for listed sites is designated using geocoded information provided by federal, state, or local agencies and commonly used mapping databases with the exception of "Orphan" sites. Due to poor or inadequate address information, Orphan sites are identified but not geocoded/mapped by EDR, rather, information is provided based upon vicinity zip codes, city name, and state. The number of listed sites identified within the approximate minimum search distance from the federal and state environmental records database listings specified in ASTM Standard E1527-13 is summarized in Section 5.1, along with the total number of Orphan sites. A copy of the regulatory database report is included in Appendix C of this report.

The subject property was identified in the regulatory database report as follows: HAZNET (4), RGA LUST (2), SAN MATEO CO. BI (2), RCRA-SQG, LUST, HIST CORTESE, SWEEPS UST, FINDS, ECHO, EDR HIST AUTO. See Section 5.1 for additional discussion.

In determining if a listed site is a potential environmental concern to the subject property, AEI generally applies the following criteria to classify the site as lower potential environmental concern: 1) the site only holds an operating permit (which does not imply a release), 2) the site's distance from, and/or topographic position relative to, the subject property, and/or 3) the site has recently been granted "No Further Action" by the appropriate regulatory agency.

5.1 RECORDS SUMMARY

Database	Search Distance (Miles)	Subject Property Listed	Number of Listings within Search Distance	Recognized Environmental Condition or Other Environmental Consideration (Yes or No)
NPL	1	No	0	
DELISTED NPL	0.5	No	0	
SEMS (formerly CERCLIS)	0.5	No	1	No
SEMS-ARCHIVE (formerly CERCLIS NFRAP)	0.5	No	1	No
RCRA CORRACTS	1	No	1	No
RCRA-TSDF	0.5	No	2	No
RCRA LQG, SQG, CESQGs, VGN, NLR	SP/ADJ	**Yes**	3	Yes; the subject property and two other sites are further discussed below
US ENG CONTROLS	SP	No	0	
US INST CONTROLS	SP	No	0	
ERNS	SP	No	0	
STATE/TRIBAL HWS	1	No	44	No; one site is further discussed below

Database	Search Distance (Miles)	Subject Property Listed	Number of Listings within Search Distance	Recognized Environmental Condition or Other Environmental Consideration (Yes or No)
STATE/TRIBAL SWLF	0.5	No	0	
STATE/TRIBAL REGISTERED STORAGE TANKS	SP/ADJ	No	0	
STATE/TRIBAL LUST	0.5	**Yes**	72	Yes; the subject property and three other sites are further discussed below
STATE/TRIBAL EC and IC	SP	No	0	
STATE/TRIBAL VCP	0.5	No	4	No
STATE/TRIBAL BROWNFIELD	0.5	No	2	No
ORPHAN	N/A	No	5	No; none of the identified orphan sites are located in the immediate vicinity (500-feet) of the subject property, and/or based upon the distance and relative gradient, the sites are not expected to represent a significant environmental concern.
ADDITIONAL ENVIRONMENTAL RECORD SOURCES	SP/ADJ	**Yes**	25	Yes; the subject property and four other sites are further discussed below

Facility Name: CHUBS AUTO RPR, CHUB'S AUTO REPAIR, LATHROP PARK REDWOOD CITY LLC, FIVE STAR DEVELOPMENT
Database(s): HAZNET (4), RGA LUST (2), SAN MATEO CO. BI (2), RCRA-SQG, LUST, HIST CORTESE, SWEEPS UST, FINDS, ECHO, EDR HIST AUTO Address: 1180-1190 Main Street, 134 Maple Street Distance: Subject Property Direction: Subject Property
Comments: According to the EDR report, the subject property is listed as a closed LUST case under Chub's Auto Repair, which is further discussed in Section 4.1. Additionally, the subject property is listed as being occupied by various auto repair facilities from 1972 to 2006, which is further discussed in Section 4.1. Chub's Auto Repair and Lathrop Park Redwood City LLC are listed as producing hazardous wastes, which is further discussed in Section 4.7. Five Star Development is listed under 134 Maple Street as an inactive facility for generating <27 gallons per year of hazardous wastes and having a UST, which is further discussed in Section 4.1.

Facility Name: J&JS AUTO, LS TRUCKING, ROTARY PERFORMANCE MOTORS
Database(s): SAN MATEO CO. BI, EDR HIST AUTO Address: 112-150 Elm Street Distance: Adjacent (0.016 mile) Direction: Southeast (hydrologically cross-gradient)

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Comments: According to the EDR report, this site is listed as an auto repair shop from 1991 to 1998 and as inactive facility for generating hazardous wastes. Based on the lack of a documented release, groundwater gradient and relative distance, the review of regulatory files was not deemed necessary and therefore this listing is not expected to represent a significant environmental concern at this time.

Facility Name: COOKS AUTO BODY & PAINT SHOP, COOKS COLLISION OF REDWOOD CITY, COOKS AUTO BODY

Database(s): EDR HIST AUTO, SAN MATEO CO. BI, RCRA-SQG (2), ENVIROSTOR, LUST, FINDS, ECHO
Address: 1104 Main Street
Distance: Adjacent (0.027 mile)
Direction: Northeast (hydrologically cross-gradient)

Comments: According to the EDR report, this site is listed as a closed LUST case. AEI reviewed information on file on the GeoTracker database.

Cook's Auto Body has leased the site since 1979 for a vehicle repair operation. The site had previously been occupied by another auto body facility since 1969. A concrete dispenser island 18 feet in length by 3 feet in width (east-west orientation) is located approximately 13 feet north of the central north side of the building structure. Based on recorded observations of the product and vent piping removed beneath the northern portion of the site, it is evident that at least three USTs were once present at the property prior to Cook's Auto Body's initial occupancy in 1979. In February 2002, EnviroVision, Inc. drilled exploratory borings SB-1, SB-2 and SB-3 to a depth of 15 feet to assess the potential impact to soil and groundwater from reported fuel dispensing activities at the site. Golden Gate Tank Removal Incorporated (GGTR) excavated the soil surrounding the GPR anomalies to determine if abandoned USTs were present and collected soil sample PL[2'] beneath Product Line 1 because residual product was observed in the line. No USTs were encountered and Sample PL[2 '] contained low concentrations of hydrocarbons. The excavations were backfilled with the excavated soil. GGTR removed the abandoned product and vent lines and collected soil confirmation samples beneath the product piping. Low to moderate hydrocarbon concentrations were reported in the soil and groundwater samples collected from the investigation (up to 110 mg/kg TPHg; 709 mg/kg TPHd; 1,490 mg/kg TPHmo; 0.172 mg/kg benzene and 800 ug/L TPHg; 395 ug/L benzene; and 42 ug/L MTBE). However, elevated metal concentrations were reported in near surface soil samples (up to 1, 140 mg/kg lead and 1,260 mg/kg zinc). In 2012, the San Mateo County Groundwater Protection Program (GPP) concluded that the on-site hydrocarbon conditions satisfied the low risk criteria defined by the San Francisco Bay Region's RWQCB's standards. No remedial activities were required or performed to address the hydrocarbon concentrations reported in soil and groundwater. GPP staff closed the case with regards to the hydrocarbons and referred the metals contamination to DTSC.

The site is listed as an open "inactive - action required as of 1/31/2013" in the EnviroStor database. No additional sampling information was on file on EnviroStor. According to site maps from the SMCEHD's closure letter, the contamination plume is approximately 200 feet northeast of the subject property. Based on the direction of groundwater flow and the relative distance, this site is not expected to represent a significant environmental concern at this time.

Facility Name: B P S BAKER GRAPHICS REDWOOD CITY

Database(s): RCRA-SQG, FINDS, ECHO, SAN MATEO CO. BI
Address: 1201 Main Street
Distance: Adjacent (0.03 mile)
Direction: East (hydrologically cross-gradient)

Comments: According to the EDR report, this site is listed as a small quantity generator of hazardous wastes in 1992 with no violations found. The facility was also listed as generating and recycling waste oil/solvent and storing hazardous materials. The site is also registered under the Facility Index System/ Facility Registry System and the Enforcement and Compliance History Online database, with no environmental concerns noted. Based on the lack of a documented release, groundwater gradient and relative distance, the review of regulatory files was not deemed necessary and therefore this listing is not expected to represent a significant environmental concern at this time.

Facility Name: TOWNE FORD, HUDSON PROPERTY, AUTO ELECTRIC & CARBURETOR CO
Database(s): SAN MATEO CO BI., LUST, EDR HIST AUTO Address: 135 Maple Street Distance: Adjacent (0.045 mile) Direction: Northwest (hydrologically cross-gradient)
Comments: According to the EDR report, this site is listed as a closed LUST case. AEI reviewed information on file with the SMCEHD and on the GeoTracker database. Historically, this site has been used as a carburetor and auto repair shop. In March 1997, soil and groundwater sampling took place in four areas of concern: the grease trap/sewer connection (sump in the floor of the back room formerly used for carburetor cleaning; the hydraulic hoist in the south shop area; the dyno-pit outside the north shop area; and the waste oil and other automotive fluids storage area outside and beside the south end of the building. Soil and groundwater investigations revealed contaminant plumes at the property. Additionally, 2,108 cubic yards of contaminated soil were removed from the property from 2000 to 2001. The "after cleanup" concentrations listed in the closure letter were noted as: 22 ppm TPHg, 790 ppm TPHd, 0.045 ppm benzene, 0.10 ppm toluene and ethylbenzene, 0.11 ppm xylenes, 0.023 ppm PCE, 0.051 ppm TCE, 0.012 ppm cis-12-DCE, and 0.12 ppm chlorobenzene in soil and 97 ppb TPHd, 3.5 ppb MTBE, 1.4 ppb toluene, 0.6 ppb ethylbenzene, 5.4 ppb PCE, 250 ppb TCE, 93 ppb cis-12-DCE, and 1.6 ppb chlorobenzene in groundwater. In 2002, the SMCEHD granted the case closure with no further action required. Based on the direction of groundwater flow, the regulatory status, and the time elapsed since closure was achieved, this listing is not expected to represent a significant environmental concern at this time.

Facility Name: TOWNE FORD SALES
Database(s): SAN MATEO CO. BI, HIST CORTESE, LUST, HIST UST, NOTIFY 65 Address: 1601 El Camino Real Distance: 0.107 mile Direction: South (hydrologically up-gradient)
Comments: According to the EDR report, this site is listed as a closed LUST case. AEI reviewed information on file with the SMCEHD and on the GeoTracker database. In 1986 a waste oil UST was removed from the property. A pipeline also ran from the UST to inside the building. The responsible party stated that the pipeline had apparently leaked and the only way to clean up contamination was to remove the pipeline in addition to a sump underneath it. Contamination was detected and therefore soil and groundwater sampling was conducted through 1994. The "after cleanup" concentrations noted in the closure letter are 24 ppm TPHg in soil and 33 ppb TCE in groundwater. All other constituents were non-detect. In 1995 the SMCEHD granted the case closure with no further action required. Based on the relative distance, the regulatory status, and the time elapsed since closure was achieved, this listing is not expected to represent a significant environmental concern at this time.

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5.2 VAPOR MIGRATION

AEI reviewed reasonably ascertainable information for the subject and nearby properties, including a regulatory database, files for nearby release sites, and/or historical documentation, to determine if potential vapor-phase migration concerns may be present which could impact the subject property.

Based on a review of available resources as documented in this report, AEI did not identify significant on-site concerns and/or regulated listings from nearby sites which suggest that a vapor-phase migration concern currently exists at the subject property.

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6.0 INTERVIEWS AND USER PROVIDED INFORMATION

6.1 INTERVIEWS

Pursuant to ASTM E1527-13, the following interviews were performed during this assessment in order to obtain information indicating RECs in connection with the subject property.

6.1.1 INTERVIEW WITH OWNER

The subject property owner, Mr. Louis Deziel, was contacted in person on July 26, 2017. Mr. Louis Deziel has been associated with the subject property since 2010. Mr. Louis Deziel stated that the current foundation on the northern portion of the subject property was part of a redevelopment project in 2011 that was never completed. Mr. Louis Deziel was asked if he was aware of any of the following:

	Yes	No
Any knowledge of USTs, clarifiers or oil/water separators, sumps, or other subsurface features.		✔
Any knowledge of previous environmental investigations conducted on site.	✔	
Any knowledge of current or past industrial operations and/or other operations which would involve the use of hazardous substances and/or petroleum products.	✔	
Any known plans for site redevelopment or change in site use.	✔	
Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property.		✔
Any pending, threatened or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property.		✔
Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.		✔
Any incidents of flooding, leaks, or other water intrusion, and/or complaints related to indoor air quality.		✔
Comments: **Mr. Deziel stated that there were former USTs removed from the subject property related to a former auto repair shop. Additionally, the subject property is being sold to a developer to construct a mixed use project.**		

6.1.2 INTERVIEW WITH KEY SITE MANAGER

The property owner, Mr. Louis Deziel, is also the key site manager. Refer to Section 6.1.1.

6.1.3 PAST OWNERS, OPERATORS, AND OCCUPANTS

AEI did not attempt to interview past owners, operators, and occupants of the subject property because information from these sources would likely be duplicative of information already obtained from other sources.

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6.1.4 Interview with Others

Information obtained during interviews with local government officials is incorporated into the appropriate segments of this section.

6.2 User Provided Information

User provided information is intended to help identify the possibility of RECs in connection with the subject property. According to ASTM E1527-13 and the EPA Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), certain items should be researched by the prospective landowner or grantee, and the results of such inquiries may be provided to the Environmental Professional. The responsibility for qualifying for LLPs by conducting the inquiries ultimately rests with the User, and providing the information to the Environmental Professional would be prudent if such information is available.

The User did not complete the ASTM User Questionnaire or provide the User information to AEI. AEI assumes that qualification for the LLPs is being established by the User in documentation outside of this assessment.

6.2.1 Environmental Liens

In accordance with our approved scope of services, AEI contracted AFX Research, LLC (AFX) to perform an environmental lien search for the subject property.

According to AFX, environmental liens were not identified during the review of historical ownership documentation. Copies of the AFX reports are provided in the appendices.

6.3 Previous Reports and Other Provided Documentation

Documentation was provided to AEI by Premia Capital during this assessment. A summary of this information follows:

NESHAP Asbestos Survey and Lead-Based Paint Inspection (134 Maple Street & 1180 Main Street, Redwood City, California 94063), prepared by AEI Consultants (November 11, 2010)

AEI Consultants (AEI) was retained by Lathrop PARC Redwood City, LLC (Client) to conduct a NESHAP Asbestos Survey and Lead-based Paint Inspection for the structures located at 134 Maple Street and 1180 Main Street in Redwood City, California. The survey was performed on November 5, 2010. The purpose of the survey was to locate, identify, sample and assess the condition of interior and exterior building materials suspected of containing greater than one percent (1%) asbestos and to perform a lead paint inspection. The survey included the assessment and characterization of suspect friable and non-friable ACM and lead content in painted surfaces.

The subject property at 134 Maple Street is located on the east side of Maple Street in a mixed residential and commercial area of Redwood City, California. The property is improved with a concrete warehouse/retail facility that was vacant at the time of this investigation.

The subject property at 1180 Main Street is located on the south side of Main Street in a mixed residential and commercial area of Redwood City, California. The property is improved with two

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structures: a stand-alone office building at the southeast corner of the property, as well as a warehouse/retail facility along the north side of the property; both properties were occupied at the time of this investigation. The warehouse/retail facility is the only structure involved under the scope of this survey.

A total of thirty-two (32) samples of suspect ACM were collected from the subject property buildings during the survey. RACM was detected in the materials collected from 134 Maple Street in the form of tan vinyl floor sheet in the hallway and bathroom. No asbestos-containing materials were detected from the sampling conducted at 1180 Main Street.

A total of ninety-seven (97) samples of suspect paint were taken from the painted surfaces of components throughout the subject property buildings. None of the painted surfaces sampled registered above the action level of ≥1.0 mg/cm² (0.5% wt and 5,000 ppm).

Phase I Environmental Site Assessment (134 Maple Street, Redwood City, California), prepared by Dominion Due Diligence Group (D3G) (January 28, 2011)

This assessment included three parcels which were developed with a vacant commercial building (formerly Marcelli Lighting) which was constructed around 1974, one auto repair building (formerly Chub's Auto Repair) constructed around 1955, and one vacant office building constructed between 1950 and 1962. In addition, the property was noted to be developed with Redwood Creek (a concrete-lined culvert) and an exterior storage yard. There were plans to demolish two of the buildings in order to build a new medical facility.

D3G noted the former generations of USTs and hydraulic lifts at the subject property and stated that they are not an environmental concern to the subject property. Based on the condition of the removed USTs, the analytical data, remediation of the soils from the UST tank pit, and regulatory status, D3G believes that a vapor encroachment condition does not exist or is not likely to exist at the subject property from the previous USTs and lifts.

D3G also cited the former ACM and LBP investigations conducted by AEI in 2010, which are further discussed below.

In conclusion, D3G identified HRECs for the former USTs and lifts and associated investigations and "environmental concerns" for likely ACM/LBP materials in the 1180 Main Street building.

Soil Sampling Services (Lathrop Parc, Redwood City, California), prepared by TRC (September 23, 2011)

TRC evaluated the current soil conditions at the site for potential reuse or landfill disposal. It was TRC's understanding that approximately 4,500 Cubic Yards of soil will be excavated during construction activities at the site. As requested, to evaluate the quality, TRC will collect 5 four-point composite samples from the planned excavation area. A four-point composite sample consists of four individual, discrete soil samples that will be mixed or composited by the selected laboratory for one chemical analysis. Based on the site history, TRC recommends testing the five soil composite soil samples for total petroleum hydrocarbons in the diesel and motor oil range (EPA Method 8015B), 17 California Assessment Manual (CAM) metals (EPA Test Method 6010/7000); (EPA Test Method 8270), and organochlorine pesticides (EPA Test Method 8081). Additionally, prior to compositing, 5 discrete samples (one from each composite batch) will be

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selected and analyzed for volatile organic compounds (VOCs) including gasoline range petroleum hydrocarbons (TPHg) (EPA Test Method 8015); benzene, toluene, ethylbenzene, and xylenes (BTEX) (EPA Test Method 8260).

Soil Sampling Services (Lathrop Parc, Redwood City, California), prepared by TRC (October 11, 2011)

The analyses performed by TRC did not detect pesticides, VOC's, including gasoline-range hydrocarbons, BTEX nor MTBE in any of the samples analyzed. The metal concentrations detected appear typical of naturally occurring background concentrations and are below Total Threshold Level Concentrations (TTLC), except for chromium, nickel and lead. Of these only lead in the near-surface sample with a detected concentration of 54 mg/kg appeared anomalous and above the hazardous waste TTLC level of 50 mg/kg.

The detected chromium concentrations in samples collected at a depth of 1.5, 3.0, 4.5 and 6.0 feet, although above the hazardous waste TTLC level of 50 mg/kg, appear consistent with naturally occurring levels for soils known from the area. Nickel concentrations are also elevated, but exceeded the hazardous waste TTLC concentration only in one soil sample.

As with chromium, the detected nickel levels appear consistent with natural occurring background concentrations. Elevated chromium and nickel concentrations are typical of ultramafic bedrock, naturally occurring and common in the area of the investigation. However, since the concentrations were above the hazardous waste levels, additional solubility tests (STLC) were completed on all soil samples with TTLC exceedances. Results of the solubility tests demonstrated that none of the samples exceeded the hazardous STLC waste levels and therefore the soil can be safely disposed off as non-hazardous waste.

Furthermore, laboratory analysis detected motor oil, diesel and low-level pesticide concentrations in samples collected from the upper 4.5 feet. But only the near-surface sample produced motor oil concentrations that exceeded the ESL established by the State Regional Water Quality Control Board for residential site use and beneficial use of groundwater.

Based on the chemical analytical data, TRC stated that the soil appears non-hazardous and should be acceptable for offsite disposal at any Class II landfill. Furthermore, if selective excavation and disposal is considered, based on the analytical results, soil below a depth of 1.0 ft, did not exceed established ESLs for residential site use, and therefore this soil does not appear to pose a risk to human health or the environment. Consequently, the soil below 1.0 foot can be considered for residential reuse, or alternatively, for appropriate disposal at a Class III landfill. The near-surface soil (0-1.0 ft), due to the detected above ESL motor oil concentrations is not recommended for re-use and should be disposed off at an appropriate Class II landfill.

Soil Sampling Services (Lathrop Parc, Redwood City, California), prepared by TRC (December 16, 2011)

On October 25, 2011, TRC collected soil samples for laboratory evaluation of the in-place soil at the Area II of the site. The top 1-foot of soil in this area is being considered for potential reuse or landfill disposal. TRC stated that approximately 200 Cubic Yards of soil will be excavated during construction activities at the site.

Analysis on the one composite soil sample collected from Area II detected Motor Oil Range Organics ranging from 59 to 1100 mg/Kg. Total Threshold Level Concentrations (TTLC) for lead was detected from 9.3 to 50 mg/Kg. The lead concentration of 50 mg/Kg detect in one sample was equal to the minimum hazardous waste TTLC level.

Due to the exceedances of lead, the soil appears hazardous and a Class II landfill will likely require STLC analysis prior to acceptance. Because the concentrations did not exceed ESLs or CHHSLs the top 1.0- foot of soil can be considered for on-site residential or commercial reuse.

Additional Soil Sampling Services (Lathrop Parc Redwood City, California), prepared by TRC (December 21, 2011)

On September 27, 2011, TRC collected representative soil samples at the northern portion of the site where the foundation elements of the proposed building were to be excavated. Subsequently the site was divided into three soil sampling areas. Area I was at the northernmost portion, with Area II in the center and Area II on the southern portion of the site. On October 25, 2011, TRC collected one four point composite sample from the top foot of Area II. On December 2, 2011, TRC collected one four point composite sample from the top foot of the Area III.

Soil Sampling Services (Lathrop Parc, Redwood City, California), prepared by TRC (December 23, 2011)

On December 2, 2011, TRC collected soil samples for laboratory evaluation of the in-place soil at the Section 3 Area of the site. The top 1-foot of soil in this area is being considered for potential reuse or landfill disposal.

The analyses performed did not detect pesticides, VOC's, including gasoline-range hydrocarbons, BTEX nor MTBE in the composite sample analyzed. Detected diesel and motor oil concentrations (190 mg/kg and 670 mg/kg respectively) exceeded the concentrations of the ESL established by the State Regional Water Quality Control Board for residential site use and beneficial use of groundwater. Therefore this soil is not suitable for residential on-site use unless it is capped by low permeable pavement (roadways, vehicle parking areas) reducing the risk of direct exposure. However in areas of surface exposure (landscaped areas) this soil needs to be removed and appropriately disposed off site.

The metal concentrations detected appear typical of naturally occurring background concentrations and are below Total Threshold Level Concentrations (TTLC), except for chromium and lead. The chromium and lead concentrations were reported at 130 mg/kg and 52 mg/kg respectively, which are above the hazardous waste TTLC level of 50 mg/kg for both. However chromium concentration appears consistent with naturally occurring levels for soils from the area. Subsequent STLC analysis detected a soluble lead concentration of 1.4 mg/L which is significantly below the hazardous waste level and therefore appears acceptable at either a Class II or possibly, a Class III landfill.

Based on field observations during sampling, it appears that the soil of Section 3 is similar to the Section 2 soil. Also site history and hence, the detected anomalous compounds and concentrations, are similar between the two site development sections and no additional soil quality characterization appears required.

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Copies of the reports are included in the appendices.

Note: If the above report(s) were not prepared by AEI, the information obtained was not verified for accuracy and a critique of the report(s) is beyond the scope of this assessment.

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7.0 SITE RECONNAISSANCE

Site Reconnaissance Date	July 26, 2017
AEI Site Assessor(s)	Megan Nolet
Property Escort(s)/Relationship(s) to Property	Mr. Louis Deziel, Property Owner
Units/Areas Observed	Representative portions of the interiors of the building as well as the vacant land
Area(s) not accessed and reason(s)	Due to the size of the subject property, AEI performed a site inspection of the property utilizing a field technique of traversing the site in an attempt to provide an overlapping field of view. Due to the size of the property and the vegetation present on site, isolated areas of the site may have not been accessible for direct observation during AEI's inspection. Based on the vacant nature, this limitation is not expected to significantly alter the Findings of this assessment.
Weather	75° Fahrenheit and sunny

7.1 SUBJECT PROPERTY RECONNAISSANCE FINDINGS

Yes	No	Observation
	✔	Regulated Hazardous Substances/Wastes and/or Petroleum Products in Connection with Property Use
	✔	Aboveground/Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs/USTs)
	✔	Hazardous Substance and Petroleum Product Containers Not in Connection with Property Use
	✔	Unidentified Substance Containers
	✔	Electrical or Mechanical Equipment Likely to Contain Fluids
	✔	Interior Stains or Corrosion
	✔	Strong, Pungent, or Noxious Odors
	✔	Pools of Liquid
✔		Drains, Sumps, and Clarifiers
	✔	Pits, Ponds, and Lagoons
	✔	Stained Soil or Pavement
	✔	Stressed Vegetation
	✔	Solid Waste Disposal or Evidence of Fill Materials
	✔	Waste Water Discharges
	✔	Wells
	✔	Septic Systems
	✔	Biomedical Wastes
✔		Other

The subject property is currently unoccupied.

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Drains, Sumps, and Clarifiers

One covered storm drain was observed in the vegetated area of the subject property. AEI did not observe evidence of hazardous substances or petroleum products in the vicinity of the drain. Based on the use of the drain solely for storm water runoff, the presence of the drain is not expected to represent a significant environmental concern.

Other

Approximately 20-gallons of maintenance products (paints, paint related products, WD-40) were observed in the building. The containers were properly labeled and stored. No signs of spills or leaks were observed in conjunction with the containers. No significant staining or evidence of release of any of the materials was observed during the site reconnaissance. Based on the relatively small quantities observed and the lack of evidence of the mismanagement of these materials, the use of these materials on site is not expected to represent a significant environmental concern.

7.2 Adjacent Property Reconnaissance Findings

Yes	No	Observation
	✔	Hazardous Substances/Wastes and/or Petroleum Products in Connection with Property Use
	✔	Aboveground/Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs/USTs)
	✔	Hazardous Substance and Petroleum Product Containers Not in Connection with Property Use
	✔	Unidentified Substance Containers
✔		Electrical or Mechanical Equipment Likely to Contain Fluids
	✔	Strong, Pungent, or Noxious Odors
	✔	Pools of Liquid
	✔	Drains, Sumps, and Clarifiers
	✔	Pits, Ponds, and Lagoons
	✔	Stained Soil or Pavement
	✔	Stressed Vegetation
	✔	Solid Waste Disposal or Evidence of Fill Materials
	✔	Waste Water Discharges
	✔	Wells
	✔	Septic Systems
✔		Other

Electrical or Mechanical Equipment Likely to Contain Fluids

Toxic PCBs were commonly used historically in electrical equipment such as transformers, fluorescent lamp ballasts, and capacitors. According to United States EPA regulation 40 CFR, Part 761, there are three categories for classifying such equipment: <50 ppm of PCBs is considered "Non-PCB"; between 50 and 500 ppm is considered "PCB-Contaminated"; and >500 ppm is considered "PCB-Containing". Pursuant to 15 U.S.C. 2605(e)(2)(A), the manufacture, process, or distribution in commerce or use of any polychlorinated biphenyl in any manner other than in a totally enclosed manner was prohibited after January 1, 1977.

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Transformers

The management of potential PCB-containing transformers is the responsibility of the local utility or the transformer owner. Actual material samples need to be collected to determine if transformers are PCB-containing.

Multiple pole-mounted transformers were observed on the adjacent sites during the site reconnaissance. No spills, staining, or leaks were observed on or around the transformers. Based on the good condition of the equipment, the transformers are not expected to represent a significant environmental concern.

OTHER

The railroad tracks located adjacent to the northeast of the subject property are surrounded by concrete and gravel. Based on the presence of gravel, the use of oils, arsenic, and herbicides associated with weed or pest control is expected to be minimal, and therefore does not represent a significant environmental concern.

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8.0 OTHER ENVIRONMENTAL CONSIDERATIONS

8.1 ASBESTOS-CONTAINING BUILDING MATERIALS

Asbestos is the name for a group of naturally occurring silicate minerals that are considered to be "fibrous" and through processing can be separated into smaller and smaller fibers. The fibers are strong, durable, chemical resistant, and resistant to heat and fire. They are also long, thin and flexible, so they can even be woven into cloth. Because of these qualities, asbestos was considered an ideal product and has been used in thousands of consumer, industrial, maritime, automotive, scientific, and building products.

At the federal level, asbestos is primarily regulated by the United States EPA primarily through the EPA's NESHAP (Standard 40 CFR Chapter 61, Subpart M), the OSHA through the General Industry Standard, and the Construction Industry Standard (29 CFR 1926.1101 and 29 CFR 1910.1001). Many states have regulations in place for the inspection, management, and remediation of asbestos including company and individual licensing requirements for all activities relating to asbestos. Under both federal and state regulations building owners and employers may be required to perform certain activities related to the in-place management of asbestos, and prior to renovations or demolition activities (i.e. asbestos inspections or remediation) that may disturb building materials suspected of containing asbestos.

The information below is for general informational purposes only and does not constitute an asbestos survey. In addition, the information is not intended to comply with federal, state, or local regulations in regards to ACM.

Due to the age of the subject property building, there is a potential that ACMs are present. A limited list of typical suspect ACMs is included in the following table:

Material Type	Location
Plaster (Acoustical and Smooth)	Walls and Ceilings
Ceiling Tile	Ceiling Systems
Thermal Systems Insulations, Packings, Gaskets	Heating Systems, Cooling Systems, Domestic and Heating and Cooling Piping, Ductwork, Other Equipment
Floor Tile and Associated Mastics, Flooring Felts, Papers (under hardwood/other)	Floors
Vinyl Sheet Flooring and Adhesives	Floors
Cove Base and Associated Mastics	Walls
Ceramic Tile Adhesives and Grouts	Walls, Floors, and Ceilings
All Adhesives	Mirrors, Wall Coverings, Construction, etc.
Grout and Caulking	Windows and Doors
Gypsum Board, Tape, and Joint Compound	Wall and Ceiling Systems
Insulation Materials	Walls, Ceilings, Attic Spaces
Roofing Materials (Felts, Rolled, Shingle, Flashings, Adhesives, Tar, Insulations)	Roof and Parapet Wall Systems
Brick and Block, Mortars	Walls

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According to the Mr. Deziel, demolition of the subject property building is planned for the near future. Regardless of building construction date, the EPA's NESHAP requires that a thorough asbestos survey be performed prior to demolition or renovation activities that may disturb ACMs. It should be noted that a NESHAP survey was previously performed, discussed in Section 6.3. This requirement may be enforced by federal, state and local regulatory agencies, and specifies that all suspect ACMs be sampled to determine the presence or absence of asbestos prior to any renovation or demolition activities which may disturb them to prevent potential exposure to workers, building occupants, and the environment. Similarly, OSHA regulations require that specific work practices be implemented when handling construction materials and debris that contain asbestos and/or lead-containing materials.

8.2 LEAD-BASED PAINT

LBP is defined as any paint, varnish, stain, or other applied coating that has ≥1 mg/cm² (5,000 µg/g or 5,000 ppm) or more of lead by federal guidelines; state and local definitions may differ from the federal definitions in amounts ranging from 0.5 mg/cm² to 2.0 mg/cm². Section 1017 of the Housing and Urban Development (HUD) Guidelines, Residential Lead-Based Paint Hazard Reduction Act of 1992, otherwise known as "Title X", defines a LBP hazard as "any condition that causes exposure to lead that would result in adverse human health effects" resulting from lead-contaminated dust, bare, lead-contaminated soil, and/or lead-contaminated paint that is deteriorated or present on accessible, friction, or impact surfaces. Therefore, under Title X, intact LBP on most walls and ceilings would not be considered a "hazard", although the paint should be maintained and its condition monitored to ensure that it does not deteriorate and become a hazard. Additionally, Section 1018 of this law directed HUD and EPA to require the disclosure of known information on LBP and LBP hazards before the sale or lease of most housing built before 1978. Most private housing, public housing, or federally owned or subsidized housing is affected by this rule.

LCP is defined as any paint with any detectable amount of lead present in it. It is important to note that LCP may create a lead hazard when being removed. The condition of these materials must be monitored when they are being disturbed. In the event LCP is subject to abrading, sanding, torching, and/or cutting during demolition or renovation activities, there may be regulatory issues that must be addressed.

The information below is for general informational purposes only and does not constitute a lead hazard evaluation. In addition, the information is not intended to comply with federal, state, or local regulations in regards to LCP.

In buildings constructed after 1978, it is unlikely that LBP is present. Structures built prior to 1978 and especially prior to the 1960s should be expected to contain LBP.

Due to the age of the subject property building, there is a potential that LBP is present. AEI understands that renovation and/or demolition activities of the subject property buildings are planned. It should be noted that lead testing was previously performed, and discussed in Section 6.3. AEI recommends that the property owner consult with a certified Lead Risk Assessor to determine options for control of possible LBP hazards. Stringent local and State regulations may apply to LBP in association with building demolition/renovations and worker/ occupant protection. It should be noted that construction activities that disturb materials or

paints containing any amount of lead may be subject to certain requirements of the OSHA lead standard contained in 29 CFR 1910.1025 and 1926.62.

8.3 Radon

Radon is a naturally-occurring, odorless, and invisible gas. Natural radon levels vary and are closely related to geologic formations. Radon may enter buildings through basement sumps or other openings.

The United States EPA has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three radon zones, with Zone 1 being those areas with the average predicted indoor radon concentration in residential dwellings exceeding the EPA Action Limit of 4.0 pCi/L. It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the EPA recommends site specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures.

Radon sampling was not requested as part of this assessment. According to the California Department of Health Services Radon Database, 19 tests were conducted for radon levels in the subject property zip code (94063) in 2010. Only two of the tests exceeded the action level of 4.0 pCi/L set forth by the US EPA. Based on the commercial nature of the property and the lack of subsurface areas, radon does not appear to be a concern. However, radon sampling would be required to determine site-specific radon levels.

8.4 Drinking Water Sources and Lead in Drinking Water

The City of Redwood City supplies potable water to the subject property. The most recent water quality report states that lead levels in the area's water supply were well within standards established by the US EPA and the State of California.

8.5 Mold/Indoor Air Quality Issues

Molds are simple, microscopic organisms, which can often be seen in the form of discoloration, frequently green, gray, white, brown, or black. When excessive moisture or water accumulates indoors, mold growth will often occur, particularly if the moisture problem remains undiscovered or is not addressed. As such, interior areas of buildings characterized by poor ventilation and high humidity are the most common locations of mold growth. Building materials including drywall, wallpaper, baseboards, wood framing, insulation, and carpeting often play host to such growth. Mold spores primarily cause health problems through the inhalation of mold spores or the toxins they emit when they are present in large numbers. This can occur primarily when there is active mold growth within places where people live or work.

Mold, if present, may or may not visually manifest itself. Neither the individual completing this inspection, nor AEI has any liability for the identification of mold-related concerns except as defined in applicable industry standards. In short, this Phase I ESA should not be construed as a mold survey or inspection.

DRAFT

AEI observed interior areas of the subject property building in order to identify the potential presence of mold. AEI did not note obvious visual or olfactory indications of the presence of mold, nor did AEI observe obvious indications of significant water damage. As such, no bulk sampling of suspect surfaces was conducted as part of this assessment and no additional action with respect to suspect mold appears to be warranted at this time.

This activity was not designed to discover all areas which may be affected by mold growth on the subject property. Rather, it is intended to give the client an indication if significant (based on observed areas) mold growth is present at the subject property. Additional areas of mold not observed as part of this limited assessment, possibly in pipe chases, HVAC systems, and behind enclosed walls and ceilings, may be present on the subject property.

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9.0 SIGNATURE OF ENVIRONMENTAL PROFESSIONALS

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of 40 CFR Part 312.

I have the specific qualifications based on education, training, and experience to assess a property of the nature, history and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Prepared By:
DRAFT
Megan Nolet
Project Manager

Reviewed By:
DRAFT
Steven Yekich
Senior Author

DRAFT

10.0 REFERENCES

Item	Date(s)	Source
Soils Information	July 2017	USDA Web Soil Survey http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx
Topographic Map	2015	USGS
Depth to Groundwater Information	July 2017	Regional Water Quality Control Board (RWQCB) GeoTracker website http://geotracker.waterboards.ca.gov/
Aerial Photographs	1943-2012 (not inclusive)	EDR
Sanborn Map Report/Search	1884-1968 (not inclusive)	EDR
City Directories	1922-2016 (not inclusive)	Redwood City Library
Environmental Health Department/State Environmental Agency	July 12, 2017	San Mateo Environmental Health Department (SMCEHD)
Fire Department	July 12, 2017	Redwood City Fire Department (RCFD)
Building Department	July 26, 2017	Redwood City Building Department (RCBD)
Planning Department	July 26, 2017	Redwood City Planning Department (RCPD)
Assessor's Information and Parcel Map	July 26, 2017	San Mateo County assessor's office
Oil and Gas Wells/Pipelines	July 27, 2017	Department of Oil and Gas & Geothermal Resources (DOGGR) and NPMS Public Map Viewer https://www.npms.phmsa.dot.gov/PublicViewer/composite.jsf
Other Agencies Searched	July 2017	BAAQMD, DTSC HWTS, EnviroStor
Regulatory Database Report	July 2017	EDR
Interview with Owner	July 2017	Mr. Louis Deziel
Interview with Key Site Manager	July 2017	Mr. Louis Deziel
Lien Search	July 2017	AFX

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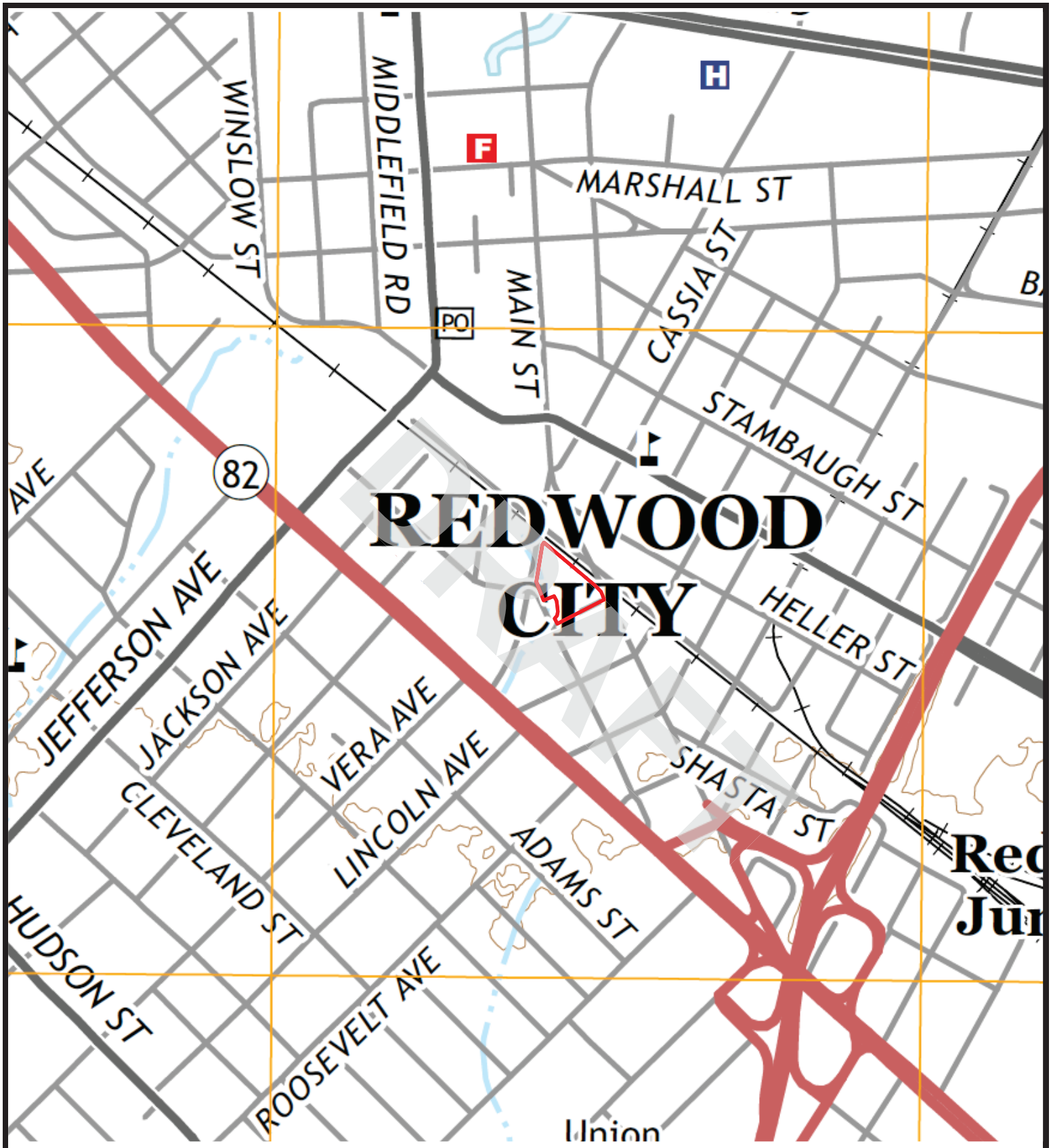
Item	Date(s)	Source
Previous Report(s)	November 22, 2010 January 28, 2011 September 23, 2011 October 11, 2011 December 16, 2011 December 21, 2011 December 23, 2011	*NESHAP Asbestos Survey and Lead-Based Paint Inspection (134 Maple Street & 1180 Main Street, Redwood City, California 94063)*, prepared by AEI Consultants *Phase I Environmental Site Assessment (134 Maple Street, Redwood City, California)*, prepared by Dominion Due Diligence Group (D3G) *Soil Sampling Services (Lathrop Parc, Redwood City, California)*, prepared by TRC *Soil Sampling Services (Lathrop Parc, Redwood City, California)*, prepared by TRC *Soil Sampling Services (Lathrop Parc, Redwood City, California)*, prepared by TRC *Additional Soil Sampling Services (Lathrop Parc Redwood City, California)*, prepared by TRC *Soil Sampling Services (Lathrop Parc, Redwood City, California)*, prepared by TRC
Radon Zone Information	2010	Department of Health Services (DHS) California Indoor Radon Levels
Water Quality Report	2016	City of Redwood City

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APPENDIX A

FIGURES

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Legend: Approximate Property Boundary

Source: USGS Topographic Map *Palo Alto, CA* (2015)

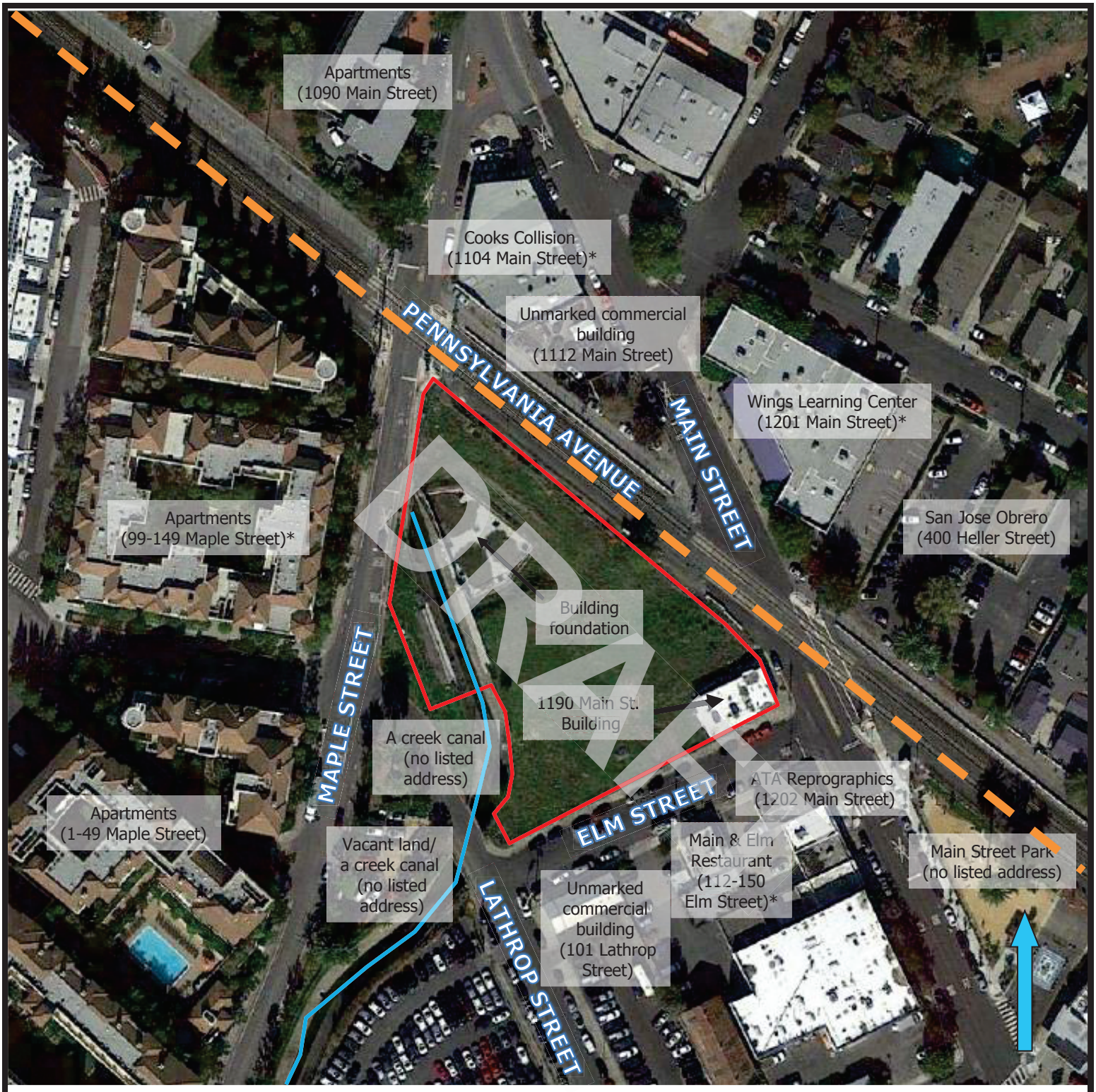
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Figure 1: TOPOGRAPHIC MAP

1180 and 1190 Main Street, Redwood City, California 94063

Project Number: 374905

AEI Consultants



Legend

Estimated Groundwater Flow Direction → Railroad Tracks/Spurs - - - - - -

Approximate Property Boundary ——— Creek ———

Listed in Environmental Database Report *

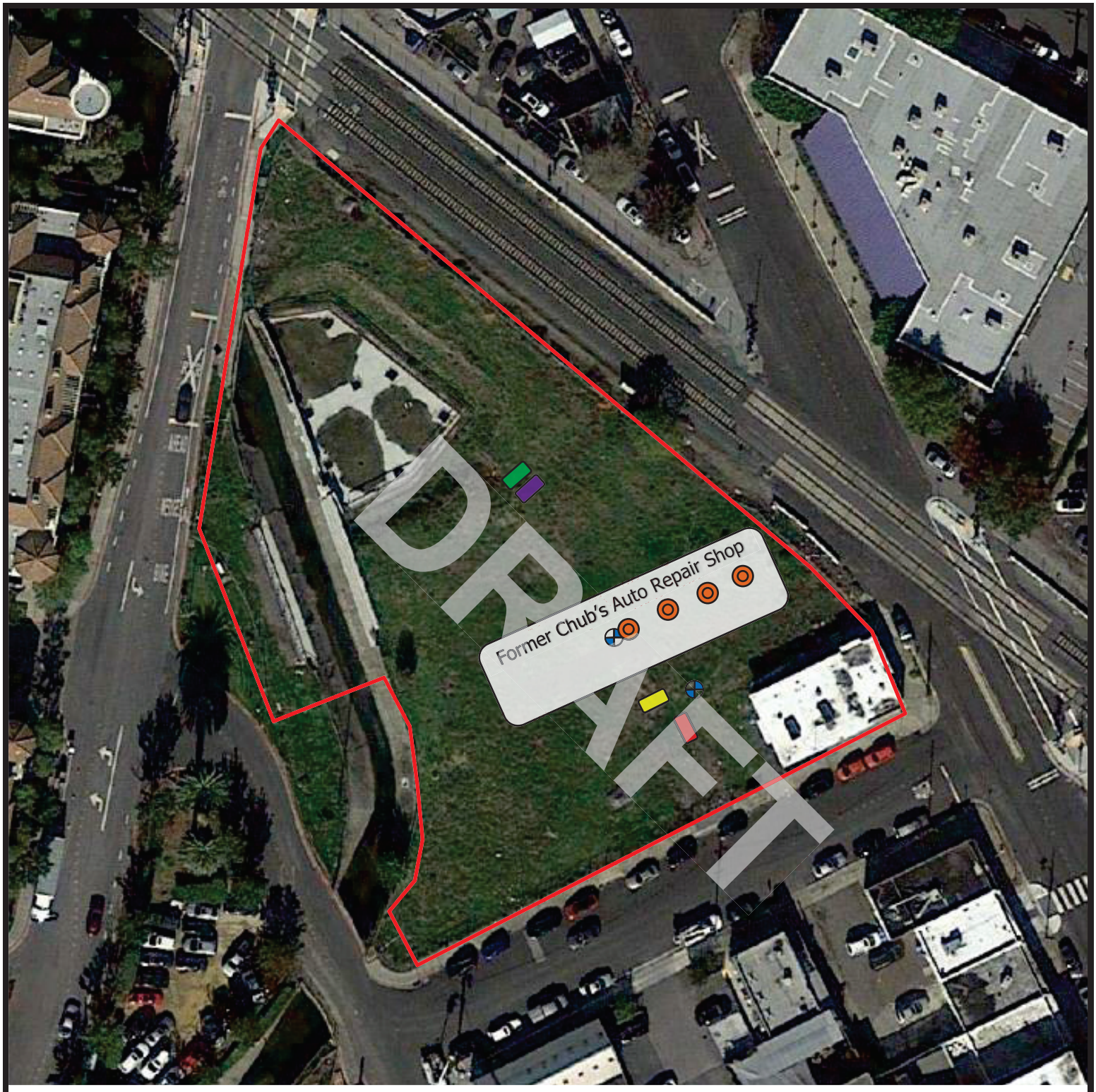
N

Figure 2: SITE MAP

1180 and 1190 Main Street, Redwood City, California 94063

Project Number: 374905

AEI Consultants



Legend

Former Waste Oil UST
Former Gasoline UST
Former Hydraulic Lifts
Former GWM Well
Approximate Property Boundary
Former Diesel UST
Former Gasoline UST

N

Figure 3: SITE PLAN

1180 and 1190 Main Street, Redwood City, California 94063
Project Number: 374905

AEI Consultants

APPENDIX B

PROPERTY PHOTOGRAPHS

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1. View of the northern portion of the vacant land



2. View of the southern portion of the vacant land



3. View of the northern portion of the vacant land



4. View of the building foundation

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5. View of the building foundation



6. View of the creek



7. IMG 5767



8. View of the southern portion of the vacant land

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9. View of the southern portion of the vacant land



10. View of the storm drain



11. View of the storm drain

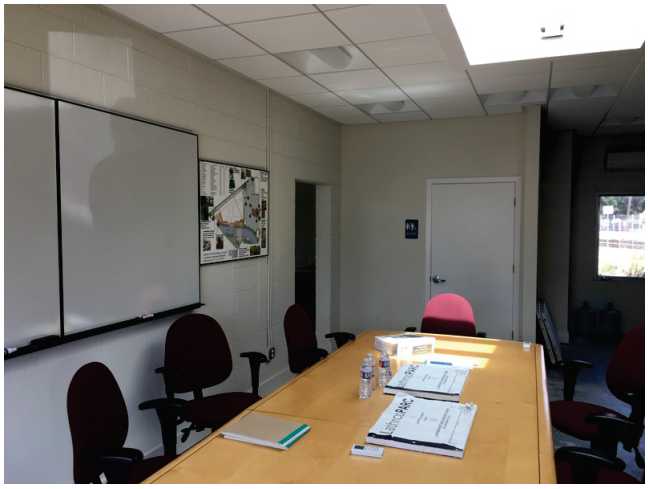


12. View of the vacant building

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13. View of the vacant building



14. View of the interior of the vacant building



15. View of the interior of the vacant building



16. View of the interior of the vacant building

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17. View of the interior of the vacant building



18. View of the interior of the vacant building



19. View of the interior of the vacant building



20. View of Pennsylvania Ave and railroad tracks followed by an eastern adjacent property

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21. View of Pennsylvania Ave and railroad tracks followed by an eastern adjacent property



22. View of Elm Street followed by a southeastern adjacent property



23. View of Elm Street followed by a southeastern adjacent property



24. View of Elm Street followed by a southeastern adjacent property

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25. View of Lathrop Street followed by a southwestern adjacent property



26. View of the northwestern adjacent properties

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APPENDIX C

REGULATORY DATABASE

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374905 PM
1180 and 1190 Main Street
Redwood City, CA 94063

Inquiry Number: 4991394.2s
July 13, 2017

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The EDR Radius Map™ Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Orphan Summary	473
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

GeoCheck - Not Requested

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

1180 AND 1190 MAIN STREET
REDWOOD CITY, CA 94063

COORDINATES

Latitude (North):	37.4818630 - 37° 28' 54.70''
Longitude (West):	122.2259140 - 122° 13' 33.29''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	568440.3
UTM Y (Meters):	4148406.0
Elevation:	13 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5640620 PALO ALTO, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140608
Source:	USDA

DRAFT

MAPPED SITES SUMMARY

Target Property Address:
1180 AND 1190 MAIN STREET
REDWOOD CITY, CA 94063

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	CHUBS AUTO RPR	1180 MAIN ST	HAZNET		TP
A2	CHUB'S AUTO REPAIR	1180 MAIN	RGA LUST		TP
A3	CHUB'S AUTO REPAIR	1180 MAIN ST	RGA LUST		TP
A4	CHUBS AUTO REPAIR	1180 MAIN	San Mateo Co. BI		TP
A5	CHUBS AUTO REPAIR	1180 MAIN ST	RCRA-SQG, LUST, SWEEPS UST, FINDS, ECHO, HAZNET,...		TP
A6	CHUBS AUTO REPAIR	1180 MAIN ST	EDR Hist Auto		TP
A7	CHUB'S AUTO REPAIR	1180 MAIN ST	HAZNET		TP
A8	LATHROP PARK REDWOOD	1190 MAIN ST	HAZNET		TP
A9	FIVE STAR DEVELOPMEN	134 MAPLE	San Mateo Co. BI	Higher	4, 0.001,
A10	J&JS AUTO	150 ELM	San Mateo Co. BI	Higher	86, 0.016, SSE
A11	LS TRUCKING	112 ELM	San Mateo Co. BI	Higher	86, 0.016, SSE
A12	ROTARY PERFORMANCE M	150 ELM ST A	EDR Hist Auto	Higher	89, 0.017, SE
B13	COOKS AUTO BODY & PA	1104 MAIN	EDR Hist Auto	Higher	141, 0.027, North
C14	ROOTES GROUP DEPOT	1224 MAIN	San Mateo Co. BI	Higher	152, 0.029, SE
A15	B P S BAKER GRAPHICS	1201 MAIN ST	RCRA-SQG, FINDS, ECHO	Higher	160, 0.030, NNE
A16	B P S	1201 MAIN	San Mateo Co. BI	Higher	160, 0.030, NNE
B17	COOKS COLLISION OF R	1104 MAIN	San Mateo Co. BI	Higher	168, 0.032, North
B18	COOKS AUTO BODY	1104 MAIN STREET	RCRA-SQG, ENVIROSTOR, LUST, FINDS, ECHO	Higher	168, 0.032, North
B19	COOKS AUTO BODY	1104 MAIN STREET	RCRA-SQG	Higher	168, 0.032, North
B20	BOBS AUTO REPAIR	415 CASSIA	San Mateo Co. BI	Higher	227, 0.043, NNE
B21	BOBS AUTO REPAIR	415 CASSIA ST	EDR Hist Auto	Higher	227, 0.043, NNE
D22	TOWNE FORD	135 MAPLE	San Mateo Co. BI	Higher	238, 0.045, SW
D23	HUDSON PROPERTY	135 MAPLE	LUST	Higher	238, 0.045, SW
D24	AUTO ELECTRIC & CARB	135 MAPLE ST	EDR Hist Auto	Higher	238, 0.045, SW
D25	KOPF MOTOR COMPANY I	1555 EL CAMINO REAL	EDR Hist Auto	Higher	240, 0.045, SSW
D26	HOPKINS ACURA	1555 EL CAMINO REAL	San Mateo Co. BI	Higher	240, 0.045, SSW
C27	BALTZER ENTERPRISES	113 BEECH ST	EDR Hist Auto	Higher	277, 0.052, SSE
C28	CALIFORNIA AUTO DETA	113 BEECH	San Mateo Co. BI	Higher	277, 0.052, SSE
B29	COOKS UPHOLSTERY	1101 MAIN ST	EDR Hist Auto	Higher	335, 0.063, North
B30	COOKS UPHOLSTERY	1101 1/2 MAIN	San Mateo Co. BI	Higher	341, 0.065, North
B31	DAN STEWART CO	410 MAPLE	San Mateo Co. BI	Higher	370, 0.070, North
E32	MOTOR VERKSTAD VOLVO	113 MONROE	San Mateo Co. BI	Higher	370, 0.070, WNW
E33	KC PAVING	113 MONROE	San Mateo Co. BI	Higher	370, 0.070, WNW
E34	MOTOR VERKSTAD	113 MONROE ST	EDR Hist Auto	Higher	370, 0.070, WNW
C35	CAL CAR WASH DISTRIB	1303 MAIN	San Mateo Co. BI	Higher	399, 0.076, SE
B36	H N LOCKWOOD INC	450 MAPLE ST	RCRA-SQG, FINDS, ECHO, EMI, HAZNET	Higher	412, 0.078, NNE
D37	RMC LONESTAR	25 MAPLE	San Mateo Co. BI	Higher	422, 0.080, SW
D38	PACIFIC READY MIX IN	25 MAPLE ST	LUST, HIST UST	Higher	422, 0.080, SW
D39	RMC LONESTAR	25 MAPLE	LUST, SWEEPS UST, HIST CORTESE	Higher	422, 0.080, SW

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MAPPED SITES SUMMARY

Target Property Address:
1180 AND 1190 MAIN STREET
REDWOOD CITY, CA 94063

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MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
F40	HN LOCKWOOD INC	450 MAPLE	San Mateo Co. BI	Higher	435, 0.082, North
D41	PERCYS BODY SHOP	19 MAPLE ST	EDR Hist Auto	Higher	438, 0.083, SW
E42	WESTPAC ENGINEERING	145 MONROE	San Mateo Co. BI, HAZNET	Higher	471, 0.089, NW
F43	DESANTANA FOUNTAINS	1280 MIDDLEFIELD	San Mateo Co. BI	Higher	504, 0.095, NNE
F44	PHIL FINER REFRIGERA	1001 MAIN ST	LUST, HIST UST	Higher	528, 0.100, North
F45	PHIL FINER REFRIGERA	1001 MAIN	San Mateo Co. BI	Higher	528, 0.100, North
F46	CHEVRON 307542 FORME	1001 MAIN ST	RCRA-SQG, HAZNET	Higher	528, 0.100, North
F47	GRIFFIN MOHAWK SERVI	1001 MAIN STREET	EDR Hist Auto	Higher	528, 0.100, North
G48	CHAIN REACTION BICYC	1451 EL CAMINO REAL	San Mateo Co. BI	Higher	533, 0.101, WSW
G49	T MOBILE WEST CORP S	1451 EL CAMINO REAL	San Mateo Co. BI	Higher	533, 0.101, WSW
G50	BEKINS MOVING & STOR	1451 EL CAMINO REAL	SWEEPS UST, CA FID UST	Higher	533, 0.101, WSW
G51	VERIZON WIRELESS RED	1451 EL CAMINO REAL	LUST, San Mateo Co. BI, HIST CORTESE	Higher	533, 0.101, WSW
H52	PRECISION FOREIGN CA	1540 EL CAMINO REAL	EDR Hist Auto	Higher	544, 0.103, SW
H53	PRECISION FOREIGN CA	1540 EL CAMINO REAL	San Mateo Co. BI	Higher	544, 0.103, SW
H54	AUTOWORKS	1540 EL CAMINO REAL	San Mateo Co. BI	Higher	544, 0.103, SW
I55	BORK & CHRISTENSEN I	1597 EL CAMINO REAL	EDR Hist Auto	Higher	557, 0.105, South
G56	CHEVRON USA INC SERV	1502 EL CAMINO REAL	RCRA NonGen / NLR, FINDS, ECHO	Higher	561, 0.106, SW
G57	94256	1502 EL CAMINO REAL	HIST UST	Higher	561, 0.106, SW
G58	LYNN AUTO MACHINE	1445 EL CAMINO REAL	EDR Hist Auto	Higher	565, 0.107, WSW
I59	TOWNE FORD SALES	1601 EL CAMINO REAL	San Mateo Co. BI	Higher	565, 0.107, South
I60	TOWN FORD SALES	1601 EL CAMINO REAL	HIST CORTESE	Higher	565, 0.107, South
I61	TOWNE FORD SALES	1601 EL CAMINO REAL	LUST, HIST UST, Notify 65	Higher	565, 0.107, South
G62	LYNN AUTO MACHINE	1447 EL CAMINO REAL	EDR Hist Auto	Higher	569, 0.108, WSW
G63	BEKINS MOVING AND ST	1451 EL CAMINO	HIST UST	Higher	577, 0.109, SW
J64	TOWNE AUTO BODY	111 CEDAR	San Mateo Co. BI	Higher	594, 0.112, SSE
G65	FIRESTONE TIRES #367	1458 EL CAMINO REAL	SWEEPS UST, CA FID UST	Higher	628, 0.119, SW
G66	FIRESTONE STORE #367	1458 EL CAMINO REAL	LUST	Higher	628, 0.119, SW
G67	FIRESTONE COMPLETE A	1458 EL CAMINO REAL	LUST, HIST UST, San Mateo Co. BI	Higher	628, 0.119, SW
G68	FIRESTONE TIRE & RUB	1458 EL CAMINO REAL	EDR Hist Auto	Higher	628, 0.119, SW
K69	SHADOW AUTO BODY SHO	20 DILLER	San Mateo Co. BI	Higher	631, 0.120, West
K70	SPEED AND COLOR BODY	20 DILLER	San Mateo Co. BI	Higher	631, 0.120, West
K71	SHIMAS AUTO BODY REP	20 DILLER ST	RCRA-SQG, FINDS, ECHO	Higher	631, 0.120, West
K72	R & R AUTO BODY	20 DILLER ST	EDR Hist Auto	Higher	631, 0.120, West
F73	NW CORNER	MAIN AND MIDDLEFIELD	SLIC	Higher	638, 0.121, North
H74	CHEVRON 9-4256	1501 EL CAMINO REAL	LUST	Higher	645, 0.122, SW
L75	GLENNS AUTO SVC	132 WILSON	San Mateo Co. BI	Higher	649, 0.123, NW
L76	MOTOR VERKSTAD	132 WILSON ST STE A	EDR Hist Auto	Higher	649, 0.123, NW
L77	MOTOR VERKSTAD VOLVO	132 WILSON	San Mateo Co. BI	Higher	649, 0.123, NW
I78	MC DONNEL JOHN T	1600 EL CAMINO REAL	EDR Hist Auto	Higher	650, 0.123, SSW

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1180 AND 1190 MAIN STREET
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MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
I79	REDWOOD CITY SOLVENT	1600 EL CAMINO REAL	SLIC	Higher	650, 0.123, SSW
G80	RED CARPET CAR WASH	1436 EL CAMINO REAL	HIST CORTESE	Higher	663, 0.126, WSW
J81	PRIVATE RESIDENCE	PRIVATE RESIDENCE	LUST, SLIC, BROWNFIELDS	Higher	684, 0.130, SSE
M82	LIQUID DIGITAL MEDIA	999 MAIN	San Mateo Co. BI	Higher	694, 0.131, North
I83	QUEST COLLISION CENT	1612 EL CAMINO REAL	San Mateo Co. BI	Higher	694, 0.131, South
I84	PREMIER AUTO COLLISO	1612 EL CAMINO REAL	San Mateo Co. BI	Higher	694, 0.131, South
I85	FERIANTE PROPERTY	1612 EL CAMINO REAL	LUST	Higher	694, 0.131, South
I86	NBS MOTORS	1612 EL CAMINO REAL	San Mateo Co. BI	Higher	694, 0.131, South
I87	FERIANTE PROPERTY	1612 EL CAMINO REAL	LUST, SWEEPS UST, HIST CORTESE	Higher	694, 0.131, South
I88	WEST COAST WHEELS &	1612 EL CAMINO REAL	San Mateo Co. BI	Higher	694, 0.131, South
J89	FORMER DEMMA PARCELS	104 AND 112 CEDAR	ENVIROSTOR	Higher	710, 0.134, SSE
G90	MUFFLER EXPRESS	1414 EL CAMINO REAL	San Mateo Co. BI	Higher	735, 0.139, WSW
G91	LIFE TIME MUFFLER	1414 EL CAMINO REAL	San Mateo Co. BI	Higher	735, 0.139, WSW
N92	CITY OF REDWOOD CITY	1036 MIDDLEFIELD	LUST	Higher	737, 0.140, NNW
I93	SCHERBAS	1680 EL CAMINO REAL	San Mateo Co. BI	Higher	750, 0.142, South
94	611 HELLER STREET RE	611 HELLER STREET	ENVIROSTOR	Higher	761, 0.144, East
M95	RUST PROPERTY	925 MAIN STREET	SLIC	Higher	809, 0.153, North
M96	RUST PROPERTY AKA YO	925 / 929 MAIN STREE	ENVIROSTOR, VCP	Higher	813, 0.154, North
M97	JIMS MACHINE SHOP	929 MAIN	San Mateo Co. BI	Higher	813, 0.154, North
K98	ECONO LUBE N'TUNE #1	1331 EL CAMINO REAL	SWEEPS UST, CA FID UST	Higher	815, 0.154, West
K99	REDWOOD CAR CARE	1331 EL CAMINO REAL	UST	Higher	815, 0.154, West
K100	REDWOOD CAR CARE	1331 EL CAMINO REAL	San Mateo Co. BI, HAZNET	Higher	815, 0.154, West
L101	UST SITE - REDEVELOP	127 WILSON	San Mateo Co. BI	Higher	816, 0.155, NW
102	AT&T CALIFORNIA - P3	72 WILSON	San Mateo Co. BI	Higher	822, 0.156, WNW
N103	REDWOOD CITY POLICE	1020 MIDDLEFIELD RD	LUST, SWEEPS UST, HIST CORTESE	Higher	823, 0.156, NNW
N104	TEMPORARY CITY HALL	1020 MIDDLEFIELD	LUST	Higher	823, 0.156, NNW
K105	CYCLE GEAR	1326 EL CAMINO REAL	San Mateo Co. BI	Higher	875, 0.166, West
O106	CARBON3D, INC.	312 CHESTNUT STREET	RCRA-LQG, ECHO	Higher	896, 0.170, ESE
N107	CULVERT REALIGNMENT	1017 MIDDLEFIELD ROA	LUST, SLIC, HIST CORTESE	Higher	901, 0.171, NNW
N108	REDWOOD CITY HALL	1017 MIDDLEFIELD	San Mateo Co. BI	Higher	901, 0.171, NNW
N109	REDWOOD CITY CITY HA	1017 MIDDLEFIELD	LUST	Higher	901, 0.171, NNW
P110	GRADE SEPARATION	923 JEFFERSON AVENUE	LUST	Higher	909, 0.172, NW
O111	ANGEL CAR CARE	330 CHESTNUT	San Mateo Co. BI	Higher	911, 0.173, ESE
Q112	MCDONALD	185 CHESTNUT	San Mateo Co. BI	Higher	915, 0.173, SSE
O113	CARBON3D	312 CHESTNUT	San Mateo Co. BI	Higher	926, 0.175, ESE
R114	MEZES COURT	950 MAIN STREET	LUST, SLIC	Higher	930, 0.176, NNW
R115	HOUSING AND REDEVELO	878 950 MAIN ST	RCRA-SQG, FINDS, ECHO	Higher	930, 0.176, NNW
P116	VANHAM PROPERTY	1015 JEFFERSON	LUST, HIST CORTESE	Higher	935, 0.177, NW
S117	PRECISION TUNE AUTO	1304 EL CAMINO REAL	San Mateo Co. BI, HAZNET	Higher	964, 0.183, West

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MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
S118	PRECISION TUNE AUTO	1304 EL CAMINO REAL	San Mateo Co. BI	Higher	964, 0.183, West
S119	CLUTCH EXPRESS	1304 EL CAMINO REAL	San Mateo Co. BI	Higher	964, 0.183, West
T120	COMMERCIAL PROPERTY	727 SHASTA	San Mateo Co. BI	Higher	1016, 0.192, SE
T121	CALIFORNIA AUTOMOTIV	727 SHASTA ST UNIT C	RCRA NonGen / NLR, FINDS, ECHO, HAZNET	Higher	1016, 0.192, SE
T122	AMERICAN ASPHALT	727 SHASTA	San Mateo Co. BI	Higher	1016, 0.192, SE
T123	CALIFORNIA CONCEPTS	727 SHASTA	San Mateo Co. BI	Higher	1016, 0.192, SE
T124	HEBREW ACADEMY	727 SHASTA	San Mateo Co. BI	Higher	1016, 0.192, SE
T125	COMMERCIAL PROPERTY	727 SHASTA ST	SWEEPS UST, CA FID UST	Higher	1016, 0.192, SE
T126	AMERICAN ASPHALT R A	727 SHASTA ST	RCRA-SQG	Higher	1016, 0.192, SE
Q127	NICOLOSI DISTRIBUTIN	220 CHESTNUT	San Mateo Co. BI	Higher	1029, 0.195, SSE
Q128	CHESTNUT AUTOMOTIVE	160 CHESTNUT	San Mateo Co. BI	Higher	1029, 0.195, SSE
O129	SAN MATEO CO AGRICUL	728 HELLER ST	HWP	Higher	1037, 0.196, ESE
O130	AGRICULTURAL WEIGHTS	728 HELLER	San Mateo Co. BI	Higher	1037, 0.196, ESE
O131	SAN MATEO CO AGRI DE	728 HELLER ST	RCRA-TSDF, RCRA-SQG, FINDS, ECHO	Higher	1037, 0.196, ESE
P132	COST PLUS INC #284	890 JEFFERSON	San Mateo Co. BI	Higher	1041, 0.197, NNW
O133	GARAFFO AUTO REPAIR	301 PINE	San Mateo Co. BI	Higher	1054, 0.200, ESE
O134	COLLINS CLASSICS	301 PINE	San Mateo Co. BI	Higher	1054, 0.200, ESE
O135	COVENTRY MOTORS	301 PINE	San Mateo Co. BI	Higher	1054, 0.200, ESE
U136	GLEN GREER ARCO	1032 JEFFERSON AVE	HIST UST	Higher	1075, 0.204, WNW
U137	GLENN GREER ARCO	1032 JEFFERSON	San Mateo Co. BI	Higher	1075, 0.204, WNW
U138	ARCO	1032 JEFFERSON	LUST, SWEEPS UST, HIST CORTESE	Higher	1075, 0.204, WNW
U139	SEQUOIA STATION	1032 JEFFERSON AVE	CA FID UST	Higher	1075, 0.204, WNW
O140	ENVIRONMENTAL HEALTH	310 PINE	San Mateo Co. BI	Higher	1079, 0.204, ESE
P141	REDWOOD CITY PARTNER	950 MIDDLEFIELD RD	LUST, San Mateo Co. BI, HAZNET, NPDES	Higher	1079, 0.204, NW
Q142	B & D AUTOMOTIVE	1510 MAIN	San Mateo Co. BI	Higher	1090, 0.206, SSE
V143	ARCO 00306	1700 MIDDLEFIELD	San Mateo Co. BI	Higher	1096, 0.208, East
V144	ARCO SERVICE STATION	1700 MIDDLEFIELD ROA	Notify 65	Higher	1096, 0.208, East
V145	ARCO #0306	1700 MIDDLEFIELD	LUST	Higher	1096, 0.208, East
V146	VEGA ARCO AM/PM	1700 MIDDLEFIELD RD	HIST UST	Higher	1096, 0.208, East
V147	ARCO #0306	1700 MIDDLEFIELD ROA	LUST, SWEEPS UST, HIST CORTESE	Higher	1096, 0.208, East
V148	ARCO 00306	1700 MIDDLEFIELD RD	UST	Higher	1096, 0.208, East
V149	VEGA ARCO AM/PM	1700 MIDDLEFIELD ROA	HIST UST	Higher	1096, 0.208, East
U150	AT&T CALIFORNIA - P3	1121 JEFFERSON AVE	UST	Higher	1102, 0.209, WNW
U151	PACIFIC BELL	1121 JEFFERSON AVENU	RCRA-SQG, LUST, SWEEPS UST, HIST UST, CA FID UST,...	Higher	1102, 0.209, WNW
U152	AT&T CALIFORNIA - P3	1121 JEFFERSON AVE	AST	Higher	1102, 0.209, WNW
Q153	BENS AUTO TECH	413 LATHROP	San Mateo Co. BI	Higher	1116, 0.211, SSE
Q154	BEN'S AUTO TECH	413 LATHROP	San Mateo Co. BI	Higher	1116, 0.211, SSE
W155	APS PHOTO CTRS	1201 EL CAMINO REAL	San Mateo Co. BI	Higher	1118, 0.212, WNW
W156	HUMBLE OIL, FORMER (	1201 EL CAMINO REAL	LUST	Higher	1118, 0.212, WNW

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T157	U S AUTO REPAIR	230 PINE	San Mateo Co. BI	Higher	1120, 0.212, SE
T158	AMERICAN ORNAMENTAL	220 PINE	San Mateo Co. BI	Higher	1125, 0.213, SE
X159	REDWOOD CITY POST OF	855 JEFFERSON	San Mateo Co. BI	Higher	1203, 0.228, NNW
X160	REDWOOD CITY POST OF	855 JEFFERSON AVE	LUST, SWEEPS UST, HIST CORTESE	Higher	1203, 0.228, NNW
X161	U.S. POSTAL SERVICE	855 JEFFERSON	LUST	Higher	1203, 0.228, NNW
W162	AT & T MOBILITY-EL C	1200 EL CAMINO REAL	San Mateo Co. BI	Higher	1203, 0.228, West
163	SCHROEDER SHEET META	640 MAPLE	San Mateo Co. BI	Lower	1207, 0.229, NNE
Y164	ASAP TIRES, LLC	1823 EL CAMINO REAL	San Mateo Co. BI	Higher	1213, 0.230, SSE
165	BIZZARROS RESTORATIV	847 MAIN	San Mateo Co. BI	Lower	1214, 0.230, North
Y166	THE ORIGINAL UNDERWH	1802 EL CAMINO REAL	San Mateo Co. BI	Higher	1231, 0.233, SSE
W167	LUCKY STORE #15	UNKNOWN JEFFERSON AV	SLIC	Higher	1237, 0.234, WNW
Z168	BROADWAY PARKING GAR	915 MIDDLEFIELD	San Mateo Co. BI	Higher	1245, 0.236, NW
T169	ACTERON METAL FINISH	851 SHASTA	San Mateo Co. BI	Higher	1254, 0.237, SE
T170	ACTERON CORP	851 SHASTA STREET	RCRA-SQG, HIST UST, FINDS, ECHO	Higher	1254, 0.237, SE
T171	ACTERON CORP, FORMER	851 SHASTA STREET	LUST, HIST CORTESE	Higher	1254, 0.237, SE
X172	LE SUN INC	846 JEFFERSON	San Mateo Co. BI	Lower	1255, 0.238, NNW
W173	DAVIES CHEVROLET	1101 EL CAMINO REAL	LUST	Higher	1283, 0.243, WNW
W174	PARK CHEVROLET	1101 EL CAMINO REAL	San Mateo Co. BI	Higher	1283, 0.243, WNW
W175	THE HABIT BURGER GRI	1111 EL CAMINO REAL	San Mateo Co. BI	Higher	1286, 0.244, WNW
Z176	CROSSING 900	900 MIDDLEFIELD	San Mateo Co. BI	Higher	1290, 0.244, NW
177	PRECISION AUTO REPAI	110 PINE	San Mateo Co. BI	Higher	1315, 0.249, SE
Z178	REDWOOD CITY PARTNER	932 MIDDLEFIELD RD	LUST, HAZNET	Higher	1367, 0.259, NW
Z179	CHEVRON 20-6318, FOR	932 MIDDLEFIELD	LUST, HIST CORTESE	Higher	1367, 0.259, NW
AA180	SHELL, FORMER (HARRY	1909 EL CAMINO REAL	LUST	Higher	1536, 0.291, SSE
181	G R BROWN CO	989 SHASTA	LUST	Higher	1543, 0.292, SE
AB182	ROYS CLEANERS	1100 EL CAMINO REAL	RCRA-SQG, SLIC, FINDS, ECHO, DRYCLEANERS, EMI,...	Higher	1546, 0.293, WNW
AB183	ROY'S DRY CLEANERS	1100 EL CAMINO REAL	SLIC	Higher	1546, 0.293, WNW
AB184	WHOLE FOODS MARKET I	1250 JEFFERSON AVE	LUST, SWEEPS UST, CA FID UST, HAZNET, HIST CORTESE	Higher	1553, 0.294, West
185	PG AND E GAS PLANT R	E MARSHALL, WASHINGT	EDR MGP	Lower	1652, 0.313, NNW
AA186	MOTLOCH PARCEL	1629 MAIN STREET	LUST, SLIC	Higher	1658, 0.314, SE
AC187	BROADWAY PRODUCE & F	1870 BROADWAY	LUST, HIST CORTESE, Notify 65	Lower	1673, 0.317, North
AC188	BROADWAY PRODUCE & F	1870 BROADWAY	LUST	Lower	1673, 0.317, North
189	GUS'S SERVICE STATIO	841 HAMILTON	LUST, HIST CORTESE	Higher	1754, 0.332, NW
AD190	MID PENINSULA LEASIN	1039 EL CAMINO REAL	LUST, SWEEPS UST	Lower	1804, 0.342, NW
AD191	CVS PHARMACY # 9329	1039 EL CAMINO REAL	LUST, HIST UST, HAZNET, HIST CORTESE	Lower	1804, 0.342, NW
AE192	TINCHER PROPERTY (CH	1800 BROADWAY	LUST	Lower	1805, 0.342, NNE
AE193	REDWOOD CITY CORPORA	1400 BROADWAY	LUST	Lower	1827, 0.346, NNE
AE194	REDWOOD CITY CORPORA	1400 BROADWAY	LUST, ENF, HIST CORTESE	Lower	1827, 0.346, NNE
AF195	CITY CENTER PARKING	750 MARSHALL ST.	LUST, SWEEPS UST, CA FID UST	Lower	1901, 0.360, North

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AF196	CITY CENTER PARKING	750 MARSHALL	LUST, HIST CORTESE	Lower	1901, 0.360, North
AG197	SHELL, FORMER/KENNED	1026 EL CAMINO REAL	LUST, HIST CORTESE	Higher	2002, 0.379, WNW
AH198	GRANT CORPORATION YA	752 CHESTNUT ST	LUST, HIST UST, San Mateo Co. BI	Higher	2005, 0.380, ENE
AI199	RITZ CLEANERS	37 JAMES	LUST, SLIC, HIST CORTESE	Lower	2013, 0.381, WNW
200	ROHM&HAAS/OCCIDENTAL	800 CHESNUT	Cortese, ENF, HIST CORTESE	Lower	2051, 0.388, NE
AJ201	BRADFORD STREET PARK	500 BLK BRADFORD ST	LUST, HIST CORTESE	Lower	2059, 0.390, NNW
202	PG&E, REDWOOD CITY	675 JEFFERSON AVENUE	ENVIROSTOR, VCP	Lower	2072, 0.392, NNW
AK203	ORCHARD SUPPLY HARDW	UNKNOWN MIDDLEFIELD	SLIC	Higher	2074, 0.393, ESE
AJ204	660 JEFFERSON	660 JEFFERSON AVENUE	ENVIROSTOR, SLIC, VCP	Lower	2074, 0.393, NNW
AH205	DUOLITE INTERNATIONA	800 CHESTNUT ST	SEMS, CORRACTS, RCRA-TSDF, RCRA-SQG, HIST UST,...	Higher	2076, 0.393, ENE
AH206	800 CHESTNUT (ROHM A	800 CHESTNUT STREET	SLIC	Higher	2076, 0.393, ENE
AH207	DUOLITE INTERNATIONA	800 CHESTNUT ST	ENVIROSTOR, LUST, SLIC, HIST UST, HAZNET, HWP	Higher	2076, 0.393, ENE
AH208	WOODSPRING CENTER	800-898 CHESTNUT STR	ENVIROSTOR	Higher	2076, 0.393, ENE
AK209	PRICE COMPANY	2110 MIDDLEFIELD RD	SEMS-ARCHIVE	Higher	2124, 0.402, ESE
AK210	ORCHARD SUPPLY HARDW	2110 MIDDLEFIELD ROA	SLIC	Higher	2124, 0.402, ESE
AG211	CHARLES SYMES PROPER	1011 EL CAMINO REAL	LUST, HIST CORTESE	Higher	2130, 0.403, WNW
AL212	SMCO MOTOR POOL	590 HAMILTON	LUST	Lower	2142, 0.406, NNW
AL213	SMCO MOTOR POOL	590 HAMILTON	HIST CORTESE	Lower	2142, 0.406, NNW
AL214	SAN MATEO COUNTY MOT	590 HAMILTON ST	LUST, SWEEPS UST, HIST UST, CA FID UST	Lower	2142, 0.406, NNW
AL215	OLD COURTHOUSE-SAN M	711 HAMILTON	LUST, HIST CORTESE	Lower	2149, 0.407, NNW
AI216	SEQUOIA STATION PROJ	1001 EL CAMINO REAL	LUST, HIST CORTESE	Higher	2155, 0.408, WNW
AI217	SCR-SOUTHERN PACIFIC	1001 EL CAMINO REAL	LUST, SWEEPS UST, HIST CORTESE	Higher	2155, 0.408, WNW
218	ARTISTIC CLEANERS	860 MAPLE ST	LUST, SLIC, HAZNET	Lower	2218, 0.420, NNE
AM219	NURBURG RING	1202 SHASTA	SLIC, San Mateo Co. BI	Higher	2225, 0.421, SE
AM220	NURBURG RING AUTO	1202 SHASTA	LUST, BROWNFIELDS	Higher	2225, 0.421, SE
221	ALOHA STATE FLOWERS,	1260 MARSHALL STREET	LUST, HIST CORTESE	Lower	2227, 0.422, NNE
AN222	AMERICAN SAVINGS BAN	201 MARSHALL	HIST CORTESE	Higher	2378, 0.450, NW
223	BRADFORD STREET PARC	707 BRADFORD STREET	ENVIROSTOR, VCP	Lower	2380, 0.451, NNW
AO224	RAY'S AUTO	2233 MIDDLEFIELD RD	LUST, SWEEPS UST, HIST CORTESE	Higher	2386, 0.452, ESE
AO225	OPFER PROPERTY	2233 MIDDLEFIELD	LUST	Higher	2386, 0.452, ESE
AP226	1661 BROADWAY ST - U	1661 BROADWAY	LUST, San Mateo Co. BI, HAZNET	Lower	2397, 0.454, NE
227	PRICE CLUB #409	2300 MIDDLEFIELD	ENVIROSTOR, CHMIRS	Higher	2519, 0.477, ESE
228	SEQUOIA TRANSPORTATI	480 JAMES AVENUE	LUST, HIST UST, NPDES	Higher	2556, 0.484, West
AQ229	U HAUL	2200 EL CAMINO REAL	LUST, HIST CORTESE	Higher	2560, 0.485, SSE
AQ230	U-HAUL	2200 EL CAMINO REAL	LUST, HIST UST	Higher	2560, 0.485, SSE
AQ231	U-HAUL MOVING & STOR	2200 EL CAMINO REAL	LUST, CHMIRS, San Mateo Co. BI	Higher	2560, 0.485, SSE
AP232	CHEVRON	1603 BROADWAY	LUST, HIST CORTESE	Lower	2561, 0.485, NE
AP233	CHEVRON	1603 BROADWAY	LUST, San Mateo Co. BI	Lower	2561, 0.485, NE
234	KAISER PERMANENTE	1150 VETERANS	LUST, SWEEPS UST, HIST UST, NPDES	Lower	2570, 0.487, NNE

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MAPPED SITES SUMMARY

Target Property Address:
1180 AND 1190 MAIN STREET
REDWOOD CITY, CA 94063

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
AN235	BRADFORD STREET PARC	0 BRADFORD STREET	SLIC	Higher	2625, 0.497, NW
AP236	REDWOOD GENERAL TIRE	1630 BROADWAY	ENVIROSTOR, LUST, HAULERS, SWEEPS UST, HIST UST,...	Lower	2655, 0.503, NE
237	JOHNS-MANVILLE PRODU	2200 MIDDLEFIELD ROA	ENVIROSTOR	Higher	2887, 0.547, ESE
238	ROBISON PROPERTY	827 EL CAMINO REAL	ENVIROSTOR, SLIC, VCP	Higher	2895, 0.548, WNW
239	EICHROME	2480 MIDDLEFIELD ROA	RESPONSE, ENVIROSTOR, HIST Cal-Sites	Higher	3318, 0.628, ESE
240	STAR TOOL & ENGINEER	860 CHARTER	ENVIROSTOR, SLIC, VCP, San Mateo Co. BI	Higher	4000, 0.758, ENE
AR241	PRESSURE VESSEL SERV	50 CHEMICAL WAY	ENVIROSTOR, HIST UST, EMI	Higher	4191, 0.794, NNE
242	BAY AREA CIRCUITS IN	91 WINSLOW ST.	RCRA-LQG, ENVIROSTOR, FINDS, ECHO, EMI	Lower	4205, 0.796, NNW
AR243	WILLARD PRODUCTS	70 CHEMICAL WAY	SSTS, CA BOND EXP. PLAN	Higher	4236, 0.802, NNE
AR244	SAN MATEO CNTY REPLA	70 CHEMICAL WAY	RCRA-LQG, RESPONSE, ENVIROSTOR, SLIC, HIST UST,...	Higher	4268, 0.808, NNE
245	LIMA REALTY GROUP	350 CONVENTION WAY	CHMIRS, EMI, Notify 65	Lower	4282, 0.811, North
246	ARTON MANAGEMENT/INV	570 EL CAMINO REAL	ENVIROSTOR, LUST, HIST UST	Higher	4313, 0.817, NW
247	FORMER FRANK'S TANNE	1548 MAPLE STREET	ENVIROSTOR, LUST, SLIC, BROWNFIELDS, CHMIRS	Lower	4450, 0.843, NNE
AS248	TYDEMAN MACHINE WORK	BROADWAY AND CHARTER	ENVIROSTOR	Higher	4469, 0.846, ENE
249	COORS WEST	2700 MIDDLEFIELD ROA	Notify 65	Higher	4551, 0.862, ESE
AS250	COORS WEST	890 BROADWAY	LUST, Notify 65	Lower	4675, 0.885, ENE
251	SERVICE STATION	503 WHIPPLE AVENUE	Notify 65	Lower	4932, 0.934, NNW
AT252	KLIKLOK CO. (BUILDIN	2661 SPRING	ENVIROSTOR, HIST CORTESE	Higher	4971, 0.941, East
253	MOBILE STATION # 10-	640 WHIPPLE STREET	Notify 65	Lower	5010, 0.949, NW
AT254	UNKNOWN	860 HURLINGAMES	Notify 65	Higher	5028, 0.952, East

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EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 8 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
CHUBS AUTO RPR 1180 MAIN ST REDWOOD CITY, CA 94063	HAZNET GEPAID: CAL000007612	N/A
CHUB'S AUTO REPAIR 1180 MAIN REDWOOD CITY, CA	RGA LUST	N/A
CHUB'S AUTO REPAIR 1180 MAIN ST REDWOOD CITY, CA	RGA LUST	N/A
CHUBS AUTO REPAIR 1180 MAIN REDWOOD CITY, CA 94063	San Mateo Co. BI Facility Id: FA0017442	N/A
CHUBS AUTO REPAIR 1180 MAIN ST REDWOOD CITY, CA 94063	RCRA-SQG EPA ID:: CAR000004721 LUST Database: LUST REG 2, Date of Government Version: 09/30/2004 Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017 Database: LUST, Date of Government Version: 03/13/2017 Status: Completed - Case Closed Facility Status: Case Closed Facility Id: 330120 Facility Status: 9- Case Closed Global Id: T0608100848 Global ID: T0608100848 date9: 6/21/1995 SWEEPS UST Comp Number: 340141 FINDS Registry ID:: 110002907310 ECHO HAZNET GEPAID: CAR000004721 HIST CORTESE Reg Id: 41-0920	CAR000004721
CHUBS AUTO REPAIR 1180 MAIN ST REDWOOD CITY, CA 94063	EDR Hist Auto	N/A

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CHUB'S AUTO REPAIR 1180 MAIN ST REDWOOD CITY, CA 94063	HAZNET GEPAID: CAC001001392	N/A
LATHROP PARK REDWOOD 1190 MAIN ST REDWOOD CITY, CA 94063	HAZNET GEPAID: CAC002693842	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

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STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal RCRA generators list

RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST ---- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST ---- Underground Storage Tank Listing
INDIAN UST ---- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ---- Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ---- Waste Management Unit Database
SWRCY ---- Recycler Database
HAULERS ---- Registered Waste Tire Haulers Listing
INDIAN ODI ---- Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ---- Torres Martinez Reservation Illegal Dump Site Locations
ODI ---- Open Dump Inventory
IHS OPEN DUMPS ---- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---- Delisted National Clandestine Laboratory Register
SCH ---- School Property Evaluation Program
CDL ---- Clandestine Drug Labs
Toxic Pits ---- Toxic Pits Cleanup Act Sites
US CDL ---- National Clandestine Laboratory Register

Local Land Records

LIENS ---- Environmental Liens Listing
LIENS 2 ---- CERCLA Lien Information
DEED ---- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System
CHMIRS ---- California Hazardous Material Incident Report System
LDS ---- Land Disposal Sites Listing
MCS ---- Military Cleanup Sites Listing
SPILLS 90 ---- SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS ---- Formerly Used Defense Sites

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DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
ICE	ICE
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
UIC	UIC Listing
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Cleaner	EDR Exclusive Historic Dry Cleaners

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EXECUTIVE SUMMARY

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF ---------- Recovered Government Archive Solid Waste Facilities List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal CERCLIS list

SEMS: SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the SEMS list, as provided by EDR, and dated 02/07/2017 has revealed that there is 1 SEMS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
DUOLITE INTERNATIONA	***800 CHESTNUT ST***	***ENE 1/4 - 1/2 (0.393 mi.)***	***AH205***	***308***

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless

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information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

A review of the SEMS-ARCHIVE list, as provided by EDR, and dated 02/07/2017 has revealed that there is 1 SEMS-ARCHIVE site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PRICE COMPANY	2110 MIDDLEFIELD RD	ESE 1/4 - 1/2 (0.402 mi.)	AK209	332

Federal RCRA CORRACTS facilities list

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 12/12/2016 has revealed that there is 1 CORRACTS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
DUOLITE INTERNATIONA	***800 CHESTNUT ST***	***ENE 1/4 - 1/2 (0.393 mi.)***	***AH205***	***308***

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRA-TSDF list, as provided by EDR, and dated 12/12/2016 has revealed that there are 2 RCRA-TSDF sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SAN MATEO CO AGRI DE	***728 HELLER ST***	***ESE 1/8 - 1/4 (0.196 mi.)***	***O131***	***149***
DUOLITE INTERNATIONA	***800 CHESTNUT ST***	***ENE 1/4 - 1/2 (0.393 mi.)***	***AH205***	***308***

Federal RCRA generators list

RCRA-LQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

A review of the RCRA-LQG list, as provided by EDR, and dated 12/12/2016 has revealed that there is 1

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RCRA-LQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CARBON3D, INC.	***312 CHESTNUT STREET***	***ESE 1/8 - 1/4 (0.170 mi.)***	***O106***	***120***

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 12/12/2016 has revealed that there are 11 RCRA-SQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
B P S BAKER GRAPHICS	***1201 MAIN ST***	***NNE 0 - 1/8 (0.030 mi.)***	***A15***	***20***
COOKS AUTO BODY	***1104 MAIN STREET***	***N 0 - 1/8 (0.032 mi.)***	***B18***	***22***
COOKS AUTO BODY	1104 MAIN STREET	N 0 - 1/8 (0.032 mi.)	B19	37
H N LOCKWOOD INC	***450 MAPLE ST***	***NNE 0 - 1/8 (0.078 mi.)***	***B36***	***46***
CHEVRON 307542 FORME	***1001 MAIN ST***	***N 0 - 1/8 (0.100 mi.)***	***F46***	***65***
SHIMAS AUTO BODY REP	***20 DILLER ST***	***W 0 - 1/8 (0.120 mi.)***	***K71***	***84***
HOUSING AND REDEVELO	***878 950 MAIN ST***	***NNW 1/8 - 1/4 (0.176 mi.)***	***R115***	***137***
AMERICAN ASPHALT R A	727 SHASTA ST	SE 1/8 - 1/4 (0.192 mi.)	T126	146
SAN MATEO CO AGRI DE	***728 HELLER ST***	***ESE 1/8 - 1/4 (0.196 mi.)***	***O131***	***149***
PACIFIC BELL	***1121 JEFFERSON AVENU***	***WNW 1/8 - 1/4 (0.209 mi.)***	***U151***	***186***
ACTERON CORP	***851 SHASTA STREET***	***SE 1/8 - 1/4 (0.237 mi.)***	***T170***	***206***

State- and tribal - equivalent NPL

RESPONSE: Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

A review of the RESPONSE list, as provided by EDR, has revealed that there are 2 RESPONSE sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EICHROME	***2480 MIDDLEFIELD ROA***	***ESE 1/2 - 1 (0.628 mi.)***	***239***	***414***
Database: RESPONSE, Date of Government Version: 01/30/2017 Status: Certified Facility Id: 41350026				
SAN MATEO CNTY REPLA	***70 CHEMICAL WAY***	***NNE 1/2 - 1 (0.808 mi.)***	***AR244***	***447***
Database: RESPONSE, Date of Government Version: 01/30/2017 Status: Certified O&M - Land Use Restrictions Only Facility Id: 41280076				

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State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 01/30/2017 has revealed that there are 22 ENVIROSTOR sites within approximately 1 mile of the target property.

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Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
COOKS AUTO BODY Facility Id: 60001847 Status: Inactive - Action Required	***1104 MAIN STREET***	***N 0 - 1/8 (0.032 mi.)***	***B18***	***22***
FORMER DEMMA PARCELS Facility Id: 60001045 Status: Refer: 1248 Local Agency	104 AND 112 CEDAR	SSE 1/8 - 1/4 (0.134 mi.)	J89	100
611 HELLER STREET RE Facility Id: 60001749 Status: Inactive - Action Required	611 HELLER STREET	E 1/8 - 1/4 (0.144 mi.)	94	103
RUST PROPERTY AKA YO Facility Id: 60001313 Status: Active	***925 / 929 MAIN STREE***	***N 1/8 - 1/4 (0.154 mi.)***	***M96***	***105***
DUOLITE INTERNATIONA Facility Id: 80001511 Status: Refer: RWQCB	***800 CHESTNUT ST***	***ENE 1/4 - 1/2 (0.393 mi.)***	***AH207***	***324***
WOODSPRING CENTER Facility Id: 41280139 Status: Refer: RWQCB	800-898 CHESTNUT STR	ENE 1/4 - 1/2 (0.393 mi.)	AH208	331
PRICE CLUB #409 Facility Id: 71003269 Status: Inactive - Needs Evaluation	***2300 MIDDLEFIELD***	***ESE 1/4 - 1/2 (0.477 mi.)***	***227***	***376***
JOHNS-MANVILLE PRODU Facility Id: 41100001 Status: Refer: Other Agency	2200 MIDDLEFIELD ROA	ESE 1/2 - 1 (0.547 mi.)	237	411
ROBISON PROPERTY Facility Id: 60001444 Status: Active	***827 EL CAMINO REAL***	***WNW 1/2 - 1 (0.548 mi.)***	***238***	***412***
EICHROME Facility Id: 41350026 Status: Certified	***2480 MIDDLEFIELD ROA***	***ESE 1/2 - 1 (0.628 mi.)***	***239***	***414***
STAR TOOL & ENGINEER Facility Id: 60002245 Status: Active	***860 CHARTER***	***ENE 1/2 - 1 (0.758 mi.)***	***240***	***419***
PRESSURE VESSEL SERV	***50 CHEMICAL WAY***	***NNE 1/2 - 1 (0.794 mi.)***	***AR241***	***422***

Facility Id: 71003307
Status: Refer: RWQCB

SAN MATEO CNTY REPLA	***70 CHEMICAL WAY***	***NNE 1/2 - 1 (0.808 mi.)***	***AR244***	***447***
Facility Id: 41280076				
Status: Certified O&M - Land Use Restrictions Only				
ARTON MANAGEMENT/INV	***570 EL CAMINO REAL***	***NW 1/2 - 1 (0.817 mi.)***	***246***	***460***
Facility Id: 41550010				
Status: Refer: Other Agency				
TYDEMAN MACHINE WORK	BROADWAY AND CHARTER	ENE 1/2 - 1 (0.846 mi.)	AS248	467
Facility Id: 41340062				
Status: No Action Required				
KLIKLOK CO. (BUILDIN	***2661 SPRING***	***E 1/2 - 1 (0.941 mi.)***	***AT252***	***470***
Facility Id: 41340063				
Status: Inactive - Needs Evaluation				

Lower Elevation	Address	Direction / Distance	Map ID	Page
PG&E, REDWOOD CITY	***675 JEFFERSON AVENUE***	***NNW 1/4 - 1/2 (0.392 mi.)***	***202***	***292***
Facility Id: 60001090				
Status: Active				
660 JEFFERSON	***660 JEFFERSON AVENUE***	***NNW 1/4 - 1/2 (0.393 mi.)***	***AJ204***	***301***
Facility Id: 60002283				
Status: Active				
BRADFORD STREET PARC	***707 BRADFORD STREET***	***NNW 1/4 - 1/2 (0.451 mi.)***	***223***	***365***
Facility Id: 60000784				
Status: Inactive - Needs Evaluation				
REDWOOD GENERAL TIRE	***1630 BROADWAY***	***NE 1/2 - 1 (0.503 mi.)***	***AP236***	***402***
Facility Id: 41590001				
Status: Refer: RWQCB				
BAY AREA CIRCUITS IN	***91 WINSLOW ST.***	***NNW 1/2 - 1 (0.796 mi.)***	***242***	***424***
Facility Id: 71002593				
Status: Inactive - Needs Evaluation				
FORMER FRANK'S TANNE	***1548 MAPLE STREET***	***NNE 1/2 - 1 (0.843 mi.)***	***247***	***463***
Facility Id: 60001000				
Status: No Further Action				

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State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 71 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
COOKS AUTO BODY	***1104 MAIN STREET***	***N 0 - 1/8 (0.032 mi.)***	***B18***	***22***
Database: LUST REG 2, Date of Government Version: 09/30/2004				
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017				
Database: LUST, Date of Government Version: 03/13/2017				

Status: Completed - Case Closed
Facility Status: Preliminary site assessment underway
Facility Id: 330188
Facility Status: 9- Case Closed
Global Id: T0608183982
Global ID: T0608183982

HUDSON PROPERTY 135 MAPLE SW 0 - 1/8 (0.045 mi.) D23 40
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 339181
Facility Status: 9- Case Closed
Global Id: T0608131894
Global ID: T0608131894

PACIFIC READY MIX IN 25 MAPLE ST SW 0 - 1/8 (0.080 mi.) D38 54
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Case Closed
date9: 2/8/1996

RMC LONESTAR 25 MAPLE SW 0 - 1/8 (0.080 mi.) D39 55
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330080
Facility Status: 9- Case Closed
Global Id: T0608100686
Global ID: T0608100686

PHIL FINER REFRIGERA 1001 MAIN ST N 0 - 1/8 (0.100 mi.) F44 59
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330215
Facility Status: 9- Case Closed
Global Id: T0608135637
Global ID: T0608135637

VERIZON WIRELESS RED 1451 EL CAMINO REAL WSW 0 - 1/8 (0.101 mi.) G51 69
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Case Closed
Facility Id: 330059
Facility Status: 9- Case Closed
Global Id: T0608100285
Global ID: T0608100285
date9: 6/24/1996

TOWNE FORD SALES 1601 EL CAMINO REAL S 0 - 1/8 (0.107 mi.) I61 76
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Case Closed
Facility Id: 330023
Facility Status: 9- Case Closed

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Global Id: T0608100547
Global ID: T0608100547
date9: 10/12/1995

FIRESTONE STORE #367 | 1458 EL CAMINO REAL | SW 0 - 1/8 (0.119 mi.) | G66 | 81
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Case Closed
date9: 1/3/2001

FIRESTONE COMPLETE A | 1458 EL CAMINO REAL | SW 0 - 1/8 (0.119 mi.) | G67 | 81
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330180
Facility Status: 9- Case Closed
Global Id: T0608192795
Global ID: T0608192795

CHEVRON 9-4256 | 1501 EL CAMINO REAL | SW 0 - 1/8 (0.122 mi.) | H74 | 87
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Case Closed
Facility Id: 330021
Facility Status: 9- Case Closed
Global Id: T0608100119
Global ID: T0608100119
date9: 5/19/1997

PRIVATE RESIDENCE | PRIVATE RESIDENCE | SSE 1/8 - 1/4 (0.130 mi.) | J81 | 91
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Global Id: T10000001610

FERIANTE PROPERTY | 1612 EL CAMINO REAL | S 1/8 - 1/4 (0.131 mi.) | I85 | 96
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330118
Facility Status: 9- Case Closed
Global Id: T0608100780
Global ID: T0608100780

FERIANTE PROPERTY | 1612 EL CAMINO REAL | S 1/8 - 1/4 (0.131 mi.) | I87 | 98
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Case Closed
date9: 12/8/1999

CITY OF REDWOOD CITY | 1036 MIDDLEFIELD | NNW 1/8 - 1/4 (0.140 mi.) | N92 | 102
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Post remedial action monitoring

REDWOOD CITY POLICE | 1020 MIDDLEFIELD RD | NNW 1/8 - 1/4 (0.156 mi.) | N103 | 116
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330209
Facility Status: 9- Case Closed
Global Id: T0608192910

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Global ID: T0608192910

TEMPORARY CITY HALL 1020 MIDDLEFIELD NNW 1/8 - 1/4 (0.156 mi.) N104 119
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Post remedial action monitoring

CULVERT REALIGNMENT ***1017 MIDDLEFIELD ROA*** ***NNW 1/8 - 1/4 (0.171 mi.)*** ***N107*** ***122***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330124
Facility Id: 339207
Facility Status: 9- Case Closed
Global Id: T0608100422
Global ID: T0608100422
Global ID: SL0608108743

REDWOOD CITY CITY HA 1017 MIDDLEFIELD NNW 1/8 - 1/4 (0.171 mi.) N109 127
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Case Closed
date9: 4/17/1995

GRADE SEPARATION 923 JEFFERSON AVENUE NW 1/8 - 1/4 (0.172 mi.) P110 128
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330141
Facility Status: 9- Case Closed
Global Id: T0608100909
Global ID: T0608100909

MEZES COURT ***950 MAIN STREET*** ***NNW 1/8 - 1/4 (0.176 mi.)*** ***R114*** ***132***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Post remedial action monitoring
Facility Id: 339009
Facility Id: 330132
Facility Status: 9- Case Closed
Global Id: T0608100337
Global ID: T0608141789

VANHAM PROPERTY ***1015 JEFFERSON*** ***NW 1/8 - 1/4 (0.177 mi.)*** ***P116*** ***138***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Case Closed
Facility Id: 330064
Facility Status: 9- Case Closed
Global Id: T0608100604
Global ID: T0608100604
date9: 9/5/1997

ARCO ***1032 JEFFERSON*** ***WNW 1/8 - 1/4 (0.204 mi.)*** ***U138*** ***153***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 41-0707

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Facility Status: Case Closed
Global Id: T0608100672
date9: 2/3/1996

REDWOOD CITY PARTNER ***950 MIDDLEFIELD RD*** ***NW 1/8 - 1/4 (0.204 mi.)*** ***P141*** ***157***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330229
Facility Status: 9- Case Closed
Global Id: T10000005677
Global ID: T10000005677

ARCO #0306 1700 MIDDLEFIELD E 1/8 - 1/4 (0.208 mi.) V145 166
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Remedial action (cleanup) Underway

ARCO #0306 ***1700 MIDDLEFIELD ROA*** ***E 1/8 - 1/4 (0.208 mi.)*** ***V147*** ***167***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Open - Site Assessment
Facility Id: 330019
Facility Status: 7- Remedial Action Underway
Global Id: T0608100028
Global ID: T0608100028

PACIFIC BELL ***1121 JEFFERSON AVENU*** ***WNW 1/8 - 1/4 (0.209 mi.)*** ***U151*** ***186***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Case Closed
Facility Id: 330069
Facility Status: 9- Case Closed
Global Id: T0608100374
Global ID: T0608100374
date9: 9/17/2001

HUMBLE OIL, FORMER (1201 EL CAMINO REAL WNW 1/8 - 1/4 (0.212 mi.) W156 197
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Post remedial action monitoring
Facility Id: 330157
Facility Status: 9- Case Closed
Global Id: T0608100702
Global ID: T0608100702

REDWOOD CITY POST OF ***855 JEFFERSON AVE*** ***NNW 1/8 - 1/4 (0.228 mi.)*** ***X160*** ***200***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330070
Facility Status: 9- Case Closed
Global Id: T0608100556
Global ID: T0608100556

U.S. POSTAL SERVICE 855 JEFFERSON NNW 1/8 - 1/4 (0.228 mi.) X161 203
Database: LUST REG 2, Date of Government Version: 09/30/2004

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Facility Status: Case Closed
date9: 4/22/1996

ACTERON CORP, FORMER ***851 SHASTA STREET*** ***SE 1/8 - 1/4 (0.237 mi.)*** ***T171*** ***209***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 339022
Facility Status: 9- Case Closed
Global Id: T0608187224
Global ID: T0608187224

DAVIES CHEVROLET 1101 EL CAMINO REAL WNW 1/8 - 1/4 (0.243 mi.) W173 211
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 41-0839
Facility Status: Pollution Characterization
Global Id: T0608100786

REDWOOD CITY PARTNER ***932 MIDDLEFIELD RD*** ***NW 1/4 - 1/2 (0.259 mi.)*** ***Z178*** ***214***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Pollution Characterization

CHEVRON 20-6318, FOR ***932 MIDDLEFIELD*** ***NW 1/4 - 1/2 (0.259 mi.)*** ***Z179*** ***215***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330135
Facility Status: 9- Case Closed
Global Id: T0608100861
Global ID: T0608100861

SHELL, FORMER (HARRY 1909 EL CAMINO REAL SSE 1/4 - 1/2 (0.291 mi.) AA180 219
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330213
Facility Status: 9- Case Closed
Global Id: T0608160745
Global ID: T0608160745

G R BROWN CO 989 SHASTA SE 1/4 - 1/2 (0.292 mi.) 181 223
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Case Closed
Facility Id: 330090
Facility Status: 9- Case Closed
Global Id: T0608192700
Global ID: T0608192700
date9: 10/2/1991

WHOLE FOODS MARKET I ***1250 JEFFERSON AVE*** ***W 1/4 - 1/2 (0.294 mi.)*** ***AB184*** ***236***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 339110
Facility Status: 9- Case Closed

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Global Id: T0608102192
Global ID: T0608102192

MOTLOCH PARCEL ***1629 MAIN STREET*** ***SE 1/4 - 1/2 (0.314 mi.)*** ***AA186*** ***241***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Facility Id: 339224
Facility Status: 9- Case Closed
Global ID: TI0000003696

GUS'S SERVICE STATIO ***841 HAMILTON*** ***NW 1/4 - 1/2 (0.332 mi.)*** ***189*** ***249***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Case Closed
Facility Id: 330152
Facility Status: 9- Case Closed
Global Id: T0608100974
Global ID: T0608100974
date9: 3/20/2000

SHELL, FORMER/KENNED ***1026 EL CAMINO REAL*** ***WNW 1/4 - 1/2 (0.379 mi.)*** ***AG197*** ***272***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Preliminary site assessment underway
Facility Id: 330161
Facility Status: 9- Case Closed
Global Id: T0608101107
Global ID: T0608101107

GRANT CORPORATION YA ***752 CHESTNUT ST*** ***ENE 1/4 - 1/2 (0.380 mi.)*** ***AH198*** ***278***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Post remedial action monitoring
Facility Id: 330174
Facility Status: 9- Case Closed
Global Id: T0608116125
Global ID: T0608116125

DUOLITE INTERNATIONA ***800 CHESTNUT ST*** ***ENE 1/4 - 1/2 (0.393 mi.)*** ***AH207*** ***324***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Id: 41-1142
Facility Status: Post remedial action monitoring

CHARLES SYMES PROPER ***1011 EL CAMINO REAL*** ***WNW 1/4 - 1/2 (0.403 mi.)*** ***AG211*** ***334***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Case Closed
Facility Id: 330094
Facility Status: 9- Case Closed
Global Id: T0608100176
Global ID: T0608100176
date9: 4/23/1997

SEQUOIA STATION PROJ ***1001 EL CAMINO REAL*** ***WNW 1/4 - 1/2 (0.408 mi.)*** ***AI216*** ***347***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017

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Status: Completed - Case Closed
Facility Id: 330072
Facility Status: 9- Case Closed
Global Id: T0608100453
Global ID: T0608100453

SCR-SOUTHERN PACIFIC ***1001 EL CAMINO REAL*** ***WNW 1/4 - 1/2 (0.408 mi.)*** ***AI217*** ***348***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Case Closed
date9: 11/9/2000

NURBURG RING AUTO ***1202 SHASTA*** ***SE 1/4 - 1/2 (0.421 mi.)*** ***AM220*** ***353***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 339172
Facility Status: 9- Case Closed
Global Id: T0608158232
Global ID: T0608158232

RAY'S AUTO ***2233 MIDDLEFIELD RD*** ***ESE 1/4 - 1/2 (0.452 mi.)*** ***AO224*** ***370***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330185
Facility Status: 9- Case Closed
Global Id: T0608191150
Global ID: T0608191150

OPFER PROPERTY 2233 MIDDLEFIELD ESE 1/4 - 1/2 (0.452 mi.) AO225 372
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Remedial action (cleanup) Underway

SEQUOIA TRANSPORTATI ***480 JAMES AVENUE*** ***W 1/4 - 1/2 (0.484 mi.)*** ***228*** ***378***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Case Closed
Facility Id: 330033
Facility Id: 330236
Facility Status: 9- Case Closed
Global Id: T10000008751
Global Id: T0608100454
Global ID: T0608100454
date9: 3/3/1995

U HAUL ***2200 EL CAMINO REAL*** ***SSE 1/4 - 1/2 (0.485 mi.)*** ***AQ229*** ***384***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Post remedial action monitoring

U-HAUL ***2200 EL CAMINO REAL*** ***SSE 1/4 - 1/2 (0.485 mi.)*** ***AQ230*** ***384***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330035
Facility Id: 330149
Facility Status: 9- Case Closed
Global Id: T0608184532
Global Id: T0608100555

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Global ID: T0608184532
Global ID: T0608100555

U-HAUL MOVING & STOR ***2200 EL CAMINO REAL*** ***SSE 1/4 - 1/2 (0.485 mi.)*** ***AQ231*** ***388***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Case Closed
date9: 4/29/1992

Lower Elevation	Address	Direction / Distance	Map ID	Page

BROADWAY PRODUCE & F ***1870 BROADWAY*** ***N 1/4 - 1/2 (0.317 mi.)*** ***AC187*** ***242***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330026
Facility Status: 9- Case Closed
Global Id: T0608100085
Global ID: T0608100085

BROADWAY PRODUCE & F 1870 BROADWAY N 1/4 - 1/2 (0.317 mi.) AC188 249
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Pollution Characterization

MID PENINSULA LEASIN ***1039 EL CAMINO REAL*** ***NW 1/4 - 1/2 (0.342 mi.)*** ***AD190*** ***252***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Case Closed
date9: 4/1/1996

CVS PHARMACY # 9329 ***1039 EL CAMINO REAL*** ***NW 1/4 - 1/2 (0.342 mi.)*** ***AD191*** ***254***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330101
Facility Status: 9- Case Closed
Global Id: T0608100433
Global ID: T0608100433

TINCHER PROPERTY (CH 1800 BROADWAY NNE 1/4 - 1/2 (0.342 mi.) AE192 257
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Open - Site Assessment
Facility Id: 330234
Facility Status: 3B- Preliminary Assessment Underway
Global Id: T10000007272
Global ID: T10000007272

REDWOOD CITY CORPORA 1400 BROADWAY NNE 1/4 - 1/2 (0.346 mi.) AE193 263
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Id: 41-0440
Facility Status: Case Closed
date9: 8/12/1996

REDWOOD CITY CORPORA ***1400 BROADWAY*** ***NNE 1/4 - 1/2 (0.346 mi.)*** ***AE194*** ***263***
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Global Id: T0608100419

CITY CENTER PARKING ***750 MARSHALL ST.*** ***N 1/4 - 1/2 (0.360 mi.)*** ***AF195*** ***269***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Case Closed

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date9: 6/12/1997

CITY CENTER PARKING ***750 MARSHALL*** ***N 1/4 - 1/2 (0.360 mi.)*** ***AF196*** ***270***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330107
Facility Status: 9- Case Closed
Global Id: T0608100667
Global ID: T0608100667

RITZ CLEANERS ***37 JAMES*** ***WNW 1/4 - 1/2 (0.381 mi.)*** ***AI199*** ***287***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Id: 41-1178
Facility Status: Post remedial action monitoring

BRADFORD STREET PARK ***500 BLK BRADFORD ST*** ***NNW 1/4 - 1/2 (0.390 mi.)*** ***AJ201*** ***290***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 41-1094
Facility Status: Preliminary site assessment workplan submitted
Global Id: T0608101004

SMCO MOTOR POOL 590 HAMILTON NNW 1/4 - 1/2 (0.406 mi.) AL212 336
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Status: Pollution Characterization

SAN MATEO COUNTY MOT ***590 HAMILTON ST*** ***NNW 1/4 - 1/2 (0.406 mi.)*** ***AL214*** ***336***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330097
Facility Status: 9- Case Closed
Global Id: T0608100019
Global ID: T0608100019

OLD COURTHOUSE-SAN M ***711 HAMILTON*** ***NNW 1/4 - 1/2 (0.407 mi.)*** ***AL215*** ***345***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Case Closed
Facility Id: 330093
Facility Status: 9- Case Closed
Global Id: T0608100361
Global ID: T0608100361
date9: 3/25/1993

ARTISTIC CLEANERS ***860 MAPLE ST*** ***NNE 1/4 - 1/2 (0.420 mi.)*** ***218*** ***349***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Facility Id: 339235
Facility Status: 3B- Preliminary Assessment Underway
Global ID: T10000007273

ALOHA STATE FLOWERS, ***1260 MARSHALL STREET*** ***NNE 1/4 - 1/2 (0.422 mi.)*** ***221*** ***355***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed

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Facility Status: Pollution Characterization
Facility Id: 330004
Facility Status: 9- Case Closed
Global Id: T0608100014
Global ID: T0608100014

1661 BROADWAY ST - U ***1661 BROADWAY*** ***NE 1/4 - 1/2 (0.454 mi.)*** ***AP226*** ***372***
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Id: 330230
Facility Status: 9- Case Closed
Global Id: T10000005776
Global ID: T10000005776

CHEVRON ***1603 BROADWAY*** ***NE 1/4 - 1/2 (0.485 mi.)*** ***AP232*** ***390***
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Global Id: T0608100120

CHEVRON ***1603 BROADWAY*** ***NE 1/4 - 1/2 (0.485 mi.)*** ***AP233*** ***394***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Facility Id: 41-0127
Facility Status: Case Closed
date9: 6/23/2003

KAISER PERMANENTE ***1150 VETERANS*** ***NNE 1/4 - 1/2 (0.487 mi.)*** ***234*** ***395***
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: SAN MATEO CO. LUST, Date of Government Version: 03/15/2017
Database: LUST, Date of Government Version: 03/13/2017
Status: Completed - Case Closed
Facility Status: Case Closed
Facility Id: 330041
Facility Status: 9- Case Closed
Global Id: T0608100290
Global ID: T0608100290
date9: 9/8/1993

SLIC: Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the SLIC list, as provided by EDR, has revealed that there are 19 SLIC sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NW CORNER	MAIN AND MIDDLEFIELD	N 0 - 1/8 (0.121 mi.)	F73	86
Database: SLIC REG 2, Date of Government Version: 09/30/2004 Database: SLIC, Date of Government Version: 03/13/2017 Facility Status: Completed - Case Closed Facility Id: SL163231121 Global Id: SL163231121				
REDWOOD CITY SOLVENT	1600 EL CAMINO REAL	SSW 0 - 1/8 (0.123 mi.)	I79	90
Database: SLIC, Date of Government Version: 03/13/2017				

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Facility Status: Open - Inactive
Global Id: T10000004815

PRIVATE RESIDENCE	***PRIVATE RESIDENCE***	***SSE 1/8 - 1/4 (0.130 mi.)***	***J81***	***91***
Database: SLIC, Date of Government Version: 03/13/2017 Facility Status: Completed - Case Closed Global Id: SL0608151751				
RUST PROPERTY	925 MAIN STREET	N 1/8 - 1/4 (0.153 mi.)	M95	104
Database: SLIC, Date of Government Version: 03/13/2017 Facility Status: Open - Site Assessment Global Id: SL0608130496				
CULVERT REALIGNMENT	***1017 MIDDLEFIELD ROA***	***NNW 1/8 - 1/4 (0.171 mi.)***	***N107***	***122***
Database: SLIC, Date of Government Version: 03/13/2017 Facility Status: Completed - Case Closed Global Id: SL0608108743				
MEZES COURT	***950 MAIN STREET***	***NNW 1/8 - 1/4 (0.176 mi.)***	***R114***	***132***
Database: SLIC, Date of Government Version: 03/13/2017 Facility Status: Completed - Case Closed Global Id: T0608141789				
LUCKY STORE #15	UNKNOWN JEFFERSON AV	WNW 1/8 - 1/4 (0.234 mi.)	W167	205
Database: SLIC REG 2, Date of Government Version: 09/30/2004 Facility Id: 41S0055				
ROYS CLEANERS	***1100 EL CAMINO REAL***	***WNW 1/4 - 1/2 (0.293 mi.)***	***AB182***	***225***
Database: SLIC, Date of Government Version: 03/13/2017 Facility Status: Open - Site Assessment Global Id: SLT2O225933				
ROY'S DRY CLEANERS	1100 EL CAMINO REAL	WNW 1/4 - 1/2 (0.293 mi.)	AB183	236
Database: SLIC REG 2, Date of Government Version: 09/30/2004 Facility Id: SLT2O225				
MOTLOCH PARCEL	***1629 MAIN STREET***	***SE 1/4 - 1/2 (0.314 mi.)***	***AA186***	***241***
Database: SLIC, Date of Government Version: 03/13/2017 Facility Status: Completed - Case Closed Global Id: T10000003696				
ORCHARD SUPPLY HARDW	UNKNOWN MIDDLEFIELD	ESE 1/4 - 1/2 (0.393 mi.)	AK203	301
Database: SLIC REG 2, Date of Government Version: 09/30/2004 Facility Id: SLT2O228324				
800 CHESTNUT (ROHM A	800 CHESTNUT STREET	ENE 1/4 - 1/2 (0.393 mi.)	AH206	324
Database: SLIC REG 2, Date of Government Version: 09/30/2004 Facility Id: 41S0019				
DUOLITE INTERNATIONA	***800 CHESTNUT ST***	***ENE 1/4 - 1/2 (0.393 mi.)***	***AH207***	***324***
Database: SLIC, Date of Government Version: 03/13/2017 Facility Status: Open - Verification Monitoring Global Id: SL20221839				
ORCHARD SUPPLY HARDW	2110 MIDDLEFIELD ROA	ESE 1/4 - 1/2 (0.402 mi.)	AK210	333
Database: SLIC, Date of Government Version: 03/13/2017 Facility Status: Open - Inactive Global Id: SLT2O228324				
NURBURG RING	***1202 SHASTA***	***SE 1/4 - 1/2 (0.421 mi.)***	***AM219***	***352***
Database: SLIC, Date of Government Version: 03/13/2017 Facility Status: Open - Inactive Global Id: T10000006805				
BRADFORD STREET PARC	0 BRADFORD STREET	NW 1/4 - 1/2 (0.497 mi.)	AN235	400
Database: SLIC, Date of Government Version: 03/13/2017				

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Facility Status: Open - Site Assessment
Global Id: SL0608123721

Lower Elevation	Address	Direction / Distance	Map ID	Page
RITZ CLEANERS	***37 JAMES***	***WNW 1/4 - 1/2 (0.381 mi.)***	***AI199***	***287***
Database: SLIC, Date of Government Version: 03/13/2017 Facility Status: Open - Verification Monitoring Global Id: T0608101077				
660 JEFFERSON	***660 JEFFERSON AVENUE***	***NNW 1/4 - 1/2 (0.393 mi.)***	***AJ204***	***301***
Database: SLIC, Date of Government Version: 03/13/2017 Facility Status: Open - Site Assessment Global Id: T10000006353				
ARTISTIC CLEANERS	***860 MAPLE ST***	***NNE 1/4 - 1/2 (0.420 mi.)***	***218***	***349***
Database: SLIC, Date of Government Version: 03/13/2017 Facility Status: Open - Site Assessment Global Id: T10000007273				

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, has revealed that there are 3 UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
REDWOOD CAR CARE	1331 EL CAMINO REAL	W 1/8 - 1/4 (0.154 mi.)	K99	113
Database: UST, Date of Government Version: 03/12/2017				
ARCO 00306	1700 MIDDLEFIELD RD	E 1/8 - 1/4 (0.208 mi.)	V148	184
Database: UST, Date of Government Version: 03/12/2017 Facility Id: 41-000-017314				
AT&T CALIFORNIA - P3	1121 JEFFERSON AVE	WNW 1/8 - 1/4 (0.209 mi.)	U150	186
Database: UST, Date of Government Version: 03/12/2017 Facility Id: 41-000-005130				

AST: A listing of aboveground storage tank petroleum storage tank locations.

A review of the AST list, as provided by EDR, and dated 07/06/2016 has revealed that there is 1 AST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AT&T CALIFORNIA - P3	1121 JEFFERSON AVE	WNW 1/8 - 1/4 (0.209 mi.)	U152	195

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State and tribal voluntary cleanup sites

VCP: Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

A review of the VCP list, as provided by EDR, and dated 01/30/2017 has revealed that there are 4 VCP sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RUST PROPERTY AKA YO Status: Active Facility Id: 60001313	***925 / 929 MAIN STREE***	***N 1/8 - 1/4 (0.154 mi.)***	***M96***	***105***

Lower Elevation	Address	Direction / Distance	Map ID	Page
PG&E, REDWOOD CITY Status: Active Facility Id: 60001090	***675 JEFFERSON AVENUE***	***NNW 1/4 - 1/2 (0.392 mi.)***	***202***	***292***
660 JEFFERSON Status: Active Facility Id: 60002283	***660 JEFFERSON AVENUE***	***NNW 1/4 - 1/2 (0.393 mi.)***	***AJ204***	***301***
BRADFORD STREET PARC Status: Inactive - Needs Evaluation Facility Id: 60000784	***707 BRADFORD STREET***	***NNW 1/4 - 1/2 (0.451 mi.)***	***223***	***365***

State and tribal Brownfields sites

BROWNFIELDS: A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

A review of the BROWNFIELDS list, as provided by EDR, and dated 01/03/2017 has revealed that there are 2 BROWNFIELDS sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PRIVATE RESIDENCE	***PRIVATE RESIDENCE***	***SSE 1/8 - 1/4 (0.130 mi.)***	***J81***	***91***
NURBURG RING AUTO	***1202 SHASTA***	***SE 1/4 - 1/2 (0.421 mi.)***	***AM220***	***353***

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

HIST Cal-Sites: Formerly known as ASPIS, this database contains both known and potential hazardous substance sites. The source is the California Department of Toxic Substance Control. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

A review of the HIST Cal-Sites list, as provided by EDR, and dated 08/08/2005 has revealed that there

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is 1 HIST Cal-Sites site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EICHROME	*2480 MIDDLEFIELD ROA*	*ESE 1/2 - 1 (0.628 mi.)*	*239*	*414*

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there are 11 SWEEPS UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RMC LONESTAR Comp Number: 330011	*25 MAPLE*	*SW 0 - 1/8 (0.080 mi.)*	*D39*	*55*
BEKINS MOVING & STOR Comp Number: 330091	*1451 EL CAMINO REAL*	*WSW 0 - 1/8 (0.101 mi.)*	*G50*	*68*
FIRESTONE TIRES #367 Status: A Tank Status: A Comp Number: 330049	*1458 EL CAMINO REAL*	*SW 0 - 1/8 (0.119 mi.)*	*G65*	*80*
FERIANTE PROPERTY Comp Number: 440085	*1612 EL CAMINO REAL*	*S 1/8 - 1/4 (0.131 mi.)*	*I87*	*98*
ECONO LUBE N'TUNE #1 Status: A Tank Status: A Comp Number: 330138	*1331 EL CAMINO REAL*	*W 1/8 - 1/4 (0.154 mi.)*	*K98*	*112*
REDWOOD CITY POLICE Status: A Tank Status: A Comp Number: 330162	*1020 MIDDLEFIELD RD*	*NNW 1/8 - 1/4 (0.156 mi.)*	*N103*	*116*
COMMERCIAL PROPERTY Status: A Comp Number: 330180	*727 SHASTA ST*	*SE 1/8 - 1/4 (0.192 mi.)*	*T125*	*145*
ARCO Comp Number: 330096	*1032 JEFFERSON*	*WNW 1/8 - 1/4 (0.204 mi.)*	*U138*	*153*
ARCO #0306 Status: A Tank Status: A Comp Number: 330073	*1700 MIDDLEFIELD ROA*	*E 1/8 - 1/4 (0.208 mi.)*	*V147*	*167*
PACIFIC BELL Status: A Tank Status: A Comp Number: 330048	*1121 JEFFERSON AVENU*	*WNW 1/8 - 1/4 (0.209 mi.)*	*U151*	*186*
REDWOOD CITY POST OF Status: A	*855 JEFFERSON AVE*	*NNW 1/8 - 1/4 (0.228 mi.)*	*X160*	*200*

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Comp Number: 330152

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 11 HIST UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PACIFIC READY MIX IN Facility Id: 00000010291	***25 MAPLE ST***	***SW 0 - 1/8 (0.080 mi.)***	***D38***	***54***
PHIL FINER REFRIGERA Facility Id: 00000043884	***1001 MAIN ST***	***N 0 - 1/8 (0.100 mi.)***	***F44***	***59***
94256 Facility Id: 00000062590	1502 EL CAMINO REAL	SW 0 - 1/8 (0.106 mi.)	G57	74
TOWNE FORD SALES Facility Id: 00000004128	***1601 EL CAMINO REAL***	***S 0 - 1/8 (0.107 mi.)***	***I61***	***76***
BEKINS MOVING AND ST Facility Id: 00000063601	1451 EL CAMINO	SW 0 - 1/8 (0.109 mi.)	G63	79
FIRESTONE COMPLETE A Facility Id: 00000005847	***1458 EL CAMINO REAL***	***SW 0 - 1/8 (0.119 mi.)***	***G67***	***81***
GLEN GREER ARCO Facility Id: 00000048992	1032 JEFFERSON AVE	WNW 1/8 - 1/4 (0.204 mi.)	U136	152
VEGA ARCO AM/PM Facility Id: 00000033002	1700 MIDDLEFIELD RD	E 1/8 - 1/4 (0.208 mi.)	V146	166
VEGA ARCO AM/PM Facility Id: 00000026907	1700 MIDDLEFIELD ROA	E 1/8 - 1/4 (0.208 mi.)	V149	184
PACIFIC BELL Facility Id: 00000036934	***1121 JEFFERSON AVENU***	***WNW 1/8 - 1/4 (0.209 mi.)***	***U151***	***186***
ACTERON CORP Facility Id: 00000054752	***851 SHASTA STREET***	***SE 1/8 - 1/4 (0.237 mi.)***	***T170***	***206***

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there are 6 CA FID UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BEKINS MOVING & STOR Facility Id: 41000303 Status: A	***1451 EL CAMINO REAL***	***WSW 0 - 1/8 (0.101 mi.)***	***G50***	***68***
FIRESTONE TIRES #367 Facility Id: 41002514 Status: A	***1458 EL CAMINO REAL***	***SW 0 - 1/8 (0.119 mi.)***	***G65***	***80***
ECONO LUBE N'TUNE #1 Facility Id: 41003187	***1331 EL CAMINO REAL***	***W 1/8 - 1/4 (0.154 mi.)***	***K98***	***112***

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Status: A				
COMMERCIAL PROPERTY Facility Id: 41001594 Status: A	***727 SHASTA ST***	***SE 1/8 - 1/4 (0.192 mi.)***	***T125***	***145***
SEQUOIA STATION Facility Id: 41000613 Status: I	1032 JEFFERSON AVE	WNW 1/8 - 1/4 (0.204 mi.)	U139	157
PACIFIC BELL Facility Id: 41000380 Status: A	***1121 JEFFERSON AVENU***	***WNW 1/8 - 1/4 (0.209 mi.)***	***U151***	***186***

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 12/12/2016 has revealed that there are 2 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CHEVRON USA INC SERV	***1502 EL CAMINO REAL***	***SW 0 - 1/8 (0.106 mi.)***	***G56***	***73***
CALIFORNIA AUTOMOTIV	***727 SHASTA ST UNIT C***	***SE 1/8 - 1/4 (0.192 mi.)***	***T121***	***142***

CA BOND EXP. PLAN: Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

A review of the CA BOND EXP. PLAN list, as provided by EDR, and dated 01/01/1989 has revealed that there is 1 CA BOND EXP. PLAN site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WILLARD PRODUCTS	***70 CHEMICAL WAY***	***NNE 1/2 - 1 (0.802 mi.)***	***AR243***	***443***

Hazardous Materials Business Plan, Hazardous Waste Generator, Underground Storage tanks

A review of the San Mateo Co. BI list, as provided by EDR, and dated 03/15/2017 has revealed that there are 87 San Mateo Co. BI sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FIVE STAR DEVELOPMEN Facility Id: FA0022926	134 MAPLE	0 - 1/8 (0.001 mi.)	A9	18
J&JS AUTO Facility Id: FA0023853	150 ELM	SSE 0 - 1/8 (0.016 mi.)	A10	18
LS TRUCKING Facility Id: FA0023839	112 ELM	SSE 0 - 1/8 (0.016 mi.)	A11	19
ROOTES GROUP DEPOT	1224 MAIN	SE 0 - 1/8 (0.029 mi.)	C14	20

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Facility Id: FA0023756				
B P S Facility Id: FA0015121	1201 MAIN	NNE 0 - 1/8 (0.030 mi.)	A16	21
COOKS COLLISION OF R Facility Id: FA0017375	1104 MAIN	N 0 - 1/8 (0.032 mi.)	B17	22
BOBS AUTO REPAIR Facility Id: FA0023097	415 CASSIA	NNE 0 - 1/8 (0.043 mi.)	B20	38
TOWNE FORD Facility Id: FA0006994	135 MAPLE	SW 0 - 1/8 (0.045 mi.)	D22	39
HOPKINS ACURA Facility Id: FA0001217	1555 EL CAMINO REAL	SSW 0 - 1/8 (0.045 mi.)	D26	42
CALIFORNIA AUTO DETA Facility Id: FA0008018	113 BEECH	SSE 0 - 1/8 (0.052 mi.)	C28	43
COOKS UPHOLSTERY Facility Id: FA0024017	1101 1/2 MAIN	N 0 - 1/8 (0.065 mi.)	B30	43
DAN STEWART CO Facility Id: FA0015220	410 MAPLE	N 0 - 1/8 (0.070 mi.)	B31	44
MOTOR VERKSTAD VOLVO Facility Id: FA0007683	113 MONROE	WNW 0 - 1/8 (0.070 mi.)	E32	44
KC PAVING Facility Id: FA0025168	113 MONROE	WNW 0 - 1/8 (0.070 mi.)	E33	45
CAL CAR WASH DISTRIB Facility Id: FA0024244	1303 MAIN	SE 0 - 1/8 (0.076 mi.)	C35	45
RMC LONESTAR Facility Id: FA0010956	25 MAPLE	SW 0 - 1/8 (0.080 mi.)	D37	54
HN LOCKWOOD INC Facility Id: FA0015216	450 MAPLE	N 0 - 1/8 (0.082 mi.)	F40	58
WESTPAC ENGINEERING Facility Id: FA0023961	***145 MONROE***	***NW 0 - 1/8 (0.089 mi.)***	***E42***	***58***
DESANTANA FOUNTAINS Facility Id: FA0024344	1280 MIDDLEFIELD	NNE 0 - 1/8 (0.095 mi.)	F43	59
PHIL FINER REFRIGERA Facility Id: FA0024029	1001 MAIN	N 0 - 1/8 (0.100 mi.)	F45	65
CHAIN REACTION BICYC Facility Id: FA0024216	1451 EL CAMINO REAL	WSW 0 - 1/8 (0.101 mi.)	G48	67
T MOBILE WEST CORP S Facility Id: FA0045637	1451 EL CAMINO REAL	WSW 0 - 1/8 (0.101 mi.)	G49	67
VERIZON WIRELESS RED Facility Id: FA0027696	***1451 EL CAMINO REAL***	***WSW 0 - 1/8 (0.101 mi.)***	***G51***	***69***
PRECISION FOREIGN CA Facility Id: FA0017423	1540 EL CAMINO REAL	SW 0 - 1/8 (0.103 mi.)	H53	72
AUTOWORKS Facility Id: FA0022684	1540 EL CAMINO REAL	SW 0 - 1/8 (0.103 mi.)	H54	72
TOWNE FORD SALES Facility Id: FA0017387	1601 EL CAMINO REAL	S 0 - 1/8 (0.107 mi.)	I59	75
TOWNE AUTO BODY	111 CEDAR	SSE 0 - 1/8 (0.112 mi.)	J64	79

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Facility Id: FA0011432				
FIRESTONE COMPLETE A Facility Id: FA0017291	***1458 EL CAMINO REAL***	***SW 0 - 1/8 (0.119 mi.)***	***G67***	***81***
SHADOW AUTO BODY SHO Facility Id: FA0022789	20 DILLER	W 0 - 1/8 (0.120 mi.)	K69	84
SPEED AND COLOR BODY Facility Id: FA0027287 Facility Id: FA0053942	20 DILLER	W 0 - 1/8 (0.120 mi.)	K70	84
GLENNS AUTO SVC Facility Id: FA0016116	132 WILSON	NW 0 - 1/8 (0.123 mi.)	L75	89
MOTOR VERKSTAD VOLVO Facility Id: FA0027961	132 WILSON	NW 0 - 1/8 (0.123 mi.)	L77	90
LIQUID DIGITAL MEDIA Facility Id: FA0036940	999 MAIN	N 1/8 - 1/4 (0.131 mi.)	M82	95
QUEST COLLISION CENT Facility Id: FA0028686	1612 EL CAMINO REAL	S 1/8 - 1/4 (0.131 mi.)	I83	95
PREMIER AUTO COLLISO Facility Id: FA0050093	1612 EL CAMINO REAL	S 1/8 - 1/4 (0.131 mi.)	I84	96
NBS MOTORS Facility Id: FA0029605	1612 EL CAMINO REAL	S 1/8 - 1/4 (0.131 mi.)	I86	97
WEST COAST WHEELS & Facility Id: FA0056992	1612 EL CAMINO REAL	S 1/8 - 1/4 (0.131 mi.)	I88	100
MUFFLER EXPRESS Facility Id: FA0045549	1414 EL CAMINO REAL	WSW 1/8 - 1/4 (0.139 mi.)	G90	101
LIFE TIME MUFFLER Facility Id: FA0012775	1414 EL CAMINO REAL	WSW 1/8 - 1/4 (0.139 mi.)	G91	102
SCHERBAS Facility Id: FA0023943	1680 EL CAMINO REAL	S 1/8 - 1/4 (0.142 mi.)	I93	103
JIMS MACHINE SHOP Facility Id: FA0015199	929 MAIN	N 1/8 - 1/4 (0.154 mi.)	M97	111
REDWOOD CAR CARE Facility Id: FA0006787	***1331 EL CAMINO REAL***	***W 1/8 - 1/4 (0.154 mi.)***	***K100***	***113***
UST SITE - REDEVELOP Facility Id: FA0059859	127 WILSON	NW 1/8 - 1/4 (0.155 mi.)	L101	115
AT&T CALIFORNIA - P3 Facility Id: FA0061016	72 WILSON	WNW 1/8 - 1/4 (0.156 mi.)	102	115
CYCLE GEAR Facility Id: FA0024128	1326 EL CAMINO REAL	W 1/8 - 1/4 (0.166 mi.)	K105	120
REDWOOD CITY HALL Facility Id: FA0022973	1017 MIDDLEFIELD	NNW 1/8 - 1/4 (0.171 mi.)	N108	127
ANGEL CAR CARE Facility Id: FA0015996	330 CHESTNUT	ESE 1/8 - 1/4 (0.173 mi.)	O111	131
MCDONALD Facility Id: FA0026194	185 CHESTNUT	SSE 1/8 - 1/4 (0.173 mi.)	Q112	132
CARBON3D Facility Id: FA0056917	312 CHESTNUT	ESE 1/8 - 1/4 (0.175 mi.)	O113	132
PRECISION TUNE AUTO	***1304 EL CAMINO REAL***	***W 1/8 - 1/4 (0.183 mi.)***	***S117***	***140***

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Facility Id: FA0054867				
PRECISION TUNE AUTO Facility Id: FA0001884	1304 EL CAMINO REAL	W 1/8 - 1/4 (0.183 mi.)	S118	141
CLUTCH EXPRESS Facility Id: FA0025093	1304 EL CAMINO REAL	W 1/8 - 1/4 (0.183 mi.)	S119	142
COMMERCIAL PROPERTY Facility Id: FA0022917	727 SHASTA	SE 1/8 - 1/4 (0.192 mi.)	T120	142
AMERICAN ASPHALT Facility Id: FA0012624	727 SHASTA	SE 1/8 - 1/4 (0.192 mi.)	T122	144
CALIFORNIA CONCEPTS Facility Id: FA0022719	727 SHASTA	SE 1/8 - 1/4 (0.192 mi.)	T123	144
HEBREW ACADEMY Facility Id: FA0024749	727 SHASTA	SE 1/8 - 1/4 (0.192 mi.)	T124	145
NICOLOSI DISTRIBUTIN Facility Id: FA0024482	220 CHESTNUT	SSE 1/8 - 1/4 (0.195 mi.)	Q127	147
CHESTNUT AUTOMOTIVE Facility Id: FA0023480	160 CHESTNUT	SSE 1/8 - 1/4 (0.195 mi.)	Q128	147
AGRICULTURAL WEIGHTS Facility Id: FA0011752	728 HELLER	ESE 1/8 - 1/4 (0.196 mi.)	O130	148
COST PLUS INC #284 Facility Id: FA0057065	890 JEFFERSON	NNW 1/8 - 1/4 (0.197 mi.)	P132	151
GARAFFO AUTO REPAIR Facility Id: FA0016441	301 PINE	ESE 1/8 - 1/4 (0.200 mi.)	O133	151
COLLINS CLASSICS Facility Id: FA0024355	301 PINE	ESE 1/8 - 1/4 (0.200 mi.)	O134	152
COVENTRY MOTORS Facility Id: FA0023977	301 PINE	ESE 1/8 - 1/4 (0.200 mi.)	O135	152
GLENN GREER ARCO Facility Id: FA0017334	1032 JEFFERSON	WNW 1/8 - 1/4 (0.204 mi.)	U137	153
ENVIRONMENTAL HEALTH Facility Id: FA0022585	310 PINE	ESE 1/8 - 1/4 (0.204 mi.)	O140	157
REDWOOD CITY PARTNER Facility Id: FA0054611	***950 MIDDLEFIELD RD***	***NW 1/8 - 1/4 (0.204 mi.)***	***P141***	***157***
B & D AUTOMOTIVE Facility Id: FA0008065	1510 MAIN	SSE 1/8 - 1/4 (0.206 mi.)	Q142	164
ARCO 00306 Facility Id: FA0017314	1700 MIDDLEFIELD	E 1/8 - 1/4 (0.208 mi.)	V143	165
PACIFIC BELL Facility Id: FA0005130	***1121 JEFFERSON AVENU***	***WNW 1/8 - 1/4 (0.209 mi.)***	***U151***	***186***
BENS AUTO TECH Facility Id: FA0034872	413 LATHROP	SSE 1/8 - 1/4 (0.211 mi.)	Q153	196
BEN'S AUTO TECH Facility Id: FA0022653	413 LATHROP	SSE 1/8 - 1/4 (0.211 mi.)	Q154	197
APS PHOTO CTRS Facility Id: FA0012981	1201 EL CAMINO REAL	WNW 1/8 - 1/4 (0.212 mi.)	W155	197
U S AUTO REPAIR	230 PINE	SE 1/8 - 1/4 (0.212 mi.)	T157	199

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Facility Id: FA0014423				
AMERICAN ORNAMENTAL Facility Id: FA0014452	220 PINE	SE 1/8 - 1/4 (0.213 mi.)	T158	200
REDWOOD CITY POST OF Facility Id: FA0009239	855 JEFFERSON	NNW 1/8 - 1/4 (0.228 mi.)	X159	200
AT & T MOBILITY-EL C Facility Id: FA0036936	1200 EL CAMINO REAL	W 1/8 - 1/4 (0.228 mi.)	W162	203
ASAP TIRES, LLC Facility Id: FA0057199	1823 EL CAMINO REAL	SSE 1/8 - 1/4 (0.230 mi.)	Y164	204
THE ORIGINAL UNDERWH Facility Id: FA0024114	1802 EL CAMINO REAL	SSE 1/8 - 1/4 (0.233 mi.)	Y166	204
BROADWAY PARKING GAR Facility Id: FA0028196	915 MIDDLEFIELD	NW 1/8 - 1/4 (0.236 mi.)	Z168	205
ACTERON METAL FINISH Facility Id: FA0017430	851 SHASTA	SE 1/8 - 1/4 (0.237 mi.)	T169	205
PARK CHEVROLET Facility Id: FA0017447	1101 EL CAMINO REAL	WNW 1/8 - 1/4 (0.243 mi.)	W174	213
THE HABIT BURGER GRI Facility Id: FA0058494	1111 EL CAMINO REAL	WNW 1/8 - 1/4 (0.244 mi.)	W175	213
CROSSING 900 Facility Id: FA0057839	900 MIDDLEFIELD	NW 1/8 - 1/4 (0.244 mi.)	Z176	213
PRECISION AUTO REPAI Facility Id: FA0055477 Facility Id: FA0027008	110 PINE	SE 1/8 - 1/4 (0.249 mi.)	177	214

Lower Elevation	Address	Direction / Distance	Map ID	Page
SCHROEDER SHEET META Facility Id: FA0023571	640 MAPLE	NNE 1/8 - 1/4 (0.229 mi.)	163	203
BIZZARROS RESTORATIV Facility Id: FA0012388	847 MAIN	N 1/8 - 1/4 (0.230 mi.)	165	204
LE SUN INC Facility Id: FA0013635	846 JEFFERSON	NNW 1/8 - 1/4 (0.238 mi.)	X172	211

Cortese: The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

A review of the Cortese list, as provided by EDR, and dated 12/28/2016 has revealed that there is 1 Cortese site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
ROHM&HAAS/OCCIDENTAL	***800 CHESNUT***	***NE 1/4 - 1/2 (0.388 mi.)***	***200***	***288***

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HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 35 HIST CORTESE sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RMC LONESTAR Reg Id: 41-0724	***25 MAPLE***	***SW 0 - 1/8 (0.080 mi.)***	***D39***	***55***
VERIZON WIRELESS RED Reg Id: 41-0299	***1451 EL CAMINO REAL***	***WSW 0 - 1/8 (0.101 mi.)***	***G51***	***69***
TOWN FORD SALES Reg Id: 41-0573	1601 EL CAMINO REAL	S 0 - 1/8 (0.107 mi.)	I60	76
RED CARPET CAR WASH Reg Id: 41-1051	1436 EL CAMINO REAL	WSW 1/8 - 1/4 (0.126 mi.)	G80	91
FERIANTE PROPERTY Reg Id: 41-0833	***1612 EL CAMINO REAL***	***S 1/8 - 1/4 (0.131 mi.)***	***I87***	***98***
REDWOOD CITY POLICE Reg Id: 41-0994	***1020 MIDDLEFIELD RD***	***NNW 1/8 - 1/4 (0.156 mi.)***	***N103***	***116***
CULVERT REALIGNMENT Reg Id: 41-0443	***1017 MIDDLEFIELD ROA***	***NNW 1/8 - 1/4 (0.171 mi.)***	***N107***	***122***
VANHAM PROPERTY Reg Id: 41-0632	***1015 JEFFERSON***	***NW 1/8 - 1/4 (0.177 mi.)***	***P116***	***138***
ARCO Reg Id: 41-0707	***1032 JEFFERSON***	***WNW 1/8 - 1/4 (0.204 mi.)***	***U138***	***153***
ARCO #0306 Reg Id: 41-0029	***1700 MIDDLEFIELD ROA***	***E 1/8 - 1/4 (0.208 mi.)***	***V147***	***167***
PACIFIC BELL Reg Id: 41-0393	***1121 JEFFERSON AVENU***	***WNW 1/8 - 1/4 (0.209 mi.)***	***U151***	***186***
REDWOOD CITY POST OF Reg Id: 41-0582	***855 JEFFERSON AVE***	***NNW 1/8 - 1/4 (0.228 mi.)***	***X160***	***200***
ACTERON CORP, FORMER Reg Id: 41-1090	***851 SHASTA STREET***	***SE 1/8 - 1/4 (0.237 mi.)***	***T171***	***209***
CHEVRON 20-6318, FOR Reg Id: 41-0935	***932 MIDDLEFIELD***	***NW 1/4 - 1/2 (0.259 mi.)***	***Z179***	***215***
ROYS CLEANERS Reg Id: 41-1155 Reg Id: 41-1053	***1100 EL CAMINO REAL***	***WNW 1/4 - 1/2 (0.293 mi.)***	***AB182***	***225***
WHOLE FOODS MARKET I Reg Id: 41-0699	***1250 JEFFERSON AVE***	***W 1/4 - 1/2 (0.294 mi.)***	***AB184***	***236***
GUS'S SERVICE STATIO Reg Id: 41-1062	***841 HAMILTON***	***NW 1/4 - 1/2 (0.332 mi.)***	***189***	***249***
SHELL, FORMER/KENNED Reg Id: 41-1211	***1026 EL CAMINO REAL***	***WNW 1/4 - 1/2 (0.379 mi.)***	***AG197***	***272***
CHARLES SYMES PROPER Reg Id: 41-0185	***1011 EL CAMINO REAL***	***WNW 1/4 - 1/2 (0.403 mi.)***	***AG211***	***334***
SEQUOIA STATION PROJ	***1001 EL CAMINO REAL***	***WNW 1/4 - 1/2 (0.408 mi.)***	***AI216***	***347***

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Reg Id: 41-0477				
SCR-SOUTHERN PACIFIC Reg Id: 41-0533 Reg Id: 2 417147N01	***1001 EL CAMINO REAL***	***WNW 1/4 - 1/2 (0.408 mi.)***	***AI217***	***348***
AMERICAN SAVINGS BAN Reg Id: 41-1187	201 MARSHALL	NW 1/4 - 1/2 (0.450 mi.)	AN222	364
RAY'S AUTO Reg Id: 41-0354	***2233 MIDDLEFIELD RD***	***ESE 1/4 - 1/2 (0.452 mi.)***	***AO224***	***370***
U HAUL Reg Id: 41-0581	***2200 EL CAMINO REAL***	***SSE 1/4 - 1/2 (0.485 mi.)***	***AQ229***	***384***

Lower Elevation	Address	Direction / Distance	Map ID	Page
BROADWAY PRODUCE & F Reg Id: 41-0090	***1870 BROADWAY***	***N 1/4 - 1/2 (0.317 mi.)***	***AC187***	***242***
CVS PHARMACY # 9329 Reg Id: 41-0457	***1039 EL CAMINO REAL***	***NW 1/4 - 1/2 (0.342 mi.)***	***AD191***	***254***
REDWOOD CITY CORPORA Reg Id: 41-0440	***1400 BROADWAY***	***NNE 1/4 - 1/2 (0.346 mi.)***	***AE194***	***263***
CITY CENTER PARKING Reg Id: 41-0701	***750 MARSHALL***	***N 1/4 - 1/2 (0.360 mi.)***	***AF196***	***270***
RITZ CLEANERS Reg Id: 41-1178	***37 JAMES***	***WNW 1/4 - 1/2 (0.381 mi.)***	***AI199***	***287***
ROHM&HAAS/OCCIDENTAL Reg Id: 2 417146N01	***800 CHESNUT***	***NE 1/4 - 1/2 (0.388 mi.)***	***200***	***288***
BRADFORD STREET PARK Reg Id: 41-1094	***500 BLK BRADFORD ST***	***NNW 1/4 - 1/2 (0.390 mi.)***	***AJ201***	***290***
SMCO MOTOR POOL Reg Id: 41-0019	590 HAMILTON	NNW 1/4 - 1/2 (0.406 mi.)	AL213	336
OLD COURTHOUSE-SAN M Reg Id: 41-0380	***711 HAMILTON***	***NNW 1/4 - 1/2 (0.407 mi.)***	***AL215***	***345***
ALOHA STATE FLOWERS, Reg Id: 41-0014	***1260 MARSHALL STREET***	***NNE 1/4 - 1/2 (0.422 mi.)***	***221***	***355***
CHEVRON Reg Id: 41-0127	***1603 BROADWAY***	***NE 1/4 - 1/2 (0.485 mi.)***	***AP232***	***390***

HWP: Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

A review of the HWP list, as provided by EDR, and dated 11/21/2016 has revealed that there are 2 HWP sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SAN MATEO CO AGRICUL EPA Id: CAT000617472 Cleanup Status: PROTECTIVE FILER	728 HELLER ST	ESE 1/8 - 1/4 (0.196 mi.)	O129	148
DUOLITE INTERNATIONA	***800 CHESTNUT ST***	***ENE 1/4 - 1/2 (0.393 mi.)***	***AH207***	***324***

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EPA Id: CAD990792335
Cleanup Status: UNDERGOING CLOSURE

Notify 65: Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

A review of the Notify 65 list, as provided by EDR, and dated 12/16/2016 has revealed that there are 9 Notify 65 sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
TOWNE FORD SALES	***1601 EL CAMINO REAL***	***S 0 - 1/8 (0.107 mi.)***	***I61***	***76***
ARCO SERVICE STATION	1700 MIDDLEFIELD ROA	E 1/8 - 1/4 (0.208 mi.)	V144	165
COORS WEST	2700 MIDDLEFIELD ROA	ESE 1/2 - 1 (0.862 mi.)	249	468
UNKNOWN	860 HURLINGAMES	E 1/2 - 1 (0.952 mi.)	AT254	472

Lower Elevation	Address	Direction / Distance	Map ID	Page
BROADWAY PRODUCE & F	***1870 BROADWAY***	***N 1/4 - 1/2 (0.317 mi.)***	***AC187***	***242***
LIMA REALTY GROUP	***350 CONVENTION WAY***	***N 1/2 - 1 (0.811 mi.)***	***245***	***458***
COORS WEST	***890 BROADWAY***	***ENE 1/2 - 1 (0.885 mi.)***	***AS250***	***469***
SERVICE STATION	503 WHIPPLE AVENUE	NNW 1/2 - 1 (0.934 mi.)	251	470
MOBILE STATION # 10-	640 WHIPPLE STREET	NW 1/2 - 1 (0.949 mi.)	253	472

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

A review of the EDR MGP list, as provided by EDR, has revealed that there is 1 EDR MGP site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
PG AND E GAS PLANT R	E MARSHALL, WASHINGT	NNW 1/4 - 1/2 (0.313 mi.)	185	241

EDR Hist Auto: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station,

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service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Auto list, as provided by EDR, has revealed that there are 18 EDR Hist Auto sites within approximately 0.125 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROTARY PERFORMANCE M	150 ELM ST A	SE 0 - 1/8 (0.017 mi.)	A12	19
COOKS AUTO BODY & PA	1104 MAIN	N 0 - 1/8 (0.027 mi.)	B13	19
BOBS AUTO REPAIR	415 CASSIA ST	NNE 0 - 1/8 (0.043 mi.)	B21	39
AUTO ELECTRIC & CARB	135 MAPLE ST	SW 0 - 1/8 (0.045 mi.)	D24	41
KOPF MOTOR COMPANY I	1555 EL CAMINO REAL	SSW 0 - 1/8 (0.045 mi.)	D25	42
BALTZER ENTERPRISES	113 BEECH ST	SSE 0 - 1/8 (0.052 mi.)	C27	42
COOKS UPHOLSTERY	1101 MAIN ST	N 0 - 1/8 (0.063 mi.)	B29	43
MOTOR VERKSTAD	113 MONROE ST	WNW 0 - 1/8 (0.070 mi.)	E34	45
PERCYS BODY SHOP	19 MAPLE ST	SW 0 - 1/8 (0.083 mi.)	D41	58
GRIFFIN MOHAWK SERVI	1001 MAIN STREET	N 0 - 1/8 (0.100 mi.)	F47	67
PRECISION FOREIGN CA	1540 EL CAMINO REAL	SW 0 - 1/8 (0.103 mi.)	H52	71
BORK & CHRISTENSEN I	1597 EL CAMINO REAL	S 0 - 1/8 (0.105 mi.)	I55	72
LYNN AUTO MACHINE	1445 EL CAMINO REAL	WSW 0 - 1/8 (0.107 mi.)	G58	75
LYNN AUTO MACHINE	1447 EL CAMINO REAL	WSW 0 - 1/8 (0.108 mi.)	G62	79
FIRESTONE TIRE & RUB	1458 EL CAMINO REAL	SW 0 - 1/8 (0.119 mi.)	G68	83
R & R AUTO BODY	20 DILLER ST	W 0 - 1/8 (0.120 mi.)	K72	86
MOTOR VERKSTAD	132 WILSON ST STE A	NW 0 - 1/8 (0.123 mi.)	L76	89
MC DONNEL JOHN T	1600 EL CAMINO REAL	SSW 0 - 1/8 (0.123 mi.)	I78	90

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EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 5 records.

Site Name	Database(s)
PG&E GAS PLANT REDWOOD CITY	SEMS-ARCHIVE
JOHNS MANVILLE CORP	SEMS-ARCHIVE
IDEAL BASIC INDS OLD PLT SITE	SEMS-ARCHIVE
SEQUOIA ALTERNATIVE SCHOOL	ENVIROSTOR, SCH
SEQUOIA STATION SHOPPING CENTER	ENVIROSTOR

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OVERVIEW MAP - 4991394.2S



This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 374905 PM	CLIENT: AEI Consultants
ADDRESS: 1180 and 1190 Main Street Redwood City CA 94063	CONTACT: Lacee Elam
LAT/LONG: 37.481863 / 122.225914	INQUIRY #: 4991394.2s DATE: July 13, 2017 9:34 am

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DETAIL MAP - 4991394.2S



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 374905 PM	CLIENT: AEI Consultants
ADDRESS: 1180 and 1190 Main Street Redwood City CA 94063	CONTACT: Lacee Elam INQUIRY #: 4991394.2s
LAT/LONG: 37.481863 / 122.225914	DATE: July 13, 2017 9:40 am

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	1	NR	NR	1
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	1	NR	NR	1
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	1	0	NR	1
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	1	1	NR	NR	2
Federal RCRA generators list								
RCRA-LQG	0.250		0	1	NR	NR	NR	1
RCRA-SQG	0.250	1	6	5	NR	NR	NR	12
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	2	NR	2
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		1	3	6	12	NR	22
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500	1	10	21	40	NR	NR	72

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		2	5	12	NR	NR	19
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	3	NR	NR	NR	3
AST	0.250		0	1	NR	NR	NR	1
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	1	3	NR	NR	4
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	1	1	NR	NR	2
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	1	NR	1
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250	1	3	8	NR	NR	NR	12
HIST UST	0.250		6	5	NR	NR	NR	11
CA FID UST	0.250		2	4	NR	NR	NR	6
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		1	1	NR	NR	NR	2
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.500		0	0	0	NR	NR	0
FINDS	TP	1	NR	NR	NR	NR	NR	1
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
ECHO	TP	1	NR	NR	NR	NR	NR	1
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	1	NR	1
San Mateo Co. BI	0.250	1	32	55	NR	NR	NR	88
Cortese	0.500		0	0	1	NR	NR	1
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
HAZNET	TP	4	NR	NR	NR	NR	NR	4
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500	1	3	10	22	NR	NR	36
HWP	1.000		0	1	1	0	NR	2
HWT	0.250		0	0	NR	NR	NR	0
MINES	TP		NR	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		1	1	1	6	NR	9
UIC	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	1	0	NR	1
EDR Hist Auto	0.125	1	18	NR	NR	NR	NR	19
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP	2	NR	NR	NR	NR	NR	2
- Totals --		14	85	127	92	22	0	340

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

DRAFT

A1
Target
Property

CHUBS AUTO RPR
1180 MAIN ST
REDWOOD CITY, CA 94063

HAZNET **S113024324**
N/A

Site 1 of 14 in cluster A

Actual:
13 ft.

HAZNET:

envid:	S113024324
Year:	2000
GEPAID:	CAL000007612
Contact:	LAWRENCE H CHUBICK
Telephone:	--
Mailing Name:	Not reported
Mailing Address:	1180 MAIN ST
Mailing City,St,Zip:	REDWOOD CITY, CA 940631913
Gen County:	Not reported
TSD EPA ID:	CAD009452657
TSD County:	Not reported
Waste Category:	Unspecified organic liquid mixture
Disposal Method:	Recycler
Tons:	1.25
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

envid:	S113024324
Year:	1999
GEPAID:	CAL000007612
Contact:	CHUBICK LAWRENCE
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	1180 MAIN ST
Mailing City,St,Zip:	REDWOOD CITY, CA 940631913
Gen County:	Not reported
TSD EPA ID:	CAD009452657
TSD County:	Not reported
Waste Category:	Unspecified organic liquid mixture
Disposal Method:	Recycler
Tons:	1.5846
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

envid:	S113024324
Year:	1998
GEPAID:	CAL000007612
Contact:	CHUBICK LAWRENCE
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	1180 MAIN ST
Mailing City,St,Zip:	REDWOOD CITY, CA 940631913
Gen County:	Not reported
TSD EPA ID:	CAD009452657
TSD County:	Not reported
Waste Category:	Unspecified organic liquid mixture
Disposal Method:	Recycler
Tons:	1.6054
Cat Decode:	Not reported
Method Decode:	Not reported

DRAFT

CHUBS AUTO RPR (Continued) **S113024324**

Facility County: San Mateo

envid: S113024324
Year: 1997
GEPAID: CAL000007612
Contact: CHUBICK LAWRENCE
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 1180 MAIN ST
Mailing City,St,Zip: REDWOOD CITY, CA 940631913
Gen County: Not reported
TSD EPA ID: CAD009452657
TSD County: Not reported
Waste Category: Unspecified organic liquid mixture
Disposal Method: Recycler
Tons: 1.6680
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: S113024324
Year: 1996
GEPAID: CAL000007612
Contact: CHUBICK LAWRENCE
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 1180 MAIN ST
Mailing City,St,Zip: REDWOOD CITY, CA 940631913
Gen County: Not reported
TSD EPA ID: CAD009452657
TSD County: Not reported
Waste Category: Unspecified organic liquid mixture
Disposal Method: Recycler
Tons: 1.6680
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

Click this hyperlink while viewing on your computer to access
3 additional CA_HAZNET: record(s) in the EDR Site Report.

A2 **CHUB'S AUTO REPAIR** **RGA LUST** **S114601412**
Target Property **1180 MAIN** **N/A**
REDWOOD CITY, CA

Site 2 of 14 in cluster A

Actual: 13 ft.

RGA LUST:

2012	CHUB'S AUTO REPAIR	1180 MAIN
2011	CHUB'S AUTO REPAIR	1180 MAIN
2010	CHUB'S AUTO REPAIR	1180 MAIN
2009	CHUB'S AUTO REPAIR	1180 MAIN
2008	CHUB'S AUTO REPAIR	1180 MAIN
2007	CHUB'S AUTO REPAIR	1180 MAIN
2006	CHUB'S AUTO REPAIR	1180 MAIN
2005	CHUB'S AUTO REPAIR	1180 MAIN
2003	CHUB'S AUTO REPAIR	1180 MAIN
1996	CHUB'S AUTO REPAIR	1180 MAIN

DRAFT

CHUB'S AUTO REPAIR (Continued) **S114601412**

1995 CHUB'S AUTO REPAIR 1180 MAIN

A3 Target Property **CHUB'S AUTO REPAIR**
1180 MAIN ST
REDWOOD CITY, CA

RGA LUST **S114601411**
N/A

Site 3 of 14 in cluster A

Actual: 13 ft.

RGA LUST:

2002	CHUB'S AUTO REPAIR	1180 MAIN ST
2001	CHUB'S AUTO REPAIR	1180 MAIN ST
2000	CHUB'S AUTO REPAIR	1180 MAIN ST
1998	CHUB'S AUTO REPAIR	1180 MAIN ST
1997	CHUB'S AUTO REPAIR	1180 MAIN ST

A4 Target Property **CHUBS AUTO REPAIR**
1180 MAIN
REDWOOD CITY, CA 94063

San Mateo Co. BI **S113756412**
N/A

Site 4 of 14 in cluster A

Actual: 13 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0017442
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0024872
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0017442
Prog Element Code:	LESS THAN 500 TIRES
Record Id:	PR0045620
Description:	LESS THAN 500 TIRES
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0017442
Prog Element Code:	STORES MV FUELS OR WASTE ONLY
Record Id:	PR0003766
Description:	STORES MV FUELS OR WASTE ONLY
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0017442
Prog Element Code:	UNDERGROUND TANK - GENERAL
Record Id:	PR0022517
Description:	UNDERGROUND TANK - GENERAL
Facility Status:	INACTIVE

DRAFT

A5 **CHUBS AUTO REPAIR** **RCRA-SQG** **1001023114**
Target **1180 MAIN ST** **LUST** **CAR000004721**
Property **REDWOOD CITY, CA 94063** **SWEEPS UST**
FINDS
Site 5 of 14 in cluster A **ECHO**
HAZNET
Actual: **HIST CORTESE**
13 ft.

RCRA-SQG:

Date form received by agency:	08/07/1995
Facility name:	CHUBS AUTO REPAIR
Facility address:	1180 MAIN ST REDWOOD CITY, CA 94063
EPA ID:	CAR000004721
Mailing address:	MAIN ST REDWOOD CITY, CA 94063
Contact:	STEVE BRUGMAN
Contact address:	1180 MAIN ST REDWOOD CITY, CA 94063
Contact country:	US
Contact telephone:	(415) 368-2224
Contact email:	Not reported
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	STEVE BRUGMAN
Owner/operator address:	1180 MAIN ST REDWOOD, CA 94063
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 368-2224
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

DRAFT

CHUBS AUTO REPAIR (Continued) **1001023114**

Violation Status: No violations found

LUST:

Region:	STATE
Global Id:	T0608100848
Latitude:	37.481695
Longitude:	-122.225642
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	06/21/1995
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0920
LOC Case Number:	330120
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100848
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100848
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100848
Status:	Completed - Case Closed
Status Date:	06/21/1995

Global Id:	T0608100848
Status:	Open - Case Begin Date
Status Date:	01/14/1993

Regulatory Activities:

Global Id:	T0608100848
Action Type:	Other
Date:	01/14/1993
Action:	Leak Reported

Global Id:	T0608100848

DRAFT

CHUBS AUTO REPAIR (Continued) **1001023114**

Action Type: ENFORCEMENT
Date: 03/08/1994
Action: Notice of Responsibility - #1

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330120
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Workplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330120
Facility Status: 9- Case Closed
Global ID: T0608100848
APN Number: Not reported
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

SWEEPS UST:
Status: Not reported
Comp Number: 340141
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-340141-000001
Tank Status: Not reported
Capacity: 1000
Active Date: Not reported
Tank Use: OIL
STG: WASTE
Content: WASTE OIL
Number Of Tanks: 2

Status: Not reported
Comp Number: 340141
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported

DRAFT

CHUBS AUTO REPAIR (Continued) **1001023114**

Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-340141-000002
Tank Status: Not reported
Capacity: 1000
Active Date: Not reported
Tank Use: M.V. FUEL
STG: PRODUCT
Content: LEADED
Number Of Tanks: Not reported

FINDS:

Registry ID: 110002907310

Environmental Interest/Information System
California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1001023114
Registry ID: 110002907310
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110002907310

HAZNET:
envid: 1001023114
Year: 2007
GEPAID: CAR000004721
Contact: STEVE BRUGMAN PRESIDENT
Telephone: 6509416344
Mailing Name: Not reported
Mailing Address: 331 ANGELA CT
Mailing City,St,Zip: LOS ALTOS, CA 940223014
Gen County: Not reported
TSD EPA ID: CAD009452657
TSD County: Not reported
Waste Category: Unspecified organic liquid mixture
Disposal Method: Solvents Recovery
Tons: 0.1
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

DRAFT

CHUBS AUTO REPAIR (Continued) **1001023114**

envid: 1001023114
Year: 2006
GEPAID: CAR000004721
Contact: STEVE BRUGMAN PRESIDENT
Telephone: 6503682224
Mailing Name: Not reported
Mailing Address: 1180 MAIN ST
Mailing City,St,Zip: REDWOOD CITY, CA 940630000
Gen County: Not reported
TSD EPA ID: CAD009452657
TSD County: Not reported
Waste Category: Unspecified organic liquid mixture
Disposal Method: Solvents Recovery
Tons: 0.39
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: 1001023114
Year: 2006
GEPAID: CAR000004721
Contact: STEVE BRUGMAN PRESIDENT
Telephone: 6503682224
Mailing Name: Not reported
Mailing Address: 1180 MAIN ST
Mailing City,St,Zip: REDWOOD CITY, CA 940630000
Gen County: Not reported
TSD EPA ID: CAD009452657
TSD County: Not reported
Waste Category: Unspecified organic liquid mixture
Disposal Method: Recycler
Tons: 0.41
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: 1001023114
Year: 2005
GEPAID: CAR000004721
Contact: STEVE BRUGMAN PRESIDENT
Telephone: 6503682224
Mailing Name: Not reported
Mailing Address: 1180 MAIN ST
Mailing City,St,Zip: REDWOOD CITY, CA 940630000
Gen County: Not reported
TSD EPA ID: CAD009452657
TSD County: Not reported
Waste Category: Unspecified organic liquid mixture
Disposal Method: Recycler
Tons: 0.81
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: 1001023114
Year: 2004
GEPAID: CAR000004721

DRAFT

CHUBS AUTO REPAIR (Continued) **1001023114**

Contact:	STEVE BRUGMAN PRESIDENT
Telephone:	6503682224
Mailing Name:	Not reported
Mailing Address:	1180 MAIN ST
Mailing City,St,Zip:	REDWOOD CITY, CA 940630000
Gen County:	Not reported
TSD EPA ID:	CAD009452657
TSD County:	Not reported
Waste Category:	Unspecified organic liquid mixture
Disposal Method:	Recycler
Tons:	0.81
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

Click this hyperlink while viewing on your computer to access
2 additional CA_HAZNET: record(s) in the EDR Site Report.

HIST CORTESE:

Region:	CORTESE
Facility County Code:	41
Reg By:	LTNKA
Reg Id:	41-0920

A6 **CHUBS AUTO REPAIR** **EDR Hist Auto** **1020785666**
Target **1180 MAIN ST** **N/A**
Property **REDWOOD CITY, CA 94063**

Site 6 of 14 in cluster A

Actual:
13 ft.

EDR Hist Auto

Year:	Name:	Type:
1972	GORDONS AUTOMOTIVE CENTER	General Automotive Repair Shops
1974	CAMBRIDGE AUTO REPAIR	General Automotive Repair Shops
1975	CAMBRIDGE AUTO REPAIR	General Automotive Repair Shops
1976	CAMBRIDGE AUTO REPAIR	General Automotive Repair Shops
1977	CHUBS AUTO REPAIR	General Automotive Repair Shops
1977	CAMBRIDGE AUTO REPAIR	General Automotive Repair Shops
1978	CHUBS AUTO REPAIR	General Automotive Repair Shops
1978	CAMBRIDGE AUTO REPAIR	General Automotive Repair Shops
1979	CAMBRIDGE AUTO REPAIR	General Automotive Repair Shops
1979	CAMBRIDGE AUTO REPAIR	General Automotive Repair Shops
1979	CHUBS AUTO REPAIR	General Automotive Repair Shops
1980	CHUBS AUTO REPAIR	General Automotive Repair Shops
1982	CHUBS AUTO REPAIR	General Automotive Repair Shops
1983	CHUBS AUTO REPAIR	General Automotive Repair Shops
1985	CHUBS AUTO REPAIR	General Automotive Repair Shops
1986	CHUBS AUTO REPAIR*	General Automotive Repair Shops
1987	CHUBS AUTO REPAIR*	General Automotive Repair Shops
1988	CHUBS AUTO REPAIR	General Automotive Repair Shops
1989	CHUBS AUTO REPAIR	General Automotive Repair Shops
1990	CHUBS AUTO REPAIR	General Automotive Repair Shops
1991	CHUBS AUTO REPAIR	General Automotive Repair Shops
1992	CHUBS AUTO REPAIR	General Automotive Repair Shops
1993	CHUBS AUTO REPAIR	General Automotive Repair Shops
1994	CHUBS AUTO REPAIR	General Automotive Repair Shops

DRAFT

CHUBS AUTO REPAIR (Continued) **1020785666**

1995	CHUBS AUTO REPAIR	General Automotive Repair Shops
1996	CHUBS AUTO REPAIR	General Automotive Repair Shops
1997	CHUBS AUTO REPAIR	General Automotive Repair Shops
1998	BRUGMAN STEVEN K	General Automotive Repair Shops
1999	BRUGMAN STEVEN K	General Automotive Repair Shops
2000	BRUGMAN STEVEN K	General Automotive Repair Shops
2001	BRUGMAN STEVEN K	General Automotive Repair Shops
2002	BRUGMAN STEVEN K	General Automotive Repair Shops
2003	BRUGMAN STEVEN K	General Automotive Repair Shops
2004	BRUGMAN STEVEN K	General Automotive Repair Shops
2005	BRUGMAN STEVEN K	General Automotive Repair Shops
2006	BRUGMAN STEVEN K	General Automotive Repair Shops

A7 **CHUB'S AUTO REPAIR** **HAZNET** **S112858854**
Target **1180 MAIN ST** **N/A**
Property **REDWOOD CITY, CA 94063**

Site 7 of 14 in cluster A

Actual:
13 ft.

HAZNET:

envid:	S112858854
Year:	1994
GEPAID:	CAC001001392
Contact:	LAWRENCE H. CHUBICK
Telephone:	4153668977
Mailing Name:	Not reported
Mailing Address:	1180 MAIN ST
Mailing City,St,Zip:	REDWOOD CITY, CA 940630000
Gen County:	Not reported
TSD EPA ID:	CAD083166728
TSD County:	Not reported
Waste Category:	Unspecified oil-containing waste
Disposal Method:	Recycler
Tons:	.4170
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

envid:	S112858854
Year:	1994
GEPAID:	CAC001001392
Contact:	LAWRENCE H. CHUBICK
Telephone:	4153668977
Mailing Name:	Not reported
Mailing Address:	1180 MAIN ST
Mailing City,St,Zip:	REDWOOD CITY, CA 940630000
Gen County:	Not reported
TSD EPA ID:	CAD009466392
TSD County:	Not reported
Waste Category:	Other empty containers 30 gallons or more
Disposal Method:	Not reported
Tons:	1.0000
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

DRAFT

A8
Target Property
Actual: 13 ft.

LATHROP PARK REDWOOD CITY LLC
1190 MAIN ST
REDWOOD CITY, CA 94063

HAZNET **S113779893**
N/A

Site 8 of 14 in cluster A

HAZNET:

envid:	S113779893
Year:	2012
GEPAID:	CAC002693842
Contact:	LOUIS DEZIEL JR
Telephone:	6504624670
Mailing Name:	Not reported
Mailing Address:	100 SEMINARY DR
Mailing City,St,Zip:	MENLO PARK, CA 94025
Gen County:	San Mateo
TSD EPA ID:	CAD028409019
TSD County:	Los Angeles
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.005
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

A9
< 1/8
0.001 mi.
4 ft.

Relative: Higher

Actual: 13 ft.

FIVE STAR DEVELOPMENT
134 MAPLE
REDWOOD CITY, CA 94063

San Mateo Co. BI **S113756856**
N/A

Site 9 of 14 in cluster A

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0022926
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0028691
Description:	GENERATES <27 GAL/YEAR
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0022926
Prog Element Code:	UNDERGROUND TANK - GENERAL
Record Id:	PR0025820
Description:	UNDERGROUND TANK - GENERAL
Facility Status:	INACTIVE

A10
SSE
< 1/8
0.016 mi.
86 ft.

Relative: Higher

Actual: 15 ft.

J&JS AUTO
150 ELM
REDWOOD CITY, CA 94063

San Mateo Co. BI **S113757009**
N/A

Site 10 of 14 in cluster A

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0023853
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0027923

DRAFT

J&JS AUTO (Continued) **S113757009**

Description: GENERATES <27 GAL/YEAR
Facility Status: INACTIVE

A11 **LS TRUCKING** **San Mateo Co. BI** **S113757004**
SSE **112 ELM** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.016 mi.
86 ft. **Site 11 of 14 in cluster A**

Relative:
Higher

Actual:
15 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0023839
Prog Element Code: GENERATES <27 GAL/YEAR
Record Id: PR0027894
Description: GENERATES <27 GAL/YEAR
Facility Status: INACTIVE

A12 **ROTARY PERFORMANCE MOTORS** **EDR Hist Auto** **1022136565**
SE **150 ELM ST A** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.017 mi.
89 ft. **Site 12 of 14 in cluster A**

Relative:
Higher

Actual:
16 ft.

EDR Hist Auto

Year:	Name:	Type:
1991	ROTARY PERFORMANCE MOTORS	General Automotive Repair Shops
1996	J AND J AUTO REPAIR	General Automotive Repair Shops
1997	J AND J AUTO REPAIR	General Automotive Repair Shops
1998	J AND J AUTO REPAIR	General Automotive Repair Shops

B13 **COOKS AUTO BODY & PAINT SHOP** **EDR Hist Auto** **1021857105**
North **1104 MAIN** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.027 mi.
141 ft. **Site 1 of 10 in cluster B**

Relative:
Higher

Actual:
14 ft.

EDR Hist Auto

Year:	Name:	Type:
1969	COOKS AUTO BODY & PAINT SHOP	General Automotive Repair Shops
1969	COOKS AUTO BODY & PAINT SHOP	General Automotive Repair Shops
1970	COOKS AUTO BODY & PAINT SHOP	General Automotive Repair Shops

DRAFT

C14
SE
< 1/8
0.029 mi.
152 ft.

ROOTES GROUP DEPOT
1224 MAIN
REDWOOD CITY, CA 94063

San Mateo Co. BI

S113756980
N/A

Site 1 of 4 in cluster C

Relative:
Higher

Actual:
17 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0023756
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0027689
Description:	GENERATES <27 GAL/YEAR
Facility Status:	INACTIVE

A15
NNE
< 1/8
0.030 mi.
160 ft.

B P S BAKER GRAPHICS REDWOOD CITY
1201 MAIN ST
REDWOOD CITY, CA 94063

RCRA-SQG
FINDS
ECHO

1000597617
CAD983616343

Site 13 of 14 in cluster A

Relative:
Higher

Actual:
15 ft.

RCRA-SQG:

Date form received by agency:	01/20/1992
Facility name:	B P S BAKER GRAPHICS REDWOOD CITY
Facility address:	1201 MAIN ST REDWOOD CITY, CA 94063
EPA ID:	CAD983616343
Contact:	GERALD FULTS
Contact address:	149 2ND ST SAN FRANCISCO, CA 94105
Contact country:	US
Contact telephone:	(415) 512-6560
Contact email:	Not reported
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	BLUE PRINT SVC INC
Owner/operator address:	149 2ND ST SAN FRANCISCO, CA 94105
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 495-8700
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No

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B P S BAKER GRAPHICS REDWOOD CITY (Continued) **1000597617**

Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

FINDS:

Registry ID: 110002866998

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000597617
Registry ID:	110002866998
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110002866998

A16 **B P S** **San Mateo Co. BI** **S113756088**
NNE **1201 MAIN** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.030 mi.
160 ft. **Site 14 of 14 in cluster A**

Relative:
Higher

Actual:
15 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0015121
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0011357
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0015121
Prog Element Code:	STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id:	PR0003995
Description:	STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status:	INACTIVE

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B17 **COOKS COLLISION OF REDWOOD CITY** **San Mateo Co. BI** **S113756374**
North **1104 MAIN** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.032 mi.
168 ft. **Site 2 of 10 in cluster B**

Relative:
Higher

Actual:
14 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0017375
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0011060
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	ACTIVE

Region:	SAN MATEO
Facility ID:	FA0017375
Prog Element Code:	STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id:	PR0003830
Description:	STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status:	ACTIVE

Region:	SAN MATEO
Facility ID:	FA0017375
Prog Element Code:	LESS THAN 500 TIRES
Record Id:	PR0045618
Description:	LESS THAN 500 TIRES
Facility Status:	INACTIVE

B18 **COOKS AUTO BODY** **RCRA-SQG** **1000272042**
North **1104 MAIN STREET** **ENVIROSTOR** **CAD981457179**
< 1/8 **REDWOOD CITY, CA 94063** **LUST**
0.032 mi. **FINDS**
168 ft. **Site 3 of 10 in cluster B** **ECHO**

Relative:
Higher

Actual:
14 ft.

RCRA-SQG:

Date form received by agency:	04/02/1986
Facility name:	COOKS AUTO BODY
Facility address:	1104 MAIN STREET REDWOOD CITY, CA 94063
EPA ID:	CAD981457179
Contact:	THOMAS FRISCHE
Contact address:	1104 MAIN STREET REDWOOD CITY, CA 94063
Contact country:	US
Contact telephone:	(415) 365-3206
Contact email:	Not reported
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	WOODS AUTO BODY INC
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported

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COOKS AUTO BODY (Continued) **1000272042**

Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

ENVIROSTOR:
Facility ID: 60001847
Status: Inactive - Action Required
Status Date: 01/31/2013
Site Code: 201958
Site Type: Evaluation
Site Type Detailed: Evaluation
Acres: 0.3
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: George Chow
Supervisor: Julie Pettijohn
Division Branch: Cleanup Berkeley
Assembly: 22
Senate: 13
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Responsible Party
Latitude: 37.48273
Longitude: -122.2259

DRAFT

COOKS AUTO BODY (Continued) **1000272042**

APN: 053-138-010
Past Use: FUEL - VEHICLE STORAGE/ REFUELING
Potential COC: Lead
Confirmed COC: Lead
Potential Description: SOIL
Alias Name: 053-138-010
Alias Type: APN
Alias Name: T0608183982
Alias Type: GeoTracker Global ID
Alias Name: 201958
Alias Type: Project Code (Site Code)
Alias Name: 60001847
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 07/27/2012
Comments: This letter from the San Mateo Groundwater Protection Program (GPP) to DTSC includes the GPP's case closure for the hydrocarbon releases at this site and refers the metals contamination to DTSC. A summary of the remedial activities completed to date (July 2012) and the closure rationale can be found in this document.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 01/28/2013
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

LUST:
Region: STATE
Global Id: T0608183982
Latitude: 37.4829524
Longitude: -122.226044167
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 03/22/2013
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-4057
LOC Case Number: 330188
File Location: Local Agency
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline

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COOKS AUTO BODY (Continued) **1000272042**

Site History: Extracted from Golden Gate Environmental's March 31, 2010 Report of Groundwater Monitoring & Additional Site Characterization, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report. The subject property lies on the west side of Main Street and south of the intersection of Main and Maple Streets in Redwood City, California. The Site is approximately 0.4 mile south of the San Francisco Bay (Redwood Creek Inlet). The elevation of the property ranges between 11.70 and 12.38 feet above mean sea level. The property is relatively flat lying with the local topographic relief generally directed towards the north-northeast. The 0.3-acre property is roughly triangular in shape. The adjacent property to the west (1090 Main Street) is a multi-residential apartment/townhouse complex. Directly to the northeast across Main Street is the former upholstery facility for Cooks Auto Body (1101\\% Main Street; currently vacant) and Bobs Auto Repair facility (415 Cassia Street). A 9,000 square foot office and warehouse structure occupies the central portion of the subject property and a small office structure (625 square feet) is situated along the southeastern portion of the Site. The northernmost portion of the Site is where the former fueling station was historically located and is the subject of this evaluation. County Assessor Recorders Parcel No. 053-138-010). Cooks Auto Body has leased the Site since 1979 for a vehicle repair operation. The Site had previously been occupied by another auto body facility since 1969. Reportedly, Cooks Auto Body has never dispensed fuel from the property since 1979. A concrete dispenser island 18 feet in length by 3 feet in width (east-west orientation) is located approximately 13 feet north of the central north side of the building structure. A hydraulic lift was formerly located approximately 7 feet north of the central north wall of the building structure. Based on recorded observations of the product and vent piping removed beneath the northern portion of the Site (May 2004), it is evident that at least three USTs were once present at the property prior to Cooks Auto Bodys initial occupancy in 1979. Historic businesses that formerly operated at the Site include: Strand and Brain garage (1931-1933), Strand and Furger Autos (1937), Tacoma Distributing Company/Brewers Agents (1939), and Ferris Miles Inc Wholesaler (1953). A Redwood City Tribune article titled Miles Selling Car Agency dated May 10, 1969, describes business operations conducted across the street at 1101 Main Street from the years 1939 to 1969 by the late Ferris Miles (deceased 1982). Miles apparently co-owned the property at 1104 Main Street during the time interval spanning from 1939 to 1969 and Ferris-Miles Dodge occupied the Site in the mid 1960s. Based on review of Sanborn Fire Insurance Maps, the northern portion of the property was historically occupied by a fuel dispensing station from 1932 through 1962. In February 2002, EnviroVision, Inc. drilled exploratory borings SB-1, SB-2 and SB-3 to a depth of 15 feet. The purpose of the drilling was to assess the potential impact to soil and groundwater from reported fuel dispensing activities at the Site. In letters dated May 20 and June 4, 2002, the GPP identified Woods Limited Partnership as the responsible party (RP). On August 28 and November 18, 2002, EnviroVision submitted their Work Plan for Additional Site Characterization and Groundwater Monitoring and addendum that was approved by the GPP in a letter dated December 30, 2002. On January 10, 2003, EnviroVision in collaboration with Norcal Geophysical Consultants, Inc. conducted a geophysical survey to both trace the

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COOKS AUTO BODY (Continued) **1000272042**

lateral extent of subsurface vent and product lines using line-locating equipment and locate any abandoned USTs using ground penetrating radar. EnviroVision identified several subsurface anomalies largeenough to represent potential underground storage tanks located in the sidewalk of the Maple Street frontage. In March and April 2003, EnviroVision drilled one additional soil boring SB-4 and installed three 2-inch groundwater monitor wells MW-1, MW-2 and MW-3. In May 2004, Golden Gate Tank Removal, Inc. (GGTR) excavated five shallow locations where the previous geophysical survey by EnviroVision had indicated potential underground storage tank (UST) locations. No USTs were discovered in the exploratory excavations. A metal product line was uncovered in excavation area A and one soil sample was recovered from beneath the product line at two feet below grade for laboratory analysis. In September 2004, GGTR traced the lateral extent of the subsurface product and vent lines by hand digging. GGTR collected soil samples PLA[2], PL2B[2], PL2C[2], PL2D[2], PL2D[3.5], PL3A[2], and PL3B[2] beneath the exposed product lines and subsequently removed exposed piping from the trenches. Approximately 70 feet of product pipe and 50 feet of vent pipe were removed from the property for disposal at the Circosta Iron & Metal Company. Excavated soil was returned to the product line trenches as backfill. GGTR drilled five (5) soil borings SB-5 through SB-9 to a depth of 20 feet at the property. Borings SB-7 and SB-9 were converted to respective 2-inch groundwater monitor wells MW-5 and MW-4. Three additional soil borings SB-PL2A, SB-PL2D, and SB-PL3B were drilled to 12 feet to assess the vertical extent of soil contamination beneath the former product lines. No abandoned USTs were located during the exploratory drilling. In February 2007, GGTR drilled exploratory boring SB-13 to approximately 28 fbg. Soil samples were collected continuously in the boring between 5 and 24 fbg. The boring encountered silty clay to a depth of 15 feet, silty sand from 15 to 20 feet, and sandy gravel from 20 to 28 feet. New slotted well casing was temporarily installed in boring SB-13 and a grab groundwater sample collected after 20 minutes of recharge at a depth of 8.2 feet. A series of four separate Hydropunch borings were then drilled northward of the SB-13 location to obtain grab groundwater samples at 15, 20, 27 and 35 feet below grade. In February 2007, GGTR submitted a traffic control plan to the City of Redwood City for temporary closure of the roadway and re-routing of vehicular traffic, and on March 29, 2007, GGTR drilled boring SB-12 to a depth of 27 fbg. Soil samples were collected continuously in the boring between 5 and 24 fbg. Boring SB-12 encountered silty clay to a depth of 15 feet, silty sand from 15 to 19 feet, and sandy gravel from 19 to 27 feet. Hydrocarbon odor was recognized in the 10 foot soil sample only. Two soil samples from depths of 10 and 15 feet were submitted for analysis of TPH as gasoline and BTEX. The boring was terminated in heaving sands that prevented sample recovery below 24 feet. New slotted well casing was temporarily installed in boring SB-12 and a grab groundwater sample collected after 15 minutes of recharge at a depth of 11.5 feet. A series of four separate Hydropunch borings were then drilled northward of the boring SB-12 location to obtain grab groundwater samples at 15, 20, and 27 feet below grade. In the 4th Hydropunch boring, no groundwater was recovered at the 35 foot target depth. New slotted well casing was temporarily installed in boring 4. However, no groundwater was recovered in the casing after 45 minutes and the sampling was abandoned due to time constraints for the temporary roadway closure.

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COOKS AUTO BODY (Continued) **1000272042**

On February 27, 2007, GGTR drilled new monitor well MW-6 to approximately 20 fbg, using 8-inch diameter, continuous flight, hollow-stem augers. Monitoring well MW-6 was constructed of standard 2-inch diameter, flush-threaded, Schedule 40 Polyvinyl Chloride (PVC) factory slotted (0.010 inch) well screen (@ 5 to 20 fbg) and blank riser casing (@ 0.5 to 5 fbg). On March 14 and 30, 2007, GGTR continued thelateral and vertical delineation of the extent of soil contamination in the vicinity of former product/vent lines and the dispenser island. Handaugured borings were used to collect the soil samples at locations SB-11, SB-PL2A-E, SBPL2A- S, and SB-PL2D. Soil samples were collected from the borings for the laboratory analysis of lead, zinc, SVOCs, and TPH as Motor Oil. Due to difficult subsurface conditions, percussion drilling equipment was subsequently used to collect soil samples from borings SB-10, SBPL2A-NW, SB-PL2D-NW, and SB-PL2D-S. Boring SB-11 was proposed to a depth of five feet but encountered drilling refusal on concrete debris just below collection of the two foot soil sample. Between April 2003 and February 2004, EnviroVision conducted four consecutive quarterly monitoring and sampling events for the three onsite wells MW-1, MW-2, and MW-3. Additional details of each monitoring event are provided in respective reports issued by EnviroVision. Based on review of the EnviroVision March 2004 Groundwater Monitoring Report, the GPP in a letter dated May 17, 2004, requested that the quarterly monitoring and sampling frequency be reduced to semi-annual events (first and third quarters). Upon completing the installation of monitoring wells MW-4 and MW-5, GGTR conducted semiannual monitoring and sampling events for the five monitor wells between September 2004 and September 2006. GGTR in conjunction with Dysert Environmental, Inc., conducted semi-annual groundwater monitoring and sampling activities on March 27, 2007 for all six monitor wells at the Site. On March 14, 2007, Golden Gate Tank Removal, Inc. (GGTR) recovered five discrete soil samples using hand auger equipment from the former product/vent line removal trenches. The concrete surface was cored to allow hand-auger equipment to drill a 6-inch deep hole. Soil samples were recovered from a depth of 6-12 inches at each location using a slide hammer and brass sample liners. Between December 2007 and October 2008, Golden Gate Tank Removal, Inc. (GGTR) conducted semi-annual monitoring and sampling events for the six monitor wells. A gap in groundwater monitoring occurred from the end of 2008 through 2009. Semi-annual groundwater monitoring resumed at the Site during the first quarter of 2010, and was performed on January 27, 2010 by GGE. GGE submitted the Risk Assessment for Lead in Soil dated December 30, 2009, to address the residual lead-contaminated soil. The majority of the Site is characterized by lead concentrations within the range of expected background values for urban soils. Groundwater is not impacted by dissolved lead and the groundwater does not appear threatened by the residual lead. Two hotspots of lead contamination in soil exist above the residential ESL value of 200 mg/kg and one of the hotspots (at the building corner) exceeds the industrial ESL value of 750 mg/kg. The extent of lead contamination is not completely defined by existing soil sampling and the southern extent of lead in soil contamination beneath the building is not known. Three soil samples contain total lead concentrations above 1000 mg/kg (and elevated soluble lead) and could be considered a hazardous waste if excavated and transported offsite. As noted by the GPP in their April 23, 2008 letter, other areas of the Site with elevated lead concentrations above 100 mg/kg may also contain elevated soluble lead

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COOKS AUTO BODY (Continued) **1000272042**

concentrations and upon excavation and profiling for offsite disposal, these soils could be classified as a California hazardous waste requiring special handling/disposal practices with significant increased cost. The Site is in commercial use as an automobile body repair shop and the area of lead impact is completely covered by asphalt/concrete. The current commercial land use at the Site is unlikely to present a complete pathway for the ingestion or inhalation of lead contaminated soil. The elevated concentrations of total lead in soil present a health hazard to children under future redevelopment scenarios involving sensitive land use such as residential, school, etc., where the contaminated soil may be exposed at the surface. Excavation and transport of the contaminated soil offsite to a sensitive land use would also present opportunities for exposure to children. Although no future redevelopment is planned at the Site by the current property owner, management of the lead contaminated soil appears necessary to prevent these potential future exposures, should there be a change in property ownership or redevelopment plans. GPP has indicated it will notify the Redwood City Building Department of the lead in soil condition to inhibit improper management and use of this soil from future re-development activities. GGE also recommended the owner implement a Soil Management Plan to track and manage the contaminated soil during future utility installation or other excavation activities.

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608183982
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608183982
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608183982
Status:	Completed - Case Closed
Status Date:	03/22/2013

Global Id:	T0608183982
Status:	Open - Case Begin Date
Status Date:	02/21/2001

Global Id:	T0608183982
Status:	Open - Site Assessment
Status Date:	02/21/2001

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COOKS AUTO BODY (Continued) **1000272042**

Global Id: T0608183982
Status: Open - Site Assessment
Status Date: 03/14/2005

Global Id: T0608183982
Status: Open - Verification Monitoring
Status Date: 10/27/2010

Regulatory Activities:
Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 12/31/2003
Action: Staff Letter - #20031231

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 06/29/2006
Action: Staff Letter - #20060629

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 02/14/2013
Action: Staff Letter - #20130214

Global Id: T0608183982
Action Type: RESPONSE
Date: 08/15/2003
Action: Electronic Reporting Submittal Due

Global Id: T0608183982
Action Type: RESPONSE
Date: 06/15/2004
Action: Monitoring Report - Other

Global Id: T0608183982
Action Type: RESPONSE
Date: 11/15/2004
Action: Monitoring Report - Semi-Annually

Global Id: T0608183982
Action Type: RESPONSE
Date: 11/15/2008
Action: Monitoring Report - Semi-Annually

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 02/06/2003
Action: Staff Letter - #20030206

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 04/09/2003
Action: Staff Letter - #20030409

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 02/26/2004

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COOKS AUTO BODY (Continued) **1000272042**

Action: Staff Letter - #20040226

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 12/28/2005
Action: Staff Letter - #20051228

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 08/15/2006
Action: Technical Correspondence / Assistance / Other - #20060815

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 04/23/2008
Action: Staff Letter - #20080423

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 12/14/2006
Action: Staff Letter - #20061214

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 05/20/2008
Action: Staff Letter - #20080520

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 09/11/2006
Action: Meeting

Global Id: T0608183982
Action Type: RESPONSE
Date: 12/31/2010
Action: Correspondence

Global Id: T0608183982
Action Type: RESPONSE
Date: 07/22/2002
Action: Soil and Water Investigation Workplan

Global Id: T0608183982
Action Type: RESPONSE
Date: 11/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0608183982
Action Type: RESPONSE
Date: 02/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0608183982
Action Type: RESPONSE
Date: 08/15/2003
Action: Soil and Water Investigation Report

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COOKS AUTO BODY (Continued) **1000272042**

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 01/22/2007
Action: Staff Letter - #20070122

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 09/09/2003
Action: Staff Letter - #20030909

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 07/23/2003
Action: Staff Letter - #20030723

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 05/17/2004
Action: Staff Letter - #20040517A

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 12/13/2004
Action: Technical Correspondence / Assistance / Other - #20041213

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 12/30/2002
Action: Staff Letter - #20021230

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 07/09/2008
Action: Staff Letter - #20080709

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 05/20/2002
Action: Staff Letter - #20020520

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 10/27/2010
Action: Staff Letter - #20101027

Global Id: T0608183982
Action Type: RESPONSE
Date: 08/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0608183982
Action Type: RESPONSE
Date: 02/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0608183982
Action Type: RESPONSE

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COOKS AUTO BODY (Continued) **1000272042**

Date: 05/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0608183982
Action Type: RESPONSE
Date: 09/30/2003
Action: Soil and Water Investigation Workplan

Global Id: T0608183982
Action Type: RESPONSE
Date: 02/19/2004
Action: Soil and Water Investigation Workplan - Addendum

Global Id: T0608183982
Action Type: RESPONSE
Date: 05/16/2005
Action: Monitoring Report - Semi-Annually

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 05/31/2012
Action: PRP Search Report

Global Id: T0608183982
Action Type: RESPONSE
Date: 11/26/2002
Action: Soil and Water Investigation Workplan - Addendum

Global Id: T0608183982
Action Type: RESPONSE
Date: 05/26/2003
Action: Soil and Water Investigation Report

Global Id: T0608183982
Action Type: RESPONSE
Date: 01/31/2003
Action: Soil and Water Investigation Workplan - Addendum

Global Id: T0608183982
Action Type: Other
Date: 09/02/2002
Action: Leak Reported

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 06/05/2012
Action: Notice of Violation - #20120605

Global Id: T0608183982
Action Type: RESPONSE
Date: 05/15/2011
Action: Monitoring Report - Annually

Global Id: T0608183982
Action Type: RESPONSE
Date: 05/15/2012
Action: Monitoring Report - Annually

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COOKS AUTO BODY (Continued) **1000272042**

Global Id: T0608183982
Action Type: RESPONSE
Date: 10/31/2012
Action: Well Destruction Report

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 10/24/2002
Action: Staff Letter - #20021024

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 07/17/2003
Action: Staff Letter - #20030717

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 03/14/2005
Action: Staff Letter - #20050314

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 06/05/2002
Action: Notice of Responsibility - #20020605

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 05/17/2004
Action: Staff Letter - #20040517B

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 01/31/2013
Action: Notice of Violation - #20130131

Global Id: T0608183982
Action Type: RESPONSE
Date: 05/15/2009
Action: Monitoring Report - Semi-Annually

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 08/05/2009
Action: Staff Letter - #20090805

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 05/25/2004
Action: Staff Letter - #20040525

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 10/07/2009
Action: Notice of Violation - #20091007

Global Id: T0608183982
Action Type: ENFORCEMENT

DRAFT

COOKS AUTO BODY (Continued) **1000272042**

Date: 10/28/2009
Action: Technical Correspondence / Assistance / Other - #20091028

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 03/01/2006
Action: Notice of Violation - #20060301

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 11/22/2006
Action: Technical Correspondence / Assistance / Other - #20061122

Global Id: T0608183982
Action Type: RESPONSE
Date: 05/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0608183982
Action Type: RESPONSE
Date: 05/30/2002
Action: Unauthorized Release Form

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 07/24/2012
Action: Referral to Other State Agency - #20120724

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 03/22/2013
Action: Closure/No Further Action Letter - #20130322

Global Id: T0608183982
Action Type: RESPONSE
Date: 05/15/2010
Action: Monitoring Report - Semi-Annually

Global Id: T0608183982
Action Type: RESPONSE
Date: 05/27/2005
Action: Electronic Reporting Submittal Due

Global Id: T0608183982
Action Type: RESPONSE
Date: 06/09/2005
Action: Soil and Water Investigation Workplan

Global Id: T0608183982
Action Type: RESPONSE
Date: 01/18/2007
Action: Soil and Water Investigation Report

Global Id: T0608183982
Action Type: RESPONSE
Date: 10/02/2006
Action: Soil and Water Investigation Workplan - Addendum

DRAFT

COOKS AUTO BODY (Continued) **1000272042**

Global Id: T0608183982
Action Type: RESPONSE
Date: 06/09/2008
Action: Other Report / Document

Global Id: T0608183982
Action Type: RESPONSE
Date: 11/19/2008
Action: Risk Assessment Report

Global Id: T0608183982
Action Type: Other
Date: 02/21/2002
Action: Leak Discovery

Global Id: T0608183982
Action Type: ENFORCEMENT
Date: 07/19/2012
Action: Staff Letter - #20120719

Global Id: T0608183982
Action Type: RESPONSE
Date: 11/15/2009
Action: Monitoring Report - Semi-Annually

Global Id: T0608183982
Action Type: RESPONSE
Date: 11/19/2008
Action: Soil and Water Investigation Report

Global Id: T0608183982
Action Type: RESPONSE
Date: 09/13/2004
Action: Soil and Water Investigation Report

Global Id: T0608183982
Action Type: RESPONSE
Date: 11/15/2005
Action: Monitoring Report - Semi-Annually

Global Id: T0608183982
Action Type: RESPONSE
Date: 05/15/2006
Action: Monitoring Report - Semi-Annually

Global Id: T0608183982
Action Type: RESPONSE
Date: 05/15/2007
Action: Monitoring Report - Semi-Annually

Global Id: T0608183982
Action Type: RESPONSE
Date: 05/15/2008
Action: Monitoring Report - Semi-Annually

Global Id: T0608183982
Action Type: RESPONSE

DRAFT

COOKS AUTO BODY (Continued) **1000272042**

Date: 11/15/2006
Action: Monitoring Report - Semi-Annually

Global Id: T0608183982
Action Type: RESPONSE
Date: 11/15/2007
Action: Monitoring Report - Semi-Annually

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Preliminary site assessment underway
Case Number: 330188
How Discovered: SA
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: 2/21/2001
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330188
Facility Status: 9- Case Closed
Global ID: T0608183982
APN Number: 053138010
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

FINDS:

Registry ID: 110001168888

Environmental Interest/Information System
California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

HAZARDOUS AIR POLLUTANT MAJOR

STATE MASTER

DRAFT

COOKS AUTO BODY (Continued) **1000272042**

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1000272042
Registry ID: 110001168888
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110001168888

B19 **COOKS AUTO BODY** **RCRA-SQG** **1000272038**
North **1104 MAIN STREET** **CAD043261544**
< 1/8 **REDWOOD CITY, CA 94063**
0.032 mi.
168 ft. **Site 4 of 10 in cluster B**

Relative:
Higher

Actual:
14 ft.

RCRA-SQG:
Date form received by agency: 06/03/1986
Facility name: COOKS AUTO BODY
Facility address: 1104 MAIN STREET
REDWOOD CITY, CA 94063
EPA ID: CAD043261544
Contact: ENVIRONMENTAL MANAGER
Contact address: 1104 MAIN STREET
REDWOOD CITY, CA 94063
Contact country: US
Contact telephone: (415) 365-3206
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: BOB WOOD
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

DRAFT

COOKS AUTO BODY (Continued) **1000272038**

Handler Activities Summary:
- U.S. importer of hazardous waste: No
- Mixed waste (haz. and radioactive): No
- Recycler of hazardous waste: No
- Transporter of hazardous waste: No
- Treater, storer or disposer of HW: No
- Underground injection activity: No
- On-site burner exemption: No
- Furnace exemption: No
- Used oil fuel burner: No
- Used oil processor: No
- User oil refiner: No
- Used oil fuel marketer to burner: No
- Used oil Specification marketer: No
- Used oil transfer facility: No
- Used oil transporter: No

Violation Status: No violations found

B20 **BOBS AUTO REPAIR** **San Mateo Co. BI** **S113756890**
NNE **415 CASSIA** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.043 mi.
227 ft. **Site 5 of 10 in cluster B**

Relative:
Higher

Actual:
15 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0023097
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0026290
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0023097
Prog Element Code:	LESS THAN 500 TIRES
Record Id:	PR0045580
Description:	LESS THAN 500 TIRES
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0023097
Prog Element Code:	STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id:	PR0026291
Description:	STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status:	INACTIVE

DRAFT

B21
NNE
< 1/8
0.043 mi.
227 ft.

BOBS AUTO REPAIR
415 CASSIA ST
REDWOOD CITY, CA 94063

EDR Hist Auto **1020592268**
N/A

Site 6 of 10 in cluster B

Relative:
Higher

Actual:
15 ft.

EDR Hist Auto

Year:	Name:	Type:
1987	AUTOMOTIVE ENGINEERING	General Automotive Repair Shops
1988	AUTOMOTIVE ENGINEERING	General Automotive Repair Shops
1989	AUTOMOTIVE ENGINEERING	General Automotive Repair Shops
1990	AUTOMOTIVE ENGINEERING	General Automotive Repair Shops
1991	AUTOMOTIVE ENGINEERING	General Automotive Repair Shops
1992	AUTOMOTIVE ENGINEERING	General Automotive Repair Shops
1993	AUTOMOTIVE ENGINEERING	General Automotive Repair Shops
1994	AUTOMOTIVE ENGINEERING	General Automotive Repair Shops
1995	BOBS AUTO REPAIR	General Automotive Repair Shops
1996	BOBS AUTO REPAIR	General Automotive Repair Shops
1997	BOBS AUTO REPAIR	General Automotive Repair Shops
1998	BOBS AUTO REPAIR	General Automotive Repair Shops
1999	BOBS AUTO REPAIR	General Automotive Repair Shops
2000	BOBS AUTO REPAIR	General Automotive Repair Shops
2001	BOBS AUTO REPAIR	General Automotive Repair Shops
2002	BOBS AUTO REPAIR	General Automotive Repair Shops
2003	BOBS AUTO REPAIR	General Automotive Repair Shops
2004	BOBS AUTO REPAIR	General Automotive Repair Shops
2005	BOBS AUTO REPAIR	General Automotive Repair Shops
2006	BOBS AUTO REPAIR	General Automotive Repair Shops

D22
SW
< 1/8
0.045 mi.
238 ft.

TOWNE FORD
135 MAPLE
REDWOOD CITY, CA 94063

San Mateo Co. BI **S113755354**
N/A

Site 1 of 9 in cluster D

Relative:
Higher

Actual:
13 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0006994
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0011202
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0006994
Prog Element Code:	STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id:	PR0003920
Description:	STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status:	INACTIVE

DRAFT

D23 **HUDSON PROPERTY** **LUST** **S103951322**
SW **135 MAPLE** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.045 mi.
238 ft. **Site 2 of 9 in cluster D**

Relative:
Higher

Actual:
13 ft.

LUST:

Region:	STATE
Global Id:	T0608131894
Latitude:	37.4820848535251
Longitude:	-122.226692042992
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	10/30/2002
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	Not reported
LOC Case Number:	339181
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	* Solvents
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608131894
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608131894
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608131894
Status:	Completed - Case Closed
Status Date:	10/30/2002

Global Id:	T0608131894
Status:	Open - Case Begin Date
Status Date:	09/21/1999

Regulatory Activities:

Global Id:	T0608131894
Action Type:	ENFORCEMENT
Date:	11/02/1999
Action:	* Historical Enforcement - #1

DRAFT

HUDSON PROPERTY (Continued) **S103951322**

Global Id: T0608131894
Action Type: Other
Date: 09/21/1999
Action: Leak Reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 339181
Facility Status: 9- Case Closed
Global ID: T0608131894
APN Number: Not reported
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

D24 **AUTO ELECTRIC & CARBURETOR CO** **EDR Hist Auto** **1021581932**
SW **135 MAPLE ST** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.045 mi.
238 ft. **Site 3 of 9 in cluster D**

Relative: Higher

Actual: 13 ft.

EDR Hist Auto

Year:	Name:	Type:
1969	AUTO ELECTRIC CARBURETOR CO	Automotive Repair Shops, NEC
1970	AUTO ELECTRIC CARBURETOR CO	Automotive Repair Shops, NEC
1971	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1972	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1973	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1974	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1975	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1976	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1977	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1978	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1979	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1980	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1982	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1983	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1985	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1986	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1987	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1988	ANDERSON C C & SON INC	Automotive Repair Shops, NEC
1994	AUTO ELECTRIC & CARBURETOR CO	Automotive Repair Shops, NEC
1995	AUTO ELECTRIC & CARBURETOR CO	Automotive Repair Shops, NEC
1996	AUTO ELECTRIC & CARBURETOR CO	Automotive Repair Shops, NEC
1997	AUTO ELECTRIC & CARBURETOR CO	Automotive Repair Shops, NEC
1998	AUTO ELECTRIC & CARBURETOR CO	Automotive Repair Shops, NEC
2002	AUTO ELECTRIC & CARBURETOR CO	Automotive Repair Shops, NEC
2003	AUTO ELECTRIC & CARBURETOR CO	Automotive Repair Shops, NEC
2004	AUTO ELECTRIC & CARBURETOR CO	Automotive Repair Shops, NEC
2005	AUTO ELECTRIC & CARBURETOR CO	Automotive Repair Shops, NEC
2006	AUTO ELECTRIC & CARBURETOR CO	Automotive Repair Shops, NEC
2007	AUTO ELECTRIC & CARBURETOR CO	Automotive Repair Shops, NEC
2008	AUTO ELECTRIC & CARBURETOR CO	Automotive Repair Shops, NEC

DRAFT

D25 **KOPF MOTOR COMPANY INC** **EDR Hist Auto** **1020737942**
SSW **1555 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.045 mi.
240 ft. **Site 4 of 9 in cluster D**

Relative: EDR Hist Auto
Higher

Year:	Name:	Type:
1987	KOPF MOTOR COMPANY INC	New And Used Car Dealers

Actual:
13 ft.

D26 **HOPKINS ACURA** **San Mateo Co. BI** **S113755200**
SSW **1555 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.045 mi.
240 ft. **Site 5 of 9 in cluster D**

Relative: San Mateo Co. BI:
Higher

Region:	SAN MATEO
Facility ID:	FA0001217
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0011173
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	ACTIVE

Actual:
13 ft.

Region:	SAN MATEO
Facility ID:	FA0001217
Prog Element Code:	LESS THAN 500 TIRES
Record Id:	PR0045628
Description:	LESS THAN 500 TIRES
Facility Status:	ACTIVE

Region:	SAN MATEO
Facility ID:	FA0001217
Prog Element Code:	STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id:	PR0003705
Description:	STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status:	ACTIVE

C27 **BALTZER ENTERPRISES** **EDR Hist Auto** **1020389556**
SSE **113 BEECH ST** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.052 mi.
277 ft. **Site 2 of 4 in cluster C**

Relative: EDR Hist Auto
Higher

Year:	Name:	Type:
1988	BALTZER ENTERPRISES	General Automotive Repair Shops
1989	BALTZER ENTERPRISES	General Automotive Repair Shops
1990	BALTZER ENTERPRISES	General Automotive Repair Shops

Actual:
17 ft.

DRAFT

C28 **CALIFORNIA AUTO DETAILERS** **San Mateo Co. BI** **S113755414**
SSE **113 BEECH** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.052 mi.
277 ft. **Site 3 of 4 in cluster C**

Relative:
Higher

Actual:
17 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0008018
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0025800
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	ACTIVE

Region:	SAN MATEO
Facility ID:	FA0008018
Prog Element Code:	STORES MV FUELS OR WASTE ONLY
Record Id:	PR0003901
Description:	STORES MV FUELS OR WASTE ONLY
Facility Status:	INACTIVE

B29 **COOKS UPHOLSTERY** **EDR Hist Auto** **1021460912**
North **1101 MAIN ST** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.063 mi.
335 ft. **Site 7 of 10 in cluster B**

Relative:
Higher

Actual:
14 ft.

EDR Hist Auto

Year:	Name:	Type:
1991	COOKS UPHOLSTERY	Interior Repair Services
1992	COOKS UPHOLSTERY	Interior Repair Services
1993	COOKS UPHOLSTERY	Interior Repair Services
1994	COOKS UPHOLSTERY	Interior Repair Services

B30 **COOKS UPHOLSTERY** **San Mateo Co. BI** **S113757056**
North **1101 1/2 MAIN** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.065 mi.
341 ft. **Site 8 of 10 in cluster B**

Relative:
Higher

Actual:
14 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0024017
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0028295
Description:	GENERATES <27 GAL/YEAR
Facility Status:	INACTIVE

DRAFT

B31
North
< 1/8
0.070 mi.
370 ft.

DAN STEWART CO
410 MAPLE
REDWOOD CITY, CA 94063

Site 9 of 10 in cluster B

San Mateo Co. BI **S113756100**
N/A

Relative:
Higher

Actual:
14 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0015220
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0011363
Description:	GENERATES <27 GAL/YEAR
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0015220
Prog Element Code:	STORES MV FUELS OR WASTE ONLY
Record Id:	PR0027687
Description:	STORES MV FUELS OR WASTE ONLY
Facility Status:	INACTIVE

E32
WNW
< 1/8
0.070 mi.
370 ft.

MOTOR VERKSTAD VOLVO
113 MONROE
REDWOOD CITY, CA 94063

Site 1 of 4 in cluster E

San Mateo Co. BI **S113755396**
N/A

Relative:
Higher

Actual:
15 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0007683
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0011230
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0007683
Prog Element Code:	LESS THAN 500 TIRES
Record Id:	PR0045564
Description:	LESS THAN 500 TIRES
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0007683
Prog Element Code:	RECYCLER
Record Id:	PR0045902
Description:	RECYCLER
Facility Status:	INACTIVE

DRAFT

E33 **KC PAVING** **San Mateo Co. BI** **S113757294**
WNW **113 MONROE** **N/A**
< 1/8 **REDWOOD CITY, CA 94061**
0.070 mi.
370 ft. **Site 2 of 4 in cluster E**

Relative:
Higher

Actual:
15 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0025168
Prog Element Code:	STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id:	PR0033376
Description:	STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status:	INACTIVE

E34 **MOTOR VERKSTAD** **EDR Hist Auto** **1020253510**
WNW **113 MONROE ST** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.070 mi.
370 ft. **Site 3 of 4 in cluster E**

Relative:
Higher

Actual:
15 ft.

EDR Hist Auto

Year:	Name:	Type:
1989	MOTOR VERKSTAD	Automotive Repair Shops, NEC
1990	MOTOR VERKSTAD	Automotive Repair Shops, NEC
1991	MOTOR VERKSTAD	Automotive Repair Shops, NEC
1992	MOTOR VERKSTAD	Automotive Repair Shops, NEC
1993	MOTOR VERKSTAD	Automotive Repair Shops, NEC
1994	MOTOR VERKSTAD	Automotive Repair Shops, NEC
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1998	MOTOR VERKSTAD	Automotive Repair Shops, NEC
1999	MOTOR VERKSTAD	Automotive Repair Shops, NEC
2000	MOTOR VERKSTAD	Automotive Repair Shops, NEC
2001	MOTOR VERKSTAD	Automotive Repair Shops, NEC
2002	MOTOR VERKSTAD	Automotive Repair Shops, NEC
2003	MOTOR VERKSTAD	Automotive Repair Shops, NEC

C35 **CAL CAR WASH DISTRIBUTING CO** **San Mateo Co. BI** **S113757101**
SE **1303 MAIN** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.076 mi.
399 ft. **Site 4 of 4 in cluster C**

Relative:
Higher

Actual:
19 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0024244
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0028779
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

DRAFT

B36
NNE
< 1/8
0.078 mi.
412 ft.

H N LOCKWOOD INC
450 MAPLE ST
REDWOOD CITY, CA 94063

Site 10 of 10 in cluster B

RCRA-SQG
FINDS
ECHO
EMI
HAZNET

1000596705
CAD983606815

Relative:
Higher

Actual:
14 ft.

RCRA-SQG:

Date form received by agency:	09/16/1991
Facility name:	H N LOCKWOOD INC
Facility address:	450 MAPLE ST REDWOOD CITY, CA 94063
EPA ID:	CAD983606815
Contact:	DAN LOCKWOOD
Contact address:	450 MAPLE ST REDWOOD CITY, CA 94063
Contact country:	US
Contact telephone:	(415) 366-9557
Contact email:	Not reported
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	H N LOCKWOOD INC
Owner/operator address:	450 MAPLE ST REDWOOD CITY, CA 94063
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 366-9557
Legal status:	County
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

FINDS:

Registry ID: 110002861680

DRAFT

H N LOCKWOOD INC (Continued) **1000596705**

Environmental Interest/Information System
AIR EMISSIONS CLASSIFICATION UNKNOWN

California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000596705
Registry ID:	110002861680
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110002861680

EMI:

Year:	1998
County Code:	41
Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1999
County Code:	41
Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	0

DRAFT

H N LOCKWOOD INC (Continued) **1000596705**

NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2000
County Code:	41
Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2001
County Code:	41
Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2002
County Code:	41
Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year: 2003

DRAFT

H N LOCKWOOD INC (Continued) **1000596705**

County Code:	41
Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	1
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2004
County Code:	41
Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.102
Reactive Organic Gases Tons/Yr:	1.100082
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2005
County Code:	41
Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.176
Reactive Organic Gases Tons/Yr:	1.17326
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2006
County Code:	41
Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD

DRAFT

H N LOCKWOOD INC (Continued) **1000596705**

Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.154
Reactive Organic Gases Tons/Yr:	1.151534
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2007
County Code:	41
Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.007
Reactive Organic Gases Tons/Yr:	1.0056848
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2008
County Code:	41
Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.007
Reactive Organic Gases Tons/Yr:	1.0056848
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2009
County Code:	41
Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.97199999999999998
Reactive Organic Gases Tons/Yr:	0.96893119999999999
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0

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H N LOCKWOOD INC (Continued) **1000596705**

SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Year: 2010
County Code: 41
Air Basin: SF
Facility ID: 11443
Air District Name: BA
SIC Code: 2752
Air District Name: BAY AREA AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0.97199999999999998
Reactive Organic Gases Tons/Yr: 0.96893119999999999
Carbon Monoxide Emissions Tons/Yr: 0
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Year: 2011
County Code: 41
Air Basin: SF
Facility ID: 11443
Air District Name: BA
SIC Code: 2752
Air District Name: BAY AREA AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0.972
Reactive Organic Gases Tons/Yr: 0.9689312
Carbon Monoxide Emissions Tons/Yr: 0
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Year: 2012
County Code: 41
Air Basin: SF
Facility ID: 11443
Air District Name: BA
SIC Code: 2752
Air District Name: BAY AREA AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0.972
Reactive Organic Gases Tons/Yr: 0.9689312
Carbon Monoxide Emissions Tons/Yr: 0
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Year: 2013
County Code: 41

DRAFT

H N LOCKWOOD INC (Continued) **1000596705**

Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.04
Reactive Organic Gases Tons/Yr:	1.0374244
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2014
County Code:	41
Air Basin:	SF
Facility ID:	11443
Air District Name:	BA
SIC Code:	2752
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.040099997
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

HAZNET:

envid:	1000596705
Year:	2015
GEPAID:	CAD983606815
Contact:	DAN LOCKWOOD GENERAL MANAGER
Telephone:	6503669557
Mailing Name:	Not reported
Mailing Address:	450 MAPLE ST
Mailing City,St,Zip:	REDWOOD CITY, CA 940630000
Gen County:	San Mateo
TSD EPA ID:	CAD008252405
TSD County:	Los Angeles
Waste Category:	Aqueous solution with total organic residues less than 10 percent
Disposal Method:	Fuel Blending Prior To Energy Recovery At Another Site
Tons:	0.25
Cat Decode:	Aqueous solution with total organic residues less than 10 percent
Method Decode:	Fuel Blending Prior To Energy Recovery At Another Site
Facility County:	San Mateo

envid:	1000596705
Year:	2014
GEPAID:	CAD983606815
Contact:	DAN LOCKWOOD GENERAL MANAGER
Telephone:	6503669557
Mailing Name:	Not reported

DRAFT

H N LOCKWOOD INC (Continued) **1000596705**

Mailing Address:	450 MAPLE ST
Mailing City,St,Zip:	REDWOOD CITY, CA 940630000
Gen County:	San Mateo
TSD EPA ID:	CAD097030993
TSD County:	Los Angeles
Waste Category:	Aqueous solution with total organic residues less than 10 percent
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.21
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

envid:	1000596705
Year:	2013
GEPAID:	CAD983606815
Contact:	DAN LOCKWOOD GENERAL MANAGER
Telephone:	6503669557
Mailing Name:	Not reported
Mailing Address:	450 MAPLE ST
Mailing City,St,Zip:	REDWOOD CITY, CA 940630000
Gen County:	San Mateo
TSD EPA ID:	CAD097030993
TSD County:	Los Angeles
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.231
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Not reported

envid:	1000596705
Year:	2012
GEPAID:	CAD983606815
Contact:	DAN LOCKWOOD GENERAL MANAGER
Telephone:	6503669557
Mailing Name:	Not reported
Mailing Address:	450 MAPLE ST
Mailing City,St,Zip:	REDWOOD CITY, CA 940630000
Gen County:	San Mateo
TSD EPA ID:	CAD097030993
TSD County:	Los Angeles
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.231
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

envid:	1000596705
Year:	2011
GEPAID:	CAD983606815
Contact:	DAN LOCKWOOD GENERAL MANAGER
Telephone:	6503669557
Mailing Name:	Not reported

DRAFT

H N LOCKWOOD INC (Continued) **1000596705**

Mailing Address: 450 MAPLE ST
Mailing City,St,Zip: REDWOOD CITY, CA 940630000
Gen County: Not reported
TSD EPA ID: CAD097030993
TSD County: Not reported
Waste Category: Aqueous solution with total organic residues less than 10 percent
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.231
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

Click this hyperlink while viewing on your computer to access
5 additional CA_HAZNET: record(s) in the EDR Site Report.

D37 **RMC LONESTAR** **San Mateo Co. BI** **S113755600**
SW **25 MAPLE** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.080 mi.
422 ft. **Site 6 of 9 in cluster D**

Relative:
Higher

Actual:
17 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0010956
Prog Element Code: UNDERGROUND TANK - GENERAL
Record Id: PR0022359
Description: UNDERGROUND TANK - GENERAL
Facility Status: INACTIVE

D38 **PACIFIC READY MIX INC** **LUST** **U001596006**
SW **25 MAPLE ST** **HIST UST** **N/A**
< 1/8 **REDWOOD CITY, CA 94401**
0.080 mi.
422 ft. **Site 7 of 9 in cluster D**

Relative:
Higher

Actual:
17 ft.

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330080
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

HIST UST:
File Number: 0002C145
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002C145.pdf

DRAFT

PACIFIC READY MIX INC (Continued) **U001596006**

Region:	STATE
Facility ID:	00000010291
Facility Type:	Other
Other Type:	READY MIX CONCRETE
Contact Name:	KEN GARINO
Telephone:	4153663816
Owner Name:	PACIFIC READY MIX INC
Owner Address:	850 SAN MATEO DR
Owner City,St,Zip:	SAN MATEO, CA 94401
Total Tanks:	0002
Tank Num:	001
Container Num:	1
Year Installed:	Not reported
Tank Capacity:	00005000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor
Tank Num:	002
Container Num:	2
Year Installed:	Not reported
Tank Capacity:	00002100
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

Click here for Geo Tracker PDF:

D39 **RMC LONESTAR** **LUST** **S101303163**
SW **25 MAPLE** **SWEEPS UST** **N/A**
< 1/8 **REDWOOD CITY, CA 94063** **HIST CORTESE**
0.080 mi.
422 ft. **Site 8 of 9 in cluster D**

Relative:
Higher

Actual:
17 ft.

LUST:

Region:	STATE
Global Id:	T0608100686
Latitude:	37.4806892
Longitude:	-122.2268682
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	02/08/1996
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0724
LOC Case Number:	330080
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

DRAFT

RMC LONESTAR (Continued) **S101303163**

Global Id: T0608100686
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608100686
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100686
Status: Completed - Case Closed
Status Date: 02/08/1996

Global Id: T0608100686
Status: Open - Case Begin Date
Status Date: 04/30/1991

Regulatory Activities:
Global Id: T0608100686
Action Type: Other
Date: 05/13/1991
Action: Leak Discovery

Global Id: T0608100686
Action Type: Other
Date: 04/30/1991
Action: Leak Reported

Global Id: T0608100686
Action Type: ENFORCEMENT
Date: 05/01/1991
Action: Notice of Responsibility - #1

Global Id: T0608100686
Action Type: REMEDIATION
Date: 06/18/1991
Action: Excavation

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330080
Facility Status: 9- Case Closed
Global ID: T0608100686
APN Number: Not reported
Case Type: SAN MATEO CO. LUST

DRAFT

RMC LONESTAR (Continued) **S101303163**

EDR Link ID: SAN MATEO CO. LUST

SWEEPS UST:
Status: Not reported
Comp Number: 330011
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330011-000001
Tank Status: Not reported
Capacity: 5000
Active Date: Not reported
Tank Use: M.V. FUEL
STG: PRODUCT
Content: DIESEL
Number Of Tanks: 3

Status: Not reported
Comp Number: 330011
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330011-000002
Tank Status: Not reported
Capacity: 2000
Active Date: Not reported
Tank Use: M.V. FUEL
STG: PRODUCT
Content: LEADED
Number Of Tanks: Not reported

Status: Not reported
Comp Number: 330011
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330011-000003
Tank Status: Not reported
Capacity: 500
Active Date: Not reported
Tank Use: OIL
STG: PRODUCT
Content: UNKNOWN
Number Of Tanks: Not reported

HIST CORTESE:
Region: CORTESE

DRAFT

RMC LONESTAR (Continued) **S101303163**

Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0724

F40 **HN LOCKWOOD INC** **San Mateo Co. BI** **S113756099**
North **450 MAPLE** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.082 mi.
435 ft. **Site 1 of 7 in cluster F**

Relative:
Higher

Actual:
14 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0015216
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0011365
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0015216
Prog Element Code: STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id: PR0003997
Description: STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status: ACTIVE

D41 **PERCYS BODY SHOP** **EDR Hist Auto** **1021292600**
SW **19 MAPLE ST** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.083 mi.
438 ft. **Site 9 of 9 in cluster D**

Relative:
Higher

Actual:
18 ft.

EDR Hist Auto

Year:	Name:	Type:
1990	PERCYS BODY SHOP	Exterior Repair Services

E42 **WESTPAC ENGINEERING CORP** **San Mateo Co. BI** **S113757036**
NW **145 MONROE** **HAZNET** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.089 mi.
471 ft. **Site 4 of 4 in cluster E**

Relative:
Higher

Actual:
14 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0023961
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0028152
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0023961
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0028153
Description: STORES MV FUELS OR WASTE ONLY

DRAFT

WESTPAC ENGINEERING CORP (Continued) **S113757036**

Facility Status: INACTIVE

HAZNET:
envid: S113757036
Year: 2013
GEPAID: CAC002737339
Contact: JONATHAN HAYES
Telephone: 4154253293
Mailing Name: Not reported
Mailing Address: 1 MARKET ST FL 36
Mailing City,St,Zip: SAN FRANCISCO, CA 941051420
Gen County: San Mateo
TSD EPA ID: UTC093012201
TSD County: 99
Waste Category: Not reported
Disposal Method: Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons: 528
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Not reported

F43 **DESANTANA FOUNTAINS** **San Mateo Co. BI** **S113757122**
NNE **1280 MIDDLEFIELD** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.095 mi.
504 ft. **Site 2 of 7 in cluster F**

Relative:
Higher

Actual:
14 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0024344
Prog Element Code: GENERATES <27 GAL/YEAR
Record Id: PR0028955
Description: GENERATES <27 GAL/YEAR
Facility Status: INACTIVE

F44 **PHIL FINER REFRIGERATION INC** **LUST** **U001594593**
North **1001 MAIN ST** **HIST UST** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.100 mi.
528 ft. **Site 3 of 7 in cluster F**

Relative:
Higher

Actual:
14 ft.

LUST:
Region: STATE
Global Id: T0608135637
Latitude: 37.4837808772611
Longitude: -122.225904464722
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 01/18/2011
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: Not reported
LOC Case Number: 330215
File Location: Local Agency

DRAFT

PHIL FINER REFRIGERATION INC (Continued) **U001594593**

Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Extracted from SAIC's June 13, 2007 Work Plan for Additional Soil and Groundwater Investigation, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report. The Site is a triangular-shaped parcel comprised of approximately 0.5 acres of relatively level land and is developed with two commercial buildings that are separated by an asphalt-paved area. According to the SMCHD correspondence dated November 28, 2005, the Site was used as a Texaco service station during the 1950s and as a Mohawk Petroleum Corporation service station in the 1960s. According to SMCHD Ownership notes (August 29, 2005 file review) and an Oil Heat Engineering invoice (No. 1827), three underground storage tanks (USTs) at the site were removed, and excavated soil was used for backfilling. During development, three 1,200-gallon USTs, used to store gasoline and then filled with grout, were apparently uncovered and subsequently removed on March 25, 1987 by Mr. Feiner. The construction and age of the USTs at the time of removal are not known. 1987 UST Removal: Five soil samples from the former UST pit were collected by Blaine Tech Services, Inc. (Blaine) on March 25, 1987. The UST pit, according to the sample location map prepared by Blaine, extended to the edge of the sidewalk along the east side of Main Street at a location south of the intersection of Middlefield Road and Main Street. This location does not coincide with the location of the excavated area that was hand written on the survey. The soil samples were collected at an approximate depth of 8 feet below ground surface (ft bgs) from the sidewalls of the excavation. Two samples were collected from the eastern sidewall of the excavation. Three samples were collected from the excavation sidewalls corresponding to the fill ends of the USTs. The soil samples were analyzed by Sequoia Analytical Laboratory for total hydrocarbons as gasoline (TPHg) and benzene, toluene and xylenes (BTX) using Environmental Protection Agency (EPA) methods 8015 and 5020, respectively. Notations regarding the occurrence of groundwater during sample collection are not present in Blaines March 26, 1987 Sampling Report. Soil sample analytical results indicated TPHg concentrations ranging from 5.7 to 450 parts per million (ppm) in all five samples, with three samples reporting detectable BTX. TPHg soil impact was reported at 200 ppm and 450 ppm along the eastern wall of the UST pit and at 200 ppm for the most northerly sample from along the western UST pit wall. Detectable benzene was reported in two samples at 0.38 ppm and 6.5 ppm. Detectable toluene was reported in three samples at 0.99 ppm, 1.0 ppm and 13 ppm. Detectable xylene was reported in three samples at 6.3 ppm, 18 ppm and 36 ppm. 2006 Subsurface Investigation: On November 15, 2006, SAIC advanced five soils borings, B-1 through B-5, to collect soil samples at discrete intervals and shallow groundwater samples. Borings B-1, B-4 and B-5 were advanced to depths ranging from approximately 12.5 feet below ground surface (bgs) to 13.5 feet bgs, allowing collection of grab groundwater samples. Borings B-2 and B-3 were advanced to depths of 7.5 feet bgs, where hand auger refusal was met due to encountered gravels and cobbles. Soil samples were analyzed by Lancaster Laboratories (Lancaster), a California-certified analytical laboratory, for total hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, and xylenes (BTEX), total lead, methyl tertiary butyl ether (MTBE), 1,2 dichloroethane (1,2 DCA), and 1,2

DRAFT

PHIL FINER REFRIGERATION INC (Continued) **U001594593**

dibromoethane (1,2 DBA). Analysis of soil samples collected from borings B-1 through B-5 detected TPHg in 11 of the 12 samples at concentrations of up to 130 milligrams per kilogram (mg/kg). The highest TPHg concentrations were detected in borings B-4 and B-5 at depths of 8 feet to 8.5 feet bgs, with concentrations of 110 mg/kg and 130 mg/kg, respectively. Benzene was detected in boring B-5 at concentrations of 0.006 mg/kg and 0.007 mg/kg. Other BTEX constituents were detected in each boring at concentrations of up to 0.006 mg/kg toluene, 0.022 mg/kg ethylbenzene and 0.034 mg/kg total xylenes. MTBE, 1,2-DBA and 1,2-DCA were not detected above the reported detection limits in any soil sample analyzed. Lead was detected in each soil sample at concentrations ranging from 5.16 mg/kg to 41.0 mg/kg. The results of soil sample analysis are included as Table 1. Analysis of groundwater samples collected from borings B-1, B-4 and B-5 detected TPHg in each sample at concentrations of 490 micrograms per liter (ug/l), 370 ug/l and 9,600 ug/l, respectively. The highest TPHg concentration was detected in boring B-5, located near the former dispenser island along Middlefield Road. Benzene was detected in the groundwater samples collected from B-1 and B-5 at a concentration of 6.0 ug/l. The other BTEX constituents were detected in the sample collected from B-5 at concentrations of 2.0 ug/l toluene, 33 ug/l ethylbenzene and 15 ug/l total xylenes. MTBE was detected in the groundwater sample collected from B-1 at concentration of 3.0 ug/l. Lead was detected in each groundwater sample at concentrations ranging from 22.0 ug/l to 70.2 ug/l. The groundwater sample, however, was not field filtered. As a result, the concentrations of total lead may be elevated due to the high sediment content present in the groundwater sample. Ethanol, 1,2-DBA, 1,2-DCA and the fuel oxygenates DIPE, ETBE, TAME and TBA were not detected above the reported detection limits in any groundwater sample, with the exception of 0.8 ug/l 1,2-DBA in the sample collected from boring B-5. To define the magnitude and extent of hydrocarbon impact in the area around and down-gradient from boring B-5 and from the former northern pump island, SAIC proposes the installation of two additional borings.

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608135637
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608135637
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

PHIL FINER REFRIGERATION INC (Continued) **U001594593**

Status History:

Global Id:	T0608135637
Status:	Completed - Case Closed
Status Date:	01/18/2011
Global Id:	T0608135637
Status:	Open - Case Begin Date
Status Date:	03/26/1987
Global Id:	T0608135637
Status:	Open - Site Assessment
Status Date:	05/24/2006
Global Id:	T0608135637
Status:	Open - Site Assessment
Status Date:	08/08/2006
Global Id:	T0608135637
Status:	Open - Site Assessment
Status Date:	11/01/2006

Regulatory Activities:

Global Id:	T0608135637
Action Type:	ENFORCEMENT
Date:	06/01/2006
Action:	Notice of Responsibility - #20060601
Global Id:	T0608135637
Action Type:	ENFORCEMENT
Date:	11/28/2005
Action:	Staff Letter - #20051128
Global Id:	T0608135637
Action Type:	ENFORCEMENT
Date:	08/07/2006
Action:	Staff Letter - #20060807
Global Id:	T0608135637
Action Type:	ENFORCEMENT
Date:	07/30/2007
Action:	Staff Letter - #20070730
Global Id:	T0608135637
Action Type:	ENFORCEMENT
Date:	09/19/2006
Action:	Staff Letter - #20060919
Global Id:	T0608135637
Action Type:	ENFORCEMENT
Date:	04/30/2007
Action:	Staff Letter - #20070430
Global Id:	T0608135637
Action Type:	RESPONSE
Date:	08/31/2006
Action:	Preliminary Site Assessment Workplan

DRAFT

PHIL FINER REFRIGERATION INC (Continued) **U001594593**

Global Id: T0608135637
Action Type: RESPONSE
Date: 10/15/2006
Action: Other Report / Document

Global Id: T0608135637
Action Type: RESPONSE
Date: 10/01/2006
Action: Other Report / Document

Global Id: T0608135637
Action Type: Other
Date: 04/21/1987
Action: Leak Reported

Global Id: T0608135637
Action Type: ENFORCEMENT
Date: 01/18/2011
Action: Closure/No Further Action Letter - #20110118

Global Id: T0608135637
Action Type: ENFORCEMENT
Date: 11/23/2010
Action: Notification - Public Notice of Case Closure - #20101123

Global Id: T0608135637
Action Type: ENFORCEMENT
Date: 03/27/2009
Action: Staff Letter - #20090327

Global Id: T0608135637
Action Type: Other
Date: 03/26/1987
Action: Leak Discovery

Global Id: T0608135637
Action Type: ENFORCEMENT
Date: 07/17/2009
Action: Staff Letter - #20090717

Global Id: T0608135637
Action Type: RESPONSE
Date: 12/07/2009
Action: Soil and Water Investigation Report

Global Id: T0608135637
Action Type: RESPONSE
Date: 12/07/2009
Action: Correspondence

Global Id: T0608135637
Action Type: RESPONSE
Date: 08/31/2006
Action: Preliminary Site Assessment Workplan

Global Id: T0608135637
Action Type: RESPONSE

DRAFT

PHIL FINER REFRIGERATION INC (Continued) **U001594593**

Date: 10/19/2006
Action: Other Workplan

Global Id: T0608135637
Action Type: RESPONSE
Date: 01/30/2007
Action: Preliminary Site Assessment Report

Global Id: T0608135637
Action Type: RESPONSE
Date: 06/18/2007
Action: Soil and Water Investigation Workplan

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330215
Facility Status: 9- Case Closed
Global ID: T0608135637
APN Number: 053136010
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST UST:
File Number: 0002C17E
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002C17E.pdf
Region: STATE
Facility ID: 00000043884
Facility Type: Other
Other Type: CONTRACTOR
Contact Name: PHILIP F. FEINER PRES.
Telephone: 4153666656
Owner Name: PHILIP F. FEINER
Owner Address: 5 EL SERENO DR.
Owner City,St,Zip: SAN CARLOS, CA 94040
Total Tanks: 0001

Tank Num: 001
Container Num: 1
Year Installed: Not reported
Tank Capacity: 00000000
Tank Used for: WASTE
Type of Fuel: WASTE OIL
Container Construction Thickness: Not reported
Leak Detection: None

Click here for Geo Tracker PDF:

DRAFT

F45
North
< 1/8
0.100 mi.
528 ft.

PHIL FINER REFRIGERATION
1001 MAIN
REDWOOD CITY, CA 94063

San Mateo Co. BI **S113757058**
N/A

Site 4 of 7 in cluster F

Relative:
Higher

Actual:
14 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0024029
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0028319
Description:	GENERATES <27 GAL/YEAR
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0024029
Prog Element Code:	STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id:	PR0029547
Description:	STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status:	INACTIVE

F46
North
< 1/8
0.100 mi.
528 ft.

CHEVRON 307542 FORMER MOHAWK OIL
1001 MAIN ST
REDWOOD CITY, CA 94063

RCRA-SQG **1012175891**
HAZNET **CAR000197004**

Site 5 of 7 in cluster F

Relative:
Higher

Actual:
14 ft.

RCRA-SQG:

Date form received by agency:	12/02/2008
Facility name:	CHEVRON 307542 FORMER MOHAWK OIL
Facility address:	1001 MAIN ST REDWOOD CITY, CA 94063
EPA ID:	CAR000197004
Mailing address:	PO BOX 6004 SAN RAMON, CA 94583
Contact:	JOCKO RODRIGUEZ
Contact address:	PO BOX 6004 SAN RAMON, CA 94583
Contact country:	US
Contact telephone:	925-842-3733
Contact email:	JOCKORODRIGUEZ@CHEVRON.COM
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	CHEVRON
Owner/operator address:	PO BOX 6004 SAN RAMON, CA 94583
Owner/operator country:	US
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/1983
Owner/Op end date:	Not reported

DRAFT

CHEVRON 307542 FORMER MOHAWK OIL (Continued) **1012175891**

Owner/operator name: CHEVRON
Owner/operator address: Not reported
Not reported
Owner/operator country: Not reported
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 01/01/1983
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D008
. Waste name: LEAD

. Waste code: D018
. Waste name: BENZENE

Violation Status: No violations found

HAZNET:
envid: 1012175891
Year: 2009
GEPAID: CAR000197004
Contact: JOCKO RODRIGUEZ
Telephone: 9258423733
Mailing Name: Not reported
Mailing Address: PO BOX 6004
Mailing City,St,Zip: SAN RAMON, CA 945830000
Gen County: Not reported
TSD EPA ID: CAT000646117
TSD County: Not reported
Waste Category: Other inorganic solid waste
Disposal Method: Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons: 0.15

DRAFT

CHEVRON 307542 FORMER MOHAWK OIL (Continued) **1012175891**

Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

F47 **GRIFFIN MOHAWK SERVICE** **EDR Hist Auto** **1020650579**
North **1001 MAIN STREET** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.100 mi.
528 ft. **Site 6 of 7 in cluster F**

Relative:
Higher

Actual:
14 ft.

EDR Hist Auto

Year:	Name:	Type:
1969	REDWOOD CITY RADIATOR WORKS	Automotive Repair Shops, NEC
1969	GRIFFIN MOHAWK SERVICE	Gasoline Service Stations
1970	GRIFFIN MOHAWK SERVICE	Gasoline Service Stations
1970	REDWOOD CITY RADIATOR WORKS	Automotive Repair Shops, NEC
1971	REDWOOD CITY RADIATOR WORKS	Automotive Repair Shops, NEC
1972	GRIFFIN MOHAWK	Gasoline Service Stations
1972	REDWOOD CITY RADIATOR WORKS	Automotive Repair Shops, NEC
1973	REDWOOD CITY RADIATOR WORKS	Automotive Repair Shops, NEC
1973	GRIFFIN MOHAWK	Gasoline Service Stations
1974	GRIFFIN MOHAWK	Gasoline Service Stations
1974	REDWOOD CITY RADIATOR WORKS	Automotive Repair Shops, NEC
1975	GRIFFIN MOHAWK	Gasoline Service Stations
1975	REDWOOD CITY RADIATOR WORKS	Automotive Repair Shops, NEC
1976	SCHULBAS CAR SERVICE	General Automotive Repair Shops
1977	SCHULBAS CAR SERVICE	General Automotive Repair Shops
1978	SCHULBAS IMPORTED CAR SERVICE	General Automotive Repair Shops

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G48 **CHAIN REACTION BICYCLES** **San Mateo Co. BI** **S113757092**
WSW **1451 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.101 mi.
533 ft. **Site 1 of 16 in cluster G**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0024216
Prog Element Code: GENERATES <27 GAL/YEAR
Record Id: PR0028707
Description: GENERATES <27 GAL/YEAR
Facility Status: INACTIVE

G49 **T MOBILE WEST CORP SITE ID SF03612A** **San Mateo Co. BI** **S113758774**
WSW **1451 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.101 mi.
533 ft. **Site 2 of 16 in cluster G**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0045637
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0060275

DRAFT

T MOBILE WEST CORP SITE ID SF03612A (Continued) **S113758774**

Description: STORES MV FUELS OR WASTE ONLY
Facility Status: INACTIVE

G50 **BEKINS MOVING & STORAGE** **SWEEPS UST** **S101630214**
WSW **1451 EL CAMINO REAL** **CA FID UST** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.101 mi.
533 ft. **Site 3 of 16 in cluster G**

Relative:
Higher

Actual:
18 ft.

SWEEPS UST:
Status: Not reported
Comp Number: 330091
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: Not reported
Tank Status: Not reported
Capacity: Not reported
Active Date: Not reported
Tank Use: Not reported
STG: Not reported
Content: Not reported
Number Of Tanks: 0

CA FID UST:
Facility ID: 41000303
Regulated By: UTNKA
Regulated ID: Not reported
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 4082436100
Mail To: Not reported
Mailing Address: 3777 STEVENS CREEK BLVD
Mailing Address 2: Not reported
Mailing City,St,Zip: REDWOOD CITY 94063
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

DRAFT

G51 **VERIZON WIRELESS REDWOOD CITY DOWNTOWN** **LUST** **S101308668**
WSW **1451 EL CAMINO REAL** **San Mateo Co. BI** **N/A**
< 1/8 **REDWOOD CITY, CA 94063** **HIST CORTESE**
0.101 mi.
533 ft. **Site 4 of 16 in cluster G**

Relative:
Higher

Actual:
18 ft.

LUST:

Region:	STATE
Global Id:	T0608100285
Latitude:	37.481577
Longitude:	-122.227718
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	06/24/1996
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0299
LOC Case Number:	330059
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100285
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100285
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100285
Status:	Completed - Case Closed
Status Date:	06/24/1996

Global Id:	T0608100285
Status:	Open - Case Begin Date
Status Date:	05/10/1988

Regulatory Activities:

Global Id:	T0608100285
Action Type:	Other
Date:	10/14/1988
Action:	Leak Discovery

DRAFT

VERIZON WIRELESS REDWOOD CITY DOWNTOWN (Continued) **S101308668**

Global Id: T0608100285
Action Type: ENFORCEMENT
Date: 05/27/1992
Action: Notice of Responsibility - #1

Global Id: T0608100285
Action Type: Other
Date: 05/10/1988
Action: Leak Reported

Global Id: T0608100285
Action Type: REMEDIATION
Date: 08/06/1992
Action: Excavation

Global Id: T0608100285
Action Type: REMEDIATION
Date: 08/06/1992
Action: Pump & Treat (P&T) Groundwater

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330059
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330059
Facility Status: 9- Case Closed
Global ID: T0608100285
APN Number: 053176170
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0027696
Prog Element Code: STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id: PR0044692
Description: STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status: ACTIVE

DRAFT

VERIZON WIRELESS REDWOOD CITY DOWNTOWN (Continued) **S101308668**

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0299

H52 **PRECISION FOREIGN CAR REPAIR** **EDR Hist Auto** **1021127316**
SW **1540 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94061**
0.103 mi.
544 ft. **Site 1 of 4 in cluster H**

Relative:
Higher

Actual:
18 ft.

EDR Hist Auto

Year:	Name:	Type:
1971	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1972	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1973	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1974	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1975	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1976	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1977	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1978	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1979	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1980	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1982	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1983	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1985	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1986	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1987	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1988	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1989	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1990	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1991	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1992	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1993	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1994	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1995	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1995	AUTOWORKS	General Automotive Repair Shops
1996	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1997	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1998	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
1999	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
2000	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
2001	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops
2002	PRECISION FOREIGN CAR REPAIR	General Automotive Repair Shops

DRAFT

H53 **PRECISION FOREIGN CAR REPAIR** **San Mateo Co. BI** **S113756404**
SW **1540 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.103 mi.
544 ft. **Site 2 of 4 in cluster H**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0017423
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0024871
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0017423
Prog Element Code:	STORES MV FUELS OR WASTE ONLY
Record Id:	PR0003850
Description:	STORES MV FUELS OR WASTE ONLY
Facility Status:	INACTIVE

H54 **AUTOWORKS** **San Mateo Co. BI** **S113756801**
SW **1540 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94061**
0.103 mi.
544 ft. **Site 3 of 4 in cluster H**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0022684
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0025293
Description:	GENERATES <27 GAL/YEAR
Facility Status:	INACTIVE

I55 **BORK & CHRISTENSEN INC** **EDR Hist Auto** **1022214379**
South **1597 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.105 mi.
557 ft. **Site 1 of 13 in cluster I**

Relative:
Higher

Actual:
18 ft.

EDR Hist Auto

Year:	Name:	Type:
1969	BORK & CHRISTENSEN INC	General Automotive Repair Shops
1970	BORK & CHRISTENSEN INC	General Automotive Repair Shops
1971	BORK & CHRISTENSEN INC	General Automotive Repair Shops
1972	BORK & CHRISTENSEN INC	General Automotive Repair Shops
1973	BORK & CHRISTENSEN INC	General Automotive Repair Shops
1974	BORK & CHRISTENSEN INC	General Automotive Repair Shops
1975	BORK & CHRISTENSEN INC	General Automotive Repair Shops

DRAFT

G56 **CHEVRON USA INC SERV STA #94256** **RCRA NonGen / NLR** **1000434440**
SW **1502 EL CAMINO REAL** **FINDS** **CAD980798375**
< 1/8 **REDWOOD CITY, CA 94063** **ECHO**
0.106 mi.
561 ft. **Site 5 of 16 in cluster G**

Relative:
Higher

Actual:
19 ft.

RCRA NonGen / NLR:

Date form received by agency:	11/04/1981
Facility name:	CHEVRON USA INC SERV STA #94256
Facility address:	1502 EL CAMINO REAL REDWOOD CITY, CA 94063
EPA ID:	CAD980798375
Mailing address:	PO BOX 2569 OAKLAND, CA 94614
Contact:	ENVIRONMENTAL MANAGER
Contact address:	1502 EL CAMINO REAL REDWOOD CITY, CA 94063
Contact country:	US
Contact telephone:	(415) 638-3434
Contact email:	Not reported
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No

DRAFT

CHEVRON USA INC SERV STA #94256 (Continued) **1000434440**

Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110002671859

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1000434440
Registry ID: 110002671859
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110002671859

G57 **94256** **HIST UST** **U001594524**
SW **1502 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.106 mi.
561 ft. **Site 6 of 16 in cluster G**

Relative:
Higher

Actual:
19 ft.

HIST UST:
File Number: 0002BCED
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002BCED.pdf
Region: STATE
Facility ID: 00000062590
Facility Type: Gas Station
Other Type: Not reported
Contact Name: STORUM, WILLIAM A
Telephone: 4153663766
Owner Name: CHEVRON U.S.A. INC.
Owner Address: 575 MARKET
Owner City,St,Zip: SAN FRANCISCO, CA 94105
Total Tanks: 0004

Tank Num: 001
Container Num: 0000000001
Year Installed: Not reported
Tank Capacity: 00010000
Tank Used for: PRODUCT
Type of Fuel: Not reported
Container Construction Thickness: 0000250
Leak Detection: Stock Inventor

Tank Num: 002
Container Num: 0000000002

DRAFT

94256 (Continued) **U001594524**

Year Installed: Not reported
Tank Capacity: 00010000
Tank Used for: PRODUCT
Type of Fuel: Not reported
Container Construction Thickness: 0000250
Leak Detection: Stock Inventor

Tank Num: 003
Container Num: 0000000003
Year Installed: Not reported
Tank Capacity: 00010000
Tank Used for: PRODUCT
Type of Fuel: Not reported
Container Construction Thickness: 0000250
Leak Detection: Stock Inventor

Tank Num: 004
Container Num: 0000000004
Year Installed: Not reported
Tank Capacity: 00006000
Tank Used for: PRODUCT
Type of Fuel: Not reported
Container Construction Thickness: 0000250
Leak Detection: Stock Inventor

Click here for Geo Tracker PDF:

G58 **LYNN AUTO MACHINE** **EDR Hist Auto** **1020651204**
WSW **1445 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.107 mi.
565 ft. **Site 7 of 16 in cluster G**

Relative:
Higher

EDR Hist Auto

Year:	Name:	Type:
2000	LYNN AUTO MACHINE	Automotive Repair Shops, NEC, NEC

Actual:
18 ft.

I59 **TOWNE FORD SALES** **San Mateo Co. BI** **S113756384**
South **1601 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.107 mi.
565 ft. **Site 2 of 13 in cluster I**

Relative:
Higher

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0017387
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0011071
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: ACTIVE

Actual:
18 ft.

Region: SAN MATEO
Facility ID: FA0017387
Prog Element Code: LESS THAN 500 TIRES
Record Id: PR0045629

DRAFT

TOWNE FORD SALES (Continued) **S113756384**

Description: LESS THAN 500 TIRES
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0017387
Prog Element Code: STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id: PR0003775
Description: STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0017387
Prog Element Code: ABOVE GROUND TANK/SPCC
Record Id: PR0034110
Description: ABOVE GROUND TANK/SPCC
Facility Status: INACTIVE

I60
South
< 1/8
0.107 mi.
565 ft.

TOWN FORD SALES **HIST CORTESE** **S103472794**
1601 EL CAMINO REAL **N/A**
REDWOOD CITY, CA 94063

Site 3 of 13 in cluster I

Relative:
Higher

Actual:
18 ft.

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0573

I61
South
< 1/8
0.107 mi.
565 ft.

TOWNE FORD SALES **LUST** **1000311542**
1601 EL CAMINO REAL **HIST UST** **N/A**
REDWOOD CITY, CA 94063 **Notify 65**

Site 4 of 13 in cluster I

Relative:
Higher

Actual:
18 ft.

LUST:
Region: STATE
Global Id: T0608100547
Latitude: 37.4799709412402
Longitude: -122.225475311279
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 10/12/1995
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-0573
LOC Case Number: 330023
File Location: Local Agency
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Waste Oil / Motor / Hydraulic / Lubricating
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608100547

DRAFT

TOWNE FORD SALES (Continued) **1000311542**

Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608100547
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100547
Status: Completed - Case Closed
Status Date: 10/12/1995

Global Id: T0608100547
Status: Open - Case Begin Date
Status Date: 12/20/1988

Regulatory Activities:
Global Id: T0608100547
Action Type: Other
Date: 12/22/1988
Action: Leak Discovery

Global Id: T0608100547
Action Type: ENFORCEMENT
Date: 05/28/1990
Action: Notice of Responsibility - #1

Global Id: T0608100547
Action Type: Other
Date: 12/20/1988
Action: Leak Reported

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330023
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported

DRAFT

TOWNE FORD SALES (Continued) **1000311542**

Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330023
Facility Status: 9- Case Closed
Global ID: T0608100547
APN Number: 053185060
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST UST:
File Number: 0002C39C
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002C39C.pdf
Region: STATE
Facility ID: 00000004128
Facility Type: Other
Other Type: AUTO DEALER
Contact Name: TIM TOLAND
Telephone: 4153665744
Owner Name: TOWNE FORD SALES
Owner Address: 1601 EL CAMINO REAL
Owner City,St,Zip: REDWOOD CITY, CA 94063
Total Tanks: 0001

Tank Num: 001
Container Num: 1
Year Installed: 1956
Tank Capacity: 00001000
Tank Used for: WASTE
Type of Fuel: WASTE OIL
Container Construction Thickness: Not reported
Leak Detection: None

Click here for Geo Tracker PDF:

NOTIFY 65:
Date Reported: Not reported
Staff Initials: Not reported
Board File Number: Not reported
Facility Type: Not reported
Discharge Date: Not reported
Issue Date: Not reported
Incident Description: Not reported

DRAFT

G62 **LYNN AUTO MACHINE** **EDR Hist Auto** **1022213448**
WSW **1447 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.108 mi.
569 ft. **Site 8 of 16 in cluster G**

Relative: EDR Hist Auto
Higher

Year:	Name:	Type:
Actual: 2001	LYNN AUTO MACHINE	Automotive Repair Shops, NEC, NEC

18 ft.

G63 **BEKINS MOVING AND STORAGE** **HIST UST** **U001594536**
SW **1451 EL CAMINO** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.109 mi.
577 ft. **Site 9 of 16 in cluster G**

Relative: HIST UST:
Higher

File Number:	0002C374
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002C374.pdf
Actual: Region:	STATE
18 ft. Facility ID:	00000063601
Facility Type:	Other
Other Type:	MOVING & STORAGE
Contact Name:	JOE GRIEGO
Telephone:	4153683811
Owner Name:	THE BEKINS COMPANY
Owner Address:	777 FLOWER ST.
Owner City,St,Zip:	GLENDALE, CA 91201
Total Tanks:	0001
Tank Num:	001
Container Num:	056-003
Year Installed:	Not reported
Tank Capacity:	00001000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Stock Inventor

Click here for Geo Tracker PDF:

J64 **TOWNE AUTO BODY** **San Mateo Co. BI** **S113755674**
SSE **111 CEDAR** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.112 mi.
594 ft. **Site 1 of 3 in cluster J**

Relative: San Mateo Co. BI:
Higher

Region:	SAN MATEO
Actual: Facility ID:	FA0011432
18 ft. Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0011265
Description:	GENERATES <27 GAL/YEAR
Facility Status:	ACTIVE
Region:	SAN MATEO
Facility ID:	FA0011432

DRAFT

TOWNE AUTO BODY (Continued) **S113755674**

Prog Element Code: STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id: PR0003892
Description: STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status: ACTIVE

G65 **FIRESTONE TIRES #3671** **SWEEPS UST** **S101593908**
SW **1458 EL CAMINO REAL** **CA FID UST** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.119 mi.
628 ft. **Site 10 of 16 in cluster G**

Relative:
Higher

Actual:
19 ft.

SWEEPS UST:
Status: Active
Comp Number: 330049
Number: 1
Board Of Equalization: 44-025346
Referral Date: 04-07-94
Action Date: 04-07-94
Created Date: 10-13-88
Owner Tank Id: 330049
SWRCB Tank Id: 41-000-330049-000001
Tank Status: A
Capacity: 550
Active Date: 04-07-94
Tank Use: OIL
STG: W
Content: WASTE OIL
Number Of Tanks: 1

CA FID UST:
Facility ID: 41002514
Regulated By: UTNKA
Regulated ID: Not reported
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: Not reported
Mail To: Not reported
Mailing Address: 1458 EL CAMINO REAL
Mailing Address 2: Not reported
Mailing City,St,Zip: REDWOOD CITY 94063
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

DRAFT

G66
SW
< 1/8
0.119 mi.
628 ft.

FIRESTONE STORE #3671
1458 EL CAMINO REAL
REDWOOD CITY, CA 94063

Site 11 of 16 in cluster G

LUST **1000223045**
N/A

Relative:
Higher

Actual:
19 ft.

LUST REG 2:

Region:	2
Facility Id:	Not reported
Facility Status:	Case Closed
Case Number:	330180
How Discovered:	OM
Leak Cause:	Unknown
Leak Source:	Unknown
Date Leak Confirmed:	Not reported
Oversight Program:	LUST
Prelim. Site Assesment Wokplan Submitted:	Not reported
Preliminary Site Assesment Began:	Not reported
Pollution Characterization Began:	Not reported
Pollution Remediation Plan Submitted:	Not reported
Date Remediation Action Underway:	Not reported
Date Post Remedial Action Monitoring Began:	Not reported

G67
SW
< 1/8
0.119 mi.
628 ft.

FIRESTONE COMPLETE AUTO CARE #012858/3671
1458 EL CAMINO REAL
REDWOOD CITY, CA 94063

Site 12 of 16 in cluster G

LUST **U001594556**
HIST UST **N/A**
San Mateo Co. BI

Relative:
Higher

Actual:
19 ft.

LUST:

Region:	STATE
Global Id:	T0608192795
Latitude:	37.480737
Longitude:	-122.2278797
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	01/03/2001
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-1264
LOC Case Number:	330180
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Waste Oil / Motor / Hydraulic / Lubricating
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608192795
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id: T0608192795

DRAFT

FIRESTONE COMPLETE AUTO CARE #012858/3671 (Continued) **U001594556**

Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608192795
Status: Completed - Case Closed
Status Date: 01/03/2001

Global Id: T0608192795
Status: Open - Case Begin Date
Status Date: 03/04/1999

Regulatory Activities:
Global Id: T0608192795
Action Type: ENFORCEMENT
Date: 03/30/1999
Action: Notice of Responsibility - #1

Global Id: T0608192795
Action Type: Other
Date: 03/04/1999
Action: Leak Reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330180
Facility Status: 9- Case Closed
Global ID: T0608192795
APN Number: 053064190
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST UST:
File Number: 0002BE83
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002BE83.pdf
Region: STATE
Facility ID: 00000005847
Facility Type: Other
Other Type: AUTO SVC. CENTER
Contact Name: GARY SPIVEY
Telephone: 4153641900
Owner Name: FIRESTONE TIRE & RUBBER CO.
Owner Address: 1200 FIRESTONE PARKWAY
Owner City,St,Zip: AKRON, OH 44317
Total Tanks: 0001

Tank Num: 001
Container Num: 1
Year Installed: Not reported

DRAFT

FIRESTONE COMPLETE AUTO CARE #012858/3671 (Continued) **U001594556**

Tank Capacity: 00000000
Tank Used for: WASTE
Type of Fuel: WASTE OIL
Container Construction Thickness: Not reported
Leak Detection: Visual

Click here for Geo Tracker PDF:

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0017291
Prog Element Code: 2221
Record Id: PR0024865
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT - LQG
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0017291
Prog Element Code: LESS THAN 500 TIRES
Record Id: PR0045625
Description: LESS THAN 500 TIRES
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0017291
Prog Element Code: STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id: PR0003812
Description: STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0017291
Prog Element Code: UNDERGROUND TANK - GENERAL
Record Id: PR0022386
Description: UNDERGROUND TANK - GENERAL
Facility Status: INACTIVE

G68 **FIRESTONE TIRE & RUBBER CO** **EDR Hist Auto** **1020592714**
SW **1458 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.119 mi.
628 ft. **Site 13 of 16 in cluster G**

Relative: EDR Hist Auto
Higher

	Year:	Name:	Type:
Actual:	1987	FIRESTONE TIRE & RUBBER CO	Auto And Home Supply Stores
19 ft.			

DRAFT

K69 **SHADOW AUTO BODY SHOP** **San Mateo Co. BI** **S113756827**
West **20 DILLER** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.120 mi.
631 ft. **Site 1 of 8 in cluster K**

Relative:
Higher

Actual:
17 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0022789
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0025500
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0022789
Prog Element Code:	STORES MV FUELS OR WASTE ONLY
Record Id:	PR0025501
Description:	STORES MV FUELS OR WASTE ONLY
Facility Status:	INACTIVE

K70 **SPEED AND COLOR BODY SHOP** **San Mateo Co. BI** **S113757695**
West **20 DILLER** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.120 mi.
631 ft. **Site 2 of 8 in cluster K**

Relative:
Higher

Actual:
17 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0027287
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0043130
Description:	GENERATES <27 GAL/YEAR
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0053942
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0074520
Description:	GENERATES <27 GAL/YEAR
Facility Status:	INACTIVE

K71 **SHIMAS AUTO BODY REPAIR** **RCRA-SQG** **1000296456**
West **20 DILLER ST** **FINDS** **CAD133341594**
< 1/8 **REDWOOD CITY, CA 94063** **ECHO**
0.120 mi.
631 ft. **Site 3 of 8 in cluster K**

Relative:
Higher

Actual:
17 ft.

RCRA-SQG:

Date form received by agency:	05/01/1990
Facility name:	SHIMAS AUTO BODY REPAIR
Facility address:	20 DILLER ST REDWOOD CITY, CA 94063
EPA ID:	CAD133341594
Mailing address:	DILLER ST REDWOOD CITY, CA 94063
Contact:	ENVIRONMENTAL MANAGER
Contact address:	20 DILLER ST

DRAFT

SHIMAS AUTO BODY REPAIR (Continued) **1000296456**

REDWOOD CITY, CA 94063
Contact country: US
Contact telephone: (415) 367-0161
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: SHIMA ROYCE
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110002668676

Environmental Interest/Information System

DRAFT

SHIMAS AUTO BODY REPAIR (Continued) **1000296456**

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1000296456
Registry ID: 110002668676
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110002668676

K72 **R & R AUTO BODY** **EDR Hist Auto** **1021594681**
West **20 DILLER ST** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.120 mi.
631 ft. **Site 4 of 8 in cluster K**

Relative: EDR Hist Auto
Higher

Year:	Name:	Type:
Actual: 1989	R & R AUTO BODY	General Automotive Repair Shops
17 ft. 1990	R & R AUTO BODY	General Automotive Repair Shops

F73 **NW CORNER** **SLIC** **S106235100**
North **MAIN AND MIDDLEFIELD** **N/A**
< 1/8 **REDWOOD CITY, CA**
0.121 mi.
638 ft. **Site 7 of 7 in cluster F**

Relative: SLIC:
Higher

Region:	STATE
Actual: **Facility Status:**	**Completed - Case Closed**
14 ft. Status Date:	01/01/1997
Global Id:	SL163231121
Lead Agency:	SAN FRANCISCO BAY RWQCB (REGION 2)
Lead Agency Case Number:	Not reported
Latitude:	37.4841501421182
Longitude:	-122.22611964418
Case Type:	Cleanup Program Site
Case Worker:	UUU
Local Agency:	Not reported
RB Case Number:	SL163231121
File Location:	Not reported
Potential Media Affected:	Not reported
Potential Contaminants of Concern:	* Petroleum - Automotive gasolines, * Petroleum - Diesel fuels
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

SLIC REG 2:

DRAFT

NW CORNER (Continued) **S106235100**

Region: 2
Facility ID: SL163231121
Facility Status: Not reported
Date Closed: Not reported
Local Case #: Not reported
How Discovered: Not reported
Leak Cause: Not reported
Leak Source: Not reported
Date Confirmed: Not reported
Date Prelim Site Assmnt Workplan Submitted: Not reported
Date Preliminary Site Assessment Began: Not reported
Date Pollution Characterization Began: Not reported
Date Remediation Plan Submitted: Not reported
Date Remedial Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

H74 **CHEVRON 9-4256** **LUST** **S106610913**
SW **1501 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.122 mi.
645 ft. **Site 4 of 4 in cluster H**

Relative:
Higher

Actual:
19 ft.

LUST:
Region: STATE
Global Id: T0608100119
Latitude: 37.4815108
Longitude: -122.2286683
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 05/19/1997
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-0126
LOC Case Number: 330021
File Location: Local Agency Warehouse
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608100119
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608100119
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND

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CHEVRON 9-4256 (Continued) **S106610913**

Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100119
Status: Completed - Case Closed
Status Date: 05/19/1997

Global Id: T0608100119
Status: Open - Case Begin Date
Status Date: 05/20/1986

Regulatory Activities:
Global Id: T0608100119
Action Type: ENFORCEMENT
Date: 02/27/1989
Action: Notice of Responsibility - #1

Global Id: T0608100119
Action Type: Other
Date: 05/20/1986
Action: Leak Reported

Global Id: T0608100119
Action Type: Other
Date: 05/20/1986
Action: Leak Discovery

Global Id: T0608100119
Action Type: REMEDIATION
Date: 08/03/1989
Action: Excavation

Global Id: T0608100119
Action Type: REMEDIATION
Date: 08/03/1989
Action: Pump & Treat (P&T) Groundwater

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330021
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

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CHEVRON 9-4256 (Continued) **S106610913**

SAN MATEO CO. LUST:
- Region: SAN MATEO
- Facility ID: 330021
- Facility Status: 9- Case Closed
- Global ID: T0608100119
- APN Number: 053093150
- Case Type: SAN MATEO CO. LUST
- EDR Link ID: SAN MATEO CO. LUST

L75 **GLENNS AUTO SVC** **San Mateo Co. BI** **S113756186**
NW **132 WILSON** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.123 mi.
649 ft. **Site 1 of 4 in cluster L**

Relative: Higher

Actual: 14 ft.

San Mateo Co. BI:
- Region: SAN MATEO
- Facility ID: FA0016116
- Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
- Record Id: PR0011390
- Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
- Facility Status: INACTIVE

- Region: SAN MATEO
- Facility ID: FA0016116
- Prog Element Code: STORES MV FUELS OR WASTE ONLY
- Record Id: PR0004037
- Description: STORES MV FUELS OR WASTE ONLY
- Facility Status: INACTIVE

L76 **MOTOR VERKSTAD** **EDR Hist Auto** **1020196243**
NW **132 WILSON ST STE A** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.123 mi.
649 ft. **Site 2 of 4 in cluster L**

Relative: Higher

Actual: 14 ft.

EDR Hist Auto

Year:	Name:	Type:
1993	GREER GLENN INC	Gasoline Service Stations
1994	GREER GLENN INC	General Automotive Repair Shops
1995	GREER GLENN INC	General Automotive Repair Shops
1996	GREER GLENN INC	General Automotive Repair Shops
1997	DINASSIMO JAMES	General Automotive Repair Shops
1998	DINASSIMO JAMES	General Automotive Repair Shops
2000	DINASSIMO JAMES	General Automotive Repair Shops
2004	MOTOR VERKSTAD	Automotive Repair Shops, NEC
2005	MOTOR VERKSTAD	Automotive Repair Shops, NEC
2006	MOTOR VERKSTAD	Automotive Repair Shops, NEC
2007	MOTOR VERKSTAD	Automotive Repair Shops, NEC
2008	MOTOR VERKSTAD	Automotive Repair Shops, NEC
2009	MOTOR VERKSTAD	Automotive Repair Shops, NEC
2010	MOTOR VERKSTAD	Automotive Repair Shops, NEC
2011	MOTOR VERKSTAD	Automotive Repair Shops, NEC

DRAFT

L77 **MOTOR VERKSTAD VOLVO** **San Mateo Co. BI** **S113757900**
NW **132 WILSON** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.123 mi.
649 ft. **Site 3 of 4 in cluster L**

Relative: **Higher**

Actual: **14 ft.**

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0027961
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0045938
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0027961
Prog Element Code:	RECYCLER
Record Id:	PR0045939
Description:	RECYCLER
Facility Status:	INACTIVE

I78 **MC DONNEL JOHN T** **EDR Hist Auto** **1022002225**
SSW **1600 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.123 mi.
650 ft. **Site 5 of 13 in cluster I**

Relative: **Higher**

Actual: **18 ft.**

EDR Hist Auto

Year:	Name:	Type:
1969	MC DONNEL JOHN T	Gasoline Service Stations
1970	MC DONNEL JOHN T	Gasoline Service Stations

I79 **REDWOOD CITY SOLVENT DETECTIONS** **SLIC** **S113482456**
SSW **1600 EL CAMINO REAL** **N/A**
< 1/8 **REDWOOD CITY, CA 94063**
0.123 mi.
650 ft. **Site 6 of 13 in cluster I**

Relative: **Higher**

Actual: **18 ft.**

SLIC:

Region:	STATE
Facility Status:	**Open - Inactive**
Status Date:	06/06/2013
Global Id:	T10000004815
Lead Agency:	SAN FRANCISCO BAY RWQCB (REGION 2)
Lead Agency Case Number:	Not reported
Latitude:	37.4791640501832
Longitude:	-122.2257544427
Case Type:	Cleanup Program Site
Case Worker:	UUU
Local Agency:	Not reported
RB Case Number:	41S0196
File Location:	Not reported
Potential Media Affected:	Aquifer used for drinking water supply
Potential Contaminants of Concern:	Tetrachloroethylene (PCE)
Site History:	Chlorinated solvents were detected in the vicinity of the Towne Ford (San Mateo Case Number 330023) case. It is unclear if the chlorinated solvents are attributable to Town Ford or an unknown release at

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REDWOOD CITY SOLVENT DETECTIONS (Continued) **S113482456**

another property.

Click here to access the California GeoTracker records for this facility:

G80 **RED CARPET CAR WASH** **HIST CORTESE** **S105025725**
WSW **1436 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA**
0.126 mi.
663 ft. **Site 14 of 16 in cluster G**

Relative:
Higher

Actual:
19 ft.

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-1051

J81 **PRIVATE RESIDENCE** **LUST** **S109521360**
SSE **PRIVATE RESIDENCE** **SLIC** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94062** **BROWNFIELDS**
0.130 mi.
684 ft. **Site 2 of 3 in cluster J**

Relative:
Higher

Actual:
19 ft.

LUST:
Region: STATE
Global Id: T10000001610
Latitude: 37.485057907314
Longitude: -122.248928546906
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 02/15/2011
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: Not reported
LOC Case Number: 338207
File Location: Not reported
Potential Media Affect: Soil
Potential Contaminants of Concern: Heating Oil / Fuel Oil
Site History: Extracted from Green Environment's April 28, 2009 Report of Expanded Excavation, Soil and Groundwater Sampling, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report. On March 26, 2009, an approximate 300 gallon metal underground storage tank (UST) that once contained fuel oil was removed from a residential property located at 824 Arlington Road in Redwood City, California (subject property). The subject property is owned by Mr. James Joyce, and is in contract for sale. The UST was removed by Golden Gate Tank Removal of San Francisco, California. The removal was witnessed and documented by Mr. Darrell Cullen of the San Mateo County Health System (SMCoHS). Per Mr. Cullens Report, approximately 1 to 1.5 cubic yards of soil were excavated with the UST, and stockpiled onsite. Mr. Cullen noted no evidence of a release, but did note a slight odor and soil discoloration. The UST pit was not over-excavated. No groundwater was encountered in the excavation. One (1) discrete soil sample (sample 9072-E-7) was collected from the floor of the excavation, at an approximate depth of seven (7) feet below ground

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PRIVATE RESIDENCE (Continued) **S109521360**

surface (bgs). One (1) discrete soil sample (sample 9072-SPD) was collected from the stockpiled soil. One (1) composite soil sample (sample 9072-SP (AD)) was collected from the stockpiled soil. The soil samples were submitted to Accutest Laboratories (Accutest) of Santa Clara, California. Accutest was directed to hold sample 9072-SP (A-D) and analyze samples 9072-E-7 and 9072-SPD for Total Petroleum Hydrocarbons as diesel (TPHd), benzene, toluene, ethyl benzene, xylenes and methyltertiary butyl ether (BTEX/MTBE). TPHd and BTEX/MTBE were reported as not detected in the discrete stockpile soil sample (9072-SPD). The discrete soil sample (sample 9072-E-7) collected from the floor of the excavation floor reportedly contained 5920 milligrams per kilogram (mg/kg) of TPHd, 21.2 micrograms per kilogram (ug/kg) of benzene, 115 ug/kg of toluene, 203 ug/kg of ethylbenzene, and 1010 ug/kg of xylenes. MTBE was not detected at a reporting limit of 130 ug/kg. In April 2009, Mr. Joyce contracted with Green Environment inc. (GEI) to develop awork plan to investigate the extent of the fuel oil release. Mr. Joyce reported to GEI that the UST had been emptied and not used since circa 1987. Based upon this information, the observations of Mr. Cullen of the SMCoHS, and the results of the soil sampling and analyses conducted by Golden Gate Tank Removal, GEI developed a Work Plan to: overexcavate the UST pit; collect confirmation sidewall and floor samples from the expanded excavation; collect a deeper soil or groundwater sample from below the floor of the expanded excavation; collect a composite sample from the stockpile created by the expanded excavation; and submit the samples to a California-certified analytical lab for analyses.1 GEIs Work Plan was submitted to the SMCoHS on April 3, 2009, along with a Subsurface Drilling Permit Application and permit fee. The SMCoHS reviewed GEIs Work Plan and documentation in the Countys file for the subject property, and approved GEIs Work Plan in a letter to Mr. Joyce dated April 16, 2009 with the following conditions: &#56256;&#56451; a statistically valid number of discrete soil samples be collected from the excavated soil if the excavated soil was planned to be used for backfilling the excavation; &#56256;&#56451; consideration be given to segregating soil excavated from approximately five feet and above; &#56256;&#56451; soil sampling be based on soil texture, stratigraphy, sample screening and depth of hydrocarbon impact; &#56256;&#56451; additional soil samples be collected for analyses from the bottom and sidewalls of the excavation below any potentially impacted soil; &#56256;&#56451; groundwater be sampled using a method that would ensure the sample not be cross-contaminated from soil sloughinginto the borehole; and &#56256;&#56451; samples be additionally analyzed for Total Petroleum Hydrocarbons as gasoline (TPH-gas).

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T10000001610
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

PRIVATE RESIDENCE (Continued) **S109521360**

Status History:
Global Id: T10000001610
Status: Completed - Case Closed
Status Date: 02/15/2011

Global Id: T10000001610
Status: Open - Case Begin Date
Status Date: 03/26/2009

Global Id: T10000001610
Status: Open - Verification Monitoring
Status Date: 10/21/2009

Regulatory Activities:
Global Id: T10000001610
Action Type: Other
Date: 03/26/2009
Action: Leak Discovery

Global Id: T10000001610
Action Type: ENFORCEMENT
Date: 02/15/2011
Action: Closure/No Further Action Letter - #20110215

Global Id: T10000001610
Action Type: ENFORCEMENT
Date: 10/19/2009
Action: Technical Correspondence / Assistance / Other - #20091019

Global Id: T10000001610
Action Type: ENFORCEMENT
Date: 03/27/2009
Action: Unauthorized Release Form - #20090327

Global Id: T10000001610
Action Type: ENFORCEMENT
Date: 04/30/2009
Action: Staff Letter - #20090430

Global Id: T10000001610
Action Type: ENFORCEMENT
Date: 04/22/2009
Action: Technical Correspondence / Assistance / Other - #20090422

Global Id: T10000001610
Action Type: ENFORCEMENT
Date: 04/16/2009
Action: Site Visit / Inspection / Sampling - #20090416

Global Id: T10000001610
Action Type: ENFORCEMENT
Date: 04/16/2009
Action: Staff Letter - #20090416

Global Id: T10000001610
Action Type: RESPONSE

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PRIVATE RESIDENCE (Continued) **S109521360**

Date: 10/14/2009
Action: Final Remedial Action Report / Corrective Action Report

Global Id: T10000001610
Action Type: ENFORCEMENT
Date: 03/31/2009
Action: Technical Correspondence / Assistance / Other - #20090331

Global Id: T10000001610
Action Type: ENFORCEMENT
Date: 10/22/2009
Action: Notice of Responsibility - #20091022

Global Id: T10000001610
Action Type: ENFORCEMENT
Date: 01/10/2011
Action: Notification - Fee Title Owners Notice - #20110110

Global Id: T10000001610
Action Type: ENFORCEMENT
Date: 05/28/2009
Action: Staff Letter - #20090528

Global Id: T10000001610
Action Type: ENFORCEMENT
Date: 06/01/2009
Action: Technical Correspondence / Assistance / Other - #20090601

Global Id: T10000001610
Action Type: Other
Date: 03/27/2009
Action: Leak Reported

Global Id: T10000001610
Action Type: REMEDIATION
Date: 03/26/2009
Action: Excavation

SLIC:
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 05/23/2006
Global Id: SL0608151751
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Lead Agency Case Number: 339214
Latitude: 37.4794898963995
Longitude: -122.224531173706
Case Type: Cleanup Program Site
Case Worker: MEJ
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41S0182
File Location: Local Agency
Potential Media Affected: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Tetrachloroethylene (PCE), Lead
Site History: There appears to be an area wide VOC plume. This site does not appear to be the source of these VOCs.

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PRIVATE RESIDENCE (Continued) **S109521360**

Click here to access the California GeoTracker records for this facility:

BROWNFIELDS:

Global ID:	SL0608151751
Latitude:	37.479489896
Longitude:	-122.22453117
Project Type:	Cleanup Program Site
Status:	Completed - Case Closed
Status Date:	05/23/2006
Lead Agency:	SAN FRANCISCO BAY RWQCB (REGION 2)
Last Correspondence Date:	12/10/2009
Release Type:	Not reported
Contaminant(s) of Concern:	Tetrachloroethylene (PCE), Lead
Media of Concern:	Other Groundwater (uses other than drinking water)
Past Use(s) that Caused Contamination:	Not reported
Human Health Exposure Controlled:	YES
Human Health Exposure Controlled Date:	06/11/2009
Groundwater Migration Controlled:	NOT APPLICABLE
Groundwater Migration Controlled Date:	06/11/2009
Primary Caseworker Name:	MARK JOHNSON
Primary Caseworker Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Primary Caseworker Phone Number:	510-622-2493
Primary Caseworker Address:	1515 CLAY STREET; SUITE 1400
Primary Caseworker Address:	OAKLAND
Primary Caseworker Address:	CA
Primary Caseworker Email:	mjohnson@waterboards.ca.gov

M82 **LIQUID DIGITAL MEDIA** **San Mateo Co. BI** **S113758376**
North **999 MAIN** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.131 mi.
694 ft. **Site 1 of 4 in cluster M**

Relative:
Higher

Actual:
14 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0036940
Prog Element Code:	STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id:	PR0053831
Description:	STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status:	INACTIVE

I83 **QUEST COLLISION CENTER** **San Mateo Co. BI** **S113758032**
South **1612 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.131 mi.
694 ft. **Site 7 of 13 in cluster I**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0028686
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0048019
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

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QUEST COLLISION CENTER (Continued) **S113758032**

Region: SAN MATEO
Facility ID: FA0028686
Prog Element Code: STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id: PR0050543
Description: STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status: INACTIVE

I84 **PREMIER AUTO COLLISON** **San Mateo Co. BI** **S113758980**
South **1612 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.131 mi.
694 ft. **Site 8 of 13 in cluster I**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0050093
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0068553
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: ACTIVE

I85 **FERIANTE PROPERTY** **LUST** **S108198328**
South **1612 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.131 mi.
694 ft. **Site 9 of 13 in cluster I**

Relative:
Higher

Actual:
18 ft.

LUST:
Region: STATE
Global Id: T0608100780
Latitude: 37.4796516640367
Longitude: -122.226491868496
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 12/08/1999
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-0833
LOC Case Number: 330118
File Location: Local Agency
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608100780
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

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FERIANTE PROPERTY (Continued) **S108198328**

Global Id: T0608100780
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100780
Status: Completed - Case Closed
Status Date: 12/08/1999

Global Id: T0608100780
Status: Open - Case Begin Date
Status Date: 12/23/1993

Regulatory Activities:
Global Id: T0608100780
Action Type: Other
Date: 12/23/1993
Action: Leak Reported

Global Id: T0608100780
Action Type: ENFORCEMENT
Date: 12/27/1993
Action: Notice of Responsibility - #1

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330118
Facility Status: 9- Case Closed
Global ID: T0608100780
APN Number: 053094080
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

I86 **NBS MOTORS** **San Mateo Co. BI** **S113758158**
South **1612 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.131 mi.
694 ft. **Site 10 of 13 in cluster I**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0029605
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0050540
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0029605
Prog Element Code: LESS THAN 500 TIRES

DRAFT

NBS MOTORS (Continued) **S113758158**

Record Id: PR0052685
Description: LESS THAN 500 TIRES
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0029605
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0052684
Description: STORES MV FUELS OR WASTE ONLY
Facility Status: INACTIVE

I87 **FERIANTE PROPERTY** **LUST S102429858**
South **1612 EL CAMINO REAL** **SWEEPS UST N/A**
1/8-1/4 **REDWOOD CITY, CA 94063** **HIST CORTESE**
0.131 mi.
694 ft. **Site 11 of 13 in cluster I**

Relative: Higher

Actual: 18 ft.

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330118
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SWEEPS UST:
Status: Not reported
Comp Number: 440085
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-440085-000001
Tank Status: Not reported
Capacity: 500
Active Date: Not reported
Tank Use: UNKNOWN
STG: PRODUCT
Content: Not reported
Number Of Tanks: 6

Status: Not reported
Comp Number: 440085
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported

DRAFT

FERIANTE PROPERTY (Continued) **S102429858**

Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-440085-000002
Tank Status: Not reported
Capacity: 5000
Active Date: Not reported
Tank Use: UNKNOWN
STG: PRODUCT
Content: Not reported
Number Of Tanks: Not reported

Status: Not reported
Comp Number: 440085
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-440085-000003
Tank Status: Not reported
Capacity: 5000
Active Date: Not reported
Tank Use: UNKNOWN
STG: PRODUCT
Content: Not reported
Number Of Tanks: Not reported

Status: Not reported
Comp Number: 440085
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-440085-000004
Tank Status: Not reported
Capacity: 5000
Active Date: Not reported
Tank Use: UNKNOWN
STG: PRODUCT
Content: Not reported
Number Of Tanks: Not reported

Status: Not reported
Comp Number: 440085
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-440085-000005
Tank Status: Not reported
Capacity: 5000

DRAFT

FERIANTE PROPERTY (Continued) **S102429858**

Active Date: Not reported
Tank Use: UNKNOWN
STG: PRODUCT
Content: Not reported
Number Of Tanks: Not reported

Status: Not reported
Comp Number: 440085
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-440085-000006
Tank Status: Not reported
Capacity: 5000
Active Date: Not reported
Tank Use: UNKNOWN
STG: PRODUCT
Content: Not reported
Number Of Tanks: Not reported

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0833

I88 **WEST COAST WHEELS & TIRES** San Mateo Co. BI **S119781715**
South **1612 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.131 mi.
694 ft. **Site 12 of 13 in cluster I**

Relative: Higher

Actual: 18 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0056992
Prog Element Code: LESS THAN 500 TIRES
Record Id: PR0078990
Description: LESS THAN 500 TIRES
Facility Status: ACTIVE

J89 **FORMER DEMMA PARCELS** ENVIROSTOR **S109422388**
SSE **104 AND 112 CEDAR** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.134 mi.
710 ft. **Site 3 of 3 in cluster J**

Relative: Higher

Actual: 19 ft.

ENVIROSTOR:
Facility ID: 60001045
Status: Refer: 1248 Local Agency
Status Date: 06/15/2006
Site Code: Not reported
Site Type: Evaluation
Site Type Detailed: Evaluation

DRAFT

FORMER DEMMA PARCELS (Continued) **S109422388**

Acres:	1
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Referred - Not Assigned
Division Branch:	Cleanup Berkeley
Assembly:	40
Senate:	23
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not Applicable
Latitude:	34.03204
Longitude:	-117.1858
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	60001045
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Other Report
Completed Date:	06/15/2006
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

G90 **MUFFLER EXPRESS** **San Mateo Co. BI** **S113758760**
WSW **1414 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.139 mi.
735 ft. **Site 15 of 16 in cluster G**

Relative:
Higher

Actual:
19 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0045549
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0059816
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	ACTIVE
Region:	SAN MATEO
Facility ID:	FA0045549
Prog Element Code:	STORES MV FUELS OR WASTE ONLY
Record Id:	PR0059815

DRAFT

MUFFLER EXPRESS (Continued) **S113758760**

Description: STORES MV FUELS OR WASTE ONLY
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0045549
Prog Element Code: 1805
Record Id: PR0060220
Description: TIRE GENERATOR - SMALL QUANTITY
Facility Status: ACTIVE

G91 **LIFE TIME MUFFLER** **San Mateo Co. BI** **S113755853**
WSW **1414 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.139 mi.
735 ft. **Site 16 of 16 in cluster G**

Relative: Higher

Actual: 19 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0012775
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0046616
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0012775
Prog Element Code: GENERATES <27 GAL/YEAR
Record Id: PR0028644
Description: GENERATES <27 GAL/YEAR
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0012775
Prog Element Code: STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id: PR0003945
Description: STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status: INACTIVE

N92 **CITY OF REDWOOD CITY** **LUST** **S103177225**
NNW **1036 MIDDLEFIELD** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94064**
0.140 mi.
737 ft. **Site 1 of 6 in cluster N**

Relative: Higher

Actual: 13 ft.

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Post remedial action monitoring
Case Number: 330143
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported

DRAFT

CITY OF REDWOOD CITY (Continued) **S103177225**

Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: 1/1/1965

I93 **SCHERBAS** **San Mateo Co. BI** **S113757024**
South **1680 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.142 mi.
750 ft. **Site 13 of 13 in cluster I**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0023943
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0028098
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0023943
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0028099
Description: STORES MV FUELS OR WASTE ONLY
Facility Status: INACTIVE

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94 **611 HELLER STREET REDWOOD CITY** **ENVIROSTOR** **S109927186**
East **611 HELLER STREET** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.144 mi.
761 ft.

Relative:
Higher

Actual:
17 ft.

ENVIROSTOR:
Facility ID: 60001749
Status: Inactive - Action Required
Status Date: 07/13/2012
Site Code: 201938
Site Type: Evaluation
Site Type Detailed: Evaluation
Acres: 0.11
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: George Chow
Supervisor: Julie Pettijohn
Division Branch: Cleanup Berkeley
Assembly: 22
Senate: 13
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Responsible Party
Latitude: 37.48173
Longitude: -122.2225
APN: 053-155-050
Past Use: UNKNOWN

DRAFT

611 HELLER STREET REDWOOD CITY (Continued) **S109927186**

Potential COC: Under Investigation
Confirmed COC: 31001-NO
Potential Description: UE
Alias Name: 053-155-050
Alias Type: APN
Alias Name: 201938
Alias Type: Project Code (Site Code)
Alias Name: 60001749
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 06/26/2012
Comments: Additional sampling is recommended.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

M95 **RUST PROPERTY** **SLIC** **S108536390**
North **925 MAIN STREET** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.153 mi.
809 ft. **Site 2 of 4 in cluster M**

Relative:
Higher

Actual:
13 ft.

SLIC:
Region: STATE
Facility Status: **Open - Site Assessment**
Status Date: 05/01/2007
Global Id: SL0608130496
Lead Agency: DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Lead Agency Case Number: 60001313
Latitude: 37.484584
Longitude: -122.225897
Case Type: Cleanup Program Site
Case Worker: Not reported
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: Not reported
File Location: Local Agency
Potential Media Affected: Soil
Potential Contaminants of Concern: Lead, Waste Oil / Motor / Hydraulic / Lubricating
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

DRAFT

M96 **RUST PROPERTY AKA YOUNG AUTO PARTS** **ENVIROSTOR** **S110445635**
North **925 / 929 MAIN STREET** **VCP** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.154 mi.
813 ft. **Site 3 of 4 in cluster M**

Relative:
Higher

Actual:
13 ft.

ENVIROSTOR:

Facility ID:	60001313
Status:	Active
Status Date:	06/28/2010
Site Code:	201880
Site Type:	Voluntary Cleanup
Site Type Detailed:	Voluntary Cleanup
Acres:	0.02
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Charles (Chip) Gribble
Supervisor:	Julie Pettijohn
Division Branch:	Cleanup Berkeley
Assembly:	22
Senate:	13
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Responsible Party
Latitude:	37.48452
Longitude:	-122.2261
APN:	053-135-240, 053-135-260
Past Use:	MACHINE SHOP
Potential COC:	Arsenic Lead TPH-MOTOR OIL
Confirmed COC:	Arsenic Lead TPH-MOTOR OIL
Potential Description:	SOIL
Alias Name:	Young Auto Parts
Alias Type:	Alternate Name
Alias Name:	053-135-240
Alias Type:	APN
Alias Name:	053-135-260
Alias Type:	APN
Alias Name:	SL0608130496
Alias Type:	GeoTracker Global ID
Alias Name:	201880
Alias Type:	Project Code (Site Code)
Alias Name:	60001313
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Correspondence
Completed Date:	11/12/2010
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Correspondence
Completed Date:	10/11/2011
Comments:	Not reported
Completed Area Name:	PROJECT WIDE

DRAFT

RUST PROPERTY AKA YOUNG AUTO PARTS (Continued) **S110445635**

Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 06/23/2011
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 06/20/2011
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 05/14/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 06/28/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 05/26/2009
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 10/07/2008
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 06/27/2009
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 05/17/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 06/24/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 06/28/2010

DRAFT

RUST PROPERTY AKA YOUNG AUTO PARTS (Continued) **S110445635**

Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 06/27/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 10/31/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 07/30/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 08/05/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 07/28/2014
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 08/24/2015
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 08/16/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 07/01/2010
Comments: Notification letter sent.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Letter - Demand
Completed Date: 07/18/2012
Comments: Demand letter #1

Completed Area Name: PROJECT WIDE

DRAFT

RUST PROPERTY AKA YOUNG AUTO PARTS (Continued) **S110445635**

Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 09/07/2010
Comments: Not reported

Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Certification
Future Due Date: 2017
Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Land Use Restriction
Future Due Date: 2017
Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: 5 Year Review Reports
Future Due Date: 2020
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

VCP:
Facility ID: 60001313
Site Type: Voluntary Cleanup
Site Type Detail: Voluntary Cleanup
Site Mgmt. Req.: NONE SPECIFIED
Acres: 0.02
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Charles (Chip) Gribble
Supervisor: Julie Pettijohn
Division Branch: Cleanup Berkeley
Site Code: 201880
Assembly: 22
Senate: 13
Special Programs Code: Not reported
Status: Active
Status Date: 06/28/2010
Restricted Use: NO
Funding: Responsible Party
Lat/Long: 37.48452 / -122.2261
APN: 053-135-240, 053-135-260
Past Use: MACHINE SHOP
Potential COC: 30001, 30013, 3002502
Confirmed COC: 30001,30013,3002502
Potential Description: SOIL
Alias Name: Young Auto Parts
Alias Type: Alternate Name
Alias Name: 053-135-240
Alias Type: APN
Alias Name: 053-135-260
Alias Type: APN
Alias Name: SL0608130496

DRAFT

RUST PROPERTY AKA YOUNG AUTO PARTS (Continued) **S110445635**

Alias Type: GeoTracker Global ID
Alias Name: 201880
Alias Type: Project Code (Site Code)
Alias Name: 60001313
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 11/12/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 10/11/2011
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 06/23/2011
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 06/20/2011
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 05/14/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 06/28/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 05/26/2009
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 10/07/2008
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report

DRAFT

RUST PROPERTY AKA YOUNG AUTO PARTS (Continued) **S110445635**

Completed Date: 06/27/2009
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 05/17/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 06/24/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 06/28/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 06/27/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 10/31/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 07/30/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 08/05/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 07/28/2014
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 08/24/2015
Comments: Not reported

DRAFT

RUST PROPERTY AKA YOUNG AUTO PARTS (Continued) **S110445635**

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Other Report
Completed Date:	08/16/2016
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Correspondence
Completed Date:	07/01/2010
Comments:	Notification letter sent.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Letter - Demand
Completed Date:	07/18/2012
Comments:	Demand letter #1
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Correspondence
Completed Date:	09/07/2010
Comments:	Not reported
Future Area Name:	PROJECT WIDE
Future Sub Area Name:	Not reported
Future Document Type:	Certification
Future Due Date:	2017
Future Area Name:	PROJECT WIDE
Future Sub Area Name:	Not reported
Future Document Type:	Land Use Restriction
Future Due Date:	2017
Future Area Name:	PROJECT WIDE
Future Sub Area Name:	Not reported
Future Document Type:	5 Year Review Reports
Future Due Date:	2020
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

M97 **JIMS MACHINE SHOP** **San Mateo Co. BI** **S113756097**
North **929 MAIN** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.154 mi.
813 ft. **Site 4 of 4 in cluster M**

Relative:
Higher

Actual:
13 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0015199
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0011359
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE
Region:	SAN MATEO
Facility ID:	FA0015199

DRAFT

JIMS MACHINE SHOP (Continued) **S113756097**

Prog Element Code: STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id: PR0003996
Description: STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status: INACTIVE

K98 **ECONO LUBE N'TUNE #111** **SWEEPS UST** **S101593932**
West **1331 EL CAMINO REAL** **CA FID UST** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.154 mi.
815 ft. **Site 5 of 8 in cluster K**

Relative:
Higher

Actual:
18 ft.

SWEEPS UST:
Status: Active
Comp Number: 330138
Number: 1
Board Of Equalization: Not reported
Referral Date: 04-07-94
Action Date: 04-07-94
Created Date: 04-13-93
Owner Tank Id: 1MEGINV3423
SWRCB Tank Id: 41-000-330138-000001
Tank Status: A
Capacity: 500
Active Date: 04-07-94
Tank Use: OIL
STG: W
Content: WASTE OIL
Number Of Tanks: 1

CA FID UST:
Facility ID: 41003187
Regulated By: UTNKA
Regulated ID: Not reported
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 7148512259
Mail To: Not reported
Mailing Address: 4911 BIRCH ST
Mailing Address 2: Not reported
Mailing City,St,Zip: REDWOOD CITY 94063
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

DRAFT

K99 **REDWOOD CAR CARE** **UST** **U004266225**
West **1331 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.154 mi.
815 ft. **Site 6 of 8 in cluster K**

Relative:
Higher

Actual:
18 ft.

UST:
Facility ID: Not reported
Permitting Agency: San Mateo County Environmental Health
Latitude: 37.482136
Longitude: -122.229073

K100 **REDWOOD CAR CARE** **San Mateo Co. BI** **S113025201**
West **1331 EL CAMINO REAL** **HAZNET** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.154 mi.
815 ft. **Site 7 of 8 in cluster K**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0006787
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0011192
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0006787
Prog Element Code: LESS THAN 500 TIRES
Record Id: PR0075486
Description: LESS THAN 500 TIRES
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0006787
Prog Element Code: STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id: PR0003840
Description: STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0006787
Prog Element Code: PERMIT MODIFICATION
Record Id: PR0032259
Description: TEMPORARY CLOSURE
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0006787
Prog Element Code: UNDERGROUND TANK - GENERAL
Record Id: PR0022444
Description: UNDERGROUND TANK - GENERAL
Facility Status: INACTIVE

HAZNET:
envid: S113025201
Year: 2002
GEPAID: CAL000010329
Contact: DEACT CO SOLD-PH

DRAFT

REDWOOD CAR CARE (Continued) **S113025201**

Telephone: --
Mailing Name: Not reported
Mailing Address: 1331 EL CAMINO REAL
Mailing City,St,Zip: REDWOOD CITY, CA 940630000
Gen County: Not reported
TSD EPA ID: CAD053044053
TSD County: Not reported
Waste Category: Liquids with halogenated organic compounds >= 1,000 Mg./L
Disposal Method: Transfer Station
Tons: 0.1
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: S113025201
Year: 2002
GEPAID: CAL000010329
Contact: DEACT CO SOLD-PH
Telephone: --
Mailing Name: Not reported
Mailing Address: 1331 EL CAMINO REAL
Mailing City,St,Zip: REDWOOD CITY, CA 940630000
Gen County: Not reported
TSD EPA ID: CAD009452657
TSD County: Not reported
Waste Category: Unspecified organic liquid mixture
Disposal Method: Recycler
Tons: 0.93
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: S113025201
Year: 2001
GEPAID: CAL000010329
Contact: DEACT CO SOLD-PH
Telephone: --
Mailing Name: Not reported
Mailing Address: 1331 EL CAMINO REAL
Mailing City,St,Zip: REDWOOD CITY, CA 940630000
Gen County: Not reported
TSD EPA ID: CAD009452657
TSD County: Not reported
Waste Category: Unspecified organic liquid mixture
Disposal Method: Recycler
Tons: 3.27
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: S113025201
Year: 2000
GEPAID: CAL000010329
Contact: DEACT CO SOLD-PH
Telephone: --
Mailing Name: Not reported
Mailing Address: 1331 EL CAMINO REAL

DRAFT

REDWOOD CAR CARE (Continued) **S113025201**

Mailing City,St,Zip:	REDWOOD CITY, CA 940630000
Gen County:	Not reported
TSD EPA ID:	CAD009452657
TSD County:	Not reported
Waste Category:	Unspecified organic liquid mixture
Disposal Method:	Recycler
Tons:	2
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

envid:	S113025201
Year:	1999
GEPAID:	CAL000010329
Contact:	MMC ENTERPRISES INC
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	1331 EL CAMINO REAL
Mailing City,St,Zip:	REDWOOD CITY, CA 940630000
Gen County:	Not reported
TSD EPA ID:	CAD009452657
TSD County:	Not reported
Waste Category:	Unspecified organic liquid mixture
Disposal Method:	Recycler
Tons:	2.0224
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

Click this hyperlink while viewing on your computer to access
11 additional CA_HAZNET: record(s) in the EDR Site Report.

L101 **UST SITE - REDEVELOPMENT** **San Mateo Co. BI** **S118584927**
NW **127 WILSON** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.155 mi.
816 ft. **Site 4 of 4 in cluster L**

Relative:
Higher

Actual:
15 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0059859
Prog Element Code:	UNDERGROUND TANK - GENERAL
Record Id:	PR0082269
Description:	UNDERGROUND TANK - GENERAL
Facility Status:	INACTIVE

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102 **AT&T CALIFORNIA - P3081** **San Mateo Co. BI** **S119781838**
WNW **72 WILSON** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.156 mi.
822 ft.

Relative:
Higher

Actual:
17 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0061016
Prog Element Code:	STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3

DRAFT

AT&T CALIFORNIA - P3081 (Continued) **S119781838**

Record Id:	PR0083649
Description:	STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status:	ACTIVE
Region:	SAN MATEO
Facility ID:	FA0061016
Prog Element Code:	2352
Record Id:	PR0083652
Description:	TIER I: TANK STOR CAP =>1,320 & <5,000 GAL
Facility Status:	ACTIVE

N103 **REDWOOD CITY POLICE DEPT.** **LUST** **S103893026**
NNW **1020 MIDDLEFIELD RD** **SWEEPS UST** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063** **HIST CORTESE**
0.156 mi.
823 ft. **Site 2 of 6 in cluster N**

Relative:
Higher

Actual:
14 ft.

LUST:

Region:	STATE
Global Id:	T0608192910
Latitude:	37.48401925786 13
Longitude:	-122.22794 2943573
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	04/02/2009
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	Not reported
LOC Case Number:	330209
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608192910
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292
Global Id:	T0608192910
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608192910

DRAFT

REDWOOD CITY POLICE DEPT. (Continued) **S103893026**

Status: Completed - Case Closed
Status Date: 04/02/2009

Global Id: T0608192910
Status: Open - Case Begin Date
Status Date: 01/06/1997

Global Id: T0608192910
Status: Open - Site Assessment
Status Date: 01/07/1997

Global Id: T0608192910
Status: Open - Verification Monitoring
Status Date: 11/29/2006

Regulatory Activities:
Global Id: T0608192910
Action Type: ENFORCEMENT
Date: 04/02/2009
Action: Closure/No Further Action Letter - #20090402

Global Id: T0608192910
Action Type: RESPONSE
Date: 05/13/2005
Action: Tank Removal Report / UST Sampling Report

Global Id: T0608192910
Action Type: Other
Date: 01/06/1997
Action: Leak Discovery

Global Id: T0608192910
Action Type: ENFORCEMENT
Date: 01/31/2005
Action: Notice of Responsibility - #20050131

Global Id: T0608192910
Action Type: ENFORCEMENT
Date: 11/03/2005
Action: Staff Letter - #20051103

Global Id: T0608192910
Action Type: ENFORCEMENT
Date: 01/31/2005
Action: Staff Letter - #20050131

Global Id: T0608192910
Action Type: RESPONSE
Date: 07/13/2005
Action: Electronic Reporting Submittal Due

Global Id: T0608192910
Action Type: RESPONSE
Date: 07/13/2005
Action: Soil and Water Investigation Workplan

Global Id: T0608192910

DRAFT

REDWOOD CITY POLICE DEPT. (Continued) **S103893026**

Action Type: RESPONSE
Date: 12/05/2005
Action: Electronic Reporting Submittal Due

Global Id: T0608192910
Action Type: RESPONSE
Date: 01/17/2007
Action: Electronic Reporting Submittal Due

Global Id: T0608192910
Action Type: RESPONSE
Date: 12/29/2006
Action: Other Report / Document

Global Id: T0608192910
Action Type: ENFORCEMENT
Date: 11/29/2006
Action: Staff Letter - #20061129

Global Id: T0608192910
Action Type: ENFORCEMENT
Date: 05/03/2005
Action: Staff Letter - #20050503

Global Id: T0608192910
Action Type: ENFORCEMENT
Date: 01/03/2008
Action: Staff Letter - #20080103

Global Id: T0608192910
Action Type: RESPONSE
Date: 02/28/2006
Action: Soil and Water Investigation Report

Global Id: T0608192910
Action Type: REMEDIATION
Date: 01/03/1997
Action: Pump & Treat (P&T) Groundwater

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330209
Facility Status: 9- Case Closed
Global ID: T0608192910
APN Number: 053134010
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

SWEEPS UST:
Status: Active
Comp Number: 330162
Number: 4
Board Of Equalization: Not reported
Referral Date: 05-14-94
Action Date: 05-14-94

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REDWOOD CITY POLICE DEPT. (Continued) **S103893026**

Created Date: 07-09-92
Owner Tank Id: UNK
SWRCB Tank Id: 41-000-330162-000001
Tank Status: A
Capacity: 10000
Active Date: 04-22-94
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: 2

Status: Active
Comp Number: 330162
Number: 4
Board Of Equalization: Not reported
Referral Date: 05-14-94
Action Date: 05-14-94
Created Date: 07-09-92
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330162-000002
Tank Status: A
Capacity: 2500
Active Date: 02-08-93
Tank Use: OIL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0994

N104 **TEMPORARY CITY HALL** **LUST** **S102438486**
NNW **1020 MIDDLEFIELD** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94064**
0.156 mi.
823 ft. **Site 3 of 6 in cluster N**

Relative:
Higher

Actual:
14 ft.

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Post remedial action monitoring
Case Number: 330141
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: 1/1/1965

DRAFT

K105 **CYCLE GEAR** **San Mateo Co. BI** **S113757073**
West **1326 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.166 mi.
875 ft. **Site 8 of 8 in cluster K**

Relative:
Higher

Actual:
19 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0024128
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0028521
Description:	GENERATES <27 GAL/YEAR
Facility Status:	ACTIVE

Region:	SAN MATEO
Facility ID:	FA0024128
Prog Element Code:	LESS THAN 500 TIRES
Record Id:	PR0047184
Description:	LESS THAN 500 TIRES
Facility Status:	ACTIVE

O106 **CARBON3D, INC.** **RCRA-LQG** **1019899637**
ESE **312 CHESTNUT STREET** **ECHO** **CAR000267468**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.170 mi.
896 ft. **Site 1 of 10 in cluster O**

Relative:
Higher

Actual:
18 ft.

RCRA-LQG:

Date form received by agency:	09/26/2016
Facility name:	CARBON3D, INC.
Facility address:	312 CHESTNUT STREET REDWOOD CITY, CA 94063
EPA ID:	CAR000267468
Mailing address:	CHESTNUT STREET REDWOOD CITY, CA 94063
Contact:	JOSEPH H BATDORF
Contact address:	CHESTNUT STREET REDWOOD CITY, CA 94063
Contact country:	US
Contact telephone:	(408) 529-8902
Contact email:	JBATDORF@CARBON3D.COM
EPA Region:	09
Classification:	Large Quantity Generator
Description:	Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:

Owner/operator name:	BUTLER REALTY, LLC.
Owner/operator address:	FRANKLIN STREET

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CARBON3D, INC. (Continued) **1019899637**

REDWOOD CITY, CA 94063
Owner/operator country: US
Owner/operator telephone: (650) 361-1270
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 09/08/2006
Owner/Op end date: Not reported

Owner/operator name: CARBON3D
Owner/operator address: Not reported
Not reported
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 07/01/2014
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: 122
. Waste name: 122

. Waste code: 343
. Waste name: 343

. Waste code: 352
. Waste name: 352

. Waste code: 551
. Waste name: 551

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: U220

DRAFT

CARBON3D, INC. (Continued) **1019899637**

. Waste name: BENZENE, METHYL- (OR) TOLUENE

Historical Generators:
Date form received by agency: 09/26/2016
Site name: CARBON3D. INC.
Classification: Large Quantity Generator

. Waste code: 122
. Waste name: 122

. Waste code: 343
. Waste name: 343

. Waste code: 352
. Waste name: 352

. Waste code: 551
. Waste name: 551

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: U220
. Waste name: BENZENE, METHYL- (OR) TOLUENE

Violation Status: No violations found

ECHO:
Envid: 1019899637
Registry ID: Not reported
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=CAR000267468

N107 **CULVERT REALIGNMENT** **LUST S103620505**
NNW **1017 MIDDLEFIELD ROAD** **SLIC N/A**
1/8-1/4 **REDWOOD CITY, CA 94063** **HIST CORTESE**
0.171 mi.
901 ft. **Site 4 of 6 in cluster N**

Relative:
Higher

Actual:
14 ft.

LUST:
Region: STATE
Global Id: T0608100422
Latitude: 37.485317
Longitude: -122.227276
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 04/17/1995
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-0443
LOC Case Number: 330124
File Location: Local Agency

DRAFT

CULVERT REALIGNMENT (Continued) **S103620505**

Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Waste Oil / Motor / Hydraulic / Lubricating
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608100422
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608100422
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100422
Status: Completed - Case Closed
Status Date: 04/17/1995

Global Id: T0608100422
Status: Open - Case Begin Date
Status Date: 03/13/1987

Regulatory Activities:
Global Id: T0608100422
Action Type: Other
Date: 03/13/1987
Action: Leak Reported

Global Id: T0608100422
Action Type: Other
Date: 03/13/1987
Action: Leak Discovery

Global Id: T0608100422
Action Type: ENFORCEMENT
Date: 08/10/1994
Action: Notice of Responsibility - #1

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330124
Facility Status: 9- Case Closed
Global ID: T0608100422

DRAFT

CULVERT REALIGNMENT (Continued) **S103620505**

APN Number: 053131140
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

Region: SAN MATEO
Facility ID: 339207
Facility Status: 9- Case Closed
Global ID: SL0608108743
APN Number: 053131140
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

SLIC:
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 05/23/2014
Global Id: SL0608108743
Lead Agency: SAN MATEO COUNTY LOP
Lead Agency Case Number: 339207
Latitude: 37.486109312339 8
Longitude: -122.27385044098
Case Type: Cleanup Program Site
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: Not reported
File Location: Local Agency
Potential Media Affected: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Stoddard solvent / Mineral Spriits / Distillates
Site History: Extracted from Green Environment's January 21, 2008 Status report on Subsurface Investigation, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report. In February 2003, Bay Area Geotechnical Group (BAGG) conducted an investigation for the City of Redwood City (City) to evaluate subsurface soil and groundwater conditions along and near the new culvert alignment for the Jefferson Branch of the Redwood Creek Storm Drainage Culvert Relocation Project. Borings B-1, B-2, B-3 and B-4 were completed along the new culvert alignment to develop geotechnical criteria for the design and construction of the new culvert. Boring B-2 was completed in the alignment for the new box culvert in the City parking lot, approximately 60 feet east of the 821-831 Jefferson Building. Borings B-1, B-3 and B-4 were completed along other segments of the new box culvert alignment located farther away from the subject properties. Boring B-1 was completed on Jefferson Avenue, approximately 250 feet southwest of the 821-831 Jefferson Building. Boring B-3 was completed in an alleyway approximately 250 feet southeast of the 821-831 Jefferson Building. Finally, Boring B-4 was completed off Middlefield Road, approximately 650 feet southwest of the same building. The boring locations and investigation results were documented in a technical report by BAGG dated March 10, 2003. The February 2003 investigation by BAGG included the collection of soil and groundwater samples from the borings and analyses for total extractable petroleum hydrocarbons as diesel (TEPHd), motor oil (TEPHmo) and kerosene (TEPHk) by Environmental Protection Agency (EPA) Method 8015 with silica gel cleanup; total petroleum hydrocarbons as gasoline (TPHg) with benzene (B), toluene (T), ethylbenzene (E), xylenes (X) and methyl tert butyl

DRAFT

CULVERT REALIGNMENT (Continued) **S103620505**

ether (MTBE) distinction by EPA Methods 8015/8020F; and volatile organic compounds (VOCs) by EPA Method 8260. In addition, the grab groundwater sample from Boring B-4 off Middlefield Road was analyzed for semi-volatile organic compounds (SVOCs) by EPA Method 8270 and polychlorinated biphenyls (PCBs) by EPA Method 8082A. One soil sample from each of the four (4) borings was analyzed for CAM 17 Metals by EPA Method 6010B/7471. The investigation results of Boring B-2 are most relevant to the present investigation because of the proximity of this boring to the subject properties. The analytical results of the grab groundwater sample from Boring B-2 (Sample B-2, 02/19/03) indicated 152 micrograms per liter ("g/L) of TPHg with traces of MTBE (6.4 "g/L) and xylenes (1.2 "g/L). The laboratory reported traces of the following EPA 8260 VOCs: naphthalene (3 "g/L), n-propylbenzene (n-PB: 2 "g/L), 1,2,4-trimethylbenzene (1,2,4-TMB: 1 "g/L) and 1,3,5-trimethylbenzene (1,3,5-TMB: 1 "g/L). In October 2003, chemically impacted soil and water were allegedly discovered during excavation for the installation of the final segment of the new box culvert in the City parking lot to the east of the 2075 Broadway Building. According to BAGG, the analytical results of a soil sample taken on October 7, 2003 from soil stockpiled next to the excavation indicated 47.1 milligrams per kilogram (mg/kg) TPHg with 0.343 mg/kg xylenes and 0.037 mg/kg ethylbenzene. The EPA 8260 analytical results of the same soil sample identified traces of VOCs, namely 22.2 mg/kg acetone, 0.807 mg/kg naphthalene, 0.517 mg/kg 1,2,3-trichlorobenzene (1,2,3-TCB) and 0.332 mg/kg 1,2,4-trichlorobenzene (1,2,4-TCB). The analytical results of a grab water sample taken from the excavation on October 9, 2003 indicated 1.31 milligrams per liter (mg/L) TPHg and 5 mg/L of total oil and grease. In December 2003, BAGG completed three (3) borings in the City parking lot near the culvert reconnection excavation and submitted soil and groundwater samples for laboratory analyses. Up to four soil samples, and one grab groundwater sample, were collected from each boring and submitted for laboratory analyses for TEPHd, TEPHmo and TEPHss by EPA Method 8015; TPHg with BTEX and MTBE distinction by EPA Method 8015/8020F; and VOCs by EPA Method 8260. The maximum concentrations of petroleum hydrocarbons in both soil and groundwater were reported in Boring EB-3 located next to the culvert reconnection excavation, approximately 90 feet east of the 2075 Broadway Building. BAGG reported up to 1,040 mg/kg of TEPHss, 958 mg/kg TEPHd and 792 mg/kg of TPHg in soil samples collected from 6 to 13 feet bgs. The soil data indicated hydrocarbon concentrations in soil attenuated with depth and were not detectable in soil sampled from 19 feet bgs. The analytical results of the grab groundwater sample from Boring EB-3 (Sample 3-W) indicated 317 "g/L TPHg with 38 "g/L naphthalene, 2.1 "g/L xylenes and 1.1 "g/L ethylbenzene, plus 310 "g/L TEPHd and 300 "g/L L TEPHss. By letter dated July 13, 2004, SMCoGPP informed the City that the site of the culvert reconnection and the City parking lot was to be added to the countys regulatory oversight case list based on the elevated hydrocarbon concentrations reported by BAGG in soil and groundwater sampled from Boring EB-3. At the time, the City was named as the Primary Responsible Party because the City owned the parking lot where the contamination was discovered. The case was assigned by SMCoGPP Case No. #339207. In a follow-up letter dated July 14, 2004, SMCoGPP requested that the City investigate and take remedial action to address the chemically impacted soil and groundwater identified below the City parking lot, Case No. 339207 site. In August 2004, the City contracted GEI to further investigate

CULVERT REALIGNMENT (Continued) **S103620505**

the historical occupancy and use history of the City parking lot and surrounding parcels southeast of the intersection of Broadway Street and Jefferson Avenue. The main purpose was to evaluate potential sources for the contamination identified by BAGG at Boring EB-3 and vicinity. GEI reviewed historical aerial photographs dating to the 1940s and Sanborn Fire Insurance Maps dating to the late 1800s with coverage of the area. GEI also reviewed historical documents in the City Building Department, City Fire Department, and City Public Library. GEI reported that a commercial paint store operated at 837 Jefferson Avenue in the 1950s and 1960s and possibly up until 1996, and concluded that historical paint products distribution and storage practices may have contributed to the contaminants identified below the City parking lot and vicinity. In April 2006, GEI completed a subsurface investigation of the parking lots east of the 2075 Broadway and 821-831 Jefferson Buildings. A conduit study and soil and groundwater sampling were performed pursuant to a GEI work plan dated July 21, 2005, and requests by SMCoGPP in letters dated November 16 and March 7, 2005. The conduit study identified an abandoned underground box culvert below the 2075 Broadway Building and adjoining parking lots. The abandoned box culvert and the spatially associated, former west branch of Redwood Creek were listed as a potential preferential pathway for groundwater-borne contaminants in the vicinity of the Broadway and Jefferson intersection. The underground concrete box culvert is approximately 18 feet in width and 7 feet in height, and the bottom is estimated at 9 to 10 feet bgs. The abandoned box culvert extends from the east side of Jefferson Avenue east below the 2075 Broadway Building to terminate at the new box culvert alignment below the City parking lot, approximately 90 feet east of the 2075 Broadway Building. Below Jefferson Avenue west of the building and sidewalk, the box culvert was removed by the City. The April 2006 investigation by GEI included the drilling of seven (7) Geoprobe borings in the parking lots east of the 2075 Broadway and 821-831 Jefferson Buildings. The borings included four shallow borings each to approximately 12 feet depth and designated B-1A, B-3A, B-4A and B-5; one deeper boring to approximately 32 feet depth and designated B-1B; and two additional deeper borings each to approximately 24 feet depth and designated B-3B and B-4B. In addition, GEI installed a shallow groundwater monitoring well, designated MW-1, to approximately 12 feet depth in the City parking lot. Although a limited number of soil samples were submitted for laboratory analyses, the maximum concentration of hydrocarbons and VOCs in soil was reported in a soil sample collected from Boring B-5 . Soil Sample B5d 11.0 from approximately 11 feet bgs contained 2,700 mg/kg TPHg, 700 mg/kg TEPHss and 570 mg/kg of TEPHd, plus 10,000 "g/kg secbutylbenzene (sec-BB), 2,700 "g/kg iso-propylbenzene (iso-PB) and 2,300 "g/kg npropylbenzene (n-PB). Groundwater analytical results for April 2006 identified elevated concentrations of hydrocarbons and VOCs in groundwater sampled from the 12-feet deep Boring B-1A, Boring B-5 and Well MW-1 on the south side of the abandoned box culvert, east of the 2075 Broadway Building. The maximum hydrocarbon concentrations were reported in Boring B-1A (Sample B1d12) with 540,000 "g/L TEPHss, 490,000 "g/L TEPHd and 7,300 "g/L TPHg. VOCs in the groundwater samples included up to 34 "g/L secbutylbenzene (sec-BB), 19 "g/L chloroform, 14 "g/L iso-propylbenzene (iso-PB), 5.5 "g/L tert-butylbenzene (tert-BB), 4.8 "g/L n-propylbenzene (n-PB), 4.8 "g/L 1,2,4-trimethylbenzene (1,2,4-TMB), 4.8 "g/L 1,3,5-trimethylbenzene (1,2,3-TMB), 1.4 "g/L of

CULVERT REALIGNMENT (Continued) **S103620505**

each of dichlorobromomethane (DCBM), ethylbenzene, xylenes and MTBE, and 1.3 "g/L naphthalene. Pursuant to comments and conditions by SMCoGPP presented in letters dated April 10 and May 15, 2007, GEI proposed in July 2007 to collect and analyze additional soil and groundwater samples in the vicinity of the abandoned box culvert. Addendums to the proposed sampling were subsequently issued because of access, safety and underground utilities.

Click here to access the California GeoTracker records for this facility:

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0443

N108 **REDWOOD CITY HALL** **San Mateo Co. BI** **S113756868**
NNW **1017 MIDDLEFIELD** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94064**
0.171 mi.
901 ft. **Site 5 of 6 in cluster N**

Relative:
Higher

Actual:
14 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0022973
Prog Element Code: UNDERGROUND TANK - GENERAL
Record Id: PR0025935
Description: UNDERGROUND TANK - GENERAL
Facility Status: INACTIVE

N109 **REDWOOD CITY CITY HALL** **LUST** **S104494052**
NNW **1017 MIDDLEFIELD** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94062**
0.171 mi.
901 ft. **Site 6 of 6 in cluster N**

Relative:
Higher

Actual:
14 ft.

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330124
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

DRAFT

P110 **GRADE SEPARATION** **LUST** **S107410884**
NW **923 JEFFERSON AVENUE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94064**
0.172 mi.
909 ft. **Site 1 of 4 in cluster P**

Relative:
Higher

Actual:
14 ft.

LUST:

Region:	STATE
Global Id:	T0608100909
Latitude:	37.484330795
Longitude:	-122.228403
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	08/24/2010
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0994
LOC Case Number:	330141
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Extracted from EarthTech's July 12, 2005 Soil and Groundater Investigation Work Plan, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report. The former USTs were located on three formal parcels recognized by San Mateo County for tax purposes. The parcels have or had the following street addresses: 923 Jefferson Avenue, 1020 Middlefield Road, and 1036 Middlefield Road. The City of Redwood City currently uses and manages the three contiguous parcels as a City employee parking lot (923 Jefferson Avenue and 1020 Middlefield Road) and the Redwood City Main Public Library (1036 Middlefield Road). The site is largely covered by an asphalt-paved parking lot with small areas of landscaping, and the Redwood City Main Public Library building is on the eastern part of the site. A driveway/alleyway, railroad tracks, and commercial development across the railroad tracks are immediately to the southwest of the site. Jefferson Avenue and commercial and retail development across Jefferson Avenue are immediately northwest of the site. Middlefield Road and the Redwood City City Hall across Middlefield Road are immediately northeast of the site. Commercial and retail development are immediately southeast of the library building. 923 Jefferson Avenue. Prior to the current use as a parking lot, the land area comprising the 923 Jefferson Avenue parcel was occupied by a large commercial-type building, a U.S. Geological Survey (USGS) topographic base map dating from 1973. The previous business and activity housed within the former 923 Jefferson Avenue building are not known, and the building was demolished some time after 1973. A portion of a 750-gallon UST was encountered in June 1996 during trenching for a Pacific Bell utility relocation project associated with the grade separation project of the railroad tracks and Jefferson Avenue. The UST installation date is unknown. The UST was removed and soil overexcavation was conducted beneath the UST on June 27, 1996. Soil excavation northwest of the former UST location was also conducted as part of the Jefferson Avenue grade separation project in the late 1990s. No additional environmental work has been done at this location since the UST removal and grade separation project. 1020 Middlefield Road. Prior to the current use as a parking lot, the land area comprising the 1020 Middlefield Road parcel was

GRADE SEPARATION (Continued) **S107410884**

occupied by a City of Redwood City municipal building that at various times housed the City Police Station and later the temporary City Hall. In January 1997, a 10,000 gallon, double-walled, fiberglass, unleaded gasoline UST, its associated piping, and the product dispenser pump and island were removed from the property. This 10,000 gallon UST was located approximately 120 feet southwest of the 1020 Middlefield Road building and had been in use at the property since approximately 1986. The 1020 Middlefield Road municipal building was demolished sometime after 1997 and the property has been used as a parking lot since that time. No other environmental work has been done at this location since the UST removal. 1036 Middlefield Road. Prior to the current Redwood City Main Public Library use, the building at 1036 Middlefield Road occupied a much smaller footprint and housed the Redwood City Main Fire Department. This smaller, older building was first expanded in approximately 1975 for the Fire Department, and then was expanded again and converted into the library in 1986. As part of the 1986 expansion and conversion to the library, two USTs were removed from this site, a 1,000-gallon UST previously located along the western exterior wall of the fire station and a 10,000-gallon UST previously located southwest of the original fire station building. Although the 1,000-gallon UST is identified on old architectural drawings as a gasoline UST, a March 1986 San Mateo County field observation record describes soil and water analytical testing results for a 1,000-gallon diesel UST removal. The 10,000 gallon UST removed in 1986 was a gasoline UST. No additional environmental work has been done at the 1036 Middlefield Road property since the UST removals.

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100909
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100909
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100909
Status:	Completed - Case Closed
Status Date:	08/24/2010

Global Id:	T0608100909
Status:	Open - Case Begin Date
Status Date:	04/02/1996

DRAFT

GRADE SEPARATION (Continued) **S107410884**

Global Id: T0608100909
Status: Open - Site Assessment
Status Date: 11/27/1996

Global Id: T0608100909
Status: Open - Verification Monitoring
Status Date: 11/27/2006

Regulatory Activities:
Global Id: T0608100909
Action Type: ENFORCEMENT
Date: 01/28/2005
Action: Staff Letter - #20050128

Global Id: T0608100909
Action Type: ENFORCEMENT
Date: 05/03/2005
Action: Meeting

Global Id: T0608100909
Action Type: ENFORCEMENT
Date: 05/03/2005
Action: Staff Letter - #20050503

Global Id: T0608100909
Action Type: ENFORCEMENT
Date: 01/31/2005
Action: Staff Letter - #20050131

Global Id: T0608100909
Action Type: Other
Date: 06/26/1996
Action: Leak Discovery

Global Id: T0608100909
Action Type: Other
Date: 06/27/1996
Action: Leak Reported

Global Id: T0608100909
Action Type: ENFORCEMENT
Date: 07/11/1996
Action: Notice of Responsibility - #19960711

Global Id: T0608100909
Action Type: ENFORCEMENT
Date: 11/03/2005
Action: Staff Letter - #20051103

Global Id: T0608100909
Action Type: ENFORCEMENT
Date: 11/27/2006
Action: Staff Letter - #20061127

Global Id: T0608100909
Action Type: ENFORCEMENT
Date: 08/05/2009

DRAFT

GRADE SEPARATION (Continued) **S107410884**

Action: Staff Letter - #20090805

Global Id: T0608100909
Action Type: ENFORCEMENT
Date: 08/24/2010
Action: Closure/No Further Action Letter - #20100824

Global Id: T0608100909
Action Type: RESPONSE
Date: 07/13/2005
Action: Electronic Reporting Submittal Due

Global Id: T0608100909
Action Type: RESPONSE
Date: 07/13/2005
Action: Soil and Water Investigation Workplan

Global Id: T0608100909
Action Type: RESPONSE
Date: 02/28/2006
Action: Soil and Water Investigation Report

Global Id: T0608100909
Action Type: RESPONSE
Date: 12/27/2006
Action: Other Report / Document

Global Id: T0608100909
Action Type: REMEDIATION
Date: 06/27/1996
Action: Excavation

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330141
Facility Status: 9- Case Closed
Global ID: T0608100909
APN Number: 053134010
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

O111 **ANGEL CAR CARE** **San Mateo Co. BI** **S113756171**
ESE **330 CHESTNUT** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.173 mi.
911 ft. **Site 2 of 10 in cluster O**

Relative:
Higher

Actual:
17 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0015996
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0011384
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: INACTIVE

Region: SAN MATEO

DRAFT

ANGEL CAR CARE (Continued) **S113756171**

Facility ID: FA0015996
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0004029
Description: STORES MV FUELS OR WASTE ONLY
Facility Status: INACTIVE

Q112 **MCDONALD** **San Mateo Co. BI** **S119781582**
SSE **185 CHESTNUT** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.173 mi.
915 ft. **Site 1 of 6 in cluster Q**

Relative:
Higher

Actual:
19 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0026194
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0083211
Description: STORES MV FUELS OR WASTE ONLY
Facility Status: ACTIVE

O113 **CARBON3D** **San Mateo Co. BI** **S117398848**
ESE **312 CHESTNUT** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.175 mi.
926 ft. **Site 3 of 10 in cluster O**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0056917
Prog Element Code: GEN <1 TONS HAZ WASTE/YR
Record Id: PR0078902
Description: GEN <1 TONS HAZ WASTE/YR
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0056917
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0078901
Description: STORES MV FUELS OR WASTE ONLY
Facility Status: ACTIVE

R114 **MEZES COURT** **LUST** **S104494039**
NNW **950 MAIN STREET** **SLIC** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.176 mi.
930 ft. **Site 1 of 2 in cluster R**

Relative:
Higher

Actual:
13 ft.

LUST:
Region: STATE
Global Id: T0608100337
Latitude: 37.484926
Longitude: -122.226704
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 12/01/2005

DRAFT

MEZES COURT (Continued) **S104494039**

Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0354
LOC Case Number:	330132
File Location:	Local Agency Warehouse
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100337
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100337
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100337
Status:	Completed - Case Closed
Status Date:	12/01/2005

Global Id:	T0608100337
Status:	Open - Case Begin Date
Status Date:	08/18/1988

Global Id:	T0608100337
Status:	Open - Remediation
Status Date:	11/06/1995

Global Id:	T0608100337
Status:	Open - Verification Monitoring
Status Date:	11/10/1995

Regulatory Activities:

Global Id:	T0608100337
Action Type:	Other
Date:	08/18/1988
Action:	Leak Discovery

Global Id:	T0608100337
Action Type:	ENFORCEMENT
Date:	08/25/2004

DRAFT

MEZES COURT (Continued) **S104494039**

Action: Staff Letter - #20040825

Global Id: T0608100337
Action Type: Other
Date: 09/30/1988
Action: Leak Reported

Global Id: T0608100337
Action Type: RESPONSE
Date: 11/17/2004
Action: Electronic Reporting Submittal Due

Global Id: T0608100337
Action Type: RESPONSE
Date: 12/22/1995
Action: Remedial Progress Report

Global Id: T0608100337
Action Type: RESPONSE
Date: 10/29/1997
Action: Correspondence

Global Id: T0608100337
Action Type: RESPONSE
Date: 04/18/1995
Action: Other Report / Document

Global Id: T0608100337
Action Type: RESPONSE
Date: 08/21/1995
Action: Risk Assessment Report

Global Id: T0608100337
Action Type: RESPONSE
Date: 12/21/1993
Action: Preliminary Site Assessment Report

Global Id: T0608100337
Action Type: RESPONSE
Date: 05/07/1996
Action: Well Installation Report

Global Id: T0608100337
Action Type: RESPONSE
Date: 12/20/1995
Action: Correspondence

Global Id: T0608100337
Action Type: RESPONSE
Date: 01/07/1997
Action: Correspondence

Global Id: T0608100337
Action Type: RESPONSE
Date: 05/06/1998
Action: Monitoring Report - Other

DRAFT

MEZES COURT (Continued) **S104494039**

Global Id: T0608100337
Action Type: RESPONSE
Date: 08/15/1995
Action: CAP/RAP - Other Report

Global Id: T0608100337
Action Type: RESPONSE
Date: 12/28/1995
Action: Correspondence

Global Id: T0608100337
Action Type: RESPONSE
Date: 02/25/1999
Action: Correspondence

Global Id: T0608100337
Action Type: RESPONSE
Date: 01/17/1996
Action: Correspondence

Global Id: T0608100337
Action Type: RESPONSE
Date: 02/12/1996
Action: Correspondence

Global Id: T0608100337
Action Type: RESPONSE
Date: 02/10/1999
Action: Correspondence

Global Id: T0608100337
Action Type: ENFORCEMENT
Date: 05/23/1995
Action: Notice of Responsibility - #1

Global Id: T0608100337
Action Type: ENFORCEMENT
Date: 12/01/2005
Action: Closure/No Further Action Letter - #20051201

Global Id: T0608100337
Action Type: ENFORCEMENT
Date: 06/28/1996
Action: Staff Letter

Global Id: T0608100337
Action Type: RESPONSE
Date: 11/17/2004
Action: Other Report / Document

Global Id: T0608100337
Action Type: REMEDIATION
Date: 11/06/1995
Action: Excavation

DRAFT

MEZES COURT (Continued) **S104494039**

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Post remedial action monitoring
Case Number: 330132
How Discovered: SA
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: 11/6/1995
Date Post Remedial Action Monitoring Began: 11/10/1995

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 339009
Facility Status: 9- Case Closed
Global ID: T0608141789
APN Number: 053400010 and 030
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

Region: SAN MATEO
Facility ID: 330132
Facility Status: 9- Case Closed
Global ID: T0608100337
APN Number: 053400010 and 053400030
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

SLIC:
Region: STATE
Facility Status: Completed - Case Closed
Status Date: 12/27/2010
Global Id: T0608141789
Lead Agency: SAN MATEO COUNTY LOP
Lead Agency Case Number: 339009
Latitude: 37.484906
Longitude: -122.226715
Case Type: Cleanup Program Site
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: Not reported
File Location: Local Agency
Potential Media Affected: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Lead, Other Metal
Site History: Paint thinner near Boring A-32 & lead

Click here to access the California GeoTracker records for this facility:

DRAFT

R115 **HOUSING AND REDEVELOPMENT DIV** **RCRA-SQG** **1001022932**
NNW **878 950 MAIN ST** **FINDS** **CAR000002766**
1/8-1/4 **REDWOOD CITY, CA 94064** **ECHO**
0.176 mi.
930 ft. **Site 2 of 2 in cluster R**

Relative:
Higher

Actual:
13 ft.

RCRA-SQG:

Date form received by agency:	05/16/1995
Facility name:	HOUSING AND REDEVELOPMENT DIV
Facility address:	878 950 MAIN ST REDWOOD CITY, CA 94064
EPA ID:	CAR000002766
Mailing address:	2010 BROADWAY STE 200 REDWOOD CITY, CA 94063
Contact:	TOM LUNDEY
Contact address:	171 12TH ST STE 201 OAKLAND, CA 94063
Contact country:	US
Contact telephone:	(510) 268-0461
Contact email:	Not reported
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	REDWOOD CITY REDEVELOPMENT AGENCY
Owner/operator address:	2010 BROADWAY STE 200 REDWOOD CITY, CA 94063
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 780-7290
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

DRAFT

HOUSING AND REDEVELOPMENT DIV (Continued) **1001022932**

FINDS:

Registry ID: 110002906053

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1001022932
Registry ID: 110002906053
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110002906053

P116 **VANHAM PROPERTY** **LUST** **S100234098**
NW **1015 JEFFERSON** **HIST CORTESE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.177 mi.
935 ft. **Site 2 of 4 in cluster P**

Relative:
Higher

Actual:
14 ft.

LUST:

Region:	STATE
Global Id:	T0608100604
Latitude:	37.483884
Longitude:	-122.2290714
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	09/05/1997
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0632
LOC Case Number:	330064
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100604
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

DRAFT

VANHAM PROPERTY (Continued) **S100234098**

Global Id: T0608100604
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100604
Status: Completed - Case Closed
Status Date: 09/05/1997

Global Id: T0608100604
Status: Open - Case Begin Date
Status Date: 12/28/1989

Regulatory Activities:
Global Id: T0608100604
Action Type: ENFORCEMENT
Date: 06/08/1990
Action: Notice of Responsibility - #1

Global Id: T0608100604
Action Type: Other
Date: 12/28/1989
Action: Leak Reported

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330064
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330064
Facility Status: 9- Case Closed
Global ID: T0608100604
APN Number: 053171060
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

DRAFT

VANHAM PROPERTY (Continued) **S100234098**

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0632

S117 **PRECISION TUNE AUTO CARE** **San Mateo Co. BI** **S113068268**
West **1304 EL CAMINO REAL** **HAZNET** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.183 mi.
964 ft. **Site 1 of 3 in cluster S**

Relative:
Higher

Actual:
19 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0054867
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0075675
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0054867
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0075674
Description: STORES MV FUELS OR WASTE ONLY
Facility Status: ACTIVE

HAZNET:
envid: S113068268
Year: 1996
GEPAID: CAL000121342
Contact: CHRIS OLIVA, OWNER
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 1304 EL CAMINO REAL
Mailing City,St,Zip: REDWOOD CITY, CA 940631809
Gen County: Not reported
TSD EPA ID: CAD980887418
TSD County: Not reported
Waste Category: Aqueous solution with total organic residues less than 10 percent
Disposal Method: Transfer Station
Tons: .2919
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: S113068268
Year: 1995
GEPAID: CAL000121342
Contact: CHRIS OLIVA, OWNER
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 1304 EL CAMINO REAL
Mailing City,St,Zip: REDWOOD CITY, CA 940631809
Gen County: Not reported
TSD EPA ID: CAD980887418
TSD County: Not reported

DRAFT

PRECISION TUNE AUTO CARE (Continued) **S113068268**

Waste Category:	Aqueous solution with total organic residues less than 10 percent
Disposal Method:	Transfer Station
Tons:	.2085
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

envid:	S113068268
Year:	1994
GEPAID:	CAL000121342
Contact:	CHRIS OLIVA, OWNER
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	1304 EL CAMINO REAL
Mailing City,St,Zip:	REDWOOD CITY, CA 940631809
Gen County:	Not reported
TSD EPA ID:	CAD980887418
TSD County:	Not reported
Waste Category:	Aqueous solution with total organic residues less than 10 percent
Disposal Method:	Transfer Station
Tons:	.2085
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

S118 **PRECISION TUNE AUTO CARE** **San Mateo Co. BI** **S113755208**
West **1304 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.183 mi.
964 ft. **Site 2 of 3 in cluster S**

Relative:
Higher

Actual:
19 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0001884
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0011175
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0001884
Prog Element Code:	LESS THAN 500 TIRES
Record Id:	PR0045622
Description:	LESS THAN 500 TIRES
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0001884
Prog Element Code:	RECYCLER
Record Id:	PR0046807
Description:	RECYCLER
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0001884
Prog Element Code:	STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id:	PR0003746
Description:	STORES HAZ MAT <219GAL,1,999LB, 879CF

DRAFT

PRECISION TUNE AUTO CARE (Continued) **S113755208**

Facility Status: INACTIVE

S119 **CLUTCH EXPRESS** **San Mateo Co. BI** **S113757285**
West **1304 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.183 mi.
964 ft. **Site 3 of 3 in cluster S**

Relative:
Higher

Actual:
19 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0025093
Prog Element Code: GENERATES <27 GAL/YEAR
Record Id: PR0033031
Description: GENERATES <27 GAL/YEAR
Facility Status: INACTIVE

T120 **COMMERCIAL PROPERTY** **San Mateo Co. BI** **S113756854**
SE **727 SHASTA** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.192 mi.
1016 ft. **Site 1 of 12 in cluster T**

Relative:
Higher

Actual:
19 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0022917
Prog Element Code: UNDERGROUND TANK - GENERAL
Record Id: PR0025801
Description: UNDERGROUND TANK - GENERAL
Facility Status: INACTIVE

T121 **CALIFORNIA AUTOMOTIVE CONCEPTS** **RCRA NonGen / NLR** **1000985080**
SE **727 SHASTA ST UNIT C** **FINDS** **CAR000001909**
1/8-1/4 **REDWOOD CITY, CA 94063** **ECHO**
0.192 mi. **HAZNET**
1016 ft. **Site 2 of 12 in cluster T**

Relative:
Higher

Actual:
19 ft.

RCRA NonGen / NLR:
Date form received by agency: 07/14/1997
Facility name: CALIFORNIA AUTOMOTIVE CONCEPTS
Facility address: 727 SHASTA ST UNIT C
REDWOOD CITY, CA 94063
EPA ID: CAR000001909
Mailing address: CHESTNUT ST
REDWOOD CITY, CA 94063
Contact: STEVE LEHR
Contact address: 220 CHESTNUT ST
REDWOOD CITY, CA 94063
Contact country: US
Contact telephone: (415) 361-8193
Contact email: Not reported
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

DRAFT

CALIFORNIA AUTOMOTIVE CONCEPTS (Continued) **1000985080**

Owner/Operator Summary:
Owner/operator name: BRIAN BUCKNER
Owner/operator address: 5900 ALPINE RD
PORTOLA VALLEY, CA 99028
Owner/operator country: Not reported
Owner/operator telephone: (415) 851-2929
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110002867452

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1000985080
Registry ID: 110002867452
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110002867452

HAZNET:
envid: 1000985080
Year: 1999
GEPAID: CAR000001909
Contact: BRIAN BUCKNER

DRAFT

CALIFORNIA AUTOMOTIVE CONCEPTS (Continued) **1000985080**

Telephone: 4153686931
Mailing Name: Not reported
Mailing Address: 727 SHASTA ST UNIT C
Mailing City,St,Zip: REDWOOD CITY, CA 940632124
Gen County: Not reported
TSD EPA ID: CAD009452657
TSD County: Not reported
Waste Category: Unspecified oil-containing waste
Disposal Method: Not reported
Tons: .4587
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

T122 **AMERICAN ASPHALT** **San Mateo Co. BI** **S113755839**
SE **727 SHASTA** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.192 mi.
1016 ft. **Site 3 of 12 in cluster T**

Relative: **Higher**

Actual: **19 ft.**

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0012624
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0011302
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0012624
Prog Element Code: STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id: PR0003939
Description: STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status: INACTIVE

T123 **CALIFORNIA CONCEPTS** **San Mateo Co. BI** **S113756806**
SE **727 SHASTA** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.192 mi.
1016 ft. **Site 4 of 12 in cluster T**

Relative: **Higher**

Actual: **19 ft.**

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0022719
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0025350
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0022719
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0025351
Description: STORES MV FUELS OR WASTE ONLY
Facility Status: INACTIVE

DRAFT

T124 **HEBREW ACADEMY** **San Mateo Co. BI** **S113757222**
SE **727 SHASTA** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.192 mi.
1016 ft. **Site 5 of 12 in cluster T**

Relative:
Higher

Actual:
19 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0024749
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0030083
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0024749
Prog Element Code:	STORES MV FUELS OR WASTE ONLY
Record Id:	PR0030084
Description:	STORES MV FUELS OR WASTE ONLY
Facility Status:	INACTIVE

T125 **COMMERCIAL PROPERTY** **SWEEPS UST** **S101593868**
SE **727 SHASTA ST** **CA FID UST** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.192 mi.
1016 ft. **Site 6 of 12 in cluster T**

Relative:
Higher

Actual:
19 ft.

SWEEPS UST:

Status:	Not reported
Comp Number:	330180
Number:	Not reported
Board Of Equalization:	Not reported
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Owner Tank Id:	Not reported
SWRCB Tank Id:	41-000-330180-000001
Tank Status:	Not reported
Capacity:	550
Active Date:	Not reported
Tank Use:	M.V. FUEL
STG:	PRODUCT
Content:	REG UNLEADED
Number Of Tanks:	1

Status:	Active
Comp Number:	330180
Number:	2
Board Of Equalization:	Not reported
Referral Date:	11-01-93
Action Date:	11-01-93
Created Date:	07-09-92
Owner Tank Id:	Not reported
SWRCB Tank Id:	Not reported
Tank Status:	Not reported
Capacity:	Not reported
Active Date:	Not reported
Tank Use:	Not reported
STG:	Not reported
Content:	Not reported

DRAFT

COMMERCIAL PROPERTY (Continued) **S101593868**

Number Of Tanks: Not reported

CA FID UST:
Facility ID: 41001594
Regulated By: UTNKA
Regulated ID: CAC000601
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: Not reported
Mail To: Not reported
Mailing Address: 2260 REDINGTON RD
Mailing Address 2: Not reported
Mailing City,St,Zip: REDWOOD CITY 94063
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

T126 **AMERICAN ASPHALT R AND R CO INC** **RCRA-SQG** **1000597675**
SE **727 SHASTA ST** **CAD983616988**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.192 mi.
1016 ft. **Site 7 of 12 in cluster T**

Relative:
Higher

Actual:
19 ft.

RCRA-SQG:
Date form received by agency: 01/30/1992
Facility name: AMERICAN ASPHALT R AND R CO INC
Facility address: 727 SHASTA ST
REDWOOD CITY, CA 94063
EPA ID: CAD983616988
Mailing address: PO BOX 2306
REDWOOD CITY, CA 94064
Contact: GREG OBREGON
Contact address: 727 SHASTA ST
REDWOOD CITY, CA 94063
Contact country: US
Contact telephone: (415) 366-0144
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: ALLAN A HENDERSON
Owner/operator address: PO BOX 2306
REDWOOD CITY, CA 94064
Owner/operator country: Not reported
Owner/operator telephone: (415) 366-0144
Legal status: Private
Owner/Operator Type: Owner

DRAFT

AMERICAN ASPHALT R AND R CO INC (Continued) **1000597675**

Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

Q127 **NICOLOSI DISTRIBUTING CO** **San Mateo Co. BI** **S113757152**
SSE **220 CHESTNUT** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94064**
0.195 mi.
1029 ft. **Site 2 of 6 in cluster Q**

Relative:
Higher

Actual:
20 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0024482
Prog Element Code: STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id: PR0029190
Description: STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status: INACTIVE

Q128 **CHESTNUT AUTOMOTIVE BRAKE/ALIGNMENT** **San Mateo Co. BI** **S113756943**
SSE **160 CHESTNUT** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.195 mi.
1029 ft. **Site 3 of 6 in cluster Q**

Relative:
Higher

Actual:
20 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0023480
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0027181
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0023480
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0027182
Description: STORES MV FUELS OR WASTE ONLY
Facility Status: ACTIVE

DRAFT

CHESTNUT AUTOMOTIVE BRAKE/ALIGNMENT (Continued) **S113756943**

Region:	SAN MATEO
Facility ID:	FA0023480
Prog Element Code:	LESS THAN 500 TIRES
Record Id:	PR0045566
Description:	LESS THAN 500 TIRES
Facility Status:	INACTIVE

O129 **SAN MATEO CO AGRICULTURAL COMMISSIONER** **HWP** **S100873220**
ESE **728 HELLER ST** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94064**
0.196 mi.
1037 ft. **Site 4 of 10 in cluster O**

Relative:
Higher

Actual:
17 ft.

HWP:

EPA Id:	CAT000617472
Cleanup Status:	PROTECTIVE FILER
Latitude:	37.48039
Longitude:	-122.2213
Facility Type:	Historical - Non-Operating
Facility Size:	Not reported
Team:	Not reported
Supervisor:	Not reported
Site Code:	Not reported
Assembly District:	22
Senate District:	13
Public Information Officer:	Not reported
Public Information Officer:	Not reported

Activities:

EPA Id:	CAT000617472
Facility Type:	Historical - Non-Operating
Unit Names:	CONTAIN1
Event Description:	Protective Filer Status - PROTECTIVE FILER (APPROVED)
Actual Date:	01/09/1987

EPA Id:	CAT000617472
Facility Type:	Historical - Non-Operating
Unit Names:	CONTAIN1
Event Description:	Protective Filer Status - PROTECTIVE FILER (RECEIVED)
Actual Date:	09/30/1986

O130 **AGRICULTURAL WEIGHTS & MEASURE** **San Mateo Co. BI** **S113755717**
ESE **728 HELLER** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94064**
0.196 mi.
1037 ft. **Site 5 of 10 in cluster O**

Relative:
Higher

Actual:
17 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0011752
Prog Element Code:	GEN <1 TONS HAZ WASTE/YR
Record Id:	PR0025920
Description:	GEN <1 TONS HAZ WASTE/YR
Facility Status:	INACTIVE

DRAFT

O131 **SAN MATEO CO AGRI DEPT** **RCRA-TSDF** **1000123796**
ESE **728 HELLER ST** **RCRA-SQG** **CAT000617472**
1/8-1/4 **REDWOOD CITY, CA 94064** **FINDS**
0.196 mi. **ECHO**
1037 ft. **Site 6 of 10 in cluster O**

Relative:
Higher

Actual:
17 ft.

RCRA-TSDF:

Date form received by agency:	07/24/1998
Facility name:	SAN MATEO CO AGRI DEPT
Facility address:	728 HELLER ST REDWOOD CITY, CA 94064
EPA ID:	CAT000617472
Mailing address:	P O BOX 999 REDWOOD CITY, CA 94064
Contact:	GAIL RAABE
Contact address:	728 HELLER ST REDWOOD CITY, CA 94064
Contact country:	US
Contact telephone:	(650) 363-4700
Contact email:	Not reported
EPA Region:	09
Land type:	County
Classification:	TSDF
Description:	Handler is engaged in the treatment, storage or disposal of hazardous waste

Owner/Operator Summary:

Owner/operator name:	SAN MATEO CO AGRICULTURAL COMMISSIONER
Owner/operator address:	728 HELLER ST REDWOOD CITY, CA 94064
Owner/operator country:	Not reported
Owner/operator telephone:	(650) 363-4700
Legal status:	County
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	SAN MATEO CO AGRICULTURAL COMMISSIONER
Owner/operator address:	PO BOX 999 CITY NOT REPORTED, CA 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 364-5600
Legal status:	County
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No

DRAFT

SAN MATEO CO AGRI DEPT (Continued) **1000123796**

User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

Historical Generators:
Date form received by agency: 09/01/1996
Site name: SAN MATEO CO AGRI DEPT
Classification: Small Quantity Generator

Facility Has Received Notices of Violations:
Regulation violated: FR - 262.10-12.A
Area of violation: Generators - General
Date violation determined: 02/14/1986
Date achieved compliance: 09/30/1986
Violation lead agency: EPA
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 03/18/1987
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 09/30/1986
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: EPA

Evaluation date: 02/14/1986
Evaluation: NON-FINANCIAL RECORD REVIEW
Area of violation: Generators - General
Date achieved compliance: 09/30/1986
Evaluation lead agency: EPA

FINDS:

Registry ID: 110002943762

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

DRAFT

SAN MATEO CO AGRI DEPT (Continued) **1000123796**

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1000123796
Registry ID: 110002943762
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110002943762

P132 **COST PLUS INC #284** **San Mateo Co. BI** **S117398879**
NNW **890 JEFFERSON** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.197 mi.
1041 ft. **Site 3 of 4 in cluster P**

Relative: Higher

Actual: 14 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0057065
Prog Element Code: GENERATES <27 GAL/YEAR
Record Id: PR0079141
Description: GENERATES <27 GAL/YEAR
Facility Status: ACTIVE

O133 **GARAFFO AUTO REPAIR** **San Mateo Co. BI** **S113756222**
ESE **301 PINE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.200 mi.
1054 ft. **Site 7 of 10 in cluster O**

Relative: Higher

Actual: 18 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0016441
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0024855
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0016441
Prog Element Code: LESS THAN 500 TIRES
Record Id: PR0045569
Description: LESS THAN 500 TIRES
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0016441
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0029236
Description: STORES MV FUELS OR WASTE ONLY
Facility Status: INACTIVE

DRAFT

O134 **COLLINS CLASSICS** **San Mateo Co. BI** **S113757125**
ESE **301 PINE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.200 mi.
1054 ft. **Site 8 of 10 in cluster O**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0024355
Prog Element Code: GENERATES <27 GAL/YEAR
Record Id: PR0028989
Description: GENERATES <27 GAL/YEAR
Facility Status: INACTIVE

O135 **COVENTRY MOTORS** **San Mateo Co. BI** **S113757040**
ESE **301 PINE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.200 mi.
1054 ft. **Site 9 of 10 in cluster O**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0023977
Prog Element Code: GENERATES <27 GAL/YEAR
Record Id: PR0028191
Description: GENERATES <27 GAL/YEAR
Facility Status: INACTIVE

U136 **GLEN GREER ARCO** **HIST UST** **U001594501**
WNW **1032 JEFFERSON AVE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94062**
0.204 mi.
1075 ft. **Site 1 of 7 in cluster U**

Relative:
Higher

Actual:
14 ft.

HIST UST:
File Number: 0002BEEC
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002BEEC.pdf
Region: STATE
Facility ID: 00000048992
Facility Type: Gas Station
Other Type: Not reported
Contact Name: DLR.
Telephone: 3153649599
Owner Name: GLENN GREER, INC.
Owner Address: 1032 JEFFERSON AVE.
Owner City,St,Zip: REDWOOD CITY, CA 94062
Total Tanks: 0004

Tank Num: 001
Container Num: 1
Year Installed: 1968
Tank Capacity: 00006000
Tank Used for: PRODUCT
Type of Fuel: UNLEADED
Container Construction Thickness: Not reported
Leak Detection: Stock Inventor

Tank Num: 002

DRAFT

GLEN GREER ARCO (Continued) **U001594501**

Container Num:	2
Year Installed:	1968
Tank Capacity:	00006000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Stock Inventor
Tank Num:	003
Container Num:	3
Year Installed:	1968
Tank Capacity:	00006000
Tank Used for:	PRODUCT
Type of Fuel:	PREMIUM
Container Construction Thickness:	Not reported
Leak Detection:	Stock Inventor
Tank Num:	004
Container Num:	4
Year Installed:	1968
Tank Capacity:	00000000
Tank Used for:	WASTE
Type of Fuel:	WASTE OIL
Container Construction Thickness:	Not reported
Leak Detection:	Stock Inventor

Click here for Geo Tracker PDF:

U137 **GLENN GREER ARCO** San Mateo Co. BI **S113756352**
WNW **1032 JEFFERSON** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.204 mi.
1075 ft. **Site 2 of 7 in cluster U**

Relative:
Higher

Actual:
14 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0017334
Prog Element Code:	UNDERGROUND TANK - GENERAL
Record Id:	PR0022423
Description:	UNDERGROUND TANK - GENERAL
Facility Status:	INACTIVE

U138 **ARCO** **LUST** **S103892992**
WNW **1032 JEFFERSON** **SWEEPS UST** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063** **HIST CORTESE**
0.204 mi.
1075 ft. **Site 3 of 7 in cluster U**

Relative:
Higher

Actual:
14 ft.

LUST:

Region:	STATE
Global Id:	T0608100672
Latitude:	37.4839504
Longitude:	-122.2292271
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	02/03/1996

DRAFT

ARCO (Continued) **S103892992**

Lead Agency:	SAN FRANCISCO BAY RWQCB (REGION 2)
Case Worker:	Not reported
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0707
LOC Case Number:	330082
File Location:	Not reported
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Diesel
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100672
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Status History:

Global Id:	T0608100672
Status:	Completed - Case Closed
Status Date:	02/03/1996
Global Id:	T0608100672
Status:	Open - Case Begin Date
Status Date:	05/03/1991
Global Id:	T0608100672
Status:	Open - Remediation
Status Date:	02/02/1996
Global Id:	T0608100672
Status:	Open - Site Assessment
Status Date:	02/01/1996

Regulatory Activities:

Global Id:	T0608100672
Action Type:	ENFORCEMENT
Date:	06/01/2000
Action:	Closure/No Further Action Letter
Global Id:	T0608100672
Action Type:	Other
Date:	05/03/1991
Action:	Leak Discovery
Global Id:	T0608100672
Action Type:	Other
Date:	05/03/1991
Action:	Leak Reported
Global Id:	T0608100672
Action Type:	Other

DRAFT

ARCO (Continued) **S103892992**

Date: 05/03/1991
Action: Leak Stopped

LUST REG 2:
Region: 2
Facility Id: 41-0707
Facility Status: Case Closed
Case Number: 330082
How Discovered: Tank Closure
Leak Cause: Structure Failure
Leak Source: Tank
Date Leak Confirmed: 2/1/1996
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: 2/2/1996
Date Post Remedial Action Monitoring Began: Not reported

SWEEPS UST:
Status: Not reported
Comp Number: 330096
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330096-000001
Tank Status: Not reported
Capacity: 6000
Active Date: Not reported
Tank Use: M.V. FUEL
STG: PRODUCT
Content: PRM UNLEADED
Number Of Tanks: 5

Status: Not reported
Comp Number: 330096
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330096-000002
Tank Status: Not reported
Capacity: 6000
Active Date: Not reported
Tank Use: M.V. FUEL
STG: PRODUCT
Content: PRM UNLEADED
Number Of Tanks: Not reported

DRAFT

ARCO (Continued) **S103892992**

Status:	Not reported
Comp Number:	330096
Number:	Not reported
Board Of Equalization:	Not reported
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Owner Tank Id:	Not reported
SWRCB Tank Id:	41-000-330096-000003
Tank Status:	Not reported
Capacity:	6000
Active Date:	Not reported
Tank Use:	M.V. FUEL
STG:	PRODUCT
Content:	REG UNLEADED
Number Of Tanks:	Not reported

Status:	Not reported
Comp Number:	330096
Number:	Not reported
Board Of Equalization:	Not reported
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Owner Tank Id:	Not reported
SWRCB Tank Id:	41-000-330096-000004
Tank Status:	Not reported
Capacity:	6000
Active Date:	Not reported
Tank Use:	M.V. FUEL
STG:	PRODUCT
Content:	REG UNLEADED
Number Of Tanks:	Not reported

Status:	Not reported
Comp Number:	330096
Number:	Not reported
Board Of Equalization:	Not reported
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Owner Tank Id:	Not reported
SWRCB Tank Id:	41-000-330096-000005
Tank Status:	Not reported
Capacity:	500
Active Date:	Not reported
Tank Use:	OIL
STG:	WASTE
Content:	WASTE OIL
Number Of Tanks:	Not reported

HIST CORTESE:

Region:	CORTESE
Facility County Code:	41
Reg By:	LTNKA
Reg Id:	41-0707

DRAFT

U139 **SEQUOIA STATION** **CA FID UST** **S101593805**
WNW **1032 JEFFERSON AVE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.204 mi.
1075 ft. **Site 4 of 7 in cluster U**

Relative:
Higher

Actual:
14 ft.

CA FID UST:

Facility ID:	41000613
Regulated By:	UTNKI
Regulated ID:	Not reported
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	Not reported
Mail To:	Not reported
Mailing Address:	4TH & JACKSON ST
Mailing Address 2:	Not reported
Mailing City,St,Zip:	REDWOOD CITY 94063
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Inactive

O140 **ENVIRONMENTAL HEALTH STORAGE** **San Mateo Co. BI** **S113756779**
ESE **310 PINE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.204 mi.
1079 ft. **Site 10 of 10 in cluster O**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0022585
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0048829
Description:	GENERATES <27 GAL/YEAR
Facility Status:	ACTIVE

Region:	SAN MATEO
Facility ID:	FA0022585
Prog Element Code:	STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id:	PR0024935
Description:	STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status:	INACTIVE

P141 **REDWOOD CITY PARTNERS, LLC** **LUST** **S113881529**
NW **950 MIDDLEFIELD RD** **San Mateo Co. BI** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063** **HAZNET**
0.204 mi. **NPDES**
1079 ft. **Site 4 of 4 in cluster P**

Relative:
Higher

Actual:
14 ft.

LUST:

Region:	STATE
Global Id:	T10000005677
Latitude:	37.4850633134608
Longitude:	-122.229344176196
Case Type:	LUST Cleanup Site

DRAFT

REDWOOD CITY PARTNERS, LLC (Continued) **S113881529**

Status:	Completed - Case Closed
Status Date:	11/06/2014
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	Not reported
LOC Case Number:	330229
File Location:	All Files are on GeoTracker or in the Local Agency Database
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Waste Oil / Motor / Hydraulic / Lubricating
Site History:	Discovered UST during redevelopment of site (Crossing 900 development) Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T10000005677
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Status History:

Global Id:	T10000005677
Status:	Completed - Case Closed
Status Date:	11/06/2014
Global Id:	T10000005677
Status:	Open - Case Begin Date
Status Date:	11/22/2013
Global Id:	T10000005677
Status:	Open - Eligible for Closure
Status Date:	05/15/2014
Global Id:	T10000005677
Status:	Open - Verification Monitoring
Status Date:	02/20/2014

Regulatory Activities:

Global Id:	T10000005677
Action Type:	Other
Date:	11/22/2013
Action:	Leak Discovery
Global Id:	T10000005677
Action Type:	ENFORCEMENT
Date:	03/19/2014
Action:	Notice of Responsibility - #20140319
Global Id:	T10000005677
Action Type:	ENFORCEMENT
Date:	11/06/2014
Action:	Closure/No Further Action Letter - #20141106

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REDWOOD CITY PARTNERS, LLC (Continued) **S113881529**

Global Id: T10000005677
Action Type: ENFORCEMENT
Date: 08/26/2014
Action: Notification - Preclosure - #20140826

Global Id: T10000005677
Action Type: ENFORCEMENT
Date: 02/20/2014
Action: Staff Letter - #20140220

Global Id: T10000005677
Action Type: ENFORCEMENT
Date: 05/15/2014
Action: Staff Letter - #20140515

Global Id: T10000005677
Action Type: RESPONSE
Date: 05/20/2014
Action: Site Assessment Report - Regulator Responded

Global Id: T10000005677
Action Type: Other
Date: 01/28/2014
Action: Leak Reported

Global Id: T10000005677
Action Type: RESPONSE
Date: 04/30/2014
Action: Unauthorized Release Form

Global Id: T10000005677
Action Type: RESPONSE
Date: 01/28/2014
Action: Tank Removal Report / UST Sampling Report

Global Id: T10000005677
Action Type: REMEDIATION
Date: 10/15/2014
Action: Excavation

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330229
Facility Status: 9- Case Closed
Global ID: T10000005677
APN Number: 052363200
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0054611
Prog Element Code: UNDERGROUND TANK - GENERAL
Record Id: PR0075313
Description: UNDERGROUND TANK - GENERAL

DRAFT

REDWOOD CITY PARTNERS, LLC (Continued) **S113881529**

Facility Status: INACTIVE

HAZNET:

envid:	S113881529
Year:	2013
GEPAID:	CAC002749365
Contact:	JEFF BLOXHAM
Telephone:	4155591347
Mailing Name:	Not reported
Mailing Address:	12200 W OLYMPIC BLVD STE 200
Mailing City,St,Zip:	LOS ANGELES, CA 900641044
Gen County:	San Mateo
TSD EPA ID:	CAD980675276
TSD County:	Kern
Waste Category:	Not reported
Disposal Method:	Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons:	0.125
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Not reported

envid:	S113881529
Year:	2013
GEPAID:	CAC002749365
Contact:	JEFF BLOXHAM
Telephone:	4155591347
Mailing Name:	Not reported
Mailing Address:	12200 W OLYMPIC BLVD STE 200
Mailing City,St,Zip:	LOS ANGELES, CA 900641044
Gen County:	San Mateo
TSD EPA ID:	CAD980675276
TSD County:	Kern
Waste Category:	Not reported
Disposal Method:	Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons:	21.24
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Not reported

envid:	S113881529
Year:	2013
GEPAID:	CAC002749365
Contact:	JEFF BLOXHAM
Telephone:	4155591347
Mailing Name:	Not reported
Mailing Address:	12200 W OLYMPIC BLVD STE 200
Mailing City,St,Zip:	LOS ANGELES, CA 900641044
Gen County:	San Mateo
TSD EPA ID:	CAD009466392
TSD County:	Contra Costa
Waste Category:	Not reported
Disposal Method:	Other Treatment
Tons:	0.65
Cat Decode:	Not reported
Method Decode:	Not reported

DRAFT

REDWOOD CITY PARTNERS, LLC (Continued) **S113881529**

Facility County: Not reported

envid: S113881529
Year: 2013
GEPAID: CAC002749365
Contact: JEFF BLOXHAM
Telephone: 4155591347
Mailing Name: Not reported
Mailing Address: 12200 W OLYMPIC BLVD STE 200
Mailing City,St,Zip: LOS ANGELES, CA 900641044
Gen County: San Mateo
TSD EPA ID: CAL000190816
TSD County: Stanislaus
Waste Category: Not reported
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 1.668
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Not reported

envid: S113881529
Year: 2013
GEPAID: CAC002749365
Contact: JEFF BLOXHAM
Telephone: 4155591347
Mailing Name: Not reported
Mailing Address: 12200 W OLYMPIC BLVD STE 200
Mailing City,St,Zip: LOS ANGELES, CA 900641044
Gen County: San Mateo
TSD EPA ID: UTC093012201
TSD County: 99
Waste Category: Not reported
Disposal Method: Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons: 682
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Not reported

Click this hyperlink while viewing on your computer to access additional CA_HAZNET: detail in the EDR Site Report.

NPDES:
Npdes Number: CAS000002
Facility Status: Terminated
Agency Id: 0
Region: 2
Regulatory Measure Id: 439452
Order No: 2009-0009-DWQ
Regulatory Measure Type: Enrollee
Place Id: Not reported
WDID: 2 41C367203
Program Type: Construction
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: 07/24/2013
Expiration Date Of Regulatory Measure: Not reported

DRAFT

REDWOOD CITY PARTNERS, LLC (Continued) **S113881529**

Termination Date Of Regulatory Measure:	12/21/2015
Discharge Name:	Redwood City Partners LLC
Discharge Address:	12200 West Olumpic Blvd Suite 200
Discharge City:	Los Angeles
Discharge State:	California
Discharge Zip:	90064
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported

DRAFT

REDWOOD CITY PARTNERS, LLC (Continued) **S113881529**

CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	2
Regulatory Measure Id:	439452
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	2 41C367203
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	12/21/2015
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	7/16/2013
PROCESSED DATE:	7/24/2013
STATUS CODE NAME:	Terminated
STATUS DATE:	12/22/2015
PLACE SIZE:	2.24
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Clark Pothoff
FACILITY CONTACT TITLE:	Project Manager
FACILITY CONTACT PHONE:	650-489-9900
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	clark.pothoff@vancebrown.com
OPERATOR NAME:	Redwood City Partners LLC
OPERATOR ADDRESS:	12200 West Olumpic Blvd Suite 200
OPERATOR CITY:	Los Angeles
OPERATOR STATE:	California
OPERATOR ZIP:	90064
OPERATOR CONTACT NAME:	Robert Palmer
OPERATOR CONTACT TITLE:	Senior Vice President
OPERATOR CONTACT PHONE:	310-481-8400
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	rpalmer@kilroyrealty.com
OPERATOR TYPE:	Private Business
DEVELOPER NAME:	Vance Brown Inc
DEVELOPER ADDRESS:	3197 Park Blvd
DEVELOPER CITY:	Palo Alto
DEVELOPER STATE:	California
DEVELOPER ZIP:	94306
DEVELOPER CONTACT NAME:	Clark Pothoff
DEVELOPER CONTACT TITLE:	Project Manager
CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported

DRAFT

REDWOOD CITY PARTNERS, LLC (Continued) **S113881529**

CONSTYPE ABOVE GROUND IND:	N
CONSTYPE BELOW GROUND IND:	N
CONSTYPE CABLE LINE IND:	N
CONSTYPE COMM LINE IND:	N
CONSTYPE COMMERTIAL IND:	Y
CONSTYPE ELECTRICAL LINE IND:	N
CONSTYPE GAS LINE IND:	N
CONSTYPE INDUSTRIAL IND:	N
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	N
CONSTYPE RECONS IND:	N
CONSTYPE RESIDENTIAL IND:	N
CONSTYPE TRANSPORT IND:	N
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	N
CONSTYPE WATER SEWER IND:	N
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Robert Palmer
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	16-JUL-13
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

Q142 **B & D AUTOMOTIVE** **San Mateo Co. BI** **S113755415**
SSE **1510 MAIN** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.206 mi.
1090 ft. **Site 4 of 6 in cluster Q**

Relative:
Higher

Actual:
20 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0008065
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0011237
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	ACTIVE

Region:	SAN MATEO
Facility ID:	FA0008065
Prog Element Code:	STORES MV FUELS OR WASTE ONLY
Record Id:	PR0003894
Description:	STORES MV FUELS OR WASTE ONLY
Facility Status:	ACTIVE

Region:	SAN MATEO
Facility ID:	FA0008065
Prog Element Code:	LESS THAN 500 TIRES
Record Id:	PR0045626
Description:	LESS THAN 500 TIRES
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0008065
Prog Element Code:	RECYCLER
Record Id:	PR0042968
Description:	RECYCLER

DRAFT

B & D AUTOMOTIVE (Continued) **S113755415**

Facility Status: INACTIVE

V143 **ARCO 00306** **San Mateo Co. BI** **S113756336**
East **1700 MIDDLEFIELD** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.208 mi.
1096 ft. **Site 1 of 7 in cluster V**

Relative:
Higher

Actual:
16 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0017314
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0040094
Description:	GENERATES <27 GAL/YEAR
Facility Status:	ACTIVE
Region:	SAN MATEO
Facility ID:	FA0017314
Prog Element Code:	STORES MV FUELS OR WASTE ONLY
Record Id:	PR0023412
Description:	STORES MV FUELS OR WASTE ONLY
Facility Status:	ACTIVE
Region:	SAN MATEO
Facility ID:	FA0017314
Prog Element Code:	UNDERGROUND TANK - GENERAL
Record Id:	PR0022405
Description:	UNDERGROUND TANK - GENERAL
Facility Status:	ACTIVE

V144 **ARCO SERVICE STATION #306** **Notify 65** **S100178650**
East **1700 MIDDLEFIELD ROAD** **N/A**
1/8-1/4 **REDWOOD CITY, CA 92257**
0.208 mi.
1096 ft. **Site 2 of 7 in cluster V**

Relative:
Higher

Actual:
16 ft.

NOTIFY 65:

Date Reported:	Not reported
Staff Initials:	Not reported
Board File Number:	Not reported
Facility Type:	Not reported
Discharge Date:	Not reported
Issue Date:	Not reported
Incident Description:	Not reported

DRAFT

V145 **ARCO #0306** **LUST** **S101303167**
East **1700 MIDDLEFIELD** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94064**
0.208 mi.
1096 ft. **Site 3 of 7 in cluster V**

Relative:
Higher

Actual:
16 ft.

LUST REG 2:

Region:	2
Facility Id:	Not reported
Facility Status:	Remedial action (cleanup) Underway
Case Number:	330019
How Discovered:	OM
Leak Cause:	Unknown
Leak Source:	Unknown
Date Leak Confirmed:	Not reported
Oversight Program:	LUST
Prelim. Site Assesment Wokplan Submitted:	Not reported
Preliminary Site Assesment Began:	Not reported
Pollution Characterization Began:	Not reported
Pollution Remediation Plan Submitted:	Not reported
Date Remediation Action Underway:	1/1/1965
Date Post Remedial Action Monitoring Began:	Not reported

V146 **VEGA ARCO AM/PM** **HIST UST** **U001594614**
East **1700 MIDDLEFIELD RD** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.208 mi.
1096 ft. **Site 4 of 7 in cluster V**

Relative:
Higher

Actual:
16 ft.

HIST UST:

File Number:	Not reported
URL:	Not reported
Region:	STATE
Facility ID:	00000033002
Facility Type:	Gas Station
Other Type:	Not reported
Contact Name:	JOSE R. VEGA
Telephone:	4153652583
Owner Name:	ATLANTIC RICHFIELD COMPANY
Owner Address:	2000 ALAMEDA DE LAS PULEAS
Owner City,St,Zip:	SAN MATEO, CA 94403
Total Tanks:	0003
Tank Num:	001
Container Num:	1
Year Installed:	Not reported
Tank Capacity:	00006000
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Pressure Test
Tank Num:	002
Container Num:	2
Year Installed:	Not reported
Tank Capacity:	00006000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Pressure Test

DRAFT

VEGA ARCO AM/PM (Continued) **U001594614**

Tank Num:	003
Container Num:	3
Year Installed:	Not reported
Tank Capacity:	00006000
Tank Used for:	PRODUCT
Type of Fuel:	PREMIUM
Container Construction Thickness:	Not reported
Leak Detection:	Pressure Test

V147 **ARCO #0306** **LUST S101438021**
East **1700 MIDDLEFIELD ROAD** **SWEEPS UST N/A**
1/8-1/4 **REDWOOD CITY, CA 94064** **HIST CORTESE**
0.208 mi.
1096 ft. **Site 5 of 7 in cluster V**

Relative:
Higher

Actual:
16 ft.

LUST:

Region:	STATE
Global Id:	T0608100028
Latitude:	37.48185464897 28
Longitude:	-122.221576049924
Case Type:	LUST Cleanup Site
Status:	Open - Site Assessment
Status Date:	04/14/2009
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0029
LOC Case Number:	330019
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Extracted from Stantec's FEBRUARY 9, 2010 ADDITIONAL SITE ASSESSMENT REPORT AND SITE CONCEPTUAL MODEL, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report. The site is located at the southern corner of the intersection of Chestnut Street and Middlefield Road in Redwood City, California. The site is currently developed as a retail ARCO service station with an approximately 1,500-square foot, one-story station building, a fuel dispenser island, and an underground storage tank (UST) complex comprised of four 10,000-gallon gasoline USTs. The site and vicinity currently have eleven groundwater monitoring wells (A-1 through A-4, A-6 through A-8, and A-10 through A-13), three groundwater extraction wells (EW-1, EW-5, and EW-11), two tank cavity wells (TCW-1 and TCW-2), and six shallow soil vapor wells (SV-1 through SV-6). The adjacent property east of the site (1726 Middlefield Road) had a shallow irrigation well on their property. A soil and groundwater investigation status report by PEG dated September 2, 1988, indicates that an investigation was performed in response to the discovery of over one foot of floating product or separate phase hydrocarbons (SPH) in the irrigation well. At an undetermined time, San Mateo County was contacted by the property owner to investigate petroleum hydrocarbon vapors in the cellar at the property. Subsequently, San Mateo County investigated the complaint and did not detect any hydrocarbon vapors at the residence. San Mateo County requested the property owner to abandon the unpermitted irrigation well. The well construction details, and installation and/or abandonment dates are unknown. A subsequent well survey conducted by SECOR in 1999

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ARCO #0306 (Continued) **S101438021**

indicated that the well had been abandoned. A 550-gallon waste oil UST was reportedly removed from the site prior to 1988. In July 1988, a soil and groundwater investigation was performed that included installation of four groundwater monitoring wells (A-1 through A-4). Laboratory analysis of soil and groundwater samples collected during the assessment indicated petroleum hydrocarbon impacts to the subsurface. Concentrations of low boiling point hydrocarbons (calculated as gasoline), and high boiling point hydrocarbons (calculated as diesel and oil) were reported in the samples collected. A laboratory note indicates that high boiling hydrocarbons calculated and reported as diesel appeared to be the less volatile constituents of gasoline. In November 1989, a soil gas survey was performed at and in the vicinity of the site utilizing sixteen temporary vapor sample points (VP-1 through VP-16). The soil gas survey confirmed the presence of petroleum hydrocarbon vapors in the subsurface at the site. The highest soil vapor concentration of Total Hydrocarbons as gasoline and benzene, toluene, ethylbenzene, and xylenes was detected in vapor point VP-5, located adjacent to the former gasoline UST cavity. Groundwater monitoring wells A-5 through A-10 were installed during this phase of investigation. In June 1990, monitoring well A-9 was destroyed to allow Redwood City to install a water main in the intersection of Middlefield Road and Chestnut Street. On August 15, 1990, excavation work by the Redwood City Department of Public Works revealed approximately two-inches of SPH and gasoline odors in an excavation located near the intersection of Middlefield Road and Chestnut Street. SPH and groundwater were reportedly removed from the excavation before it was backfilled. Conductor casing was placed in the excavation before backfilling to allow for installation of a future extraction well. In September 1990, GeoStrategies Incorporated (GSI) performed two aquifer tests including a step-down test and constant-rate yield test using EW-5 (formerly A-5) as the extraction well, while measuring aquifer drawdown in A-3 and A-4. The aquifer tests were performed to facilitate selection of an effective remedial technology for the site. The groundwater table elevation was reported to have been influenced in all onsite and offsite monitoring wells during the aquifer tests. Transmissivity values using the Cooper-Jacob Method ranged from 370 gallons per day per foot (gpd/ft) to 8,123 gpd/ft with an average transmissivity value of 5,341 gpd/ft. The average transmissivity value calculated using the Theis method was 5,724 gpd/ft. Between November 1990, and January 1991, three 6,000-gallon gasoline USTs were removed from the site. These tanks were replaced with the four current 10,000-gallon USTs in a location farther to the west of the former USTs. Soil samples collected during the UST removal were analyzed and reported with concentrations of volatile petroleum hydrocarbons as gasoline (VPHg), and BTEX. Due to space constraints at the site, the lateral extent of hydrocarbon-impacted soil was not completely characterized. The former UST cavity was excavated to approximately 9.5 feet bgs and backfilled with clean, imported soil. In preparation for installation of the new USTs, the current gasoline UST cavity was excavated to approximately 25 feet wide by 50 feet long by 15 feet deep to the north of the former gasoline UST cavity. During UST replacement activities, approximately 1,550 cubic yards of petroleum hydrocarbon-impacted soil and approximately 35,000 gallons of hydrocarbon-impacted groundwater were removed and disposed offsite. In August 1991, ten soil borings (SB-1 through SB-10) were advanced along Chestnut Street. Soil samples were

ARCO #0306 (Continued) **S101438021**

collected at multiple depths from the borings and were all reported with TPHg concentrations below the laboratory method reporting limit. In November 1991, a groundwater extraction and treatment (GET) system, consisting of extraction pumps and product skimmers placed in EW-5 (formerly well A-5) and EW-11 (installed in 1991) was installed and operated at the site. The CEW Groundwater Extraction System Start-up Testing and Monitoring Report dated May 8, 1992(b) indicates that as of January 24, 1992, approximately 60 gallons of SPH were removed through the skimmers at the site. During operation of the GET system from November 1991 to October 3, 1995, approximately 8,105,456 gallons of hydrocarbon-impacted groundwater were extracted, treated, and discharged at the site (SECOR, 1995a). An additional 27,113 gallons of groundwater were reported to have been extracted between October 3 and October 10, 1995 for a total of approximately 8,132,569 gallons. The GET system was shutdown on October 10, 1995 to evaluate system performance and has not been restarted. Based on a review of available historical site remediation data, it does not appear that well EW-1 was used in GET system operations. In May 1992, Environmental Bio-Systems Incorporated advanced one soil boring at 1726 Middlefield Road. Soil samples were reportedly collected at approximately 8 and 9 feet bgs. According to the SECOR document, TPHg was reported at concentrations of 290 mg/kg and 410 mg/kg, respectively. Benzene was not detected at or above the laboratory detection limits in either soil sample collected. In March 1993, two wells (A-11 and A-12) were installed north-northeast of the site to characterize the lateral extent of dissolved petroleum hydrocarbons downgradient of the site. Wells A-11 and A-12 were installed to depths of 20 and 22 feet bgs, respectively. The wells were subsequently incorporated into the quarterly monitoring and sampling program . On May 6, 1993, eight soil borings were advanced at 1726 Middlefield Road. Soil borings SB-1 through SB-3 and WP-1 through WP-5 were advanced to total depths of approximately 14 to 16 feet bgs. Five of the eight borings were completed as temporary well points and groundwater samples collected from these points were analyzed for TPHg and BTEX compounds. The data collected during the sampling activities indicated that petroleum hydrocarbons exist in soil and groundwater beneath the property. In June 1993, two air sparging wells (ASW-1 and ASW-2) and one extraction well (EW-1) were installed. Soil vapor extraction and air sparging pilot tests were performed at the site on June 15 and 16, 1993. The pilot test was performed to: 1) gather data on subsurface characteristics of the site; 2) use these data to evaluate the potential to remediate the site using soil vapor extraction and air sparging; and 3) maximize hydrocarbon mass removal during the test. Wells EW-1 and A-5 (later renamed EW-5) were used as soil vapor extraction wells during the pilot test. Optimum soil vapor extraction flow rates from the two wells were estimated to be approximately 23 standard cubic feet per minute (SCFM) at 46 to 80 inches of water column vacuum (H2O). Optimum air sparging flow rates varied at each sparging well. A lower flow rate and higher pressure was observed while sparging at well ASW-2 indicating a less permeable subsurface formation in the area. A higher flow rate with lower pressure was observed while sparging at well ASW-1 indicating a more permeable subsurface formation. In the report, CEW concluded that soil vapor extraction may be effective at removing hydrocarbons from the subsurface and that air sparging appeared to increase extracted hydrocarbon vapor concentrations. Based on their review of the 1993 CEW pilot test data, a vapor

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ARCO #0306 (Continued) **S101438021**

extraction (VE) flow rate of 10 to 15 cubic feet per minute (CFM) was achieved by CEW at a vacuum of approximately 50 H2O vacuum. Using the induced vacuum data collected during CEWs pilot test, SECOR estimated an effective VE radius of influence of approximately 25 feet. Soil vapor TPHg concentrations during the CEW pilot test before air sparging (AS) ranged from 5,500 micrograms per liter ("g/L) to 9,000 "g/L. With the addition of AS, soil vapor TPHg concentrations were 14,000 "g/L, 2,200 "g/L, and 14,000 "g/L. SECOR noted that due to the sporadic nature of the concentrations during the CEW pilot test, it was difficult to determine the effectiveness of AS at the site. Therefore, SECOR conducted a VE/AS pilot test on December 13, 1994, using well A-3 as the VE well and well ASW-1 for AS. Well A-3 was selected as the VE well because it was constructed with the largest available screen interval from 5 to 25 feet bgs. The optimum VE flow rate from well A-3 during the test was approximately 1.2 CFM at 80 H2O vacuum. At higher VE flow rates, significant upwelling occurred that shut down the internal combustion (IC) engine used during the pilot test. The optimum AS injection rate for ASW-1 was approximately 4.4 CFM at a maximum pressure of 5 pounds per square inch (PSI). The AS injection rate was higher than the VE flow rate indicating that full contaminant capture may not been achieved. A significantly lower VE flow rate of approximately 1 CFM and lower soil vapor TPHg concentration of 24 "g/L was observed during the SECOR VE/AS pilot test. The AS radius of influence was conservatively estimated to be approximately 12 feet. In review of radius influence data, SECOR noted the predominantly clay soil type beneath the site had low permeability while the more permeable sandy soil appeared to be relatively thin and laterally discontinuous resulting in the possible creation of local areas of preferential flow. SECOR concluded that VE/AS may be effective at removal of hydrocarbons in both the unsaturated and saturated zones. SECOR submitted a Well Survey Results report dated February 1, 1999. The well survey area encompassed a 1,405-foot radius to characterize the downgradient areas and a 200-foot radius for the upgradient areas. SECOR received a total of 44 responses to 536 well survey questionnaires distributed. In addition to the questionnaires received, SECOR also received 24 verbal responses. Fourteen wells were discovered in the survey area. Five of the fourteen wells were either not in use or were of unknown use to the occupants and the other nine wells were used for irrigation. No domestic drinking water wells were discovered. On October 28, 2000, a five-day (120-hour) dual-phase extraction (DPE) event using high vacuum extraction was initiated at the site. The average influent flow rate measured approximately 150 SCFM while extracting from EW-5 and EW-11. During the 120-hour DPE event, approximately 17 pounds (2.86 gallons) of petroleum hydrocarbons were removed from the subsurface. Approximately 18,000 gallons of groundwater were removed during the DPE pilot test. On May 5, 2003, all dispensers and related double-walled fiberglass piping were removed and replaced by B&M Construction. Results of soil sample analyses reported concentrations of TPHg ranging from <0.3 parts per million (ppm, D4-3) to 5.5 ppm (D2-3) and benzene ranging from <0.0015 ppm (D4-3) to 0.56 ppm (D2-3). On February 10, 2006, Gregg Drilling installed two soil vapor wells (SV-1 and SV-2) onsite in order to characterize shallow soil vapor south and west of the former UST complex. The soil vapor samples collected from soil vapor wells SV-1 and SV-2 reported TPHg at concentrations of 32,000 parts per million by volume (ppmv) and 2,600 ppmv, respectively; and benzene

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ARCO #0306 (Continued) **S101438021**

concentrations of 320 ppmv and 7.2 ppmv, respectively. None of the samples analyzed contained concentrations of MtBE, TBA, DIPE, EtBE or TAME above laboratory reporting limits. However, MtBE was reported at a concentration of 1.1 ppmv in the SV-1 duplicate sample. In a letter dated May 17, 2007, the San Mateo County Health Department directed submittal of a Feasibility Study/ Corrective Action Plan (FS/CAP). In response, SECOR prepared a Corrective Action Plan and Site Conceptual Model dated July 16, 2007(b). In the CAP, SECOR concluded Given that the site is an active service station and is anticipated to remain an active station for the foreseeable future, SECOR believes that monitored natural attenuation is the best course of action until land use changes. At that time, shallow soil impacted with gasoline at the site can be excavated to remove any residual source material. In a letter dated January 3, 2008, GPP noted their review of the SECOR CAP and directed submittal of an addendum to the Corrective Action Plan and Site Conceptual Model. In response, Stantec (formerly SECOR) submitted a Revised Corrective Action Plan and Site Conceptual Model (Revised CAP/SCM) dated March 12, 2008. In a letter dated December 17, 2008, the GPP noted their review of the Revised CAP/SCM and directed submittal of a revised SCM and workplan for additional site assessment. Stantec submitted an Addendum to Workplan for Additional Site Characterization dated March 25, 2009. GPP reviewed the Stantec Addendum to Workplan for Additional Site Characterization dated March 25, 2009, and approved the scope of work in a letter dated May 13, 2009. Additional site assessment work conducted per the GPP directive is documented in this report.

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100028
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100028
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100028
Status:	Open - Case Begin Date
Status Date:	07/05/1988

Global Id:	T0608100028
Status:	Open - Remediation
Status Date:	07/05/1988

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ARCO #0306 (Continued) **S101438021**

Global Id: T0608100028
Status: Open - Site Assessment
Status Date: 04/14/2009

Regulatory Activities:
Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 06/19/2012
Action: Staff Letter - #20120619

Global Id: T0608100028
Action Type: RESPONSE
Date: 02/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 08/12/2005
Action: Soil and Water Investigation Workplan

Global Id: T0608100028
Action Type: RESPONSE
Date: 05/15/2011
Action: Monitoring Report - Semi-Annually

Global Id: T0608100028
Action Type: RESPONSE
Date: 02/24/2009
Action: Soil and Water Investigation Workplan - Addendum

Global Id: T0608100028
Action Type: RESPONSE
Date: 05/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 02/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 09/15/2010
Action: CAP/RAP - Feasibility Study Report

Global Id: T0608100028
Action Type: RESPONSE
Date: 09/30/2014
Action: Site Assessment Report

Global Id: T0608100028
Action Type: RESPONSE
Date: 04/15/2015
Action: Soil Vapor Intrusion Investigation Report

Global Id: T0608100028
Action Type: RESPONSE

DRAFT

ARCO #0306 (Continued) **S101438021**

Date: 05/15/2014
Action: Correspondence

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 12/17/2008
Action: Staff Letter - #20081217

Global Id: T0608100028
Action Type: Other
Date: 07/05/1988
Action: Leak Discovery

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 01/25/2016
Action: Email Correspondence - #20160125

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 02/25/2015
Action: Staff Letter - #20150225

Global Id: T0608100028
Action Type: RESPONSE
Date: 08/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 11/15/2010
Action: Monitoring Report - Semi-Annually

Global Id: T0608100028
Action Type: RESPONSE
Date: 11/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 09/30/2015
Action: Soil Vapor Intrusion Investigation Report

Global Id: T0608100028
Action Type: RESPONSE
Date: 04/15/2015
Action: Soil Vapor Intrusion Investigation Report

Global Id: T0608100028
Action Type: RESPONSE
Date: 11/15/2015
Action: Electronic Reporting Submittal Due

Global Id: T0608100028
Action Type: RESPONSE
Date: 12/16/2015
Action: Electronic Reporting Submittal Due

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ARCO #0306 (Continued) **S101438021**

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 02/16/1989
Action: Notice of Responsibility - #19890216

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 05/17/2007
Action: Staff Letter - #20070517

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 01/03/2008
Action: Staff Letter - #20080103

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 09/15/2005
Action: Staff Letter - #20050915

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 09/16/2011
Action: Staff Letter - #20110916

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 03/17/2015
Action: Technical Correspondence / Assistance / Other - #20150317

Global Id: T0608100028
Action Type: RESPONSE
Date: 08/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 11/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 05/15/2010
Action: Monitoring Report - Semi-Annually

Global Id: T0608100028
Action Type: RESPONSE
Date: 04/04/2011
Action: Site Assessment Report

Global Id: T0608100028
Action Type: RESPONSE
Date: 11/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE

DRAFT

ARCO #0306 (Continued) **S101438021**

Date: 02/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 02/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 02/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 02/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 02/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 11/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 08/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 01/03/2006
Action: Soil Vapor Intrusion Investigation Report

Global Id: T0608100028
Action Type: RESPONSE
Date: 07/16/2007
Action: CAP/RAP - Feasibility Study Report

Global Id: T0608100028
Action Type: RESPONSE
Date: 03/12/2008
Action: Corrective Action Plan / Remedial Action Plan

Global Id: T0608100028
Action Type: RESPONSE
Date: 08/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 09/10/2015
Action: Correspondence

DRAFT

ARCO #0306 (Continued) **S101438021**

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 09/10/2002
Action: Staff Letter - #20020910

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 07/17/2014
Action: Technical Correspondence / Assistance / Other - #7/17/2014

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 01/21/2005
Action: Staff Letter - #20050121

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 01/03/2013
Action: Staff Letter - #20130103

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 07/06/2010
Action: Staff Letter - #20100706

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 11/19/2013
Action: Staff Letter - #20131119

Global Id: T0608100028
Action Type: Other
Date: 07/05/1988
Action: Leak Reported

Global Id: T0608100028
Action Type: RESPONSE
Date: 05/15/2016
Action: Monitoring Report - Annually

Global Id: T0608100028
Action Type: RESPONSE
Date: 12/06/2016
Action: Soil and Water Investigation Report

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 04/19/2016
Action: Notice of Violation - #20160419

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 11/07/2016
Action: Email Correspondence - #20161107

Global Id: T0608100028
Action Type: ENFORCEMENT

DRAFT

ARCO #0306 (Continued) **S101438021**

Date: 11/29/2016
Action: Email Correspondence - #20161129

Global Id: T0608100028
Action Type: RESPONSE
Date: 05/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 11/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 04/15/2017
Action: Soil Vapor Intrusion Investigation Report

Global Id: T0608100028
Action Type: RESPONSE
Date: 06/15/2016
Action: Electronic Reporting Submittal Due

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 06/14/2016
Action: Staff Letter - #20160614

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 03/17/2016
Action: Email Correspondence - #20160317

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 09/16/2011
Action: Staff Letter - #20110916

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 08/11/2015
Action: Staff Letter - #20150811

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 11/16/2015
Action: Staff Letter - #20151116

Global Id: T0608100028
Action Type: RESPONSE
Date: 12/01/2009
Action: Soil and Water Investigation Report

Global Id: T0608100028
Action Type: RESPONSE
Date: 11/15/2011
Action: Monitoring Report - Semi-Annually

DRAFT

ARCO #0306 (Continued) **S101438021**

Global Id: T0608100028
Action Type: RESPONSE
Date: 05/15/2013
Action: Monitoring Report - Annually

Global Id: T0608100028
Action Type: RESPONSE
Date: 09/12/2012
Action: Pilot Study/ Treatability Report

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 05/13/2009
Action: Staff Letter - #20090513

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 04/08/2015
Action: Email Correspondence - #20150408

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 03/05/2015
Action: Verbal Enforcement

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 07/02/2009
Action: Staff Letter - #20090702

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 07/23/2013
Action: Staff Letter - #20130723

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 09/15/2016
Action: Technical Correspondence / Assistance / Other - #20160915

Global Id: T0608100028
Action Type: RESPONSE
Date: 05/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 05/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 05/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE

DRAFT

ARCO #0306 (Continued) **S101438021**

Date: 05/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 08/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 08/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 04/28/2013
Action: Corrective Action Plan / Remedial Action Plan - Regulator Responded

Global Id: T0608100028
Action Type: RESPONSE
Date: 09/23/2013
Action: Other Workplan - Regulator Responded

Global Id: T0608100028
Action Type: RESPONSE
Date: 01/30/2014
Action: Soil and Water Investigation Workplan - Addendum - Regulator Responded

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 12/22/2014
Action: Email Correspondence - #20141222

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 03/25/2014
Action: Staff Letter - #20140325

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 12/22/2014
Action: Staff Letter - #20141222

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 12/21/2015
Action: Email Correspondence - #20151221

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 04/28/2016
Action: Site Visit / Inspection / Sampling - #20160428

Global Id: T0608100028
Action Type: RESPONSE
Date: 01/09/2012
Action: Pilot Study / Treatability Workplan

DRAFT

ARCO #0306 (Continued) **S101438021**

Global Id: T0608100028
Action Type: RESPONSE
Date: 05/15/2012
Action: Monitoring Report - Semi-Annually

Global Id: T0608100028
Action Type: RESPONSE
Date: 08/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 11/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 11/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 12/19/2013
Action: Correspondence

Global Id: T0608100028
Action Type: RESPONSE
Date: 12/19/2013
Action: Electronic Reporting Submittal Due

Global Id: T0608100028
Action Type: RESPONSE
Date: 05/29/2014
Action: Soil and Water Investigation Workplan - Addendum - Regulator Responded

Global Id: T0608100028
Action Type: RESPONSE
Date: 04/22/2016
Action: Soil and Water Investigation Workplan - Regulator Responded

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 06/25/2014
Action: Technical Correspondence / Assistance / Other - #20140625

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 01/05/2015
Action: Notice of Violation - #20150105

Global Id: T0608100028
Action Type: ENFORCEMENT
Date: 10/13/2010
Action: Staff Letter - #20101013

Global Id: T0608100028
Action Type: RESPONSE

DRAFT

ARCO #0306 (Continued) **S101438021**

Date: 05/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608100028
Action Type: RESPONSE
Date: 01/06/2012
Action: Soil Vapor Intrusion Investigation Report

Global Id: T0608100028
Action Type: RESPONSE
Date: 05/15/2014
Action: Monitoring Report - Annually

Global Id: T0608100028
Action Type: RESPONSE
Date: 05/15/2015
Action: Monitoring Report - Annually

Global Id: T0608100028
Action Type: REMEDIATION
Date: 11/18/1991
Action: Pump & Treat (P&T) Groundwater

Global Id: T0608100028
Action Type: REMEDIATION
Date: 12/12/1994
Action: Free Product Removal

Global Id: T0608100028
Action Type: REMEDIATION
Date: 11/01/1990
Action: Excavation

Global Id: T0608100028
Action Type: REMEDIATION
Date: 10/28/2000
Action: Other (Use Description Field)

Global Id: T0608100028
Action Type: REMEDIATION
Date: 05/05/2003
Action: Excavation

Global Id: T0608100028
Action Type: REMEDIATION
Date: 09/12/1990
Action: Pump & Treat (P&T) Groundwater

Global Id: T0608100028
Action Type: REMEDIATION
Date: 06/15/1993
Action: Soil Vapor Extraction (SVE)

Global Id: T0608100028
Action Type: REMEDIATION
Date: 12/13/1994
Action: Soil Vapor Extraction (SVE)

DRAFT

ARCO #0306 (Continued) **S101438021**

Global Id: T0608100028
Action Type: REMEDIATION
Date: 08/07/2012
Action: Soil Vapor Extraction (SVE)

Global Id: T0608100028
Action Type: REMEDIATION
Date: 08/15/1990
Action: Excavation

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330019
Facility Status: 7- Remedial Action Underway
Global ID: T0608100028
APN Number: 053162150
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

SWEEPS UST:
Status: Not reported
Comp Number: 330073
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330073-000005
Tank Status: Not reported
Capacity: 6000
Active Date: Not reported
Tank Use: M.V. FUEL
STG: PRODUCT
Content: LEADED
Number Of Tanks: 3

Status: Not reported
Comp Number: 330073
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330073-000006
Tank Status: Not reported
Capacity: 6000
Active Date: Not reported
Tank Use: M.V. FUEL
STG: PRODUCT
Content: REG UNLEADED
Number Of Tanks: Not reported

Status: Not reported

DRAFT

ARCO #0306 (Continued) **S101438021**

Comp Number: 330073
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330073-000007
Tank Status: Not reported
Capacity: 6000
Active Date: Not reported
Tank Use: M.V. FUEL
STG: PRODUCT
Content: REG UNLEADED
Number Of Tanks: Not reported

Status: Active
Comp Number: 330073
Number: 1
Board Of Equalization: Not reported
Referral Date: 05-18-94
Action Date: 05-18-94
Created Date: 10-13-88
Owner Tank Id: 1
SWRCB Tank Id: 41-000-330073-000001
Tank Status: A
Capacity: 10000
Active Date: 04-07-94
Tank Use: M.V. FUEL
STG: P
Content: LEADED
Number Of Tanks: 4

Status: Active
Comp Number: 330073
Number: 1
Board Of Equalization: Not reported
Referral Date: 05-18-94
Action Date: 05-18-94
Created Date: 10-13-88
Owner Tank Id: 2
SWRCB Tank Id: 41-000-330073-000002
Tank Status: A
Capacity: 10000
Active Date: 04-07-94
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: Not reported

Status: Active
Comp Number: 330073
Number: 1
Board Of Equalization: Not reported
Referral Date: 05-18-94
Action Date: 05-18-94
Created Date: 10-13-88

DRAFT

ARCO #0306 (Continued) **S101438021**

Owner Tank Id: 3
SWRCB Tank Id: 41-000-330073-000003
Tank Status: A
Capacity: 10000
Active Date: 04-07-94
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: Not reported

Status: Active
Comp Number: 330073
Number: 1
Board Of Equalization: Not reported
Referral Date: 05-18-94
Action Date: 05-18-94
Created Date: 10-13-88
Owner Tank Id: 4
SWRCB Tank Id: 41-000-330073-000004
Tank Status: A
Capacity: 10000
Active Date: 04-07-94
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: Not reported

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0029

V148 **ARCO 00306** **UST** **U004262408**
East **1700 MIDDLEFIELD RD** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.208 mi.
1096 ft. **Site 6 of 7 in cluster V**

Relative:
Higher

Actual:
16 ft.

UST:
Facility ID: 41-000-017314
Permitting Agency: San Mateo County Environmental Health
Latitude: 37.481861
Longitude: -122.221474

V149 **VEGA ARCO AM/PM** **HIST UST** **U001594569**
East **1700 MIDDLEFIELD ROAD** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.208 mi.
1096 ft. **Site 7 of 7 in cluster V**

Relative:
Higher

Actual:
16 ft.

HIST UST:
File Number: 0002BBD9
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002BBD9.pdf
Region: STATE
Facility ID: 00000026907

DRAFT

VEGA ARCO AM/PM (Continued) **U001594569**

Facility Type:	Gas Station
Other Type:	Not reported
Contact Name:	Not reported
Telephone:	0000000000
Owner Name:	ARCO PETROLEUM PRODUCTS CO.
Owner Address:	515 SOUTH FLOWER STREET
Owner City,St,Zip:	LOS ANGELES, CA 90071
Total Tanks:	0003
Tank Num:	001
Container Num:	0000000001
Year Installed:	1969
Tank Capacity:	00006000
Tank Used for:	PRODUCT
Type of Fuel:	06
Container Construction Thickness:	0000240
Leak Detection:	Stock Inventor, 10
Tank Num:	001
Container Num:	0000000001
Year Installed:	1969
Tank Capacity:	00006000
Tank Used for:	PRODUCT
Type of Fuel:	06
Container Construction Thickness:	0000240
Leak Detection:	Stock Inventor, 10
Tank Num:	002
Container Num:	0000000002
Year Installed:	1969
Tank Capacity:	00006000
Tank Used for:	PRODUCT
Type of Fuel:	06
Container Construction Thickness:	0000240
Leak Detection:	Stock Inventor, 10
Tank Num:	002
Container Num:	0000000002
Year Installed:	1969
Tank Capacity:	00006000
Tank Used for:	PRODUCT
Type of Fuel:	06
Container Construction Thickness:	0000240
Leak Detection:	Stock Inventor, 10
Tank Num:	003
Container Num:	0000000003
Year Installed:	1969
Tank Capacity:	00006000
Tank Used for:	PRODUCT
Type of Fuel:	06
Container Construction Thickness:	0000240
Leak Detection:	Stock Inventor, 10
Tank Num:	003
Container Num:	0000000003
Year Installed:	1969

DRAFT

VEGA ARCO AM/PM (Continued) **U001594569**

Tank Capacity: 00006000
Tank Used for: PRODUCT
Type of Fuel: 06
Container Construction Thickness: 0000240
Leak Detection: Stock Inventor, 10

Click here for Geo Tracker PDF:

U150 **AT&T CALIFORNIA - P3056** **UST** **U004262371**
WNW **1121 JEFFERSON AVE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.209 mi.
1102 ft. **Site 5 of 7 in cluster U**

Relative:
Higher

Actual:
17 ft.

UST:
Facility ID: 41-000-005130
Permitting Agency: San Mateo County Environmental Health
Latitude: 37.483184
Longitude: -122.229796

U151 **PACIFIC BELL** **RCRA-SQG** **1000251154**
WNW **1121 JEFFERSON AVENUE** **LUST** **CAT080019862**
1/8-1/4 **REDWOOD CITY, CA 94063** **SWEEPS UST**
0.209 mi. **HIST UST**
1102 ft. **Site 6 of 7 in cluster U** **CA FID UST**
FINDS
Relative: **ECHO**
Higher **San Mateo Co. BI**
EMI
Actual: **HIST CORTESE**
17 ft.

RCRA-SQG:
Date form received by agency: 09/01/1996
Facility name: PACIFIC BELL
Facility address: 1121 JEFFERSON AVENUE
REDWOOD CITY, CA 94063
EPA ID: CAT080019862
Mailing address: 2 NORTH SECOND ST ROOM 1125
SAN JOSE, CA 95113
Contact: Not reported
Contact address: Not reported
Not reported
Contact country: US
Contact telephone: Not reported
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: THE PACIFIC TELEPHONE AND TELEGRAPH CO
Owner/operator address: NOT REQUIRED

DRAFT

PACIFIC BELL (Continued) **1000251154**

NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 02/19/1992
Site name: PACIFIC BELL/ L. MONTANO
Classification: Large Quantity Generator

Date form received by agency: 01/19/1981
Site name: PACIFIC BELL
Classification: Large Quantity Generator

Violation Status: No violations found

LUST:
Region: STATE
Global Id: T0608100374
Latitude: 37.483307
Longitude: -122.2297754
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 09/17/2001
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP

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PACIFIC BELL (Continued) **1000251154**

RB Case Number: 41-0742
LOC Case Number: 330069
File Location: Local Agency
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608100374
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608100374
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100374
Status: Completed - Case Closed
Status Date: 09/17/2001

Global Id: T0608100374
Status: Open - Case Begin Date
Status Date: 05/15/1990

Regulatory Activities:
Global Id: T0608100374
Action Type: Other
Date: 05/15/1990
Action: Leak Reported

Global Id: T0608100374
Action Type: ENFORCEMENT
Date: 06/08/1990
Action: Notice of Responsibility - #1

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330069
How Discovered: OM
Leak Cause: Unknown

DRAFT

PACIFIC BELL (Continued) **1000251154**

Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330069
Facility Status: 9- Case Closed
Global ID: T06081100374
APN Number: Not reported
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

SWEEPS UST:
Status: Active
Comp Number: 330048
Number: 1
Board Of Equalization: 44-001027
Referral Date: 04-07-94
Action Date: 04-07-94
Created Date: 10-13-88
Owner Tank Id: 91
SWRCB Tank Id: 41-000-330048-000001
Tank Status: A
Capacity: 4000
Active Date: 04-07-94
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: 1

HIST UST:
File Number: 0002C127
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002C127.pdf
Region: STATE
Facility ID: 00000036934
Facility Type: Other
Other Type: SIC 4800
Contact Name: E.J. KOEHLER
Telephone: 4155426758
Owner Name: PACIFIC BELL
Owner Address: 370 THIRD STREET
Owner City,St,Zip: SAN FRANCISCO, CA 94107
Total Tanks: 0001

Tank Num: 001
Container Num: D-68-3K
Year Installed: 1968
Tank Capacity: 00003000
Tank Used for: PRODUCT

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PACIFIC BELL (Continued) **1000251154**

Type of Fuel: DIESEL
Container Construction Thickness: Not reported
Leak Detection: Visual

Tank Num: 002
Container Num: 1
Year Installed: 1968
Tank Capacity: 00003000
Tank Used for: PRODUCT
Type of Fuel: DIESEL
Container Construction Thickness: Not reported
Leak Detection: None

Click here for Geo Tracker PDF:

CA FID UST:
Facility ID: 41000380
Regulated By: UTNKA
Regulated ID: 080019
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: Not reported
Mail To: Not reported
Mailing Address: 2600 CAMINO RAMON
Mailing Address 2: Not reported
Mailing City,St,Zip: REDWOOD CITY 94063
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

FINDS:

Registry ID: 110055758933

Environmental Interest/Information System
STATE MASTER

Registry ID: 110002948767

Environmental Interest/Information System
AIR EMISSIONS CLASSIFICATION UNKNOWN

California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and

DRAFT

PACIFIC BELL (Continued) **1000251154**

corrective action activities required under RCRA.

STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000251154
Registry ID:	110002948767
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110002948767

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0005130
Prog Element Code:	STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id:	PR0003770
Description:	STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status:	ACTIVE

Region:	SAN MATEO
Facility ID:	FA0005130
Prog Element Code:	2352
Record Id:	PR0079837
Description:	TIER I: TANK STOR CAP =>1,320 & <5,000 GAL
Facility Status:	ACTIVE

Region:	SAN MATEO
Facility ID:	FA0005130
Prog Element Code:	UNDERGROUND TANK - GENERAL
Record Id:	PR0022385
Description:	UNDERGROUND TANK - GENERAL
Facility Status:	ACTIVE

Region:	SAN MATEO
Facility ID:	FA0005130
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0026727
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

EMI:

Year:	2002
County Code:	41
Air Basin:	SF
Facility ID:	13509
Air District Name:	BA
SIC Code:	4813
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0

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PACIFIC BELL (Continued) **1000251154**

SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2003
County Code:	41
Air Basin:	SF
Facility ID:	13509
Air District Name:	BA
SIC Code:	4813
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2004
County Code:	41
Air Basin:	SF
Facility ID:	13509
Air District Name:	BA
SIC Code:	4813
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.022
Reactive Organic Gases Tons/Yr:	0.0184074
Carbon Monoxide Emissions Tons/Yr:	0.061
NOX - Oxides of Nitrogen Tons/Yr:	0.281
SOX - Oxides of Sulphur Tons/Yr:	0.004
Particulate Matter Tons/Yr:	0.02
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.01952

Year:	2005
County Code:	41
Air Basin:	SF
Facility ID:	13509
Air District Name:	BA
SIC Code:	4813
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.022
Reactive Organic Gases Tons/Yr:	.0184074
Carbon Monoxide Emissions Tons/Yr:	.061
NOX - Oxides of Nitrogen Tons/Yr:	.281
SOX - Oxides of Sulphur Tons/Yr:	.004
Particulate Matter Tons/Yr:	.02
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.01952

Year:	2006
County Code:	41

DRAFT

PACIFIC BELL (Continued) **1000251154**

Air Basin:	SF
Facility ID:	13509
Air District Name:	BA
SIC Code:	4813
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.003
Reactive Organic Gases Tons/Yr:	.0025101
Carbon Monoxide Emissions Tons/Yr:	.008
NOX - Oxides of Nitrogen Tons/Yr:	.035
SOX - Oxides of Sulphur Tons/Yr:	.001
Particulate Matter Tons/Yr:	.002
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.001952

Year:	2007
County Code:	41
Air Basin:	SF
Facility ID:	13509
Air District Name:	BA
SIC Code:	4813
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.003
Reactive Organic Gases Tons/Yr:	.0025101
Carbon Monoxide Emissions Tons/Yr:	.008
NOX - Oxides of Nitrogen Tons/Yr:	.035
SOX - Oxides of Sulphur Tons/Yr:	.001
Particulate Matter Tons/Yr:	.002
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.001952

Year:	2008
County Code:	41
Air Basin:	SF
Facility ID:	13509
Air District Name:	BA
SIC Code:	4813
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.012
Reactive Organic Gases Tons/Yr:	.0100404
Carbon Monoxide Emissions Tons/Yr:	.032
NOX - Oxides of Nitrogen Tons/Yr:	.149
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	.011
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.010736

Year:	2009
County Code:	41
Air Basin:	SF
Facility ID:	13509
Air District Name:	BA
SIC Code:	4813
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported

DRAFT

PACIFIC BELL (Continued) **1000251154**

Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	8.9999999999999993E-3
Reactive Organic Gases Tons/Yr:	7.5303000000000002E-3
Carbon Monoxide Emissions Tons/Yr:	2.8000000000000001E-2
NOX - Oxides of Nitrogen Tons/Yr:	0.128
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	9.2213114754098307E-3
Part. Matter 10 Micrometers and Smllr Tons/Yr:	8.9999999999999993E-3

Year:	2010
County Code:	41
Air Basin:	SF
Facility ID:	13509
Air District Name:	BA
SIC Code:	4813
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	8.9999999999999993E-3
Reactive Organic Gases Tons/Yr:	7.5303000000000002E-3
Carbon Monoxide Emissions Tons/Yr:	2.8000000000000001E-2
NOX - Oxides of Nitrogen Tons/Yr:	0.128
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	9.2213114754098307E-3
Part. Matter 10 Micrometers and Smllr Tons/Yr:	8.9999999999999993E-3

Year:	2011
County Code:	41
Air Basin:	SF
Facility ID:	13509
Air District Name:	BA
SIC Code:	4813
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.009
Reactive Organic Gases Tons/Yr:	0.0075303
Carbon Monoxide Emissions Tons/Yr:	0.028
NOX - Oxides of Nitrogen Tons/Yr:	0.128
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2012
County Code:	41
Air Basin:	SF
Facility ID:	13509
Air District Name:	BA
SIC Code:	4813
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.009
Reactive Organic Gases Tons/Yr:	0.0075303
Carbon Monoxide Emissions Tons/Yr:	0.028
NOX - Oxides of Nitrogen Tons/Yr:	0.129
SOX - Oxides of Sulphur Tons/Yr:	0

DRAFT

PACIFIC BELL (Continued) **1000251154**

Particulate Matter Tons/Yr: 0.0092213114754
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0.009

Year: 2013
County Code: 41
Air Basin: SF
Facility ID: 13509
Air District Name: BA
SIC Code: 4813
Air District Name: BAY AREA AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0.009
Reactive Organic Gases Tons/Yr: 0.0075303
Carbon Monoxide Emissions Tons/Yr: 0.028
NOX - Oxides of Nitrogen Tons/Yr: 0.129
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0.01
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0.009

Year: 2014
County Code: 41
Air Basin: SF
Facility ID: 13509
Air District Name: BA
SIC Code: 4813
Air District Name: BAY AREA AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0.014490405
Reactive Organic Gases Tons/Yr: 0
Carbon Monoxide Emissions Tons/Yr: 0.043757989
NOX - Oxides of Nitrogen Tons/Yr: 0.201277428
SOX - Oxides of Sulphur Tons/Yr: 9.3308e-005
Particulate Matter Tons/Yr: 0.014983447
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0.014384109

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0393

U152 **AT&T CALIFORNIA - P3056** **AST** **A100417273**
WNW **1121 JEFFERSON AVE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.209 mi.
1102 ft. **Site 7 of 7 in cluster U**

Relative:
Higher

Actual:
17 ft.

AST:
Certified Unified Program Agencies: Not reported
Owner: Pacific Bell Telephone Company dba AT&T California
Total Gallons: Not reported
CERSID: 10063756
Facility ID: 41-000-005130
Business Name: PACIFIC BELL TELEPHONE COMPANY dba AT&T CALIFORNIA
Phone: 925-998-5876

DRAFT

AT&T CALIFORNIA - P3056 (Continued) **A100417273**

Fax:	925-973-0584
Mailing Address:	308 S. Akard Street, Room 1708
Mailing Address City:	Dallas
Mailing Address State:	TX
Mailing Address Zip Code:	75202
Operator Name:	AT&T California
Operator Phone:	925-998-5876
Owner Phone:	214-464-2626
Owner Mail Address:	308 S. Akard Street, Room 1708
Owner State:	TX
Owner Zip Code:	75202
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	CAT080019862

Q153 **BENS AUTO TECH** **San Mateo Co. BI** **S113758325**
SSE **413 LATHROP** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.211 mi.
1116 ft. **Site 5 of 6 in cluster Q**

Relative:
Higher

Actual:
20 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0034872
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0052888
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0034872
Prog Element Code:	STORES MV FUELS OR WASTE ONLY
Record Id:	PR0052887
Description:	STORES MV FUELS OR WASTE ONLY
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0034872
Prog Element Code:	1805
Record Id:	PR0054131
Description:	TIRE GENERATOR - SMALL QUANTITY
Facility Status:	INACTIVE

DRAFT

Q154 **BEN'S AUTO TECH** **San Mateo Co. BI** **S113756795**
SSE **413 LATHROP** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.211 mi.
1116 ft. **Site 6 of 6 in cluster Q**

Relative:
Higher

Actual:
20 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0022653
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0025146
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0022653
Prog Element Code:	STORES MV FUELS OR WASTE ONLY
Record Id:	PR0025147
Description:	STORES MV FUELS OR WASTE ONLY
Facility Status:	INACTIVE

W155 **APS PHOTO CTRS** **San Mateo Co. BI** **S113755880**
WNW **1201 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94064**
0.212 mi.
1118 ft. **Site 1 of 7 in cluster W**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0012981
Prog Element Code:	COND EXEMPT - SPECIAL WASTES
Record Id:	PR0029905
Description:	COND EXEMPT - SPECIAL WASTES
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0012981
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0011319
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

W156 **HUMBLE OIL, FORMER (EXXON#78476)** **LUST** **S104583555**
WNW **1201 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.212 mi.
1118 ft. **Site 2 of 7 in cluster W**

Relative:
Higher

Actual:
18 ft.

LUST:

Region:	STATE
Global Id:	T0608100702
Latitude:	37.482799617
Longitude:	-122.230157233
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	11/18/2005
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM

DRAFT

HUMBLE OIL, FORMER (EXXON#78476) (Continued) **S104583555**

Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0742
LOC Case Number:	330157
File Location:	Local Agency Warehouse
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Not reported
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100702
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100702
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100702
Status:	Completed - Case Closed
Status Date:	11/18/2005

Global Id:	T0608100702
Status:	Open - Case Begin Date
Status Date:	03/26/1993

Global Id:	T0608100702
Status:	Open - Verification Monitoring
Status Date:	03/26/1993

Regulatory Activities:

Global Id:	T0608100702
Action Type:	Other
Date:	03/26/1993
Action:	Leak Reported

Global Id:	T0608100702
Action Type:	ENFORCEMENT
Date:	05/27/1998
Action:	Notice of Responsibility - #1

Global Id:	T0608100702
Action Type:	ENFORCEMENT
Date:	11/18/2005
Action:	Closure/No Further Action Letter - #20051118

DRAFT

HUMBLE OIL, FORMER (EXXON#78476) (Continued) **S104583555**

LUST REG 2:
- Region: 2
- Facility Id: Not reported
- Facility Status: Post remedial action monitoring
- Case Number: 330157
- How Discovered: OM
- Leak Cause: Unknown
- Leak Source: Unknown
- Date Leak Confirmed: Not reported
- Oversight Program: LUST
- Prelim. Site Assesment Wokplan Submitted: Not reported
- Preliminary Site Assesment Began: Not reported
- Pollution Characterization Began: Not reported
- Pollution Remediation Plan Submitted: Not reported
- Date Remediation Action Underway: Not reported
- Date Post Remedial Action Monitoring Began: 1/1/1965

SAN MATEO CO. LUST:
- Region: SAN MATEO
- Facility ID: 330157
- Facility Status: 9- Case Closed
- Global ID: T0608100702
- APN Number: 053172020
- Case Type: SAN MATEO CO. LUST
- EDR Link ID: SAN MATEO CO. LUST

T157 **U S AUTO REPAIR** **San Mateo Co. BI** **S113756003**
SE **230 PINE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.212 mi.
1120 ft. **Site 8 of 12 in cluster T**

Relative: Higher

Actual: 19 ft.

San Mateo Co. BI:
- Region: SAN MATEO
- Facility ID: FA0014423
- Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
- Record Id: PR0011343
- Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
- Facility Status: INACTIVE

- Region: SAN MATEO
- Facility ID: FA0014423
- Prog Element Code: STORES HAZ MAT <219GAL,1,999LB, 879FT3
- Record Id: PR0003988
- Description: STORES HAZ MAT <219GAL,1,999LB, 879CF
- Facility Status: INACTIVE

DRAFT

T158 **AMERICAN ORNAMENTAL IRON WORKS INC** **San Mateo Co. BI** **S113756009**
SE **220 PINE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.213 mi.
1125 ft. **Site 9 of 12 in cluster T**

Relative:
Higher

Actual:
19 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0014452
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0028147
Description:	GENERATES <27 GAL/YEAR
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0014452
Prog Element Code:	STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id:	PR0003989
Description:	STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status:	INACTIVE

X159 **REDWOOD CITY POST OFFICE** **San Mateo Co. BI** **S113755470**
NNW **855 JEFFERSON** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.228 mi.
1203 ft. **Site 1 of 4 in cluster X**

Relative:
Higher

Actual:
13 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0009239
Prog Element Code:	UNDERGROUND TANK - GENERAL
Record Id:	PR0022450
Description:	UNDERGROUND TANK - GENERAL
Facility Status:	INACTIVE

X160 **REDWOOD CITY POST OFFICE** **LUST** **S103892994**
NNW **855 JEFFERSON AVE** **SWEEPS UST** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063** **HIST CORTESE**
0.228 mi.
1203 ft. **Site 2 of 4 in cluster X**

Relative:
Higher

Actual:
13 ft.

LUST:

Region:	STATE
Global Id:	T0608100556
Latitude:	37.485506
Longitude:	-122.227647
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	04/22/1996
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0582
LOC Case Number:	330070
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

DRAFT

REDWOOD CITY POST OFFICE (Continued) **S103892994**

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100556
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100556
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100556
Status:	Completed - Case Closed
Status Date:	04/22/1996

Global Id:	T0608100556
Status:	Open - Case Begin Date
Status Date:	04/02/1990

Regulatory Activities:

Global Id:	T0608100556
Action Type:	Other
Date:	04/02/1990
Action:	Leak Discovery

Global Id:	T0608100556
Action Type:	Other
Date:	04/02/1990
Action:	Leak Reported

Global Id:	T0608100556
Action Type:	ENFORCEMENT
Date:	02/27/1992
Action:	Notice of Responsibility - #1

Global Id:	T0608100556
Action Type:	REMEDIATION
Date:	02/09/1995
Action:	Excavation

SAN MATEO CO. LUST:

Region:	SAN MATEO
Facility ID:	330070

DRAFT

REDWOOD CITY POST OFFICE (Continued) **S103892994**

Facility Status: 9- Case Closed
Global ID: T0608100556
APN Number: 053131190
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

SWEEPS UST:
Status: Not reported
Comp Number: 330152
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330152-000001
Tank Status: Not reported
Capacity: 15000
Active Date: Not reported
Tank Use: OIL
STG: PRODUCT
Content: BUNKER C BOI
Number Of Tanks: 1

Status: Active
Comp Number: 330152
Number: 7
Board Of Equalization: Not reported
Referral Date: 04-07-94
Action Date: 04-07-94
Created Date: 06-19-90
Owner Tank Id: Not reported
SWRCB Tank Id: Not reported
Tank Status: Not reported
Capacity: Not reported
Active Date: Not reported
Tank Use: Not reported
STG: Not reported
Content: Not reported
Number Of Tanks: Not reported

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0582

DRAFT

X161 **U.S. POSTAL SERVICE** **LUST** **S102439430**
NNW **855 JEFFERSON** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.228 mi.
1203 ft. **Site 3 of 4 in cluster X**

Relative:
Higher

Actual:
13 ft.

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330070
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

W162 **AT & T MOBILITY-EL CAMINO/JEFFERSON** **San Mateo Co. BI** **S113758372**
West **1200 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.228 mi.
1203 ft. **Site 3 of 7 in cluster W**

Relative:
Higher

Actual:
18 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0036936
Prog Element Code: STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id: PR0053820
Description: STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status: INACTIVE

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163 **SCHROEDER SHEET METAL INC** **San Mateo Co. BI** **S113756949**
NNE **640 MAPLE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.229 mi.
1207 ft.

Relative:
Lower

Actual:
12 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0023571
Prog Element Code: UNDERGROUND TANK - GENERAL
Record Id: PR0027288
Description: UNDERGROUND TANK - GENERAL
Facility Status: INACTIVE

DRAFT

Y164 **ASAP TIRES, LLC** **San Mateo Co. BI** **S119781717**
SSE **1823 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.230 mi.
1213 ft. **Site 1 of 2 in cluster Y**

Relative:
Higher

Actual:
20 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0057199
Prog Element Code:	LESS THAN 500 TIRES
Record Id:	PR0079361
Description:	LESS THAN 500 TIRES
Facility Status:	ACTIVE

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165 **BIZZARROS RESTORATIVE** **San Mateo Co. BI** **S113755800**
North **847 MAIN** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.230 mi.
1214 ft.

Relative:
Lower

Actual:
12 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0012388
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0011288
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0012388
Prog Element Code:	STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id:	PR0004008
Description:	STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status:	INACTIVE

Y166 **THE ORIGINAL UNDERWHERE CO** **San Mateo Co. BI** **S113757068**
SSE **1802 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.233 mi.
1231 ft. **Site 2 of 2 in cluster Y**

Relative:
Higher

Actual:
20 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0024114
Prog Element Code:	GENERATES <27 GAL/YEAR
Record Id:	PR0028479
Description:	GENERATES <27 GAL/YEAR
Facility Status:	INACTIVE

DRAFT

W167 **LUCKY STORE #15** **SLIC** **S106163424**
WNW **UNKNOWN JEFFERSON AVE & EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94062**
0.234 mi.
1237 ft. **Site 4 of 7 in cluster W**

Relative:
Higher

Actual:
17 ft.

SLIC REG 2:
Region: 2
Facility ID: 41S0055
Facility Status: Remedial action (cleanup) Underway
Date Closed: Not reported
Local Case #: Not reported
How Discovered: Tank Closure
Leak Cause: UNK
Leak Source: UNK
Date Confirmed: Not reported
Date Prelim Site Assmnt Workplan Submitted: Not reported
Date Preliminary Site Assessment Began: Not reported
Date Pollution Characterization Began: Not reported
Date Remediation Plan Submitted: Not reported
Date Remedial Action Underway: 12/7/1992
Date Post Remedial Action Monitoring Began: Not reported

Z168 **BROADWAY PARKING GARAGE** **San Mateo Co. BI** **S113757941**
NW **915 MIDDLEFIELD** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.236 mi.
1245 ft. **Site 1 of 4 in cluster Z**

Relative:
Higher

Actual:
13 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0028196
Prog Element Code: UNDERGROUND TANK - GENERAL
Record Id: PR0046586
Description: UNDERGROUND TANK - GENERAL
Facility Status: INACTIVE

T169 **ACTERON METAL FINISHERS** **San Mateo Co. BI** **S113756407**
SE **851 SHASTA** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.237 mi.
1254 ft. **Site 10 of 12 in cluster T**

Relative:
Higher

Actual:
20 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0017430
Prog Element Code: COND EXEMPT - SQ TREATMENT
Record Id: PR0029999
Description: COND EXEMPT - SQ TREATMENT
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0017430
Prog Element Code: GEN <1 TONS HAZ WASTE/YR
Record Id: PR0011101
Description: GEN <1 TONS HAZ WASTE/YR
Facility Status: INACTIVE

DRAFT

ACTERON METAL FINISHERS (Continued) **S113756407**

Region:	SAN MATEO
Facility ID:	FA0017430
Prog Element Code:	STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id:	PR0003743
Description:	STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status:	INACTIVE

T170 **ACTERON CORP** **RCRA-SQG** **1000217250**
SE **851 SHASTA STREET** **HIST UST** **CAD981458870**
1/8-1/4 **REDWOOD CITY, CA 94063** **FINDS**
0.237 mi. **ECHO**
1254 ft. **Site 11 of 12 in cluster T**

Relative:
Higher

Actual:
20 ft.

RCRA-SQG:

Date form received by agency:	03/04/1999
Facility name:	ACTERON CORP
Site name:	ACTERON CORPORATION
Facility address:	851 SHASTA STREET REDWOOD CITY, CA 94063
EPA ID:	CAD981458870
Mailing address:	1000 COMMERCIAL STREET SAN CARLOS, CA 94070
Contact:	PATRICK BURT
Contact address:	Not reported Not reported
Contact country:	US
Contact telephone:	(650) 596-8000
Telephone ext.:	14
Contact email:	Not reported
EPA Region:	09
Land type:	Facility is not located on Indian land. Additional information is not known.
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	VICKERS MANAGEMENT LTD
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported

DRAFT

ACTERON CORP (Continued) **1000217250**

Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 09/01/1996
Site name: ACTERON CORP
Classification: Small Quantity Generator

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 10/17/1994
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State Contractor/Grantee

HIST UST:
File Number: 0002BBD5
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002BBD5.pdf
Region: STATE
Facility ID: 00000054752
Facility Type: Other
Other Type: ELECTROPLATING
Contact Name: PATRICK BURT
Telephone: 4153695217
Owner Name: ASHCO
Owner Address: 10905 LAUREL AVE.
Owner City,St,Zip: SANTA FE SPRINGS, CA 90670
Total Tanks: 0007

Tank Num: 001
Container Num: 01
Year Installed: 1984
Tank Capacity: 00000074
Tank Used for: WASTE
Type of Fuel: Not reported
Container Construction Thickness: 4
Leak Detection: Visual

DRAFT

ACTERON CORP (Continued) **1000217250**

Tank Num:	002
Container Num:	02
Year Installed:	1984
Tank Capacity:	00000074
Tank Used for:	WASTE
Type of Fuel:	Not reported
Container Construction Thickness:	4
Leak Detection:	Visual

Tank Num:	003
Container Num:	03
Year Installed:	Not reported
Tank Capacity:	00000028
Tank Used for:	WASTE
Type of Fuel:	Not reported
Container Construction Thickness:	4"
Leak Detection:	Visual

Tank Num:	004
Container Num:	04
Year Installed:	Not reported
Tank Capacity:	00000011
Tank Used for:	WASTE
Type of Fuel:	Not reported
Container Construction Thickness:	4"
Leak Detection:	Visual

Tank Num:	005
Container Num:	05
Year Installed:	Not reported
Tank Capacity:	00000705
Tank Used for:	WASTE
Type of Fuel:	Not reported
Container Construction Thickness:	4"
Leak Detection:	Visual

Tank Num:	006
Container Num:	06
Year Installed:	Not reported
Tank Capacity:	00000045
Tank Used for:	WASTE
Type of Fuel:	Not reported
Container Construction Thickness:	4"
Leak Detection:	Visual

Tank Num:	007
Container Num:	07
Year Installed:	Not reported
Tank Capacity:	00000200
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	Not reported
Leak Detection:	Visual

Click here for Geo Tracker PDF:

DRAFT

ACTERON CORP (Continued) **1000217250**

FINDS:

Registry ID: 110000784125

Environmental Interest/Information System

US EPA TRIS (Toxics Release Inventory System) contains information from facilities on the amounts of over 300 listed toxic chemicals that these facilities release directly to air, water, land, or that are transported off-site.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000217250
Registry ID:	110000784125
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110000784125

T171 **ACTERON CORP, FORMER** **LUST** **S103893081**
SE **851 SHASTA STREET** **HIST CORTESE** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.237 mi.
1254 ft. **Site 12 of 12 in cluster T**

Relative:
Higher

Actual:
20 ft.

LUST:

Region:	STATE
Global Id:	T0608187224
Latitude:	37.4791563193828
Longitude:	-122.222075813491
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	05/06/1998
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	Not reported
LOC Case Number:	339022
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	* Solvents
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608187224
Contact Type:	Local Agency Caseworker

DRAFT

ACTERON CORP, FORMER (Continued) **S103893081**

Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608187224
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608187224
Status: Completed - Case Closed
Status Date: 05/06/1998

Global Id: T0608187224
Status: Open - Case Begin Date
Status Date: 05/06/1998

Regulatory Activities:
Global Id: T0608187224
Action Type: ENFORCEMENT
Date: 05/07/1998
Action: Notice of Responsibility - #1

Global Id: T0608187224
Action Type: Other
Date: 04/02/1998
Action: Leak Reported

Global Id: T0608187224
Action Type: Other
Date: 04/02/1998
Action: Leak Discovery

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 339022
Facility Status: 9- Case Closed
Global ID: T0608187224
APN Number: 053194010
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA

DRAFT

ACTERON CORP, FORMER (Continued) **S103893081**

Reg Id: 41-1090

X172 **LE SUN INC** **San Mateo Co. BI** **S113755948**
NNW **846 JEFFERSON** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.238 mi.
1255 ft. **Site 4 of 4 in cluster X**

Relative:
Lower

Actual:
12 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0013635
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0024843
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: INACTIVE

W173 **DAVIES CHEVROLET** **LUST** **S104494000**
WNW **1101 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.243 mi.
1283 ft. **Site 5 of 7 in cluster W**

Relative:
Higher

Actual:
16 ft.

LUST:
Region: STATE
Global Id: T0608100786
Latitude: 37.483364
Longitude: -122.23031
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 06/02/2009
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Case Worker: DIB
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-0839
LOC Case Number: 330126
File Location: Not reported
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Diesel
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608100786
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608100786
Contact Type: Regional Board Caseworker
Contact Name: David Barr
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST., STE. 1400

DRAFT

DAVIES CHEVROLET (Continued) **S104494000**

City: OAKLAND
Email: dbarr@waterboards.ca.gov
Phone Number: Not reported

Status History:
Global Id: T0608100786
Status: Completed - Case Closed
Status Date: 06/02/2009

Global Id: T0608100786
Status: Open - Case Begin Date
Status Date: 08/10/1994

Global Id: T0608100786
Status: Open - Site Assessment
Status Date: 08/10/1994

Global Id: T0608100786
Status: Open - Site Assessment
Status Date: 03/25/1997

Regulatory Activities:
Global Id: T0608100786
Action Type: Other
Date: 09/28/1994
Action: Leak Discovery

Global Id: T0608100786
Action Type: Other
Date: 09/28/1994
Action: Leak Reported

Global Id: T0608100786
Action Type: Other
Date: 09/28/1994
Action: Leak Stopped

Global Id: T0608100786
Action Type: ENFORCEMENT
Date: 06/02/2009
Action: Closure/No Further Action Letter

LUST REG 2:
Region: 2
Facility Id: 41-0839
Facility Status: Pollution Characterization
Case Number: 330126
How Discovered: Tank Closure
Leak Cause: UNK
Leak Source: UNK
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: 8/10/1994
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: 3/25/1997

DRAFT

DAVIES CHEVROLET (Continued) **S104494000**

Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

W174 **PARK CHEVROLET** **San Mateo Co. BI** **S113756416**
WNW **1101 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.243 mi.
1283 ft. **Site 6 of 7 in cluster W**

Relative:
Higher

Actual:
16 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0017447
Prog Element Code: UNDERGROUND TANK - GENERAL
Record Id: PR0026858
Description: UNDERGROUND TANK - GENERAL
Facility Status: INACTIVE

W175 **THE HABIT BURGER GRILL** **San Mateo Co. BI** **S118188825**
WNW **1111 EL CAMINO REAL** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.244 mi.
1286 ft. **Site 7 of 7 in cluster W**

Relative:
Higher

Actual:
16 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0058494
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0081236
Description: STORES MV FUELS OR WASTE ONLY
Facility Status: ACTIVE

Z176 **CROSSING 900** **San Mateo Co. BI** **S117976179**
NW **900 MIDDLEFIELD** **N/A**
1/8-1/4 **REDWOOD CITY, CA 94063**
0.244 mi.
1290 ft. **Site 2 of 4 in cluster Z**

Relative:
Higher

Actual:
13 ft.

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0057839
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0080243
Description: STORES MV FUELS OR WASTE ONLY
Facility Status: ACTIVE

DRAFT

177
SE
1/8-1/4
0.249 mi.
1315 ft.

PRECISION AUTO REPAIR
110 PINE
REDWOOD CITY, CA 94063

San Mateo Co. BI **S113757616**
N/A

Relative:
Higher

Actual:
21 ft.

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0055477
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0076499
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	ACTIVE

Region:	SAN MATEO
Facility ID:	FA0027008
Prog Element Code:	BUSINESS PLAN - GENERAL
Record Id:	PR0071927
Description:	BUSINESS PLAN - GENERAL
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0027008
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0041670
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0027008
Prog Element Code:	LESS THAN 500 TIRES
Record Id:	PR0045563
Description:	LESS THAN 500 TIRES
Facility Status:	INACTIVE

Z178
NW
1/4-1/2
0.259 mi.
1367 ft.

REDWOOD CITY PARTNERS LLC
932 MIDDLEFIELD RD
REDWOOD CITY, CA 94063

LUST **S105030646**
HAZNET **N/A**

Site 3 of 4 in cluster Z

Relative:
Higher

Actual:
13 ft.

LUST REG 2:

Region:	2
Facility Id:	Not reported
Facility Status:	Pollution Characterization
Case Number:	330135
How Discovered:	OM
Leak Cause:	Unknown
Leak Source:	Unknown
Date Leak Confirmed:	Not reported
Oversight Program:	LUST
Prelim. Site Assesment Wokplan Submitted:	Not reported
Preliminary Site Assesment Began:	Not reported
Pollution Characterization Began:	1/1/1965
Pollution Remediation Plan Submitted:	Not reported
Date Remediation Action Underway:	Not reported
Date Post Remedial Action Monitoring Began:	Not reported

HAZNET:

DRAFT

REDWOOD CITY PARTNERS LLC (Continued) **S105030646**

envid:	S105030646
Year:	2013
GEPAID:	CAC002735327
Contact:	PETER MCINTYRE
Telephone:	9252858286
Mailing Name:	Not reported
Mailing Address:	12200 W. OLYMPIC BLVD.
Mailing City,St,Zip:	LOS ANGELES, CA 90064
Gen County:	San Mateo
TSD EPA ID:	CAD980884183
TSD County:	Sacramento
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.625
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Not reported

Z179 **CHEVRON 20-6318, FORMER** **LUST** **S110060610**
NW **932 MIDDLEFIELD** **HIST CORTESE** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.259 mi.
1367 ft. **Site 4 of 4 in cluster Z**

Relative:
Higher

Actual:
13 ft.

LUST:

Region:	STATE
Global Id:	T0608100861
Latitude:	37.4847429085957
Longitude:	-122.228500843048
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	02/20/2007
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0935
LOC Case Number:	330135
File Location:	Local Agency Warehouse
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100861
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100861
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board

DRAFT

CHEVRON 20-6318, FORMER (Continued) **S110060610**

Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100861
Status: Completed - Case Closed
Status Date: 02/20/2007

Global Id: T0608100861
Status: Open - Case Begin Date
Status Date: 06/21/1995

Global Id: T0608100861
Status: Open - Site Assessment
Status Date: 06/21/1995

Global Id: T0608100861
Status: Open - Verification Monitoring
Status Date: 10/30/2005

Regulatory Activities:
Global Id: T0608100861
Action Type: RESPONSE
Date: 08/27/2004
Action: Interim Remedial Action Report

Global Id: T0608100861
Action Type: RESPONSE
Date: 03/15/2005
Action: Interim Remedial Action Plan

Global Id: T0608100861
Action Type: RESPONSE
Date: 05/24/2004
Action: Soil and Water Investigation Workplan

Global Id: T0608100861
Action Type: RESPONSE
Date: 04/05/2006
Action: Soil and Water Investigation Report

Global Id: T0608100861
Action Type: RESPONSE
Date: 09/26/2006
Action: Unknown

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 02/20/2007
Action: Closure/No Further Action Letter - #20070220

Global Id: T0608100861
Action Type: ENFORCEMENT

DRAFT

CHEVRON 20-6318, FORMER (Continued) **S110060610**

Date: 04/15/2004
Action: Staff Letter - #20040415

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 11/26/2013
Action: Staff Letter - #20131126

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 12/05/2013
Action: Staff Letter - #20131205

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 12/05/2013
Action: Technical Correspondence / Assistance / Other - #20131205

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 11/26/2013
Action: Technical Correspondence / Assistance / Other - #20131126

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 12/05/2013
Action: Technical Correspondence / Assistance / Other - #20131205

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 11/27/2013
Action: Staff Letter - #20131127

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 12/05/2013
Action: Technical Correspondence / Assistance / Other - #20131205

Global Id: T0608100861
Action Type: Other
Date: 06/21/1995
Action: Leak Reported

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 08/17/1995
Action: Notice of Responsibility - #1

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 05/26/2004
Action: Staff Letter - #20040526

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 09/16/2003
Action: Staff Letter - #20030916

DRAFT

CHEVRON 20-6318, FORMER (Continued) **S110060610**

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 01/11/2006
Action: Staff Letter - #20060111

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 06/26/2006
Action: Staff Letter - #20060626

Global Id: T0608100861
Action Type: ENFORCEMENT
Date: 06/25/2003
Action: Staff Letter - #20030625

Global Id: T0608100861
Action Type: RESPONSE
Date: 12/03/2003
Action: Soil and Water Investigation Report

Global Id: T0608100861
Action Type: RESPONSE
Date: 08/01/2003
Action: Soil and Water Investigation Workplan

Global Id: T0608100861
Action Type: RESPONSE
Date: 04/15/2004
Action: Other Report / Document

Global Id: T0608100861
Action Type: RESPONSE
Date: 12/03/2003
Action: Soil and Water Investigation Report

Global Id: T0608100861
Action Type: RESPONSE
Date: 01/30/2014
Action: Tank Removal Report / UST Sampling Report

Global Id: T0608100861
Action Type: REMEDIATION
Date: 12/15/2003
Action: Pump & Treat (P&T) Groundwater

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330135
Facility Status: 9- Case Closed
Global ID: T0608100861
APN Number: 052363180
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST CORTESE:

DRAFT

CHEVRON 20-6318, FORMER (Continued) **S110060610**

Region:	CORTESE
Facility County Code:	41
Reg By:	LTNKA
Reg Id:	41-0935

AA180 **SHELL, FORMER (HARRY'S HOFBRAU)** **LUST** **S107138457**
SSE **1909 EL CAMINO REAL** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.291 mi.
1536 ft. **Site 1 of 2 in cluster AA**

Relative:
Higher

Actual:
22 ft.

LUST:

Region:	STATE
Global Id:	T0608160745
Latitude:	37.477291
Longitude:	-122.2226351
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	11/26/2012
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	Not reported
LOC Case Number:	330213
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Can be extracted from most recent report in Geotracker or at San Mateo County offices if submitted prior to 2005, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report.

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608160745
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608160745
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608160745
Status:	Completed - Case Closed
Status Date:	11/26/2012

DRAFT

SHELL, FORMER (HARRY'S HOFBRAU) (Continued) **S107138457**

Global Id: T0608160745
Status: Open - Case Begin Date
Status Date: 05/21/1999

Global Id: T0608160745
Status: Open - Site Assessment
Status Date: 04/19/2005

Global Id: T0608160745
Status: Open - Verification Monitoring
Status Date: 04/17/2006

Global Id: T0608160745
Status: Open - Verification Monitoring
Status Date: 12/22/2010

Regulatory Activities:
Global Id: T0608160745
Action Type: ENFORCEMENT
Date: 04/27/2012
Action: Notification - Fee Title Owners Notice - #20120427

Global Id: T0608160745
Action Type: ENFORCEMENT
Date: 05/29/2012
Action: Staff Letter - #20120529

Global Id: T0608160745
Action Type: ENFORCEMENT
Date: 10/28/2009
Action: Staff Letter - #20091028

Global Id: T0608160745
Action Type: RESPONSE
Date: 05/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0608160745
Action Type: RESPONSE
Date: 08/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608160745
Action Type: RESPONSE
Date: 11/15/2009
Action: Monitoring Report - Semi-Annually

Global Id: T0608160745
Action Type: RESPONSE
Date: 02/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0608160745
Action Type: RESPONSE
Date: 05/15/2010
Action: Monitoring Report - Semi-Annually

DRAFT

SHELL, FORMER (HARRY'S HOFBRAU) (Continued) **S107138457**

Global Id: T0608160745
Action Type: RESPONSE
Date: 09/01/2005
Action: Preliminary Site Assessment Workplan

Global Id: T0608160745
Action Type: RESPONSE
Date: 05/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0608160745
Action Type: RESPONSE
Date: 08/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608160745
Action Type: RESPONSE
Date: 11/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608160745
Action Type: RESPONSE
Date: 02/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0608160745
Action Type: RESPONSE
Date: 11/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0608160745
Action Type: RESPONSE
Date: 05/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608160745
Action Type: RESPONSE
Date: 02/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608160745
Action Type: ENFORCEMENT
Date: 04/19/2005
Action: Notice of Responsibility - #20050419

Global Id: T0608160745
Action Type: ENFORCEMENT
Date: 11/23/2005
Action: Staff Letter - #20051123

Global Id: T0608160745
Action Type: ENFORCEMENT
Date: 07/02/2009
Action: Staff Letter - #20090702

Global Id: T0608160745
Action Type: RESPONSE

DRAFT

SHELL, FORMER (HARRY'S HOFBRAU) (Continued) **S107138457**

Date: 08/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0608160745
Action Type: Other
Date: 03/07/2005
Action: Leak Reported

Global Id: T0608160745
Action Type: ENFORCEMENT
Date: 03/27/2012
Action: Staff Letter - #20130327

Global Id: T0608160745
Action Type: ENFORCEMENT
Date: 12/22/2010
Action: Staff Letter - #20101222

Global Id: T0608160745
Action Type: RESPONSE
Date: 11/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0608160745
Action Type: RESPONSE
Date: 11/15/2010
Action: Monitoring Report - Semi-Annually

Global Id: T0608160745
Action Type: RESPONSE
Date: 01/18/2006
Action: Soil and Water Investigation Report

Global Id: T0608160745
Action Type: ENFORCEMENT
Date: 11/15/2012
Action: State Water Board Closure Order - #20121115

Global Id: T0608160745
Action Type: RESPONSE
Date: 05/29/2012
Action: Well Destruction Report

Global Id: T0608160745
Action Type: RESPONSE
Date: 03/09/2010
Action: Request for Closure - Regulator Responded

Global Id: T0608160745
Action Type: RESPONSE
Date: 03/01/2011
Action: Other Report / Document - Regulator Responded

Global Id: T0608160745
Action Type: RESPONSE
Date: 11/23/2011
Action: Site Assessment Report

DRAFT

SHELL, FORMER (HARRY'S HOFBRAU) (Continued) **S107138457**

Global Id:	T0608160745
Action Type:	RESPONSE
Date:	11/15/2011
Action:	Monitoring Report - Semi-Annually
Global Id:	T0608160745
Action Type:	ENFORCEMENT
Date:	07/07/2011
Action:	Staff Letter - #20110707
Global Id:	T0608160745
Action Type:	Other
Date:	05/21/1999
Action:	Leak Discovery
Global Id:	T0608160745
Action Type:	RESPONSE
Date:	08/15/2007
Action:	Monitoring Report - Quarterly
Global Id:	T0608160745
Action Type:	RESPONSE
Date:	05/15/2011
Action:	Monitoring Report - Semi-Annually

SAN MATEO CO. LUST:

Region:	SAN MATEO
Facility ID:	330213
Facility Status:	9- Case Closed
Global ID:	T0608160745
APN Number:	053197110
Case Type:	SAN MATEO CO. LUST
EDR Link ID:	SAN MATEO CO. LUST

---

181 **G R BROWN CO** **LUST** **S104732903**
SE **989 SHASTA** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.292 mi.
1543 ft.

Relative:
Higher

Actual:
20 ft.

LUST:

Region:	STATE
Global Id:	T0608192700
Latitude:	37.4779
Longitude:	-122.2196
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	10/02/1991
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-1253
LOC Case Number:	330090
File Location:	Local Agency Warehouse
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Gasoline

DRAFT

G R BROWN CO (Continued) **S104732903**

Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608192700
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608192700
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608192700
Status: Completed - Case Closed
Status Date: 10/02/1991

Global Id: T0608192700
Status: Open - Case Begin Date
Status Date: 11/29/1990

Regulatory Activities:
Global Id: T0608192700
Action Type: ENFORCEMENT
Date: 02/04/1991
Action: Notice of Responsibility - #1

Global Id: T0608192700
Action Type: Other
Date: 11/29/1990
Action: Leak Discovery

Global Id: T0608192700
Action Type: Other
Date: 01/22/1991
Action: Leak Reported

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330090
How Discovered: OM
Leak Cause: Unknown

DRAFT

G R BROWN CO (Continued) **S104732903**

Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330090
Facility Status: 9- Case Closed
Global ID: T0608192700
APN Number: 053345050
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

AB182 **ROYS CLEANERS** **RCRA-SQG** **1000374398**
WNW **1100 EL CAMINO REAL** **SLIC** **CAD981171010**
1/4-1/2 **REDWOOD CITY, CA 94063** **FINDS**
0.293 mi. **ECHO**
1546 ft. **Site 1 of 3 in cluster AB** **DRYCLEANERS**
EMI
Relative: **HAZNET**
Higher **HIST CORTESE**

Actual: **16 ft.**

RCRA-SQG:
Date form received by agency: 09/01/1996
Facility name: ROYS CLEANERS
Facility address: 1100 EL CAMINO REAL
REDWOOD CITY, CA 94063
EPA ID: CAD981171010
Contact: Not reported
Contact address: Not reported
Not reported
Contact country: US
Contact telephone: Not reported
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: LEE BONG
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported

DRAFT

ROYS CLEANERS (Continued) **1000374398**

Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 01/21/1986
Site name: ROYS CLEANERS
Classification: Large Quantity Generator

Violation Status: No violations found

SLIC:
Region: STATE
Facility Status: **Open - Site Assessment**
Status Date: 03/08/2001
Global Id: SLT2O225933
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Lead Agency Case Number: Not reported
Latitude: 37.483224
Longitude: -122.231366
Case Type: Cleanup Program Site
Case Worker: DIB
Local Agency: Not reported
RB Case Number: 41S0103
File Location: Regional Board
Potential Media Affected: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: * Chlorinated Solvents - PCE
Site History: PCE release from a dry cleaner and sanitary sewer. The main source area is beneath the sanitary sewer under El Camino Real. The groundwater pollutant plume extends onto the Sequoia Station Shopping Center. The highest level of groundwater contamination is under El Camino Real. Lower concentration of PCE extend across Sequoia

DRAFT

ROYS CLEANERS (Continued) **1000374398**

Station. A remedial action plan for cleanup of groundwater has been submitted to the Regional Water Board.

Click here to access the California GeoTracker records for this facility:

FINDS:

Registry ID: 110001153787

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

HAZARDOUS AIR POLLUTANT MAJOR

STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000374398
Registry ID:	110001153787
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110001153787

DRYCLEANERS:

EPA Id:	CAL000229740
NAICS Code:	81232
NAICS Description:	Drycleaning and Laundry Services (except Coin-Operated)
SIC Code:	7211
SIC Description:	Power Laundries, Family and Commercial
Create Date:	08/03/2001
Facility Active:	No
Inactive Date:	06/30/2008
Facility Addr2:	Not reported
Owner Name:	SANGKUL KIM AND GRACE CHUNG
Owner Address:	1100 EL CAMINO REAL
Owner Address 2:	Not reported
Owner Telephone:	6503665802
Contact Name:	GRACE CHUNG
Contact Address:	1564 MEADOW LN
Contact Address 2:	Not reported
Contact Telephone:	6503665802
Mailing Name:	Not reported
Mailing Address 1:	1100 EL CAMINO REAL
Mailing Address 2:	Not reported
Mailing City:	REDWOOD CITY
Mailing State:	CA
Mailing Zip:	940631635
Owner Fax:	Not reported
Region Code:	2

DRAFT

ROYS CLEANERS (Continued) **1000374398**

EPA Id:	CAD981171010
NAICS Code:	81232
NAICS Description:	Drycleaning and Laundry Services (except Coin-Operated)
SIC Code:	7211
SIC Description:	Power Laundries, Family and Commercial
Create Date:	04/10/1987
Facility Active:	No
Inactive Date:	08/03/2001
Facility Addr2:	Not reported
Owner Name:	BONG HO LEE
Owner Address:	1100 ELCAMINO REAL
Owner Address 2:	Not reported
Owner Telephone:	6503665802
Contact Name:	LEE BONG, OWNER
Contact Address:	INACTIVE PER VQ01 - BMI
Contact Address 2:	Not reported
Contact Telephone:	6503665802
Mailing Name:	Not reported
Mailing Address 1:	1100 EL CAMINO REAL
Mailing Address 2:	Not reported
Mailing City:	REDWOOD CITY
Mailing State:	CA
Mailing Zip:	940631635
Owner Fax:	Not reported
Region Code:	2

EMI:

Year:	1987
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1990
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0

DRAFT

ROYS CLEANERS (Continued) **1000374398**

SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1995
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1996
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1997
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1998
County Code:	41

DRAFT

ROYS CLEANERS (Continued) **1000374398**

Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1999
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2000
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2001
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported

DRAFT

ROYS CLEANERS (Continued) **1000374398**

Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2002
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2003
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2004
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.169
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0

DRAFT

ROYS CLEANERS (Continued) **1000374398**

Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0
Year:	2005
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0
Year:	2006
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.118
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0
Year:	2007
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.118
Reactive Organic Gases Tons/Yr:	.0824348
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0
Year:	2008
County Code:	41
Air Basin:	SF

DRAFT

ROYS CLEANERS (Continued) **1000374398**

Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.118
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2009
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.17499999999999999
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2010
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.17499999999999999
Reactive Organic Gases Tons/Yr:	0.122255
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2011
County Code:	41
Air Basin:	SF
Facility ID:	345
Air District Name:	BA
SIC Code:	7216
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported

DRAFT

ROYS CLEANERS (Continued) **1000374398**

Total Organic Hydrocarbon Gases Tons/Yr: 0.175
Reactive Organic Gases Tons/Yr: 0
Carbon Monoxide Emissions Tons/Yr: 0
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Year: 2012
County Code: 41
Air Basin: SF
Facility ID: 345
Air District Name: BA
SIC Code: 7216
Air District Name: BAY AREA AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 0.175
Reactive Organic Gases Tons/Yr: 0
Carbon Monoxide Emissions Tons/Yr: 0
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

HAZNET:
envid: 1000374398
Year: 2002
GEPAID: CAD981171010
Contact: LEE BONG, OWNER
Telephone: 6503665802
Mailing Name: Not reported
Mailing Address: 1100 EL CAMINO REAL
Mailing City,St,Zip: REDWOOD CITY, CA 940631635
Gen County: Not reported
TSD EPA ID: CAT080014079
TSD County: Not reported
Waste Category: Off-specification, aged or surplus organics
Disposal Method: Not reported
Tons: 0
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: 1000374398
Year: 2002
GEPAID: CAD981171010
Contact: LEE BONG, OWNER
Telephone: 6503665802
Mailing Name: Not reported
Mailing Address: 1100 EL CAMINO REAL
Mailing City,St,Zip: REDWOOD CITY, CA 940631635
Gen County: Not reported
TSD EPA ID: CAT080014079
TSD County: Not reported
Waste Category: Liquids with halogenated organic compounds >= 1,000 Mg./L
Disposal Method: Not reported

DRAFT

ROYS CLEANERS (Continued) **1000374398**

Tons: 0.02
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: 1000374398
Year: 2002
GEPAID: CAD981171010
Contact: LEE BONG, OWNER
Telephone: 6503665802
Mailing Name: Not reported
Mailing Address: 1100 EL CAMINO REAL
Mailing City,St,Zip: REDWOOD CITY, CA 940631635
Gen County: Not reported
TSD EPA ID: CAT080014079
TSD County: Not reported
Waste Category: Liquids with halogenated organic compounds >= 1,000 Mg./L
Disposal Method: Transfer Station
Tons: 0.13
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: 1000374398
Year: 2001
GEPAID: CAD981171010
Contact: LEE BONG, OWNER
Telephone: 6503665802
Mailing Name: Not reported
Mailing Address: 1100 EL CAMINO REAL
Mailing City,St,Zip: REDWOOD CITY, CA 940631635
Gen County: Not reported
TSD EPA ID: CAT080014079
TSD County: Not reported
Waste Category: Liquids with halogenated organic compounds >= 1,000 Mg./L
Disposal Method: Not reported
Tons: 0
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: 1000374398
Year: 2001
GEPAID: CAD981171010
Contact: LEE BONG, OWNER
Telephone: 6503665802
Mailing Name: Not reported
Mailing Address: 1100 EL CAMINO REAL
Mailing City,St,Zip: REDWOOD CITY, CA 940631635
Gen County: Not reported
TSD EPA ID: CAT080014079
TSD County: Not reported
Waste Category: Liquids with halogenated organic compounds >= 1,000 Mg./L
Disposal Method: Transfer Station
Tons: 0.06
Cat Decode: Not reported
Method Decode: Not reported

DRAFT

ROYS CLEANERS (Continued) **1000374398**

Facility County: San Mateo

Click this hyperlink while viewing on your computer to access
16 additional CA_HAZNET: record(s) in the EDR Site Report.

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-1155

Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-1053

AB183 **ROY'S DRY CLEANERS** **SLIC** **S100872689**
WNW **1100 EL CAMINO REAL** **N/A**
1/4-1/2 **REDWOOD CITY, CA**
0.293 mi.
1546 ft. **Site 2 of 3 in cluster AB**

Relative:
Higher

Actual:
16 ft.

SLIC REG 2:
Region: 2
Facility ID: SLT2O225
Facility Status: Leak being confirmed
Date Closed: Not reported
Local Case #: Not reported
How Discovered: Not reported
Leak Cause: Not reported
Leak Source: Not reported
Date Confirmed: Not reported
Date Prelim Site Assmnt Workplan Submitted: Not reported
Date Preliminary Site Assessment Began: Not reported
Date Pollution Characterization Began: Not reported
Date Remediation Plan Submitted: Not reported
Date Remedial Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

AB184 **WHOLE FOODS MARKET INC** **LUST** **S101593812**
West **1250 JEFFERSON AVE** **SWEEPS UST** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94062** **CA FID UST**
0.294 mi. **HAZNET**
1553 ft. **Site 3 of 3 in cluster AB** **HIST CORTESE**

Relative:
Higher

Actual:
18 ft.

LUST:
Region: STATE
Global Id: T0608102192
Latitude: 37.482456
Longitude: -122.231676
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 12/31/1993
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP

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WHOLE FOODS MARKET INC (Continued) **S101593812**

RB Case Number: 41S055
LOC Case Number: 339110
File Location: Local Agency
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608102192
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608102192
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608102192
Status: Completed - Case Closed
Status Date: 12/31/1993

Global Id: T0608102192
Status: Open - Case Begin Date
Status Date: 01/27/1993

Regulatory Activities:
Global Id: T0608102192
Action Type: ENFORCEMENT
Date: 03/11/1993
Action: * Historical Enforcement - #1

Global Id: T0608102192
Action Type: Other
Date: 12/16/1993
Action: Leak Reported

Global Id: T0608102192
Action Type: Other
Date: 01/27/1993
Action: Leak Discovery

SAN MATEO CO. LUST:
Region: SAN MATEO

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WHOLE FOODS MARKET INC (Continued) **S101593812**

Facility ID: 339110
Facility Status: 9- Case Closed
Global ID: T0608102192
APN Number: 053044150
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

SWEEPS UST:
Status: Not reported
Comp Number: 330194
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330194-000001
Tank Status: Not reported
Capacity: 500
Active Date: Not reported
Tank Use: OIL
STG: WASTE
Content: WASTE OIL
Number Of Tanks: 1

Status: Active
Comp Number: 330194
Number: 1
Board Of Equalization: Not reported
Referral Date: 11-03-93
Action Date: 11-03-93
Created Date: 07-08-92
Owner Tank Id: Not reported
SWRCB Tank Id: Not reported
Tank Status: Not reported
Capacity: Not reported
Active Date: Not reported
Tank Use: Not reported
STG: Not reported
Content: Not reported
Number Of Tanks: Not reported

CA FID UST:
Facility ID: 41000634
Regulated By: UTNKA
Regulated ID: CAC000651
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 4153684954
Mail To: Not reported
Mailing Address: PO BOX 5008
Mailing Address 2: Not reported
Mailing City,St,Zip: REDWOOD CITY 94063
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported

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WHOLE FOODS MARKET INC (Continued) **S101593812**

NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

HAZNET:
envid: S101593812
Year: 2015
GEPAID: CAL000395821
Contact: TRISTAM COFFIN
Telephone: 2013142987
Mailing Name: Not reported
Mailing Address: 5980 HORTON STREET SUITE 200
Mailing City,St,Zip: EMERYVILLE, CA 946084806
Gen County: San Mateo
TSD EPA ID: NVD980895338
TSD County: 99
Waste Category: Off-specification, aged or surplus organics
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.96
Cat Decode: Off-specification, aged or surplus organics
Method Decode: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: San Mateo

envid: S101593812
Year: 2015
GEPAID: CAL000395821
Contact: TRISTAM COFFIN
Telephone: 2013142987
Mailing Name: Not reported
Mailing Address: 5980 HORTON STREET SUITE 200
Mailing City,St,Zip: EMERYVILLE, CA 946084806
Gen County: San Mateo
TSD EPA ID: NVD980895338
TSD County: 99
Waste Category: Unspecified solvent mixture
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.141
Cat Decode: Unspecified solvent mixture
Method Decode: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: San Mateo

envid: S101593812
Year: 2015
GEPAID: CAL000395821
Contact: TRISTAM COFFIN
Telephone: 2013142987
Mailing Name: Not reported
Mailing Address: 5980 HORTON STREET SUITE 200
Mailing City,St,Zip: EMERYVILLE, CA 946084806
Gen County: San Mateo
TSD EPA ID: NVD980895338
TSD County: 99

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WHOLE FOODS MARKET INC (Continued) **S101593812**

Waste Category:	Aqueous solution (2 < pH < 12.5) containing reactive anions ...
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0025
Cat Decode:	Aqueous solution (2 < pH < 12.5) containing reactive anions ...
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	San Mateo

envid:	S101593812
Year:	2015
GEPAID:	CAL000395821
Contact:	TRISTAM COFFIN
Telephone:	2013142987
Mailing Name:	Not reported
Mailing Address:	5980 HORTON STREET SUITE 200
Mailing City,St,Zip:	EMERYVILLE, CA 946084806
Gen County:	San Mateo
TSD EPA ID:	NVD980895338
TSD County:	99
Waste Category:	Alkaline solution without metals pH >= 12.5
Disposal Method:	Neutralization Only
Tons:	0.0275
Cat Decode:	Alkaline solution without metals pH >= 12.5
Method Decode:	Neutralization Only
Facility County:	San Mateo

envid:	S101593812
Year:	2015
GEPAID:	CAL000395821
Contact:	TRISTAM COFFIN
Telephone:	2013142987
Mailing Name:	Not reported
Mailing Address:	5980 HORTON STREET SUITE 200
Mailing City,St,Zip:	EMERYVILLE, CA 946084806
Gen County:	San Mateo
TSD EPA ID:	NVD980895338
TSD County:	99
Waste Category:	Other organic solids
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0075
Cat Decode:	Other organic solids
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	San Mateo

Click this hyperlink while viewing on your computer to access
1 additional CA_HAZNET: record(s) in the EDR Site Report.

HIST CORTESE:

Region:	CORTESE
Facility County Code:	41
Reg By:	LTNKA
Reg Id:	41-0699

DRAFT

185
NNW
1/4-1/2
0.313 mi.
1652 ft.

PG AND E GAS PLANT REDWOOD CITY
E MARSHALL, WASHINGTON, BROADWAY
REDWOOD CITY, CA 94063

EDR MGP **1008407742**
N/A

Relative:
Lower

Actual:
8 ft.

Manufactured Gas Plants:
No additional information available

AA186
SE
1/4-1/2
0.314 mi.
1658 ft.

MOTLOCH PARCEL
1629 MAIN STREET
REDWOOD CITY, CA 94063

LUST **S111760561**
SLIC **N/A**

Site 2 of 2 in cluster AA

Relative:
Higher

Actual:
22 ft.

SAN MATEO CO. LUST:

Region:	SAN MATEO
Facility ID:	339224
Facility Status:	9- Case Closed
Global ID:	TI0000003696
APN Number:	053341010
Case Type:	SAN MATEO CO. LUST
EDR Link ID:	SAN MATEO CO. LUST

SLIC:

Region:	STATE
Facility Status:	**Completed - Case Closed**
Status Date:	11/26/2013
Global Id:	T10000003696
Lead Agency:	SAN FRANCISCO BAY RWQCB (REGION 2)
Lead Agency Case Number:	Not reported
Latitude:	37.477722
Longitude:	-122.222388
Case Type:	Cleanup Program Site
Case Worker:	UUU
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41S0195
File Location:	Local Agency
Potential Media Affected:	Not reported
Potential Contaminants of Concern:	Diesel, Gasoline
Site History:	The site is a former automotive repair facility with a gas station/fueling facility located next to a dry cleaning operation. Total petroleum hydrocarbons, predominantly in the kerosene range, are present in soil and groundwater. Assessments conducted in 2012 to 2013 attributed the source of the petroleum hydrocarbon contamination to a release of Stoddard solvent from the neighboring drycleaner. No further action was required to address the residual petroleum hydrocarbons at the former Motloch Parcel under current land use conditions.

Click here to access the California GeoTracker records for this facility:

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AC187 **BROADWAY PRODUCE & FLOWERS, FORMER** **LUST** **S100179784**
North **1870 BROADWAY** **HIST CORTESE** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **Notify 65**
0.317 mi.
1673 ft. **Site 1 of 2 in cluster AC**

Relative:
Lower

Actual:
10 ft.

LUST:

Region:	STATE
Global Id:	T0608100085
Latitude:	37.486862739229
Longitude:	-122.225110530853
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	07/07/2011
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0090
LOC Case Number:	330026
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Extracted from Blue Rock Environmental's November 18, 2005 Compilation of Historical Data report and Workplan Addendum, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report. The site is known in this context as the Former Broadway Produce & Flowers. It is located at 1870 Broadway in Redwood City, California. The location is near the center of downtown area of Redwood City, where property use is almost exclusively commercial in nature. Use of the adjoining properties includes (1) Grocery Outlet to the south, (2) Wells Fargo Bank to the west, and (3) Kaiser Permanente medical facility to the north and east. The site is a triangular shaped property, with Broadway forming the base on the southern border, Walnut Street forming the height on the western border, and Spring Street forming the hypotenuse on the northern border. The site was previously used as a gasoline service station. Later it was redeveloped into a two-story office building. The office building is rectangular in shape and is located along Walnut Street. A parking lot is located in the center of the property, with entrances both on the north and south sides. A large planted area occupies the eastern side of the site. In May 1988, five USTs were removed from the former service station. The USTs included three 2,000-gallon gasoline USTs and one 8,000-gallon gasoline UST in a common pit located near the southwest corner of the site, and one 400-gallon used oil UST in a separate pit located north of the former service station building. Photographs of the site in GPP files for the site in 1990 show the former building, but the dispensers islands have been removed. Based on the orientation of concrete cuts observed in the photograph, it appears the former dispensers were located south of the former station building and east of the former fuel USTs. In July 1988, approximately 100 cubic yards of backfill material were excavated presumably from the gasoline UST pit, allowed to aerate, then returned to the pit. In January 1994, approximately 2,400 cubic yards of soil was overexcavated from the north and east sides and from beneath the former fuel UST pit, and stockpiled onsite. The stockpiled soils were transported to and disposed at a Class I1 landfill (Forward) and a Class I11 landfill (Vasco). The depth of excavation was approximately 13 to 14 feet bgs, and with

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BROADWAY PRODUCE & FLOWERS, FORMER (Continued) **S100179784**

dimensions of approximately 55 feet by 70 feet. Verification soil samples were only collected from the north and east sidewalls at a depth of approximately 9 feet bgs (i.e. -depth of water table). The excavation verification soil samples contained TPHg concentrations ranging from 180 to 2,300 mg/kg. The overexcavation was lined on the bottom and sides with filter fabric and then backfilled with drain rock to depth of approximately 7 feet below grade. A layer of filter fabric was then laid over the top of the drain rock fill. Imported cohesive backfill material was then placed over the filter fabric and compacted up to grade. In April 1994, an additional 594 cubic yards of soil created from redevelopment related excavation was reportedly suspected to contain hydrocarbons and was stockpiled. Later in 1994 it was transported to and disposed at the Vasco landfill. Remediation work consisted of the aforementioned dig and haul work. In addition, during the backfill of the overexcavation, piping and wells were installed into the backfill for potential remediation use. Wells EW-1 and EW-2 consist of the following construction: a 4-inch diameter PVC drainpipe was placed horizontally in the backfill at depth of approximately 12 feet below grade, and coupled to a 6-inch diameter PVC riser. The drainpipe is approximately 55 feet long runs diagonally at a northwest strike in the backfill. It does not appear these backfill wells were ever used for pilot testing or remediation. A two-story office building and a parking lot were built on the premise in 1994 and this remains the site configuration today. In August 1988, monitoring- well MW-1 was installed north of the former gasoline USTs. Low concentrations of gasoline constituents were detected in a soil sample collected from a depth of 8.5 feet bgs . Low concentrations of TPHg were detected groundwater samples subsequently collected in four quarterly events from MW-1. In May 1992, two additional monitoring wells, MW-2 and MW-3 were installed and five soil borings (SB-1 through SB-5) were advanced. It appears that the casing elevations for MW-1, MW-2, and MW-3 were surveyed in June 1992, but no horizontal coordinates were obtained, as was the common practice at the time. In preparation for the remedial excavation and site redevelopment work, MW-I was properly destroyed in September 1993. In December 1994, nine more borings (B-1 t rough B-9) were drilled around the site and monitoring well MW-4 was installed. The casing elevations for MW-2, MW-3, MW-4, EW-1 and EW-2 were resurveyed in December 1994, but, again, no horizontal coordinates were obtained. In July 1998, an additional five borings were drilled in a north-south line, also designated SB-1 through SB-5, but located east of the original set of soil borings called SB-1 through SB-5 In September 1998, five more monitoring wells (MW-5 throug MW-9) were installed. Surprisingly, it does not appear that either casing elevations or horizontal coordinates for these wells were ever surveyed. Soils are predominately fine-grained, mostly clay but some clayey sand and fine-grained sand have been logged below approximately 14 feet bgs. The depth to groundwater is relatively shallow at approximately 8 feet bgs. Previous consultants have reported groundwater flow directions ranging from the northwest to northeast, with relatively shallow groundwater gradients of approximately 0.001 ft/ft. The last groundwater sampling event was conducted in October 1999, which included all wells except MW-1 (which was previously properly destroyed) and EW-2 (status unknown). TPHg concentrations ranged from 60 ug/L (MW-6) through 1,400 ug/L (MW-3), MTBE concentrations ranged from 0.5 (five wells) to 20 ug/L (MW-3), and benzene concentrations ranged from <0.5 (seven wells) to

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BROADWAY PRODUCE & FLOWERS, FORMER (Continued) **S100179784**

12 ug/L (MW-3), in water samples collected from the wells.

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100085
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100085
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100085
Status:	Completed - Case Closed
Status Date:	07/07/2011

Global Id:	T0608100085
Status:	Open - Case Begin Date
Status Date:	07/14/1988

Global Id:	T0608100085
Status:	Open - Verification Monitoring
Status Date:	10/20/1998

Regulatory Activities:

Global Id:	T0608100085
Action Type:	RESPONSE
Date:	05/15/2009
Action:	Monitoring Report - Annually

Global Id:	T0608100085
Action Type:	ENFORCEMENT
Date:	05/03/2005
Action:	Staff Letter - #20050503

Global Id:	T0608100085
Action Type:	Other
Date:	05/18/1988
Action:	Leak Discovery

Global Id:	T0608100085
Action Type:	ENFORCEMENT
Date:	10/21/2005
Action:	Staff Letter - #20051021

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BROADWAY PRODUCE & FLOWERS, FORMER (Continued) **S100179784**

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 01/25/2005
Action: Staff Letter - #20050125

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 02/09/2006
Action: Staff Letter - #20060209

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 03/08/2007
Action: Staff Letter - #20070308A

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 03/10/2010
Action: Staff Letter - #20100310

Global Id: T0608100085
Action Type: RESPONSE
Date: 11/15/2007
Action: Monitoring Report - Other

Global Id: T0608100085
Action Type: RESPONSE
Date: 08/29/2008
Action: Soil and Water Investigation Report

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 07/14/1988
Action: Notice of Responsibility - #19880714

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 06/18/2007
Action: Staff Letter - #20070618

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 02/26/2008
Action: Staff Letter - #20080226

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 07/19/2006
Action: Staff Letter - #20060719

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 12/07/2005
Action: Staff Letter - #20051207

Global Id: T0608100085
Action Type: ENFORCEMENT

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BROADWAY PRODUCE & FLOWERS, FORMER (Continued) **S100179784**

Date: 11/19/2008
Action: Staff Letter - #20081119

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 03/08/2007
Action: Staff Letter - #20070308B

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 10/16/1997
Action: Staff Letter - #19971016

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 01/27/2005
Action: Notice of Responsibility - #20050127

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 11/13/1992
Action: Staff Letter - #19921113

Global Id: T0608100085
Action Type: Other
Date: 07/14/1988
Action: Leak Reported

Global Id: T0608100085
Action Type: RESPONSE
Date: 05/10/2011
Action: Well Destruction Report

Global Id: T0608100085
Action Type: RESPONSE
Date: 11/21/2005
Action: Electronic Reporting Submittal Due

Global Id: T0608100085
Action Type: RESPONSE
Date: 04/23/2007
Action: Other Report / Document

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 09/10/1997
Action: Preparation of Record for Appeal/Referral/Petition - #19970910

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 07/07/2011
Action: Closure/No Further Action Letter - #20110707

Global Id: T0608100085
Action Type: RESPONSE
Date: 07/18/2007
Action: Electronic Reporting Submittal Due

DRAFT

BROADWAY PRODUCE & FLOWERS, FORMER (Continued) **S100179784**

Global Id: T0608100085
Action Type: RESPONSE
Date: 06/14/2007
Action: Electronic Reporting Submittal Due

Global Id: T0608100085
Action Type: RESPONSE
Date: 06/24/2005
Action: Soil and Water Investigation Workplan

Global Id: T0608100085
Action Type: RESPONSE
Date: 11/21/2005
Action: Soil and Water Investigation Workplan

Global Id: T0608100085
Action Type: RESPONSE
Date: 03/29/2006
Action: Soil and Water Investigation Report

Global Id: T0608100085
Action Type: RESPONSE
Date: 01/06/2006
Action: Correspondence

Global Id: T0608100085
Action Type: RESPONSE
Date: 03/15/2006
Action: Other Workplan

Global Id: T0608100085
Action Type: RESPONSE
Date: 09/12/2006
Action: Other Report / Document

Global Id: T0608100085
Action Type: RESPONSE
Date: 06/14/2007
Action: Electronic Reporting Submittal Due

Global Id: T0608100085
Action Type: RESPONSE
Date: 08/29/2008
Action: Soil and Water Investigation Report

Global Id: T0608100085
Action Type: RESPONSE
Date: 04/23/2007
Action: Other Report / Document

Global Id: T0608100085
Action Type: RESPONSE
Date: 06/14/2007
Action: Soil and Water Investigation Workplan

Global Id: T0608100085
Action Type: RESPONSE

DRAFT

BROADWAY PRODUCE & FLOWERS, FORMER (Continued) **S100179784**

Date: 05/15/2008
Action: Monitoring Report - Other

Global Id: T0608100085
Action Type: RESPONSE
Date: 09/22/2009
Action: Clean Up Fund - 5-Year Review Summary - Regulator Responded

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 08/03/2009
Action: Staff Letter - #20090803

Global Id: T0608100085
Action Type: RESPONSE
Date: 10/21/2010
Action: Clean Up Fund - 5-Year Review Summary - Regulator Responded

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 02/08/2011
Action: Staff Letter - #20110208

Global Id: T0608100085
Action Type: ENFORCEMENT
Date: 05/12/1993
Action: Warning Letter - #19930512

Global Id: T0608100085
Action Type: REMEDIATION
Date: 12/27/1993
Action: Excavation

Global Id: T0608100085
Action Type: REMEDIATION
Date: 07/14/1988
Action: Excavation

Global Id: T0608100085
Action Type: REMEDIATION
Date: 04/01/1994
Action: Excavation

Global Id: T0608100085
Action Type: REMEDIATION
Date: 12/27/1993
Action: Pump & Treat (P&T) Groundwater

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330026
Facility Status: 9- Case Closed
Global ID: T0608100085
APN Number: 053232010
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

DRAFT

BROADWAY PRODUCE & FLOWERS, FORMER (Continued) **S100179784**

HIST CORTESE:
- Region: CORTESE
- Facility County Code: 41
- Reg By: LTNKA
- Reg Id: 41-0090

NOTIFY 65:
- Date Reported: Not reported
- Staff Initials: Not reported
- Board File Number: Not reported
- Facility Type: Not reported
- Discharge Date: Not reported
- Issue Date: Not reported
- Incident Description: Not reported

AC188 **BROADWAY PRODUCE & FLOWERS** **LUST** **S101303145**
North **1870 BROADWAY** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.317 mi.
1673 ft. **Site 2 of 2 in cluster AC**

Relative: **Lower**

Actual: **10 ft.**

LUST REG 2:
- Region: 2
- Facility Id: Not reported
- Facility Status: Pollution Characterization
- Case Number: 330026
- How Discovered: OM
- Leak Cause: Unknown
- Leak Source: Unknown
- Date Leak Confirmed: Not reported
- Oversight Program: LUST
- Prelim. Site Assesment Wokplan Submitted: Not reported
- Preliminary Site Assesment Began: Not reported
- Pollution Characterization Began: 1/1/1965
- Pollution Remediation Plan Submitted: Not reported
- Date Remediation Action Underway: Not reported
- Date Post Remedial Action Monitoring Began: Not reported

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189 **GUS'S SERVICE STATION, FORMER** **LUST** **S103396258**
NW **841 HAMILTON** **HIST CORTESE** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.332 mi.
1754 ft.

Relative: **Higher**

Actual: **13 ft.**

LUST:
- Region: STATE
- Global Id: T0608100974
- Latitude: 37.48579
- Longitude: -122.2300183
- Case Type: LUST Cleanup Site
- Status: Completed - Case Closed
- Status Date: 03/20/2000
- Lead Agency: SAN MATEO COUNTY LOP
- Case Worker: DGM
- Local Agency: SAN MATEO COUNTY LOP

DRAFT

GUS'S SERVICE STATION, FORMER (Continued) **S103396258**

RB Case Number: 41-1062
LOC Case Number: 330152
File Location: Local Agency
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608100974
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608100974
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100974
Status: Completed - Case Closed
Status Date: 03/20/2000

Global Id: T0608100974
Status: Open - Case Begin Date
Status Date: 12/29/1997

Regulatory Activities:
Global Id: T0608100974
Action Type: ENFORCEMENT
Date: 09/22/2015
Action: Staff Letter - #20150922

Global Id: T0608100974
Action Type: Other
Date: 12/10/1998
Action: Leak Reported

Global Id: T0608100974
Action Type: RESPONSE
Date: 12/22/2015
Action: Other Report / Document

Global Id: T0608100974
Action Type: ENFORCEMENT
Date: 10/06/2015
Action: Email Correspondence - #20151006

DRAFT

GUS'S SERVICE STATION, FORMER (Continued) **S103396258**

Global Id: T0608100974
Action Type: RESPONSE
Date: 06/30/2016
Action: Other Report / Document

Global Id: T0608100974
Action Type: ENFORCEMENT
Date: 12/30/1997
Action: Staff Letter - #19971230

Global Id: T0608100974
Action Type: ENFORCEMENT
Date: 03/20/2000
Action: Closure/No Further Action Letter - #20000320

Global Id: T0608100974
Action Type: ENFORCEMENT
Date: 12/29/1997
Action: Notice of Responsibility - #19971229

Global Id: T0608100974
Action Type: ENFORCEMENT
Date: 12/30/2015
Action: Staff Letter - #20151230

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330152
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330152
Facility Status: 9- Case Closed
Global ID: T0608100974
APN Number: 052365080
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA

DRAFT

GUS'S SERVICE STATION, FORMER (Continued) **S103396258**

Reg Id: 41-1062

AD190 **MID PENINSULA LEASING** **LUST S105035337**
NW **1039 EL CAMINO REAL** **SWEEPS UST N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.342 mi.
1804 ft. **Site 1 of 2 in cluster AD**

Relative:
Lower

Actual:
8 ft.

LUST REG 2:

Region:	2
Facility Id:	Not reported
Facility Status:	Case Closed
Case Number:	330101
How Discovered:	OM
Leak Cause:	Unknown
Leak Source:	Unknown
Date Leak Confirmed:	Not reported
Oversight Program:	LUST
Prelim. Site Assesment Wokplan Submitted:	Not reported
Preliminary Site Assesment Began:	Not reported
Pollution Characterization Began:	Not reported
Pollution Remediation Plan Submitted:	Not reported
Date Remediation Action Underway:	Not reported
Date Post Remedial Action Monitoring Began:	Not reported

SWEEPS UST:

Status:	Not reported
Comp Number:	330197
Number:	Not reported
Board Of Equalization:	Not reported
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Owner Tank Id:	Not reported
SWRCB Tank Id:	41-000-330197-000001
Tank Status:	Not reported
Capacity:	250
Active Date:	Not reported
Tank Use:	OIL
STG:	PRODUCT
Content:	WASTE OIL
Number Of Tanks:	4

Status:	Not reported
Comp Number:	330197
Number:	Not reported
Board Of Equalization:	Not reported
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Owner Tank Id:	Not reported
SWRCB Tank Id:	41-000-330197-000002
Tank Status:	Not reported
Capacity:	250
Active Date:	Not reported
Tank Use:	OIL
STG:	PRODUCT

DRAFT

MID PENINSULA LEASING (Continued) **S105035337**

Content: WASTE OIL
Number Of Tanks: Not reported

Status: Not reported
Comp Number: 330197
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330197-000003
Tank Status: Not reported
Capacity: 250
Active Date: Not reported
Tank Use: OIL
STG: PRODUCT
Content: WASTE OIL
Number Of Tanks: Not reported

Status: Not reported
Comp Number: 330197
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330197-000004
Tank Status: Not reported
Capacity: 550
Active Date: Not reported
Tank Use: OIL
STG: WASTE
Content: WASTE OIL
Number Of Tanks: Not reported

Status: Active
Comp Number: 330197
Number: 1
Board Of Equalization: Not reported
Referral Date: 11-01-93
Action Date: 11-01-93
Created Date: 07-08-92
Owner Tank Id: Not reported
SWRCB Tank Id: Not reported
Tank Status: Not reported
Capacity: Not reported
Active Date: Not reported
Tank Use: Not reported
STG: Not reported
Content: Not reported
Number Of Tanks: Not reported

DRAFT

AD191 **CVS PHARMACY # 9329** **LUST** **U001594616**
NW **1039 EL CAMINO REAL** **HIST UST** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **HAZNET**
0.342 mi. **HIST CORTESE**
1804 ft. **Site 2 of 2 in cluster AD**

Relative:
Lower

Actual:
8 ft.

LUST:

Region:	STATE
Global Id:	T0608100433
Latitude:	37.485166
Longitude:	-122.231387
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	04/01/1996
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0457
LOC Case Number:	330101
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100433
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100433
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100433
Status:	Completed - Case Closed
Status Date:	04/01/1996

Global Id:	T0608100433
Status:	Open - Case Begin Date
Status Date:	04/28/1992

Regulatory Activities:

Global Id:	T0608100433
Action Type:	Other
Date:	06/19/1992
Action:	Leak Reported

DRAFT

CVS PHARMACY # 9329 (Continued) **U001594616**

Global Id: T0608100433
Action Type: Other
Date: 04/28/1992
Action: Leak Discovery

Global Id: T0608100433
Action Type: ENFORCEMENT
Date: 08/27/1992
Action: Notice of Responsibility - #1

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330101
Facility Status: 9- Case Closed
Global ID: T0608100433
APN Number: 052550110
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST UST:
File Number: 0002C05E
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002C05E.pdf
Region: STATE
Facility ID: 00000047626
Facility Type: Other
Other Type: LEASE CO.
Contact Name: Not reported
Telephone: 4153645540
Owner Name: MID PENINSULA LEASING, INC.
Owner Address: 1039 EL CAMINO REAL
Owner City,St,Zip: REDWOOD CITY, CA 94064
Total Tanks: 0001

Tank Num: 001
Container Num: 1
Year Installed: Not reported
Tank Capacity: 00000000
Tank Used for: WASTE
Type of Fuel: WASTE OIL
Container Construction Thickness: ???????
Leak Detection: None

Click here for Geo Tracker PDF:

HAZNET:
envid: U001594616
Year: 2015
GEPAID: CAR000235416
Contact: WENDY BRANT
Telephone: 4017651500
Mailing Name: Not reported
Mailing Address: 1 CVS DR - MC 1160
Mailing City,St,Zip: WOONSOCKET, RI 02895
Gen County: San Mateo
TSD EPA ID: CAD980884183

DRAFT

CVS PHARMACY # 9329 (Continued) **U001594616**

TSD County:	Sacramento
Waste Category:	Pharmaceutical waste
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.007
Cat Decode:	Pharmaceutical waste
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	San Mateo

envid:	U001594616
Year:	2015
GEPAID:	CAR000235416
Contact:	WENDY BRANT
Telephone:	4017651500
Mailing Name:	Not reported
Mailing Address:	1 CVS DR - MC 1160
Mailing City,St,Zip:	WOONSOCKET, RI 02895
Gen County:	San Mateo
TSD EPA ID:	CAD980884183
TSD County:	Sacramento
Waste Category:	Off-specification, aged or surplus organics
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0045
Cat Decode:	Off-specification, aged or surplus organics
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	San Mateo

envid:	U001594616
Year:	2015
GEPAID:	CAR000235416
Contact:	WENDY BRANT
Telephone:	4017651500
Mailing Name:	Not reported
Mailing Address:	1 CVS DR - MC 1160
Mailing City,St,Zip:	WOONSOCKET, RI 02895
Gen County:	San Mateo
TSD EPA ID:	INR000110197
TSD County:	Not reported
Waste Category:	Pharmaceutical waste
Disposal Method:	Not reported
Tons:	0.0005
Cat Decode:	Pharmaceutical waste
Method Decode:	Not reported
Facility County:	San Mateo

envid:	U001594616
Year:	2015
GEPAID:	CAR000235416
Contact:	WENDY BRANT
Telephone:	4017651500
Mailing Name:	Not reported
Mailing Address:	1 CVS DR - MC 1160
Mailing City,St,Zip:	WOONSOCKET, RI 02895
Gen County:	San Mateo

DRAFT

CVS PHARMACY # 9329 (Continued) **U001594616**

TSD EPA ID:	NVD980895338
TSD County:	99
Waste Category:	Alkaline solution without metals pH >= 12.5
Disposal Method:	Neutralization Only
Tons:	0.0155
Cat Decode:	Alkaline solution without metals pH >= 12.5
Method Decode:	Neutralization Only
Facility County:	San Mateo

envid:	U001594616
Year:	2015
GEPAID:	CAR000235416
Contact:	WENDY BRANT
Telephone:	4017651500
Mailing Name:	Not reported
Mailing Address:	1 CVS DR - MC 1160
Mailing City,St,Zip:	WOONSOCKET, RI 02895
Gen County:	San Mateo
TSD EPA ID:	CAD980884183
TSD County:	Sacramento
Waste Category:	Unspecified solvent mixture
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0075
Cat Decode:	Unspecified solvent mixture
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	San Mateo

Click this hyperlink while viewing on your computer to access
25 additional CA_HAZNET: record(s) in the EDR Site Report.

HIST CORTESE:

Region:	CORTESE
Facility County Code:	41
Reg By:	LTNKA
Reg Id:	41-0457

AE192 **TINCHER PROPERTY (CHEVRON #378244)** **LUST** **S118154624**
NNE **1800 BROADWAY** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.342 mi.
1805 ft. **Site 1 of 3 in cluster AE**

Relative:
Lower

Actual:
10 ft.

LUST:

Region:	STATE
Global Id:	T10000007272
Latitude:	37.48694
Longitude:	-122.2237
Case Type:	LUST Cleanup Site
Status:	Open - Site Assessment
Status Date:	08/13/2015
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	Not reported
LOC Case Number:	330234

DRAFT

TINCHER PROPERTY (CHEVRON #378244) (Continued) **S118154624**

File Location: All Files are on GeoTracker or in the Local Agency Database
Potential Media Affect: Other Groundwater (uses other than drinking water), Soil
Potential Contaminants of Concern: Gasoline
Site History: Borings advanced onsite. Based on soil and groundwater analytical there appears to have been a release to both from the former service station. Additionally, solvents PCE/TCE were detected in groundwater and may be from upgradient dry cleaner.

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T10000007272
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T10000007272
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T10000007272
Status: Open - Case Begin Date
Status Date: 06/08/2015

Global Id: T10000007272
Status: Open - Site Assessment
Status Date: 08/13/2015

Regulatory Activities:
Global Id: T10000007272
Action Type: Other
Date: 06/08/2015
Action: Leak Discovery

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 09/21/2016
Action: Email Correspondence - #20160921

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 09/16/2016
Action: Email Correspondence - #20160916

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 01/10/2017

DRAFT

TINCHER PROPERTY (CHEVRON #378244) (Continued) **S118154624**

Action: Staff Letter - #20170110

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 03/01/2016
Action: Email Correspondence - #20160301

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 01/17/2017
Action: Email Correspondence - #20170117

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 08/02/2016
Action: Email Correspondence - #20160802

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 01/10/2017
Action: Notice to Comply - #20170110

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 05/03/2016
Action: Notice of Responsibility - #20160503

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 02/23/2016
Action: Staff Letter - #20160223

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 02/17/2016
Action: Email Correspondence

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 01/04/2016
Action: Notice of Responsibility - #20160104

Global Id: T10000007272
Action Type: RESPONSE
Date: 09/30/2016
Action: Site Assessment Report

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 06/08/2016
Action: Staff Letter - #20160609

Global Id: T10000007272
Action Type: RESPONSE
Date: 07/29/2016
Action: Correspondence

DRAFT

TINCHER PROPERTY (CHEVRON #378244) (Continued) **S118154624**

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 02/13/2017
Action: Staff Letter - #20170213

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 08/18/2015
Action: Notice of Responsibility - #20150818

Global Id: T10000007272
Action Type: RESPONSE
Date: 10/15/2015
Action: Correspondence

Global Id: T10000007272
Action Type: RESPONSE
Date: 02/12/2016
Action: Correspondence

Global Id: T10000007272
Action Type: RESPONSE
Date: 02/08/2016
Action: Correspondence

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 04/06/2016
Action: Staff Letter - #20160406

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 05/10/2016
Action: Staff Letter - #20160510

Global Id: T10000007272
Action Type: RESPONSE
Date: 12/15/2015
Action: Preliminary Site Assessment Report

Global Id: T10000007272
Action Type: RESPONSE
Date: 11/11/2016
Action: Soil and Water Investigation Workplan

Global Id: T10000007272
Action Type: RESPONSE
Date: 12/17/2015
Action: Preliminary Site Assessment Report

Global Id: T10000007272
Action Type: RESPONSE
Date: 05/22/2016
Action: Correspondence

Global Id: T10000007272
Action Type: RESPONSE

DRAFT

TINCHER PROPERTY (CHEVRON #378244) (Continued) **S118154624**

Date: 06/29/2017
Action: Soil and Water Investigation Report

Global Id: T10000007272
Action Type: RESPONSE
Date: 09/30/2016
Action: Correspondence

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 11/17/2015
Action: Email Correspondence - #20151117

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 01/10/2017
Action: Email Correspondence - #20170110

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 12/13/2016
Action: Email Correspondence - #20161213

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 01/09/2017
Action: Email Correspondence - #20170109

Global Id: T10000007272
Action Type: RESPONSE
Date: 12/17/2015
Action: Correspondence

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 11/01/2016
Action: Meeting

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 08/03/2016
Action: Notice of Responsibility - #20160803

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 08/09/2016
Action: Staff Letter - #20160909

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 01/26/2016
Action: Email Correspondence - #20160126

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 11/29/2016
Action: Email Correspondence - #20161129

DRAFT

TINCHER PROPERTY (CHEVRON #378244) (Continued) **S118154624**

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 11/17/2015
Action: Email Correspondence - #20151117

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 10/06/2015
Action: Email Correspondence - #20151006

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 01/06/2016
Action: Notice of Responsibility - #20160106

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 01/07/2016
Action: Staff Letter - #20160107

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 12/16/2015
Action: Staff Letter - #20151216

Global Id: T10000007272
Action Type: Other
Date: 07/15/2015
Action: Leak Reported

Global Id: T10000007272
Action Type: RESPONSE
Date: 03/16/2016
Action: Soil and Water Investigation Workplan - Regulator Responded

Global Id: T10000007272
Action Type: RESPONSE
Date: 05/31/2016
Action: Soil and Water Investigation Workplan - Regulator Responded

Global Id: T10000007272
Action Type: ENFORCEMENT
Date: 08/13/2015
Action: Staff Letter - #20150813

Global Id: T10000007272
Action Type: RESPONSE
Date: 01/31/2017
Action: Soil and Water Investigation Workplan - Addendum - Regulator Responded

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330234
Facility Status: 3B- Preliminary Assessment Underway
Global ID: T10000007272
APN Number: 053203020

DRAFT

TINCHER PROPERTY (CHEVRON #378244) (Continued) **S118154624**

Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

AE193 **REDWOOD CITY CORPORATION YARD** **LUST** **1000438517**
NNE **1400 BROADWAY** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.346 mi.
1827 ft. **Site 2 of 3 in cluster AE**

Relative:
Lower

Actual:
10 ft.

LUST REG 2:
Region: 2
Facility Id: 41-0440
Facility Status: Case Closed
Case Number: 330091
How Discovered: Tank Closure
Leak Cause: Structure Failure
Leak Source: Tank
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

AE194 **REDWOOD CITY CORPORATION YARD** **LUST** **S104493969**
NNE **1400 BROADWAY** **ENF** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **HIST CORTESE**
0.346 mi.
1827 ft. **Site 3 of 3 in cluster AE**

Relative:
Lower

Actual:
10 ft.

LUST:
Region: STATE
Global Id: T0608100419
Latitude: 37.4866112
Longitude: -122.2324242
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 08/12/1996
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Case Worker: UUU
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-0440
LOC Case Number: 330091
File Location: Not reported
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Diesel
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608100419
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP

DRAFT

REDWOOD CITY CORPORATION YARD (Continued) **S104493969**

Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292
Global Id:	T0608100419
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100419
Status:	Completed - Case Closed
Status Date:	08/12/1996
Global Id:	T0608100419
Status:	Open - Case Begin Date
Status Date:	10/11/1991

Regulatory Activities:

Global Id:	T0608100419
Action Type:	ENFORCEMENT
Date:	10/03/1996
Action:	Staff Letter
Global Id:	T0608100419
Action Type:	Other
Date:	10/11/1991
Action:	Leak Reported
Global Id:	T0608100419
Action Type:	Other
Date:	10/11/1991
Action:	Leak Discovery
Global Id:	T0608100419
Action Type:	Other
Date:	10/11/1991
Action:	Leak Stopped
Global Id:	T0608100419
Action Type:	ENFORCEMENT
Date:	03/17/1993
Action:	Clean-up and Abatement Order
Global Id:	T0608100419
Action Type:	ENFORCEMENT
Date:	03/17/1993
Action:	* Historical Enforcement

DRAFT

REDWOOD CITY CORPORATION YARD (Continued) **S104493969**

ENF:

Region:	2
Facility Id:	252216
Agency Name:	Redwood City
Place Type:	Service/Commercial
Place Subtype:	Service/Commercial Site, NEC
Facility Type:	All other facilities
Agency Type:	City Agency
# Of Agencies:	1
Place Latitude:	Not reported
Place Longitude:	Not reported
SIC Code 1:	7549
SIC Desc 1:	Automotive Services, Except Repair and Carwashes
SIC Code 2:	Not reported
SIC Desc 2:	Not reported
SIC Code 3:	Not reported
SIC Desc 3:	Not reported
NAICS Code 1:	Not reported
NAICS Desc 1:	Not reported
NAICS Code 2:	Not reported
NAICS Desc 2:	Not reported
NAICS Code 3:	Not reported
NAICS Desc 3:	Not reported
# Of Places:	1
Source Of Facility:	Reg Meas
Design Flow:	Not reported
Threat To Water Quality:	Not reported
Complexity:	Not reported
Pretreatment:	Not reported
Facility Waste Type:	Not reported
Facility Waste Type 2:	Not reported
Facility Waste Type 3:	Not reported
Facility Waste Type 4:	Not reported
Program:	UNREGS
Program Category1:	UNREGS
Program Category2:	UNREGS
# Of Programs:	1
WDID:	2 417142N01
Reg Measure Id:	162472
Reg Measure Type:	Unregulated
Region:	2
Order #:	Not reported
Npdes# CA#:	Not reported
Major-Minor:	Not reported
Npdes Type:	Not reported
Reclamation:	Not reported
Dredge Fill Fee:	Not reported
301H:	Not reported
Application Fee Amt Received:	Not reported
Status:	Never Active
Status Date:	02/21/2013
Effective Date:	Not reported
Expiration/Review Date:	Not reported
Termination Date:	Not reported
WDR Review - Amend:	Not reported
WDR Review - Revise/Renew:	Not reported
WDR Review - Rescind:	Not reported

DRAFT

REDWOOD CITY CORPORATION YARD (Continued) **S104493969**

WDR Review - No Action Required:	Not reported
WDR Review - Pending:	Not reported
WDR Review - Planned:	Not reported
Status Enrollee:	N
Individual/General:	I
Fee Code:	Not reported
Direction/Voice:	Passive
Enforcement Id(EID):	223284
Region:	2
Order / Resolution Number:	93-026
Enforcement Action Type:	Clean-up and Abatement Order
Effective Date:	03/17/1993
Adoption/Issuance Date:	Not reported
Achieve Date:	10/16/1996
Termination Date:	Not reported
ACL Issuance Date:	Not reported
EPL Issuance Date:	Not reported
Status:	Historical
Title:	Enforcement - 2 417142N01
Description:	SCR-
Program:	UNREGS
Latest Milestone Completion Date:	10/16/1996
# Of Programs1:	1
Total Assessment Amount:	0
Initial Assessed Amount:	0
Liability $ Amount:	0
Project $ Amount:	0
Liability $ Paid:	0
Project $ Completed:	0
Total $ Paid/Completed Amount:	0

Region:	2
Facility Id:	252216
Agency Name:	Redwood City
Place Type:	Service/Commercial
Place Subtype:	Service/Commercial Site, NEC
Facility Type:	All other facilities
Agency Type:	City Agency
# Of Agencies:	1
Place Latitude:	Not reported
Place Longitude:	Not reported
SIC Code 1:	7549
SIC Desc 1:	Automotive Services, Except Repair and Carwashes
SIC Code 2:	Not reported
SIC Desc 2:	Not reported
SIC Code 3:	Not reported
SIC Desc 3:	Not reported
NAICS Code 1:	Not reported
NAICS Desc 1:	Not reported
NAICS Code 2:	Not reported
NAICS Desc 2:	Not reported
NAICS Code 3:	Not reported
NAICS Desc 3:	Not reported
# Of Places:	1
Source Of Facility:	Reg Meas
Design Flow:	Not reported
Threat To Water Quality:	Not reported

DRAFT

REDWOOD CITY CORPORATION YARD (Continued) **S104493969**

Complexity:	Not reported
Pretreatment:	Not reported
Facility Waste Type:	Not reported
Facility Waste Type 2:	Not reported
Facility Waste Type 3:	Not reported
Facility Waste Type 4:	Not reported
Program:	UNREGS
Program Category1:	UNREGS
Program Category2:	UNREGS
# Of Programs:	1
WDID:	2 417142N01
Reg Measure Id:	162472
Reg Measure Type:	Unregulated
Region:	2
Order #:	Not reported
Npdes# CA#:	Not reported
Major-Minor:	Not reported
Npdes Type:	Not reported
Reclamation:	Not reported
Dredge Fill Fee:	Not reported
301H:	Not reported
Application Fee Amt Received:	Not reported
Status:	Never Active
Status Date:	02/21/2013
Effective Date:	Not reported
Expiration/Review Date:	Not reported
Termination Date:	Not reported
WDR Review - Amend:	Not reported
WDR Review - Revise/Renew:	Not reported
WDR Review - Rescind:	Not reported
WDR Review - No Action Required:	Not reported
WDR Review - Pending:	Not reported
WDR Review - Planned:	Not reported
Status Enrollee:	N
Individual/General:	I
Fee Code:	Not reported
Direction/Voice:	Passive
Enforcement Id(EID):	222683
Region:	2
Order / Resolution Number:	96-139
Enforcement Action Type:	Clean-up and Abatement Order
Effective Date:	10/16/1996
Adoption/Issuance Date:	Not reported
Achieve Date:	Not reported
Termination Date:	Not reported
ACL Issuance Date:	Not reported
EPL Issuance Date:	Not reported
Status:	Historical
Title:	Enforcement - 2 417142N01
Description:	SCR-
Program:	UNREGS
Latest Milestone Completion Date:	Not reported
# Of Programs1:	1
Total Assessment Amount:	0
Initial Assessed Amount:	0
Liability $ Amount:	0
Project $ Amount:	0

DRAFT

REDWOOD CITY CORPORATION YARD (Continued) **S104493969**

Liability $ Paid:	0
Project $ Completed:	0
Total $ Paid/Completed Amount:	0
Region:	2
Facility Id:	630966
Agency Name:	Redwood City
Place Type:	Utility
Place Subtype:	Collection_System
Facility Type:	Municipal/Domestic
Agency Type:	City Agency
# Of Agencies:	1
Place Latitude:	Not reported
Place Longitude:	Not reported
SIC Code 1:	Not reported
SIC Desc 1:	Not reported
SIC Code 2:	Not reported
SIC Desc 2:	Not reported
SIC Code 3:	Not reported
SIC Desc 3:	Not reported
NAICS Code 1:	Not reported
NAICS Desc 1:	Not reported
NAICS Code 2:	Not reported
NAICS Desc 2:	Not reported
NAICS Code 3:	Not reported
NAICS Desc 3:	Not reported
# Of Places:	1
Source Of Facility:	Reg Meas
Design Flow:	Not reported
Threat To Water Quality:	2
Complexity:	C
Pretreatment:	Not reported
Facility Waste Type:	Not reported
Facility Waste Type 2:	Not reported
Facility Waste Type 3:	Not reported
Facility Waste Type 4:	Not reported
Program:	SSOMUNILRG
Program Category1:	SSO
Program Category2:	SSO
# Of Programs:	1
WDID:	2SSO10168
Reg Measure Id:	300097
Reg Measure Type:	Enrollee
Region:	2
Order #:	2006-0003-DWQ
Npdes# CA#:	Not reported
Major-Minor:	Minor
Npdes Type:	Not reported
Reclamation:	Not reported
Dredge Fill Fee:	Not reported
301H:	Not reported
Application Fee Amt Received:	4676
Status:	Active
Status Date:	09/05/2006
Effective Date:	09/05/2006
Expiration/Review Date:	Not reported
Termination Date:	Not reported

DRAFT

REDWOOD CITY CORPORATION YARD (Continued) **S104493969**

WDR Review - Amend:	Not reported
WDR Review - Revise/Renew:	Not reported
WDR Review - Rescind:	Not reported
WDR Review - No Action Required:	Not reported
WDR Review - Pending:	Not reported
WDR Review - Planned:	Not reported
Status Enrollee:	Y
Individual/General:	I
Fee Code:	58 - Non15 Based on (TTWQ)/CPLX)
Direction/Voice:	Passive
Enforcement Id(EID):	377307
Region:	2
Order / Resolution Number:	R2-2011-0006
Enforcement Action Type:	Admin Civil Liability
Effective Date:	02/14/2011
Adoption/Issuance Date:	Not reported
Achieve Date:	Not reported
Termination Date:	03/15/2011
ACL Issuance Date:	02/14/2011
EPL Issuance Date:	Not reported
Status:	Historical
Title:	ACLC R2-2011-0006 for Redwood City Redwood Shores SSO
Description:	On 8/25/2010, Redwood City had a 94,900 gal SSO of which 57,107 gal discharged to surface water. ACL Complaint issued assessing a $95,600 liability on 2/14/2011.
Program:	SSOMUNILRG
Latest Milestone Completion Date:	3/15/2011
# Of Programs1:	1
Total Assessment Amount:	95600
Initial Assessed Amount:	0
Liability $ Amount:	95600
Project $ Amount:	0
Liability $ Paid:	95600
Project $ Completed:	0
Total $ Paid/Completed Amount:	95600

HIST CORTESE:

Region:	CORTESE
Facility County Code:	41
Reg By:	LTNKA
Reg Id:	41-0440

AF195 **CITY CENTER PARKING STRUCTURE** **LUST S101593813**
North **750 MARSHALL ST.** **SWEEPS UST N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **CA FID UST**
0.360 mi.
1901 ft. **Site 1 of 2 in cluster AF**

Relative:
Lower

Actual:
8 ft.

LUST REG 2:

Region:	2
Facility Id:	Not reported
Facility Status:	Case Closed
Case Number:	330107
How Discovered:	OM
Leak Cause:	Unknown
Leak Source:	Unknown
Date Leak Confirmed:	Not reported

DRAFT

CITY CENTER PARKING STRUCTURE (Continued) **S101593813**

Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SWEEPS UST:
Status: Not reported
Comp Number: 330202
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330202-000001
Tank Status: Not reported
Capacity: 1000
Active Date: Not reported
Tank Use: UNKNOWN
STG: PRODUCT
Content: Not reported
Number Of Tanks: 1

CA FID UST:
Facility ID: 41000636
Regulated By: UTNKI
Regulated ID: Not reported
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 4157807380
Mail To: Not reported
Mailing Address: 750 MARSHALL ST.
Mailing Address 2: Not reported
Mailing City,St,Zip: REDWOOD CITY 94063
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Inactive

AF196 **CITY CENTER PARKING** **LUST** **S103893024**
North **750 MARSHALL** **HIST CORTESE** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.360 mi.
1901 ft. **Site 2 of 2 in cluster AF**

Relative:
Lower

Actual:
8 ft.

LUST:
Region: STATE
Global Id: T0608100667
Latitude: 37.4876233
Longitude: -122.2270604
Case Type: LUST Cleanup Site

DRAFT

CITY CENTER PARKING (Continued) **S103893024**

Status:	Completed - Case Closed
Status Date:	06/12/1997
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0701
LOC Case Number:	330107
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100667
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100667
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100667
Status:	Completed - Case Closed
Status Date:	06/12/1997

Global Id:	T0608100667
Status:	Open - Case Begin Date
Status Date:	11/09/1992

Regulatory Activities:

Global Id:	T0608100667
Action Type:	ENFORCEMENT
Date:	11/17/1992
Action:	Notice of Responsibility - #1

Global Id:	T0608100667
Action Type:	Other
Date:	11/09/1992
Action:	Leak Reported

Global Id:	T0608100667
Action Type:	Other
Date:	11/09/1992
Action:	Leak Discovery

DRAFT

CITY CENTER PARKING (Continued) **S103893024**

SAN MATEO CO. LUST:

Region:	SAN MATEO
Facility ID:	330107
Facility Status:	9- Case Closed
Global ID:	T0608100667
APN Number:	Not reported
Case Type:	SAN MATEO CO. LUST
EDR Link ID:	SAN MATEO CO. LUST

HIST CORTESE:

Region:	CORTESE
Facility County Code:	41
Reg By:	LTNKA
Reg Id:	41-0701

AG197 **SHELL, FORMER/KENNEDY AUTO** **LUST** **S103890694**
WNW **1026 EL CAMINO REAL** **HIST CORTESE** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.379 mi.
2002 ft. **Site 1 of 2 in cluster AG**

Relative:
Higher

Actual:
13 ft.

LUST:

Region:	STATE
Global Id:	T0608101107
Latitude:	37.48386
Longitude:	-122.232442
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	07/18/2014
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-1211
LOC Case Number:	330161
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Can be extracted from most recent report in Geotracker or at San Mateo County offices if submitted prior to 2005, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report.

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608101107
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Status History:

Global Id:	T0608101107
Status:	Completed - Case Closed

DRAFT

SHELL, FORMER/KENNEDY AUTO (Continued) **S103890694**

Status Date: 07/18/2014

Global Id: T0608101107
Status: Open - Case Begin Date
Status Date: 02/04/1997

Global Id: T0608101107
Status: Open - Eligible for Closure
Status Date: 06/14/2012

Global Id: T0608101107
Status: Open - Site Assessment
Status Date: 02/04/1997

Global Id: T0608101107
Status: Open - Verification Monitoring
Status Date: 04/27/2012

Regulatory Activities:
Global Id: T0608101107
Action Type: ENFORCEMENT
Date: 02/09/2011
Action: Staff Letter - #20110209

Global Id: T0608101107
Action Type: RESPONSE
Date: 08/29/2014
Action: Well Destruction Report

Global Id: T0608101107
Action Type: RESPONSE
Date: 08/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 02/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 05/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 11/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 02/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 11/15/2007

DRAFT

SHELL, FORMER/KENNEDY AUTO (Continued) **S103890694**

Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 02/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: ENFORCEMENT
Date: 10/28/2009
Action: Staff Letter - #20091028

Global Id: T0608101107
Action Type: Other
Date: 10/01/1996
Action: Leak Discovery

Global Id: T0608101107
Action Type: ENFORCEMENT
Date: 07/28/2011
Action: Staff Letter - #20110728

Global Id: T0608101107
Action Type: ENFORCEMENT
Date: 08/31/1998
Action: Notice of Responsibility - #1

Global Id: T0608101107
Action Type: ENFORCEMENT
Date: 07/06/2006
Action: Staff Letter - #20060706

Global Id: T0608101107
Action Type: ENFORCEMENT
Date: 10/24/2012
Action: Staff Letter - #20121024

Global Id: T0608101107
Action Type: ENFORCEMENT
Date: 04/29/2014
Action: Staff Letter - #20140429

Global Id: T0608101107
Action Type: ENFORCEMENT
Date: 04/27/2012
Action: Staff Letter - #20120427

Global Id: T0608101107
Action Type: Other
Date: 07/20/1998
Action: Leak Reported

Global Id: T0608101107
Action Type: RESPONSE
Date: 02/15/2011
Action: Monitoring Report - Semi-Annually

DRAFT

SHELL, FORMER/KENNEDY AUTO (Continued) **S103890694**

Global Id: T0608101107
Action Type: RESPONSE
Date: 05/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 08/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 08/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 11/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 05/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 08/15/2010
Action: Monitoring Report - Semi-Annually

Global Id: T0608101107
Action Type: RESPONSE
Date: 08/15/2011
Action: Monitoring Report - Semi-Annually

Global Id: T0608101107
Action Type: RESPONSE
Date: 02/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 08/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 08/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 02/15/2012
Action: Monitoring Report - Semi-Annually

Global Id: T0608101107
Action Type: ENFORCEMENT

DRAFT

SHELL, FORMER/KENNEDY AUTO (Continued) **S103890694**

Date: 07/08/2014
Action: Closure/No Further Action Letter

Global Id: T0608101107
Action Type: RESPONSE
Date: 08/15/2012
Action: Monitoring Report - Semi-Annually

Global Id: T0608101107
Action Type: RESPONSE
Date: 11/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 03/17/2010
Action: Risk Assessment Report - Regulator Responded

Global Id: T0608101107
Action Type: RESPONSE
Date: 04/01/2011
Action: Soil and Water Investigation Report - Regulator Responded

Global Id: T0608101107
Action Type: ENFORCEMENT
Date: 07/02/2009
Action: Staff Letter - #20090702

Global Id: T0608101107
Action Type: RESPONSE
Date: 08/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 11/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 05/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 08/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 02/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 11/15/2003
Action: Monitoring Report - Quarterly

DRAFT

SHELL, FORMER/KENNEDY AUTO (Continued) **S103890694**

Global Id: T0608101107
Action Type: RESPONSE
Date: 02/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 05/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 11/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0608101107
Action Type: RESPONSE
Date: 08/31/2006
Action: Corrective Action Plan / Remedial Action Plan

Global Id: T0608101107
Action Type: RESPONSE
Date: 12/09/2011
Action: Soil and Water Investigation Workplan - Regulator Responded

Global Id: T0608101107
Action Type: RESPONSE
Date: 07/21/2012
Action: Request for Closure - Regulator Responded

Global Id: T0608101107
Action Type: ENFORCEMENT
Date: 02/24/2014
Action: Notification - Preclosure - #20140224

Global Id: T0608101107
Action Type: RESPONSE
Date: 06/02/2014
Action: Well Destruction Workplan - Regulator Responded

Global Id: T0608101107
Action Type: REMEDIATION
Date: 09/15/2003
Action: Soil Vapor Extraction (SVE)

Global Id: T0608101107
Action Type: REMEDIATION
Date: 04/01/2005
Action: Pump & Treat (P&T) Groundwater

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Preliminary site assessment underway
Case Number: 330161
How Discovered: OM

DRAFT

SHELL, FORMER/KENNEDY AUTO (Continued) **S103890694**

Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: 1/1/1965
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330161
Facility Status: 9- Case Closed
Global ID: T0608101107
APN Number: 052211020
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-1211

AH198 **GRANT CORPORATION YARD** **LUST U001594561**
ENE **752 CHESTNUT ST** **HIST UST N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **San Mateo Co. BI**
0.380 mi.
2005 ft. **Site 1 of 5 in cluster AH**

Relative:
Higher

Actual:
13 ft.

LUST:
Region: STATE
Global Id: T0608116125
Latitude: 37.48412993431
Longitude: -122.219080924988
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 05/19/2014
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-4016
LOC Case Number: 330174
File Location: Local Agency
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Extracted from ERI's December 12, 2007 Evaluation of Case Closure Criteria report in Geotracker, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report. 1951 One 500-gallon single-walled used-oil tank and one 6,000-gallon single-walled UST were installed at the subject site. 1955 One 2,000-gallon single-walled UST and three 6,000-gallon single-walled USTs were installed at the subject site. There are no records available that indicate whether or not the 500-gallon used-oil tank

DRAFT

GRANT CORPORATION YARD (Continued) **U001594561**

and 6,000-gallon UST tank installed in 1951 were removed. February 1999 The County oversaw the removal of four USTs on February 16, 1999. One 2,000-gallon and three 6,000-gallon tanks were removed as a result of upgrading the fueling system. There were no visible holes or leaks apparent in the USTs. Soil samples were collected from the UST excavation sidewalls prior to and following over-excavation, and from beneath the former dispensers, fuel pipelines, and vent line locations. Laboratory analytical results of the soil samples collected from beneath the former dispensers and associated piping indicate the presence of total petroleum hydrocarbons as diesel (TPHd) at concentrations up to 14 milligrams per kilogram (mg/kg), total petroleum hydrocarbons as gasoline (TPHg) up to 2.0 mg/kg, methyl tertiary butyl ether (MTBE) up to 0.65 mg/kg, and total lead up to 19 mg/kg. Benzene, toluene, ethylbenzene, and total xytenes (BTEX) were not present above laboratory reporting limits in the samples collected from beneath the former dispensers and associated piping. Soil samples collected from the sidewalls of the UST excavation indicate the presence of TPHd up to 1,500 mg/kg, TPHg up to 79 mg/kg, MTBE up to 42 mg/kg, benzene up to 0.61 mg/kg, and total lead up to 17 mg/kg. Approximately 800 cubic yards of soil generated during the UST excavation was transported to County property (APN 095-220-140) located north of the San Mateo County Airport in San Carlos, California pending characterization for disposal andfor reuse as fill. October 2000 Atlas Engineering Services, Incorporated (Atlas) observed the installation of eight soil borings (B1 through B8) to evaluate the extent of hydrocarbon-impacted soil and groundwater adjacent to the former USTs. Concentrations of TPHd and TPHg were detected in soil samples collected from these borings at 1,500 mg/kg and 1,300 mg/kg, respectively. Concentrations of MTBE were detected in these samples up to 0.42 mg/kg. Concentrations of BTEX were detected in soil samples up to 3.4 mg/kg, 2.6 mg/kg, 43 mg/kg, and 150 mg/kg, respectively. March 2002 Atlas observed the installation of three groundwater monitoring wells (MW-1 through MW-3) to evaluate the lateral extent of dissolved-phase petroleum hydrocarbons in groundwater, the groundwater flow direction, and the hydraulic gradient of groundwater underlying the site. Quarterly monitoring of these wells began during first quarter 2002. February 2003 Groundwater monitoring well MW-4 was installed on site near the former dispensers. November 2003 ERI collected soil samples from the stockpile located at the Airport for analyses. The results of the analyses indicated that the total lead concentrations precluded acceptance for disposal at select landfills. June 2006 ERI observed the drilling of soil boring B9 at the subject site. Soil boring B9 was advanced to 20 fbgs to assess groundwater north of the former USTs and in the vicinity of previous soil borings B5 and B6. Groundwater monitoring has been conducted episodically at the site since March 2002. Since February 2005, monitoring has been performed annually, during the first quarter of each year. ERI performed a file review at the County, a well completion records search at the DWR, and a thorough review of ERI records and archives. ERI was unable to gather any information on the history of the 1951 and 1955 USTs other than the date of installation.

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608116125
Contact Type: Local Agency Caseworker

GRANT CORPORATION YARD (Continued) **U001594561**

Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292
Global Id:	T0608116125
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608116125
Status:	Completed - Case Closed
Status Date:	05/19/2014
Global Id:	T0608116125
Status:	Open - Case Begin Date
Status Date:	02/16/1999
Global Id:	T0608116125
Status:	Open - Eligible for Closure
Status Date:	07/31/2013
Global Id:	T0608116125
Status:	Open - Site Assessment
Status Date:	10/01/2000
Global Id:	T0608116125
Status:	Open - Verification Monitoring
Status Date:	03/28/2003

Regulatory Activities:

Global Id:	T0608116125
Action Type:	ENFORCEMENT
Date:	09/27/2013
Action:	Technical Correspondence / Assistance / Other
Global Id:	T0608116125
Action Type:	ENFORCEMENT
Date:	07/07/2005
Action:	Staff Letter - #20050707
Global Id:	T0608116125
Action Type:	ENFORCEMENT
Date:	06/16/2003
Action:	Staff Letter - #20030616
Global Id:	T0608116125
Action Type:	ENFORCEMENT
Date:	05/05/2004

DRAFT

GRANT CORPORATION YARD (Continued) **U001594561**

Action: Staff Letter - #20040505A

Global Id: T0608116125
Action Type: RESPONSE
Date: 05/15/2006
Action: Monitoring Report - Annually

Global Id: T0608116125
Action Type: RESPONSE
Date: 06/09/2004
Action: Electronic Reporting Submittal Due

Global Id: T0608116125
Action Type: RESPONSE
Date: 09/15/2005
Action: Other Report / Document

Global Id: T0608116125
Action Type: RESPONSE
Date: 04/16/2010
Action: Monitoring Report - Other

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 03/17/2010
Action: Staff Letter - #20100317

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 08/05/2009
Action: Staff Letter - #20090805

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 05/19/2014
Action: Closure/No Further Action Letter - #20140519

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 10/27/2008
Action: Staff Letter - #20081027

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 03/09/2006
Action: Staff Letter - #20060309

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 11/29/2004
Action: Staff Letter - #20041129B

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 06/18/2007
Action: Staff Letter - #20070618

DRAFT

GRANT CORPORATION YARD (Continued) **U001594561**

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 05/05/2004
Action: Staff Letter - #20040505B

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 09/25/2013
Action: Notification - Preclosure - #20130925

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 11/29/2004
Action: Staff Letter - #20041129A

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 04/30/2008
Action: Staff Letter - #20080430

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 12/02/2013
Action: Staff Letter - #20131202

Global Id: T0608116125
Action Type: RESPONSE
Date: 06/09/2004
Action: Other Report / Document

Global Id: T0608116125
Action Type: RESPONSE
Date: 07/06/2003
Action: Soil and Water Investigation Workplan - Addendum

Global Id: T0608116125
Action Type: RESPONSE
Date: 06/11/2003
Action: Well Installation Report

Global Id: T0608116125
Action Type: RESPONSE
Date: 10/16/2003
Action: Soil and Water Investigation Report

Global Id: T0608116125
Action Type: RESPONSE
Date: 05/15/2009
Action: Monitoring Report - Annually

Global Id: T0608116125
Action Type: RESPONSE
Date: 06/29/2006
Action: Other Report / Document

Global Id: T0608116125
Action Type: RESPONSE

DRAFT

GRANT CORPORATION YARD (Continued) **U001594561**

Date: 08/14/2007
Action: Electronic Reporting Submittal Due

Global Id: T0608116125
Action Type: RESPONSE
Date: 11/28/2007
Action: Request for Closure

Global Id: T0608116125
Action Type: RESPONSE
Date: 08/14/2007
Action: Other Report / Document

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 09/24/2013
Action: Notification - Preclosure - #20130924

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 02/25/2010
Action: Technical Correspondence / Assistance / Other - #20100225

Global Id: T0608116125
Action Type: RESPONSE
Date: 08/31/2010
Action: Final Remedial Action Report / Corrective Action Report

Global Id: T0608116125
Action Type: RESPONSE
Date: 07/15/2010
Action: Monitoring Report - Annually

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 02/23/1999
Action: Notice of Responsibility - #19990223

Global Id: T0608116125
Action Type: RESPONSE
Date: 12/01/2008
Action: Soil and Water Investigation Report

Global Id: T0608116125
Action Type: RESPONSE
Date: 06/11/2003
Action: Other Report / Document

Global Id: T0608116125
Action Type: RESPONSE
Date: 07/14/2004
Action: Soil and Water Investigation Report

Global Id: T0608116125
Action Type: RESPONSE
Date: 07/14/2004
Action: Monitoring Report - Semi-Annually

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GRANT CORPORATION YARD (Continued) **U001594561**

Global Id: T0608116125
Action Type: RESPONSE
Date: 05/16/2005
Action: Monitoring Report - Annually

Global Id: T0608116125
Action Type: RESPONSE
Date: 05/15/2007
Action: Monitoring Report - Annually

Global Id: T0608116125
Action Type: RESPONSE
Date: 03/07/2005
Action: Soil and Water Investigation Report

Global Id: T0608116125
Action Type: RESPONSE
Date: 03/07/2005
Action: Electronic Reporting Submittal Due

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 11/16/2010
Action: Staff Letter - #20101116

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 05/06/2003
Action: Staff Letter - #20030506

Global Id: T0608116125
Action Type: ENFORCEMENT
Date: 09/25/2013
Action: Notification - Preclosure - #20130925

Global Id: T0608116125
Action Type: RESPONSE
Date: 08/14/2009
Action: CAP/RAP - Other Report

Global Id: T0608116125
Action Type: RESPONSE
Date: 05/15/2008
Action: Monitoring Report - Annually

Global Id: T0608116125
Action Type: RESPONSE
Date: 09/17/2007
Action: Soil and Water Investigation Workplan

Global Id: T0608116125
Action Type: RESPONSE
Date: 02/28/2014
Action: Well Destruction Report

Global Id: T0608116125
Action Type: Other

DRAFT

GRANT CORPORATION YARD (Continued) **U001594561**

Date: 02/16/1999
Action: Leak Discovery

Global Id: T0608116125
Action Type: RESPONSE
Date: 09/15/2005
Action: Soil and Water Investigation Workplan

Global Id: T0608116125
Action Type: RESPONSE
Date: 06/29/2006
Action: Electronic Reporting Submittal Due

Global Id: T0608116125
Action Type: RESPONSE
Date: 06/29/2006
Action: Soil and Water Investigation Report

Global Id: T0608116125
Action Type: REMEDIATION
Date: 02/16/1999
Action: Excavation

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Post remedial action monitoring
Case Number: 330174
How Discovered: Tank Closure
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: 10/1/2000
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: 3/28/2003

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330174
Facility Status: 9- Case Closed
Global ID: T0608116125
APN Number: 054063180
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST UST:
File Number: Not reported
URL: Not reported
Region: STATE
Facility ID: 00000038775
Facility Type: Other

DRAFT

GRANT CORPORATION YARD (Continued) **U001594561**

Other Type: ROAD MAINT. CORP. YA
Contact Name: VERLE FAIRBANKS
Telephone: 3634145
Owner Name: COUNTY OF SAN MATEO, DEPT. OF
Owner Address: 590 HAMILTON STREET
Owner City,St,Zip: REDWOOD CITY, CA 94063
Total Tanks: 0004

Tank Num: 001
Container Num: 03
Year Installed: Not reported
Tank Capacity: 00006000
Tank Used for: PRODUCT
Type of Fuel: DIESEL
Container Construction Thickness: Not reported
Leak Detection: Visual

Tank Num: 002
Container Num: 01
Year Installed: Not reported
Tank Capacity: 00002000
Tank Used for: PRODUCT
Type of Fuel: DIESEL
Container Construction Thickness: Not reported
Leak Detection: Visual

Tank Num: 003
Container Num: 02
Year Installed: Not reported
Tank Capacity: 00006000
Tank Used for: PRODUCT
Type of Fuel: UNLEADED
Container Construction Thickness: Not reported
Leak Detection: Visual

Tank Num: 004
Container Num: 04
Year Installed: Not reported
Tank Capacity: 00006000
Tank Used for: PRODUCT
Type of Fuel: UNLEADED
Container Construction Thickness: Not reported
Leak Detection: Visual

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0060167
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0082654
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0060167
Prog Element Code: STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id: PR0082653
Description: STORES HAZ MAT <1,199GAL,9,999LB,4,799CF

DRAFT

GRANT CORPORATION YARD (Continued) **U001594561**

Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0060167
Prog Element Code: 1805
Record Id: PR0082652
Description: TIRE GENERATOR - SMALL QUANTITY
Facility Status: ACTIVE

AI199 **RITZ CLEANERS** **LUST 1000442613**
WNW **37 JAMES** **SLIC N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **HIST CORTESE**
0.381 mi.
2013 ft. **Site 1 of 3 in cluster AI**

Relative:
Lower

Actual:
9 ft.

LUST REG 2:
Region: 2
Facility Id: 41-1178
Facility Status: Post remedial action monitoring
Case Number: 339003
How Discovered: Tank Closure
Leak Cause: UNK
Leak Source: UNK
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: 7/26/1997

SLIC:
Region: STATE
Facility Status: **Open - Verification Monitoring**
Status Date: 07/26/1997
Global Id: T0608101077
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Lead Agency Case Number: 339003
Latitude: 37.48486
Longitude: -122.232636
Case Type: Cleanup Program Site
Case Worker: DIB
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-1178
File Location: Regional Board
Potential Media Affected: Under Investigation
Potential Contaminants of Concern: * Solvents, Tetrachloroethylene (PCE), Trichloroethylene (TCE)
Site History: THIS SITE IS NOW PART OF THE SEQUOIA STATION SHOPPING CENTER, A 13 ACRE SITE MADE UP OF A NUMBER OF FORMERLY SEPARATE PARCELS. A LARGER PCE PLUME FROM THE ROY'S DRY CLEANER SITE (41S0103) EXTENDS FROM EL CAMINO REAL ACROSS THE SOUTHER PORTION OF SEQUOIA STATION. RITZ CLEANERS IS ON THE NORTHERN SIDE OF SEQUOIA STATION. PCE CONTAMINATED SOIL WAS REMOVED TO THE EXTENT PRACTICAL FROM THE RITZ SITE IN 1993. SOME CONTAMINATED SOIL BELOW THE VADOSE ZONE COULD NOT BE EXCAVATED DUE TO THE THREAT OF UNDERMINING A LARGE CULVERT FOR REDWOOD CREEK.

DRAFT

RITZ CLEANERS (Continued) **1000442613**

Click here to access the California GeoTracker records for this facility:

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-1178

---

200 NE 1/4-1/2 0.388 mi. 2051 ft.

ROHM&HAAS/OCCIDENTAL CHEM
800 CHESNUT
REDWOOD CITY, CA 94063

Cortese S105025722
ENF N/A
HIST CORTESE

Relative: Lower

Actual: 12 ft.

CORTESE:
Region: CORTESE
Envirostor Id: Not reported
Site/Facility Type: Not reported
Cleanup Status: Not reported
Status Date: Not reported
Site Code: Not reported
Latitude: Not reported
Longitude: Not reported
Owner: Not reported
Enf Type: Not reported
Swat R: Not reported
Flag: CORTESE
Order No: Not reported
Waste Discharge System No: Not reported
Effective Date: Not reported
Region 2: 2
WID Id: 2 417146N01
Solid Waste Id No: Not reported
Waste Management Uit Name: Not reported

ENF:
Region: 2
Facility Id: 253221
Agency Name: Maxus Energy
Place Type: Facility
Place Subtype: Not reported
Facility Type: All other facilities
Agency Type: Privately-Owned Business
Of Agencies: 1
Place Latitude: Not reported
Place Longitude: Not reported
SIC Code 1: 2821
SIC Desc 1: Plastics Material and Synthetic Resins, and Nonvulcanizable Elastomers
SIC Code 2: Not reported
SIC Desc 2: Not reported
SIC Code 3: Not reported
SIC Desc 3: Not reported
NAICS Code 1: Not reported
NAICS Desc 1: Not reported
NAICS Code 2: Not reported
NAICS Desc 2: Not reported

DRAFT

ROHM&HAAS/OCCIDENTAL CHEM (Continued) **S105025722**

NAICS Code 3:	Not reported
NAICS Desc 3:	Not reported
# Of Places:	1
Source Of Facility:	Reg Meas
Design Flow:	Not reported
Threat To Water Quality:	Not reported
Complexity:	Not reported
Pretreatment:	Not reported
Facility Waste Type:	Not reported
Facility Waste Type 2:	Not reported
Facility Waste Type 3:	Not reported
Facility Waste Type 4:	Not reported
Program:	UNREGS
Program Category1:	UNREGS
Program Category2:	UNREGS
# Of Programs:	1
WDID:	2 417146N01
Reg Measure Id:	162449
Reg Measure Type:	Unregulated
Region:	2
Order #:	Not reported
Npdes# CA#:	Not reported
Major-Minor:	Not reported
Npdes Type:	Not reported
Reclamation:	Not reported
Dredge Fill Fee:	Not reported
301H:	Not reported
Application Fee Amt Received:	Not reported
Status:	Never Active
Status Date:	02/21/2013
Effective Date:	Not reported
Expiration/Review Date:	Not reported
Termination Date:	Not reported
WDR Review - Amend:	Not reported
WDR Review - Revise/Renew:	Not reported
WDR Review - Rescind:	Not reported
WDR Review - No Action Required:	Not reported
WDR Review - Pending:	Not reported
WDR Review - Planned:	Not reported
Status Enrollee:	N
Individual/General:	I
Fee Code:	Not reported
Direction/Voice:	Passive
Enforcement Id(EID):	223054
Region:	2
Order / Resolution Number:	93-004
Enforcement Action Type:	Clean-up and Abatement Order
Effective Date:	01/20/1993
Adoption/Issuance Date:	Not reported
Achieve Date:	Not reported
Termination Date:	Not reported
ACL Issuance Date:	Not reported
EPL Issuance Date:	Not reported
Status:	Active
Title:	Enforcement - 2 417146N01
Description:	SCR-
Program:	UNREGS

DRAFT

ROHM&HAAS/OCCIDENTAL CHEM (Continued) **S105025722**

Latest Milestone Completion Date:	Not reported
# Of Programs1:	1
Total Assessment Amount:	0
Initial Assessed Amount:	0
Liability $ Amount:	0
Project $ Amount:	0
Liability $ Paid:	0
Project $ Completed:	0
Total $ Paid/Completed Amount:	0

HIST CORTESE:

Region:	CORTESE
Facility County Code:	41
Reg By:	WBC&D
Reg Id:	2 417146N01

AJ201 **BRADFORD STREET PARKING LOT** **LUST** **S103472785**
NNW **500 BLK BRADFORD ST** **HIST CORTESE** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.390 mi.
2059 ft. **Site 1 of 2 in cluster AJ**

Relative:
Lower

Actual:
10 ft.

LUST:

Region:	STATE
Global Id:	T0608101004
Latitude:	37.488311
Longitude:	-122.231355
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	10/19/1998
Lead Agency:	SAN FRANCISCO BAY RWQCB (REGION 2)
Case Worker:	Not reported
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-1094
LOC Case Number:	339023
File Location:	Not reported
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	* Solvents
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608101004
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Status History:

Global Id:	T0608101004
Status:	Completed - Case Closed
Status Date:	10/19/1998

DRAFT

BRADFORD STREET PARKING LOT (Continued) **S103472785**

Global Id: T0608101004
Status: Open - Case Begin Date
Status Date: 03/18/1998

Global Id: T0608101004
Status: Open - Site Assessment
Status Date: 03/18/1998

Regulatory Activities:
Global Id: T0608101004
Action Type: Other
Date: 03/18/1998
Action: Leak Reported

Global Id: T0608101004
Action Type: Other
Date: 03/18/1998
Action: Leak Discovery

Global Id: T0608101004
Action Type: Other
Date: 03/18/1998
Action: Leak Stopped

Global Id: T0608101004
Action Type: ENFORCEMENT
Date: 05/20/1998
Action: * Historical Enforcement

LUST REG 2:
Region: 2
Facility Id: 41-1094
Facility Status: Preliminary site assessment workplan submitted
Case Number: 339023
How Discovered: Tank Closure
Leak Cause: UNK
Leak Source: UNK
Date Leak Confirmed: 3/18/1998
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: 3/18/1998
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-1094

DRAFT

202 NNW 1/4-1/2 0.392 mi. 2072 ft.

PG&E, REDWOOD CITY
675 JEFFERSON AVENUE
REDWOOD CITY, CA 94063

ENVIROSTOR VCP **S109548335 N/A**

Relative: Lower

Actual: 9 ft.

ENVIROSTOR:

Facility ID:	60001090
Status:	Active
Status Date:	04/28/2009
Site Code:	201842
Site Type:	Voluntary Cleanup
Site Type Detailed:	Voluntary Cleanup
Acres:	0.52
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Remedios Sunga
Supervisor:	Julie Pettijohn
Division Branch:	Cleanup Berkeley
Assembly:	22
Senate:	13
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Responsible Party
Latitude:	37.488
Longitude:	-122.228
APN:	052-373-030, 052373030
Past Use:	MANUFACTURED GAS PLANT
Potential COC:	Arsenic Polynuclear aromatic hydrocarbons (PAHs TPH-gas TPH-MOTOR OIL Not reported
Confirmed COC:	30001-NO 30019-NO 30025-NO 3002502-NO
Potential Description:	CSS, IA, SOIL, SV
Alias Name:	052-373-030
Alias Type:	APN
Alias Name:	052373030
Alias Type:	APN
Alias Name:	201842
Alias Type:	Project Code (Site Code)
Alias Name:	60001090
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Annual Oversight Cost Estimate
Completed Date:	09/13/2016
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	CEQA - Notice of Exemption
Completed Date:	05/26/2016
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Annual Oversight Cost Estimate
Completed Date:	09/22/2015

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PG&E, REDWOOD CITY (Continued) **S109548335**

Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Participation Plan / Community Relations Plan
Completed Date: 06/15/2010
Comments: The Community Profile is for a former PG&E gas holder site located at 675 Jefferson Street in Redwood City, California. The purpose of this community profile is to: 1) provide a description of the site and the community in which it is located, 2) determine initial community interest in investigation and cleanup activities, and 3) recommend future public participation activities to ensure that interested community members are kept informed about the site investigation and cleanup process.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 06/17/2016
Comments: Field cleanup work completed that included removal of contaminated soil from planter boxes, backfill and landscape restoration.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Workplan
Completed Date: 06/14/2011
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Work Notice
Completed Date: 07/22/2011
Comments: A work notice dated 7-20-2011 was mailed out. Work to be done Saturday 1 PM to 10 PM _ July 23, 30, August 6 and Sundays July 24, 31, August 7 from 8 AM to 10 PM

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 08/07/2011
Comments: Field work was completed on July 31, 2011.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Investigation Report
Completed Date: 04/11/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Investigation Workplan
Completed Date: 01/22/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Investigation Workplan

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PG&E, REDWOOD CITY (Continued) **S109548335**

Completed Date: 06/22/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Workplan
Completed Date: 03/14/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Investigation Report
Completed Date: 07/16/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 04/19/2016
Comments: Public notice for RAW comment period.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Workplan
Completed Date: 05/27/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fact Sheets
Completed Date: 04/19/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 10/12/2011
Comments: Sent out annual cost estimate

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 10/29/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 08/27/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 06/12/2009
Comments: The Voluntary Cleanup Agreement (VCA) between PG&E and DTSC has been signed by both parties. The VCA provides for DTSC oversight of the

DRAFT

PG&E, REDWOOD CITY (Continued) **S109548335**

investigation, assessment, and remediation activities related to historic activities conducted at the site prior to development of the current facilities on the property.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Work Notice
Completed Date: 05/31/2016
Comments: RAW implementation or cleanup work will start June 6, 2016 and end in about three weeks.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Risk Assessment Report
Completed Date: 04/08/2016
Comments: DTSC toxicologist concurred with the overall conclusions of the revised HHRA that COC does not pose a threat to current site occupants or use of the site.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 05/24/2016
Comments: Draft comment period ended. No comments received.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Workplan
Completed Date: 10/25/2016
Comments: Second round of air and indoor air sampling will be conducted as required in the Removal Action Workplan to confirm the results of the first sampling.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 11/15/2016
Comments: Field soil gas sampling completed indoor and outdoor.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Investigation Workplan
Completed Date: 01/11/2010
Comments: The Site Characterization Workplan for the initial round of investigation has been reviewed and approved. Sixteen borings will be drilled to collect groundwater, soil and soil gas samples on the Site property. Work will be done during the MLK Holiday weekend and the following weekend. A Work Notice was sent out on January 11, 2010.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 02/05/2010
Comments: The collection of soil, grab groundwater and soil gas samples was completed on February 5, 2010. This is a preliminary phase of sampling and the results will be used to plan a further round of investigation.

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PG&E, REDWOOD CITY (Continued) **S109548335**

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Investigation Report
Completed Date: 06/14/2011
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 01/11/2010
Comments: The Work Notice was mailed out on Monday, January 11, 2010.

Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Land Use Restriction
Future Due Date: 2017
Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Certification
Future Due Date: 2017
Schedule Area Name: PROJECT WIDE
Schedule Sub Area Name: Not reported
Schedule Document Type: Remedial Action Completion Report
Schedule Due Date: 05/14/2017
Schedule Revised Date: Not reported
Schedule Area Name: PROJECT WIDE
Schedule Sub Area Name: Not reported
Schedule Document Type: Operations and Maintenance Plan
Schedule Due Date: 05/16/2017
Schedule Revised Date: Not reported

VCP:
Facility ID: 60001090
Site Type: Voluntary Cleanup
Site Type Detail: Voluntary Cleanup
Site Mgmt. Req.: NONE SPECIFIED
Acres: 0.52
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Remedios Sunga
Supervisor: Julie Pettijohn
Division Branch: Cleanup Berkeley
Site Code: 201842
Assembly: 22
Senate: 13
Special Programs Code: Not reported
Status: Active
Status Date: 04/28/2009
Restricted Use: NO
Funding: Responsible Party
Lat/Long: 37.488 / -122.228
APN: 052-373-030, 052373030
Past Use: MANUFACTURED GAS PLANT
Potential COC: 30001, 30019, 30025, 3002502
Confirmed COC: 30001-NO,30019-NO,30025-NO,3002502-NO

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PG&E, REDWOOD CITY (Continued) **S109548335**

Potential Description: CSS, IA, SOIL, SV
Alias Name: 052-373-030
Alias Type: APN
Alias Name: 052373030
Alias Type: APN
Alias Name: 201842
Alias Type: Project Code (Site Code)
Alias Name: 60001090
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 09/13/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: CEQA - Notice of Exemption
Completed Date: 05/26/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 09/22/2015
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Participation Plan / Community Relations Plan
Completed Date: 06/15/2010
Comments: The Community Profile is for a former PG&E gas holder site located at 675 Jefferson Street in Redwood City, California. The purpose of this community profile is to: 1) provide a description of the site and the community in which it is located, 2) determine initial community interest in investigation and cleanup activities, and 3) recommend future public participation activities to ensure that interested community members are kept informed about the site investigation and cleanup process.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 06/17/2016
Comments: Field cleanup work completed that included removal of contaminated soil from planter boxes, backfill and landscape restoration.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Workplan
Completed Date: 06/14/2011
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Work Notice

DRAFT

PG&E, REDWOOD CITY (Continued) **S109548335**

Completed Date: 07/22/2011
Comments: A work notice dated 7-20-2011 was mailed out. Work to be done Saturday 1 PM to 10 PM _ July 23, 30, August 6 and Sundays July 24, 31, August 7 from 8 AM to 10 PM

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 08/07/2011
Comments: Field work was completed on July 31, 2011.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Investigation Report
Completed Date: 04/11/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Investigation Workplan
Completed Date: 01/22/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Investigation Workplan
Completed Date: 06/22/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Workplan
Completed Date: 03/14/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Investigation Report
Completed Date: 07/16/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 04/19/2016
Comments: Public notice for RAW comment period.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Workplan
Completed Date: 05/27/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fact Sheets
Completed Date: 04/19/2016

DRAFT

PG&E, REDWOOD CITY (Continued) **S109548335**

Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 10/12/2011
Comments: Sent out annual cost estimate

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 10/29/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 08/27/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 06/12/2009
Comments: The Voluntary Cleanup Agreement (VCA) between PG&E and DTSC has been signed by both parties. The VCA provides for DTSC oversight of the investigation, assessment, and remediation activities related to historic activities conducted at the site prior to development of the current facilities on the property.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Work Notice
Completed Date: 05/31/2016
Comments: RAW implementation or cleanup work will start June 6, 2016 and end in about three weeks.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Risk Assessment Report
Completed Date: 04/08/2016
Comments: DTSC toxicologist concurred with the overall conclusions of the revised HHRA that COC does not pose a threat to current site occupants or use of the site.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 05/24/2016
Comments: Draft comment period ended. No comments received.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Workplan
Completed Date: 10/25/2016
Comments: Second round of air and indoor air sampling will be conducted as required in the Removal Action Workplan to confirm the results of the

DRAFT

PG&E, REDWOOD CITY (Continued) **S109548335**

first sampling.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 11/15/2016
Comments: Field soil gas sampling completed indoor and outdoor.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Investigation Workplan
Completed Date: 01/11/2010
Comments: The Site Characterization Workplan for the initial round of investigation has been reviewed and approved. Sixteen borings will be drilled to collect groundwater, soil and soil gas samples on the Site property. Work will be done during the MLK Holiday weekend and the following weekend. A Work Notice was sent out on January 11, 2010.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 02/05/2010
Comments: The collection of soil, grab groundwater and soil gas samples was completed on February 5, 2010. This is a preliminary phase of sampling and the results will be used to plan a further round of investigation.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Investigation Report
Completed Date: 06/14/2011
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 01/11/2010
Comments: The Work Notice was mailed out on Monday, January 11, 2010.

Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Land Use Restriction
Future Due Date: 2017
Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Certification
Future Due Date: 2017
Schedule Area Name: PROJECT WIDE
Schedule Sub Area Name: Not reported
Schedule Document Type: Remedial Action Completion Report
Schedule Due Date: 05/14/2017
Schedule Revised Date: Not reported
Schedule Area Name: PROJECT WIDE
Schedule Sub Area Name: Not reported
Schedule Document Type: Operations and Maintenance Plan
Schedule Due Date: 05/16/2017
Schedule Revised Date: Not reported

DRAFT

AK203 **ORCHARD SUPPLY HARDWARE** **SLIC** **S106235293**
ESE **UNKNOWN MIDDLEFIELD & WOODSIDE RD** **N/A**
1/4-1/2 **REDWOOD CITY, CA**
0.393 mi.
2074 ft. **Site 1 of 3 in cluster AK**

Relative:
Higher

Actual:
18 ft.

SLIC REG 2:

Region:	2
Facility ID:	SLT2O228324
Facility Status:	Leak being confirmed
Date Closed:	Not reported
Local Case #:	Not reported
How Discovered:	Not reported
Leak Cause:	Not reported
Leak Source:	Not reported
Date Confirmed:	Not reported
Date Prelim Site Assmnt Workplan Submitted:	Not reported
Date Preliminary Site Assessment Began:	Not reported
Date Pollution Characterization Began:	Not reported
Date Remediation Plan Submitted:	Not reported
Date Remedial Action Underway:	Not reported
Date Post Remedial Action Monitoring Began:	Not reported

AJ204 **660 JEFFERSON** **ENVIROSTOR** **S117338940**
NNW **660 JEFFERSON AVENUE** **SLIC** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **VCP**
0.393 mi.
2074 ft. **Site 2 of 2 in cluster AJ**

Relative:
Lower

Actual:
9 ft.

ENVIROSTOR:

Facility ID:	60002283
Status:	Active
Status Date:	12/10/2015
Site Code:	202072
Site Type:	Voluntary Cleanup
Site Type Detailed:	Voluntary Cleanup
Acres:	0.23
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Remedios Sunga
Supervisor:	Julie Pettijohn
Division Branch:	Cleanup Berkeley
Assembly:	, 22
Senate:	, 13
Special Program:	CLRRA Liability Immunity (AB 389)
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Responsible Party
Latitude:	37.48774
Longitude:	-122.2284
APN:	NONE SPECIFIED
Past Use:	MANUFACTURING - ELECTRONIC
Potential COC:	Tetrachloroethylene (PCE Trichloroethylene (TCE
Confirmed COC:	Tetrachloroethylene (PCE Trichloroethylene (TCE
Potential Description:	OTH, SOIL
Alias Name:	Former Circuitron Inc.
Alias Type:	Alternate Name
Alias Name:	202072
Alias Type:	Project Code (Site Code)

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660 JEFFERSON (Continued) **S117338940**

Alias Name: 60002283
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Consultation
Completed Date: 12/18/2015
Comments: Based on the consultation meeting, the Phase I ESA has been updated and site investigation results were consolidated in the Site Assessment Plan/Report of Findings submitted on 1/14/2016.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 01/15/2016
Comments: Per the California Health and Safety Code. agencies with jurisdiction at the site must be notified of DTSC's intent to enter into an agreement with entities for implementation of response actions.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: CEQA - Responsible Agency Review
Completed Date: 05/10/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 12/15/2015
Comments: Submittal of existing investigation reports for CLRRA Agreement with DTSC.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Community Profile
Completed Date: 04/28/2016
Comments: Community profile completed after issuing a community questionnaire survey and evaluating the survey results.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Application
Completed Date: 12/17/2015
Comments: Applicant wants to enter into a CLRRA Agreement to redevelop the Site. DTSC and the Water Board have agreed for DTSC to be the lead agency for this redevelopment project.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 01/12/2016
Comments: Phase I ESA was updated to conform with ASTM standards for AAI.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Report
Completed Date: 02/16/2016

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660 JEFFERSON (Continued) **S117338940**

Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: AB 389 Response Plan
Completed Date: 05/10/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fact Sheets
Completed Date: 04/01/2016
Comments: Fact sheet for Response Plan announcing the comment period of April 7 to May 6, 2016.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 04/01/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 05/06/2016
Comments: 30-day comment period ended.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Work Notice
Completed Date: 05/13/2016
Comments: Work notice for Response Plan implementation to start 5/23/2016

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 06/03/2016
Comments: Perimeter air monitoring action levels for VOCs and dusts for Response Plan implementation.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: California Land Reuse and Revitalization Agreement
Completed Date: 02/10/2016
Comments: Agreement signed for cleaning up TCE soil and groundwater contamination.

Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Certification
Future Due Date: 2017
Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Removal Action Completion Report
Future Due Date: 2017
Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported

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660 JEFFERSON (Continued) **S117338940**

Future Document Type: Removal Action Completion Report
Future Due Date: 2017
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SLIC:
Region: STATE
Facility Status: **Open - Site Assessment**
Status Date: 11/25/2014
Global Id: T10000006353
Lead Agency: DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Lead Agency Case Number: 339231
Latitude: 37.4877293290475
Longitude: -122.228476719049
Case Type: Cleanup Program Site
Case Worker: Not reported
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: Not reported
File Location: All Files are on GeoTracker or in the Local Agency Database
Potential Media Affected: Under Investigation
Potential Contaminants of Concern: Dichloroethene (DCE), Tetrachloroethylene (PCE), Trichloroethylene (TCE)
Site History: The information below is from the 2/25/14 workplan prepared by Responsible Party's consultant. The San Mateo County Local Oversight Agency makes no representation as to the accuracy of the information. In 2014 Tetra Tech performed a Phase I Environmental Site Assessment (Phase I ESA) of five adjacent parcels of land located at the northeast corner of the intersection of Middlefield Road and Marshall Street in downtown Redwood City. Findings of the Phase I ESA were presented in a report dated August 12, 2014. The property assessed consisted of assessor parcel numbers (APNs) 052-347-050, -040, -030, -130, and -140, with corresponding present-day street addresses of 611 Middlefield, 621 Middlefield, 627 Middlefield, 655 Middlefield / 611 Marshall, and an asphalt parking lot east of the 601 Marshall building with no present-day address (formerly 650 and 660 Jefferson Avenue), respectively. The Phase I ESA was prepared in connection with the potential acquisition and redevelopment of the property with an 11-story office building. The office building will cover the entire footprints of four of the parcels, with the single family home at 611 Middlefield Road (APN 052-347-050) not part of the redevelopment project. Based on findings of the Phase I ESA, a Screening Level Phase II ESA was performed in the parking lot east of the 601 Marshall Street building, in the former location of a building at 660 Marshall Street that historical records indicated was the site of a printed circuit board manufacturing facility in the 1960s. The business name was identified as Circuitron in Redwood City Building Department files, with a Use Permit No. 61-05 dated January 24, 1961 for the purpose of electro plating of electrical printed circuit boards. The business was identified with a notation of Electronics Lab on 1962 and 1968 Sanborn Insurance maps. Findings of the Phase II ESA were presented in a report dated November 3, 2014. The Phase II ESA report summarized the findings of the Phase I ESA and presented the results of the soil and groundwater investigation. The former Circuitron building measured approximately 40 feet by 40

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660 JEFFERSON (Continued) **S117338940**

feet, and the parking lot parcel measures 100 feet by 100 feet. The Phase II ESA revealed shallow groundwater underlying a portion of the parking lot area to be impacted by trichloroethene (TCE), and to a lesser extent other volatile organic compounds (VOCs) including tetrachloroethene (PCE, or perc) and cis-1,2-dichloroethene (cis-1,2-DCE). The shallow groundwater was first encountered at approximately 21 to 24 feet in depth. Soil samples showed sporadic detections of VOCs at low concentrations, below corresponding agency screening levels, with one exception of an isolated benzene detection above screening levels. The location of sanitary sewer laterals on and near the Property was assessed by reviewing a portion of a public works sewer diagram; a copy of the drawing is provided in Appendix A (Note: the yellow highlighting on the sewer laterals closest to the Property was added by Tetra Tech for clarity). The lateral locations are also shown on Figure 3. The location of sewer piping can be important, as discharge of wastewater to the sanitary sewer may have been a common practice in the 1960s at plating operations. In this case, the Circuitron building was quite small as compared to other printed circuit board manufacturing and plating operations in the Silicon Valley area; a sewer lateral leaves the Property north and west of the former Circuitron building. Presumably, a sewer line ran from the building to one or both of the lateral locations to the north or west of the former building location. City files were reviewed on two occasions in attempts to discern the location of sanitary sewer lines exiting the former Circuitron building, but neither design drawings nor as-built drawings of the former building are on-file at the City. Submittal of the Phase II ESA report to the County resulted in theCounty opening up a case under the Countys Voluntary Cleanup Program.

Click here to access the California GeoTracker records for this facility:

VCP:

Facility ID:	60002283
Site Type:	Voluntary Cleanup
Site Type Detail:	Voluntary Cleanup
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	0.23
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Remedios Sunga
Supervisor:	Julie Pettijohn
Division Branch:	Cleanup Berkeley
Site Code:	202072
Assembly:	, 22
Senate:	, 13
Special Programs Code:	CLRRA Liability Immunity (AB 389)
Status:	Active
Status Date:	12/10/2015
Restricted Use:	NO
Funding:	Responsible Party
Lat/Long:	37.48774 / -122.2284
APN:	NONE SPECIFIED
Past Use:	MANUFACTURING - ELECTRONIC
Potential COC:	30022, 30027

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660 JEFFERSON (Continued) **S117338940**

Confirmed COC: 30022,30027
Potential Description: OTH, SOIL
Alias Name: Former Circuitron Inc.
Alias Type: Alternate Name
Alias Name: 202072
Alias Type: Project Code (Site Code)
Alias Name: 60002283
Alias Type: Envirostor ID Number

Completed Info:

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Consultation
Completed Date: 12/18/2015
Comments: Based on the consultation meeting, the Phase I ESA has been updated and site investigation results were consolidated in the Site Assessment Plan/Report of Findings submitted on 1/14/2016.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 01/15/2016
Comments: Per the California Health and Safety Code. agencies with jurisdiction at the site must be notified of DTSC's intent to enter into an agreement with entities for implementation of response actions.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: CEQA - Responsible Agency Review
Completed Date: 05/10/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 12/15/2015
Comments: Submittal of existing investigation reports for CLRRA Agreement with DTSC.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Community Profile
Completed Date: 04/28/2016
Comments: Community profile completed after issuing a community questionnaire survey and evaluating the survey results.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Application
Completed Date: 12/17/2015
Comments: Applicant wants to enter into a CLRRA Agreement to redevelop the Site. DTSC and the Water Board have agreed for DTSC to be the lead agency for this redevelopment project.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 01/12/2016

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660 JEFFERSON (Continued) **S117338940**

Comments: Phase I ESA was updated to conform with ASTM standards for AAI.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Report
Completed Date: 02/16/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: AB 389 Response Plan
Completed Date: 05/10/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fact Sheets
Completed Date: 04/01/2016
Comments: Fact sheet for Response Plan announcing the comment period of April 7 to May 6, 2016.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 04/01/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Public Notice
Completed Date: 05/06/2016
Comments: 30-day comment period ended.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Work Notice
Completed Date: 05/13/2016
Comments: Work notice for Response Plan implementation to start 5/23/2016

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 06/03/2016
Comments: Perimeter air monitoring action levels for VOCs and dusts for Response Plan implementation.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: California Land Reuse and Revitalization Agreement
Completed Date: 02/10/2016
Comments: Agreement signed for cleaning up TCE soil and groundwater contamination.

Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Certification
Future Due Date: 2017

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660 JEFFERSON (Continued) **S117338940**

Future Area Name:	PROJECT WIDE
Future Sub Area Name:	Not reported
Future Document Type:	Removal Action Completion Report
Future Due Date:	2017
Future Area Name:	PROJECT WIDE
Future Sub Area Name:	Not reported
Future Document Type:	Removal Action Completion Report
Future Due Date:	2017
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

AH205 **DUOLITE INTERNATIONAL** **SEMS** **1000293882**
ENE **800 CHESTNUT ST** **CORRACTS** **CAD990792335**
1/4-1/2 **REDWOOD CITY, CA 94063** **RCRA-TSDF**
0.393 mi. **RCRA-SQG**
2076 ft. **Site 2 of 5 in cluster AH** **HIST UST**
2020 COR ACTION
Relative: **FINDS**
Higher **ECHO**

Actual: **13 ft.**

SEMS:

Site ID:	905119
EPA ID:	CAD990792335
Federal Facility:	N
NPL:	Not on the NPL
Non NPL Status:	Deferred to RCRA

Following information was gathered from the prior CERCLIS update completed in 10/2013:

Site ID:	0905119
EPA ID:	CAD990792335
Facility County:	SAN MATEO
Short Name:	DUOLITE INTERNATIONAL
Congressional District:	11
IFMS ID:	Not reported
SMSA Number:	7360
USGC Hydro Unit:	18050004
Federal Facility:	Not a Federal Facility
DMNSN Number:	0.00000
Site Orphan Flag:	N
RCRA ID:	Not reported
USGS Quadrangle:	Not reported
Site Init By Prog:	Not reported
NFRAP Flag:	Not reported
Parent ID:	Not reported
RST Code:	Not reported
EPA Region:	09
Classification:	Not reported
Site Settings Code:	Not reported
NPL Status:	Not on the NPL
DMNSN Unit Code:	Not reported
RBRAC Code:	Not reported
RResp Fed Agency Code:	Not reported
Non NPL Status:	Deferred to RCRA
Non NPL Status Date:	03/24/00
Site Fips Code:	06081

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DUOLITE INTERNATIONAL (Continued) **1000293882**

CC Concurrence Date: / /
CC Concurrence FY: Not reported
Alias EPA ID: Not reported
Site FUDS Flag: Not reported

CERCLIS Site Contact Name(s):
Contact ID: 13003854.00000
Contact Name: Leslie Ramirez
Contact Tel: (415) 972-3978
Contact Title: Site Assessment Manager (SAM)
Contact Email: Not reported

Contact ID: 13003858.00000
Contact Name: Sharon Murray
Contact Tel: (415) 972-4250
Contact Title: Site Assessment Manager (SAM)
Contact Email: Not reported

Contact ID: 13004003.00000
Contact Name: Carl Brickner
Contact Tel: Not reported
Contact Title: Site Assessment Manager (SAM)
Contact Email: Not reported

Alias Comments: Not reported
Site Description: Based on APA of 3/15/2000.

CERCLIS Assessment History:

Action Code: 001
Action: DISCOVERY
Date Started: / /
Date Completed: 08/03/94
Priority Level: Not reported
Operable Unit: SITEWIDE
Primary Responsibility: EPA Fund-Financed
Planning Status: Not reported
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: PRELIMINARY ASSESSMENT
Date Started: / /
Date Completed: 03/24/00
Priority Level: Deferred to RCRA (Subtitle C)
Operable Unit: SITEWIDE
Primary Responsibility: EPA Fund-Financed
Planning Status: Not reported
Urgency Indicator: Not reported
Action Anomaly: Not reported

CORRACTS:

EPA ID: CAD990792335

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DUOLITE INTERNATIONAL (Continued) **1000293882**

EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19880601
Action: CA600SR - Stabilization Measures Implemented, Primary measure is source removal and/or treatment
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19940803
Action: CA225YE - Stabilization Measures Evaluation, This facility ,is amenable to stabilization activity based on the, status of corrective action work at the facility, technical factors, the degree of risk, timing considerations and administrative considerations
NAICS Code(s): 56291
Remediation Services
Original schedule date: 19940803
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19940803
Action: CA225YE - Stabilization Measures Evaluation, This facility ,is amenable to stabilization activity based on the, status of corrective action work at the facility, technical factors, the degree of risk, timing considerations and administrative considerations
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19940803
Action: CA075HI - CA Prioritization, Facility or area was assigned a high corrective action priority
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19970917
Action: CA750NO - Migration of Contaminated Groundwater under Control, Unacceptable migration of contaminated groundwater is observed or expected
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported

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DUOLITE INTERNATIONAL (Continued) **1000293882**

Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19970917
Action: CA225NR - Stabilization Measures Evaluation, This facility is, not amenable to stabilization activity at the, present time for reasons other than (1) it appears to be technically, infeasible or inappropriate (NF) or (2) there is a lack of technical, information (IN). Reasons for this conclusion may be the status of, closure at the facility, the degree of risk, timing considerations, the status of corrective action work at the facility, or other, administrative considerations
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19970917
Action: CA225NR - Stabilization Measures Evaluation, This facility is, not amenable to stabilization activity at the, present time for reasons other than (1) it appears to be technically, infeasible or inappropriate (NF) or (2) there is a lack of technical, information (IN). Reasons for this conclusion may be the status of, closure at the facility, the degree of risk, timing considerations, the status of corrective action work at the facility, or other, administrative considerations
NAICS Code(s): 56291
Remediation Services
Original schedule date: 19970917
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20100218
Action: CA550RC
NAICS Code(s): 56291
Remediation Services
Original schedule date: 20100218
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20100218
Action: CA550RC
NAICS Code(s): 56291
Remediation Services
Original schedule date: 20100218
Schedule end date: Not reported

EPA ID: CAD990792335

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DUOLITE INTERNATIONAL (Continued) **1000293882**

EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19970718
Action: CA200 - RFI Approved
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19970718
Action: CA200 - RFI Approved
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19970918
Action: CA210 - CA Responsibility Referred To A Non-RCRA Federal Authority
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19930120
Action: CA100 - RFI Imposition
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19930120
Action: CA250 - CMS Imposition
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19930120
Action: CA400 - Date For Remedy Selection (CM Imposed)
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported

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DUOLITE INTERNATIONAL (Continued) **1000293882**

Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19930120
Action: CA400 - Date For Remedy Selection (CM Imposed)
NAICS Code(s): 56291
Remediation Services
Original schedule date: 19930120
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19960621
Action: CA500 - CMI Workplan Approved
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19960621
Action: CA450 - Corrective Measures Design Approved
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19960621
Action: CA500 - CMI Workplan Approved
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20030922
Action: CA750YE - Migration of Contaminated Groundwater under Control, Yes, Migration of Contaminated Groundwater Under Control has been verified
NAICS Code(s): 56291
Remediation Services
Original schedule date: 20030922
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20030922

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DUOLITE INTERNATIONAL (Continued) **1000293882**

Action: CA750YE - Migration of Contaminated Groundwater under Control, Yes, Migration of Contaminated Groundwater Under Control has been verified
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20000523
Action: CA050 - RFA Completed
NAICS Code(s): 56291
Remediation Services
Original schedule date: 20000622
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20000523
Action: CA070NO - RFA Determination Of Need For An RFI, RFI is Not Necessary
NAICS Code(s): 56291
Remediation Services
Original schedule date: 20000622
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20020923
Action: CA750IN - Migration of Contaminated Groundwater under Control, More information is needed to make a determination
NAICS Code(s): 56291
Remediation Services
Original schedule date: 20020923
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20020923
Action: CA800YE
NAICS Code(s): 56291
Remediation Services
Original schedule date: 20020923
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20020923
Action: CA750IN - Migration of Contaminated Groundwater under Control, More information is needed to make a determination
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported

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DUOLITE INTERNATIONAL (Continued) **1000293882**

Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20020923
Action: CA725YE - Current Human Exposures Under Control, Yes, Current Human Exposures Under Control has been verified
NAICS Code(s): 56291
Remediation Services
Original schedule date: 20020923
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20020923
Action: CA725YE - Current Human Exposures Under Control, Yes, Current Human Exposures Under Control has been verified
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19930526
Action: CA150 - RFI Workplan Approved
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20001228
Action: CA750NO - Migration of Contaminated Groundwater under Control, Unacceptable migration of contaminated groundwater is observed or expected
NAICS Code(s): 56291
Remediation Services
Original schedule date: 20001228
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20001228
Action: CA750NO - Migration of Contaminated Groundwater under Control, Unacceptable migration of contaminated groundwater is observed or expected
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

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DUOLITE INTERNATIONAL (Continued) **1000293882**

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20001228
Action: CA725IN - Current Human Exposures Under Control, More information is needed to make a determination
NAICS Code(s): 56291
Remediation Services
Original schedule date: 20001228
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20001228
Action: CA725IN - Current Human Exposures Under Control, More information is needed to make a determination
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19970730
Action: CA725YE - Current Human Exposures Under Control, Yes, Current Human Exposures Under Control has been verified
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19880930
Action: CA650 - Stabilization Construction Completed
NAICS Code(s): 56291
Remediation Services
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD990792335
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19880531
Action: CA050 - RFA Completed
NAICS Code(s): 56291
Remediation Services
Original schedule date: 19880531
Schedule end date: Not reported

RCRA-TSDF:
Date form received by agency: 04/21/2015
Facility name: TIERRA SOLUTIONS DUOLITE INTERNATIONAL SITE
Facility address: 800 CHESTNUT ST

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DUOLITE INTERNATIONAL (Continued) **1000293882**

REDWOOD CITY, CA 94063
EPA ID: CAD990792335
Mailing address: 2 TOWER CTR BLVD
FLOOR 10
EAST BRUNSWICK, NJ 08816
Contact: CHRIS DEJARLAIS
Contact address: 2 TOWER CTR BLVD FLOOR 10
EAST BRUNSWICK, NJ 08816
Contact country: US
Contact telephone: 517-625-4138
Contact email: CDEJARLAIS@TDS.NET
EPA Region: 09
Land type: Private
Classification: TSDF
Description: Handler is engaged in the treatment, storage or disposal of hazardous waste

Owner/Operator Summary:
Owner/operator name: BIOMED REALTY
Owner/operator address: Not reported
Not reported
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 01/01/1999
Owner/Op end date: Not reported

Owner/operator name: DIAMOND SHAMROCK CORPORATION
Owner/operator address: 717 N HARWOOD STREET
DALLAS, TX 75201
Owner/operator country: Not reported
Owner/operator telephone: (214) 745-2000
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: BIOMED REALTY
Owner/operator address: 5694 MISSION CTR RD
SAN DIEGO, CA 92108
Owner/operator country: US
Owner/operator telephone: 858-485-9840
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 01/01/1999
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No

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DUOLITE INTERNATIONAL (Continued) **1000293882**

Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D040
. Waste name: TRICHLORETHYLENE

Historical Generators:
Date form received by agency: 09/01/1996
Site name: DUOLITE INTERNATIONAL
Classification: Large Quantity Generator

Date form received by agency: 09/01/1996
Site name: DUOLITE INTERNATIONAL
Classification: Small Quantity Generator

Date form received by agency: 08/18/1980
Site name: DUOLITE INTERNATIONAL
Classification: Large Quantity Generator

Corrective Action Summary:
Event date: 05/31/1988
Event: RFA Completed

Event date: 06/01/1988
Event: Stabilization Measures Implemented, Primary measure is source removal and/or treatment (e.g., soil or waste excavation, in-situ soil treatment, off-site treatment).

Event date: 09/30/1988
Event: Stabilization Construction Completed

Event date: 01/20/1993
Event: RFI Imposition

Event date: 01/20/1993
Event: CMS Imposition

Event date: 01/20/1993
Event: Date For Remedy Selection (CM Imposed)

Event date: 01/20/1993
Event: Date For Remedy Selection (CM Imposed)

Event date: 05/26/1993
Event: RFI Workplan Approved

Event date: 08/03/1994
Event: Stabilization Measures Evaluation,This facility is amenable to stabilization activity based on the status of corrective action work at the facility, technical factors, the degree of risk, timing

DRAFT

DUOLITE INTERNATIONAL (Continued) **1000293882**

considerations and administrative considerations.

Event date: 08/03/1994
Event: Stabilization Measures Evaluation,This facility is amenable to stabilization activity based on the status of corrective action work at the facility, technical factors, the degree of risk, timing considerations and administrative considerations.

Event date: 08/03/1994
Event: CA Prioritization, Facility or area was assigned a high corrective action priority.

Event date: 09/21/1995
Event: RFA Completed, Assessment was a PA-Plus.

Event date: 06/21/1996
Event: Corrective Measures Design Approved

Event date: 06/21/1996
Event: CMI Workplan Approved

Event date: 06/21/1996
Event: CMI Workplan Approved

Event date: 07/18/1997
Event: RFI Approved

Event date: 07/18/1997
Event: RFI Approved

Event date: 07/30/1997
Event: Current Human Exposures under Control, Yes, Current Human Exposures Under Control has been verified. Based on a review of information contained in the EI determination, current human exposures are expected to be under control at the facility under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

Event date: 09/17/1997
Event: Stabilization Measures Evaluation,This facility is not amenable to stabilization activity at the present time for reasons other than 1- it appears to be technically infeasible or inappropriate (NF) or 2- there is a lack of technical information (IN). Reasons for this conclusion may be the status of closure at the facility, the degree of risk, timing considerations, the status of corrective action work at the facility, or other administrative considerations.

Event date: 09/17/1997
Event: Stabilization Measures Evaluation,This facility is not amenable to stabilization activity at the present time for reasons other than 1- it appears to be technically infeasible or inappropriate (NF) or 2- there is a lack of technical information (IN). Reasons for this conclusion may be the status of closure at the facility, the degree of risk, timing considerations, the status of corrective action work at the facility, or other administrative considerations.

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DUOLITE INTERNATIONAL (Continued) **1000293882**

Event date: 09/17/1997
Event: Igration of Contaminated Groundwater under Control, Unacceptable migration of contaminated groundwater is observed or expected.

Event date: 09/18/1997
Event: CA Responsibility Referred To A Non-RCRA Federal Authority

Event date: 05/23/2000
Event: RFA Determination Of Need For An RFI, RFI is Not Necessary;

Event date: 05/23/2000
Event: RFA Completed

Event date: 12/28/2000
Event: Current Human Exposures under Control, More information is needed to make a determination.

Event date: 12/28/2000
Event: Igration of Contaminated Groundwater under Control, Unacceptable migration of contaminated groundwater is observed or expected.

Event date: 12/28/2000
Event: Igration of Contaminated Groundwater under Control, Unacceptable migration of contaminated groundwater is observed or expected.

Event date: 12/28/2000
Event: Current Human Exposures under Control, More information is needed to make a determination.

Event date: 09/23/2002
Event: CA800YE

Event date: 09/23/2002
Event: Igration of Contaminated Groundwater under Control, More information is needed to make a determination.

Event date: 09/23/2002
Event: Current Human Exposures under Control, Yes, Current Human Exposures Under Control has been verified. Based on a review of information contained in the EI determination, current human exposures are expected to be under control at the facility under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

Event date: 09/23/2002
Event: Current Human Exposures under Control, Yes, Current Human Exposures Under Control has been verified. Based on a review of information contained in the EI determination, current human exposures are expected to be under control at the facility under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

Event date: 09/23/2002
Event: Igration of Contaminated Groundwater under Control, More information is needed to make a determination.

DRAFT

DUOLITE INTERNATIONAL (Continued) **1000293882**

Event date: 09/22/2003
Event: Igration of Contaminated Groundwater under Control, Yes, Migration of Contaminated Groundwater Under Control has been verified. Based on a review of information contained in the EI determination, it has been determined that migration of contaminated groundwater is under control at the facility. Specifically, this determination indicates that the migration of contaminated groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the existing area of contaminated groundwater. This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

Event date: 09/22/2003
Event: Igration of Contaminated Groundwater under Control, Yes, Migration of Contaminated Groundwater Under Control has been verified. Based on a review of information contained in the EI determination, it has been determined that migration of contaminated groundwater is under control at the facility. Specifically, this determination indicates that the migration of contaminated groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the existing area of contaminated groundwater. This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

Event date: 02/18/2010
Event: CA550RC

Event date: 02/18/2010
Event: CA550RC

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 04/29/1986
Date achieved compliance: 04/29/1986
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 03/14/1985
Date achieved compliance: 04/29/1986
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported

DRAFT

DUOLITE INTERNATIONAL (Continued) **1000293882**

Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 03/07/1984
Date achieved compliance: 04/29/1986
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 03/16/1984
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 04/29/1986
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 04/29/1986
Evaluation lead agency: State

Evaluation date: 03/14/1985
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 04/29/1986
Evaluation lead agency: State

Evaluation date: 01/25/1985
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/07/1984
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 04/29/1986
Evaluation lead agency: State

HIST UST:
File Number: Not reported
URL: Not reported
Region: STATE
Facility ID: 00000035467
Facility Type: Other
Other Type: PLASTICS
Contact Name: LEIF SYRSTAD
Telephone: 4153690071
Owner Name: ROHM AND HAAS CALIFORNIA, INCO
Owner Address: 25500 WHITESELL STREET, P.O. B
Owner City,St,Zip: HAYWARD, CA 94540
Total Tanks: 0003

Tank Num: 001
Container Num: 0003

DRAFT

DUOLITE INTERNATIONAL (Continued) **1000293882**

Year Installed: 1970
Tank Capacity: 00020000
Tank Used for: WASTE
Type of Fuel: Not reported
Container Construction Thickness: 12
Leak Detection: None

Tank Num: 002
Container Num: 0001
Year Installed: 1975
Tank Capacity: 00027500
Tank Used for: PRODUCT
Type of Fuel: Not reported
Container Construction Thickness: 0.25
Leak Detection: Visual, Sensor Instrument

Tank Num: 003
Container Num: 0002
Year Installed: 1984
Tank Capacity: 00005000
Tank Used for: WASTE
Type of Fuel: Not reported
Container Construction Thickness: 12
Leak Detection: Not reported

2020 COR ACTION:
EPA ID: CAD990792335
Region: 9
Action: Not reported

FINDS:

Registry ID: 110000610107

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

SUPERFUND (NON-NPL)

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1000293882
Registry ID: 110000610107
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110000610107

DRAFT

AH206 **800 CHESTNUT (ROHM AND HAAS)** **SLIC** **S106234999**
ENE **800 CHESTNUT STREET** **N/A**
1/4-1/2 **REDWOOD CITY, CA**
0.393 mi.
2076 ft. **Site 3 of 5 in cluster AH**

Relative:
Higher

Actual:
13 ft.

SLIC REG 2:
Region: 2
Facility ID: 41S0019
Facility Status: Post remedial action monitoring
Date Closed: Not reported
Local Case #: Not reported
How Discovered: DVA
Leak Cause: Not reported
Leak Source: Not reported
Date Confirmed: Not reported
Date Prelim Site Assmnt Workplan Submitted: Not reported
Date Preliminary Site Assessment Began: Not reported
Date Pollution Characterization Began: Not reported
Date Remediation Plan Submitted: Not reported
Date Remedial Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

AH207 **DUOLITE INTERNATIONAL INC.** **ENVIROSTOR** **S104493980**
ENE **800 CHESTNUT ST** **LUST** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **SLIC**
0.393 mi. **HIST UST**
2076 ft. **Site 4 of 5 in cluster AH** **HAZNET**
HWP

Relative:
Higher

Actual:
13 ft.

ENVIROSTOR:
Facility ID: 80001511
Status: Refer: RWQCB
Status Date: 05/10/2011
Site Code: 200393
Site Type: Corrective Action
Site Type Detailed: Corrective Action
Acres: 11
NPL: NO
Regulatory Agencies: RWQCB 2 - San Francisco Bay
Lead Agency: RWQCB 2 - San Francisco Bay
Program Manager: Not reported
Supervisor: Denise Tsuji
Division Branch: Cleanup Berkeley
Assembly: 22
Senate: 13
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 37.48509
Longitude: -122.2185
APN: NONE SPECIFIED
Past Use: HAZARDOUS WASTE STORAGE - TANKS/CONTAINERS, MANUFACTURING - CHEMICALS
Potential COC: Tetrachloroethylene (PCE Trichloroethylene (TCE Chlorobenzene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene
Confirmed COC: Tetrachloroethylene (PCE 1,2-Dichlorobenzene 1,4-Dichlorobenzene Trichloroethylene (TCE 1,3-Dichlorobenzene Chlorobenzene
Potential Description: AQUI, SOIL, SV
Alias Name: CAD990792335

DRAFT

DUOLITE INTERNATIONAL INC. (Continued) **S104493980**

Alias Type: EPA Identification Number
Alias Name: 110000610107
Alias Type: EPA (FRS #)
Alias Name: SL20221839
Alias Type: GeoTracker Global ID
Alias Name: 200393
Alias Type: Project Code (Site Code)
Alias Name: 80001511
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Corrective Measure Implementation Workplan
Completed Date: 06/21/1996
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: RFI Report
Completed Date: 07/18/1997
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: RFI Workplan
Completed Date: 05/26/1993
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Interim Measures Workplan
Completed Date: 06/01/1988
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Groundwater Migration Controlled
Completed Date: 09/22/2003
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedy Constructed
Completed Date: 02/18/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: RCRA Facility Assessment Report
Completed Date: 05/23/2000
Comments: Report received.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Consent Agreement
Completed Date: 01/20/1993
Comments: Not reported

DRAFT

DUOLITE INTERNATIONAL INC. (Continued) **S104493980**

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedy Selection and Statement of Basis
Completed Date: 01/20/1993
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 08/19/1981
Comments: Send.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 03/08/1984
Comments: Completed.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 03/07/1984
Comments: Completed.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Letter - Notice
Completed Date: 04/30/1981
Comments: Send.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Groundwater Migration Controlled
Completed Date: 09/23/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: RCRA Facility Assessment Report
Completed Date: 05/31/1988
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Interim Measures Questionnaire
Completed Date: 09/17/1997
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 04/23/2013
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Interim Measures Questionnaire

DRAFT

DUOLITE INTERNATIONAL INC. (Continued) **S104493980**

Completed Date: 08/03/1994
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Groundwater Migration Controlled
Completed Date: 12/28/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Human Exposure Controlled
Completed Date: 12/28/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: RCRA Facility Assessment Report
Completed Date: 09/21/1995
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Interim Measures Implementation Report
Completed Date: 09/30/1988
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Design/Implementation Workplan
Completed Date: 06/21/1996
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 03/23/2000
Comments: Completed.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 06/07/1983
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 10/04/1982
Comments: Received.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 12/16/1982
Comments: Not reported

DRAFT

DUOLITE INTERNATIONAL INC. (Continued) **S104493980**

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 03/16/1984
Comments: Send.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Remedy Selected
Completed Date: 01/20/1993
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Human Exposure Controlled
Completed Date: 09/23/2002
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

LUST REG 2:
Region: 2
Facility Id: 41-1142
Facility Status: Post remedial action monitoring
Case Number: 339018
How Discovered: Tank Closure
Leak Cause: UNK
Leak Source: UNK
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: 6/21/1996
Date Remediation Action Underway: 9/6/1996
Date Post Remedial Action Monitoring Began: 7/18/1997

SLIC:
Region: STATE
Facility Status: **Open - Verification Monitoring**
Status Date: 12/01/1998
Global Id: SL20221839
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Lead Agency Case Number: Not reported
Latitude: 37.48514812
Longitude: -122.218868
Case Type: Cleanup Program Site
Case Worker: DIB

DRAFT

DUOLITE INTERNATIONAL INC. (Continued) **S104493980**

Local Agency:	Not reported
RB Case Number:	41S0019
File Location:	Regional Board
Potential Media Affected:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Other Chlorinated Hydrocarbons, Tetrachloroethylene (PCE), Trichloroethylene (TCE)
Site History:	The groundwater plume has co-mingled with downgradient plumes. Onsite contamination has been remediated; long-term monitoring of offsite plume. Site has been completely redeveloped into an office park since ~2001. Despite listing on some databases, this was never a Superfund or NPL site.

Click here to access the California GeoTracker records for this facility:

HIST UST:

File Number:	0002C1F2
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002C1F2.pdf
Region:	Not reported
Facility ID:	Not reported
Facility Type:	Not reported
Other Type:	Not reported
Contact Name:	Not reported
Telephone:	Not reported
Owner Name:	Not reported
Owner Address:	Not reported
Owner City,St,Zip:	Not reported
Total Tanks:	Not reported
Tank Num:	Not reported
Container Num:	Not reported
Year Installed:	Not reported
Tank Capacity:	Not reported
Tank Used for:	Not reported
Type of Fuel:	Not reported
Container Construction Thickness:	Not reported
Leak Detection:	Not reported

Click here for Geo Tracker PDF:

HAZNET:

envid:	S104493980
Year:	2015
GEPAID:	CAC002812774
Contact:	ART GUNTER
Telephone:	7322465852
Mailing Name:	Not reported
Mailing Address:	2 TOWER CENTER BLVD FL 10
Mailing City,St,Zip:	EAST BRUNSWICK, NJ 088161100
Gen County:	San Mateo
TSD EPA ID:	CAT080013352
TSD County:	Los Angeles
Waste Category:	Aqueous solution with total organic residues less than 10 percent
Disposal Method:	Fuel Blending Prior To Energy Recovery At Another Site
Tons:	0.105
Cat Decode:	Aqueous solution with total organic residues less than 10 percent
Method Decode:	Fuel Blending Prior To Energy Recovery At Another Site

DRAFT

DUOLITE INTERNATIONAL INC. (Continued) **S104493980**

Facility County: San Mateo

HWP:
EPA Id: CAD990792335
Cleanup Status: UNDERGOING CLOSURE
Latitude: 37.48385
Longitude: -122.2192
Facility Type: Historical - Non-Operating
Facility Size: Not reported
Team: Not reported
Supervisor: Not reported
Site Code: Not reported
Assembly District: 22
Senate District: 13
Public Information Officer: Not reported
Public Information Officer: Not reported

Activities:
EPA Id: CAD990792335
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1
Event Description: New Operating Permit - APPLICATION PART A RECEIVED
Actual Date: 11/19/1980

EPA Id: CAD990792335
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1
Event Description: New Operating Permit - APPLICATION PART B RECEIVED
Actual Date: 08/01/1983

EPA Id: CAD990792335
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1
Event Description: New Operating Permit - FINAL PERMIT (EXPIRES)
Actual Date: 06/10/1990

EPA Id: CAD990792335
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1
Event Description: New Operating Permit - CALL-IN LETTER ISSUED
Actual Date: 05/16/1983

EPA Id: CAD990792335
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1
Event Description: New Operating Permit - FINAL PERMIT
Actual Date: 06/10/1985

EPA Id: CAD990792335
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1
Event Description: New Operating Permit - TECHNICAL COMPLETE LETTER
Actual Date: 05/09/1984

EPA Id: CAD990792335
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1

DRAFT

DUOLITE INTERNATIONAL INC. (Continued) **S104493980**

Event Description: New Operating Permit - PERMIT TERMINATED - TERMINATION APPROVED
Actual Date: 06/10/1985

EPA Id: CAD990792335
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1
Event Description: New Operating Permit - PERMIT TERMINATED - TERMINATION RECEIVED
Actual Date: 10/02/1986

Closure:
EPA Id: CAD990792335
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1
Event Description: Closure - CLOSURE PLAN APPROVED
Actual Date: 06/10/1985

EPA Id: CAD990792335
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1
Event Description: Referred for closure to other agency - REFERRED FOR CLOSURE TO OTHER AGENCY
Actual Date: 10/31/1987

EPA Id: CAD990792335
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1
Event Description: Closure - ISSUE CLOSURE VERIFICATION
Actual Date: 10/30/1987

EPA Id: CAD990792335
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1
Event Description: Closure - CLOSURE PLAN RECEIVED
Actual Date: 01/29/1985

Alias:
EPA Id: CAD990792335
Facility Type: Historical - Non-Operating
Alias Type: FRS
Alias: 110000610107

AH208 **WOODSPRING CENTER** **ENVIROSTOR** **S101482210**
ENE **800-898 CHESTNUT STREET** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.393 mi.
2076 ft. **Site 5 of 5 in cluster AH**

Relative:
Higher

Actual:
13 ft.

ENVIROSTOR:
Facility ID: 41280139
Status: Refer: RWQCB
Status Date: 08/30/2002
Site Code: Not reported
Site Type: Evaluation
Site Type Detailed: Evaluation
Acres: 6.5
NPL: NO
Regulatory Agencies: RWQCB 2 - San Francisco Bay

DRAFT

WOODSPRING CENTER (Continued) **S101482210**

Lead Agency:	RWQCB 2 - San Francisco Bay
Program Manager:	Not reported
Supervisor:	Denise Tsuji
Division Branch:	Cleanup Berkeley
Assembly:	22
Senate:	13
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	37.48361
Longitude:	-122.2188
APN:	NONE SPECIFIED
Past Use:	MANUFACTURING - OTHER
Potential COC:	Benzene Tetrachloroethylene (PCE Trichloroethylene (TCE
Confirmed COC:	Tetrachloroethylene (PCE Trichloroethylene (TCE Benzene
Potential Description:	OTH, SOIL
Alias Name:	ROHM AND HAAS
Alias Type:	Alternate Name
Alias Name:	41280139
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	01/12/1996
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	03/15/1993
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

AK209 **PRICE COMPANY** **SEMS-ARCHIVE** **1003878966**
ESE **2110 MIDDLEFIELD RD** **CAD981430507**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.402 mi.
2124 ft. **Site 2 of 3 in cluster AK**

Relative:
Higher

Actual:
19 ft.

SEMS-ARCHIVE:

Site ID:	902435
EPA ID:	CAD981430507
Federal Facility:	N
NPL:	Not on the NPL
Non NPL Status:	NFRAP-Site does not qualify for the NPL based on existing information

DRAFT

PRICE COMPANY (Continued) **1003878966**

Following information was gathered from the prior CERCLIS update completed in 10/2013:
Site ID: 0902435
Federal Facility: Not a Federal Facility
NPL Status: Not on the NPL
Non NPL Status: NFRAP-Site does not qualify for the NPL based on existing information

CERCLIS-NFRAP Site Contact Details:
Contact Sequence ID: 13287440.00000
Person ID: 13003854.00000

Contact Sequence ID: 13293035.00000
Person ID: 13003858.00000

Contact Sequence ID: 13298893.00000
Person ID: 13004003.00000

CERCLIS-NFRAP Site Alias Name(s):
Alias Name: ORCHARD SUPPLY HARDWARE
Alias Address: Not reported
CA

CERCLIS-NFRAP Assessment History:
Action: DISCOVERY
Date Started: / /
Date Completed: 08/01/86
Priority Level: Not reported

Action: ARCHIVE SITE
Date Started: / /
Date Completed: 10/01/87
Priority Level: Not reported

Action: PRELIMINARY ASSESSMENT
Date Started: / /
Date Completed: 10/01/87
Priority Level: NFRAP-Site does not qualify for the NPL based on existing information

---

AK210 **ORCHARD SUPPLY HARDWARE** **SLIC S118504577**
ESE **2110 MIDDLEFIELD ROAD** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.402 mi.
2124 ft. **Site 3 of 3 in cluster AK**

Relative:
Higher

Actual:
19 ft.

SLIC:
Region: STATE
Facility Status: **Open - Inactive**
Status Date: 03/09/2001
Global Id: SLT2O228324
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Lead Agency Case Number: Not reported
Latitude: 37.478809
Longitude: -122.2173
Case Type: Cleanup Program Site
Case Worker: UUU
Local Agency: Not reported
RB Case Number: 41S0029

DRAFT

ORCHARD SUPPLY HARDWARE (Continued) **S118504577**

File Location: All Files are on GeoTracker or in the Local Agency Database
Potential Media Affected: Not reported
Potential Contaminants of Concern: Not reported
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

AG211 **CHARLES SYMES PROPERTY** **LUST** **S104493997**
WNW **1011 EL CAMINO REAL** **HIST CORTESE** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.403 mi.
2130 ft. **Site 2 of 2 in cluster AG**

Relative:
Higher

Actual:
13 ft.

LUST:
Region: STATE
Global Id: T0608100176
Latitude: 37.48427484
Longitude: -122.2303859
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 04/23/1997
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-0185
LOC Case Number: 330094
File Location: Local Agency
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608100176
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608100176
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100176
Status: Completed - Case Closed
Status Date: 04/23/1997

Global Id: T0608100176

DRAFT

CHARLES SYMES PROPERTY (Continued) **S104493997**

Status: Open - Case Begin Date
Status Date: 06/05/1991

Regulatory Activities:
Global Id: T0608100176
Action Type: ENFORCEMENT
Date: 02/05/1992
Action: Notice of Responsibility - #1

Global Id: T0608100176
Action Type: Other
Date: 06/05/1991
Action: Leak Reported

Global Id: T0608100176
Action Type: Other
Date: 06/05/1992
Action: Leak Discovery

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330094
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330094
Facility Status: 9- Case Closed
Global ID: T0608100176
APN Number: Not reported
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0185

DRAFT

AL212 **SMCO MOTOR POOL** **LUST** **S102437666**
NNW **590 HAMILTON** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.406 mi.
2142 ft. **Site 1 of 4 in cluster AL**

Relative:
Lower

Actual:
12 ft.

LUST REG 2:

Region:	2
Facility Id:	Not reported
Facility Status:	Pollution Characterization
Case Number:	330097
How Discovered:	OM
Leak Cause:	Unknown
Leak Source:	Unknown
Date Leak Confirmed:	Not reported
Oversight Program:	LUST
Prelim. Site Assesment Wokplan Submitted:	Not reported
Preliminary Site Assesment Began:	Not reported
Pollution Characterization Began:	1/1/1965
Pollution Remediation Plan Submitted:	Not reported
Date Remediation Action Underway:	Not reported
Date Post Remedial Action Monitoring Began:	Not reported

AL213 **SMCO MOTOR POOL** **HIST CORTESE** **S103892958**
NNW **590 HAMILTON** **N/A**
1/4-1/2 **REDWOOD CITY, CA**
0.406 mi.
2142 ft. **Site 2 of 4 in cluster AL**

Relative:
Lower

Actual:
12 ft.

HIST CORTESE:

Region:	CORTESE
Facility County Code:	41
Reg By:	LTNKA
Reg Id:	41-0019

AL214 **SAN MATEO COUNTY MOTOR POOL** **LUST** **S101593755**
NNW **590 HAMILTON ST** **SWEEPS UST** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **HIST UST**
0.406 mi. **CA FID UST**
2142 ft. **Site 3 of 4 in cluster AL**

Relative:
Lower

Actual:
12 ft.

LUST:

Region:	STATE
Global Id:	T0608100019
Latitude:	37.4891783087696
Longitude:	-122.230496406555
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	05/04/2011
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0019
LOC Case Number:	330097
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Can be extracted from most recent report in Geotracker or at San

DRAFT

SAN MATEO COUNTY MOTOR POOL (Continued) **S101593755**

Mateo County offices if submitted prior to 2005, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report.

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100019
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100019
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100019
Status:	Completed - Case Closed
Status Date:	05/04/2011

Global Id:	T0608100019
Status:	Open - Case Begin Date
Status Date:	04/06/1992

Global Id:	T0608100019
Status:	Open - Site Assessment
Status Date:	04/06/1992

Global Id:	T0608100019
Status:	Open - Verification Monitoring
Status Date:	09/26/2006

Regulatory Activities:

Global Id:	T0608100019
Action Type:	ENFORCEMENT
Date:	12/27/2010
Action:	Staff Letter - #20101227

Global Id:	T0608100019
Action Type:	RESPONSE
Date:	12/23/2007
Action:	Request for Closure

Global Id:	T0608100019
Action Type:	RESPONSE
Date:	05/15/2009
Action:	Monitoring Report - Annually

DRAFT

SAN MATEO COUNTY MOTOR POOL (Continued) **S101593755**

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 03/26/2010
Action: Staff Letter - #20100326

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 10/18/2016
Action: Staff Letter - #20161018

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 07/20/2004
Action: Staff Letter - #20040720

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 05/04/2011
Action: Closure/No Further Action Letter - #20110504

Global Id: T0608100019
Action Type: RESPONSE
Date: 04/29/2011
Action: Well Destruction Report

Global Id: T0608100019
Action Type: RESPONSE
Date: 11/14/2003
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: RESPONSE
Date: 02/16/2004
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: RESPONSE
Date: 06/30/2003
Action: Soil and Water Investigation Workplan

Global Id: T0608100019
Action Type: RESPONSE
Date: 08/26/2004
Action: Soil and Water Investigation Report

Global Id: T0608100019
Action Type: RESPONSE
Date: 01/25/2005
Action: Electronic Reporting Submittal Due

Global Id: T0608100019
Action Type: RESPONSE
Date: 05/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: RESPONSE

DRAFT

SAN MATEO COUNTY MOTOR POOL (Continued) **S101593755**

Date: 05/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: RESPONSE
Date: 08/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: RESPONSE
Date: 08/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 03/28/2006
Action: Staff Letter - #20060328

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 05/07/2004
Action: Staff Letter - #20040507A

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 05/12/2003
Action: Staff Letter - #20030512A

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 05/07/2004
Action: Staff Letter - #20040507B

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 07/23/2007
Action: Staff Letter - #20070723B

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 12/06/2005
Action: Technical Correspondence / Assistance / Other - #20051206

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 04/24/2006
Action: Technical Correspondence / Assistance / Other - #20060424

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 08/05/2004
Action: Technical Correspondence / Assistance / Other - #20040805

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 11/18/2015
Action: Staff Letter - #20151118

DRAFT

SAN MATEO COUNTY MOTOR POOL (Continued) **S101593755**

Global Id: T0608100019
Action Type: Other
Date: 04/09/1992
Action: Leak Reported

Global Id: T0608100019
Action Type: RESPONSE
Date: 02/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: RESPONSE
Date: 01/18/2016
Action: Other Report / Document

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 02/25/2010
Action: Technical Correspondence / Assistance / Other - #20100225

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 06/13/2016
Action: Email Correspondence - #20160613

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 02/22/2017
Action: Staff Letter - #20170222

Global Id: T0608100019
Action Type: RESPONSE
Date: 02/15/2011
Action: Monitoring Report - Annually

Global Id: T0608100019
Action Type: RESPONSE
Date: 05/10/2010
Action: Other Report / Document

Global Id: T0608100019
Action Type: RESPONSE
Date: 07/30/2015
Action: Soil and Water Investigation Report

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 11/30/2004
Action: Staff Letter - #20041130A

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 05/08/1992
Action: Notice of Responsibility - #19920508

Global Id: T0608100019
Action Type: ENFORCEMENT

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SAN MATEO COUNTY MOTOR POOL (Continued) **S101593755**

Date: 11/30/2004
Action: Staff Letter - #20041130B

Global Id: T0608100019
Action Type: RESPONSE
Date: 02/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: RESPONSE
Date: 02/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: RESPONSE
Date: 05/24/2006
Action: Electronic Reporting Submittal Due

Global Id: T0608100019
Action Type: RESPONSE
Date: 09/17/2007
Action: NPDES / WDR Reports

Global Id: T0608100019
Action Type: RESPONSE
Date: 05/15/2008
Action: Monitoring Report - Annually

Global Id: T0608100019
Action Type: RESPONSE
Date: 08/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: RESPONSE
Date: 11/15/2005
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: RESPONSE
Date: 11/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: RESPONSE
Date: 05/22/2017
Action: Soil Vapor Intrusion Investigation Report

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 11/17/2005
Action: Staff Letter - #20051117

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 08/16/2006
Action: Staff Letter - #20060816

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SAN MATEO COUNTY MOTOR POOL (Continued) **S101593755**

Global Id: T0608100019
Action Type: RESPONSE
Date: 11/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: RESPONSE
Date: 11/18/2016
Action: Other Report / Document

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 05/28/2003
Action: Staff Letter - #20030528

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 12/08/2003
Action: Technical Correspondence / Assistance / Other - #20031208

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 06/13/2005
Action: Technical Correspondence / Assistance / Other - #20050613

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 10/30/2007
Action: Staff Letter - #20071030

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 06/26/2006
Action: Technical Correspondence / Assistance / Other - #20060626

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 05/10/2006
Action: Staff Letter - #20060510

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 08/05/2009
Action: Staff Letter - #20090805

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 05/12/2003
Action: Staff Letter - #20030512B

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 04/05/2016
Action: Email Correspondence - #20160405

Global Id: T0608100019
Action Type: RESPONSE

DRAFT

SAN MATEO COUNTY MOTOR POOL (Continued) **S101593755**

Date: 05/14/2004
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: RESPONSE
Date: 08/16/2004
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 04/12/2016
Action: Email Correspondence - #20160412

Global Id: T0608100019
Action Type: ENFORCEMENT
Date: 07/23/2007
Action: Staff Letter - #20070723A

Global Id: T0608100019
Action Type: RESPONSE
Date: 05/16/2005
Action: Monitoring Report - Quarterly

Global Id: T0608100019
Action Type: REMEDIATION
Date: 01/01/1982
Action: Pump & Treat (P&T) Groundwater

Global Id: T0608100019
Action Type: REMEDIATION
Date: 08/18/1993
Action: Pump & Treat (P&T) Groundwater

Global Id: T0608100019
Action Type: REMEDIATION
Date: 04/13/1994
Action: Pump & Treat (P&T) Groundwater

Global Id: T0608100019
Action Type: REMEDIATION
Date: 05/10/1998
Action: Pump & Treat (P&T) Groundwater

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330097
Facility Status: 9- Case Closed
Global ID: T0608100019
APN Number: 052341240
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

SWEEPS UST:
Status: Active
Comp Number: 330182

DRAFT

SAN MATEO COUNTY MOTOR POOL (Continued) **S101593755**

Number: 4
Board Of Equalization: Not reported
Referral Date: 03-25-94
Action Date: 03-25-94
Created Date: 07-09-92
Owner Tank Id: 2800-9071-01
SWRCB Tank Id: 41-000-330182-000001
Tank Status: A
Capacity: 10000
Active Date: 03-25-94
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: 2

Status: Active
Comp Number: 330182
Number: 4
Board Of Equalization: Not reported
Referral Date: 03-25-94
Action Date: 03-25-94
Created Date: 07-09-92
Owner Tank Id: 2800-9071-2
SWRCB Tank Id: 41-000-330182-000002
Tank Status: A
Capacity: 10000
Active Date: 03-25-94
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: Not reported

HIST UST:
File Number: 0002C251
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002C251.pdf
Region: Not reported
Facility ID: Not reported
Facility Type: Not reported
Other Type: Not reported
Contact Name: Not reported
Telephone: Not reported
Owner Name: Not reported
Owner Address: Not reported
Owner City,St,Zip: Not reported
Total Tanks: Not reported

Tank Num: Not reported
Container Num: Not reported
Year Installed: Not reported
Tank Capacity: Not reported
Tank Used for: Not reported
Type of Fuel: Not reported
Container Construction Thickness: Not reported
Leak Detection: Not reported

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SAN MATEO COUNTY MOTOR POOL (Continued) **S101593755**

Click here for Geo Tracker PDF:

CA FID UST:

Facility ID:	41000447
Regulated By:	UTNKA
Regulated ID:	Not reported
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	4153631926
Mail To:	Not reported
Mailing Address:	590 HAMILTON ST
Mailing Address 2:	Not reported
Mailing City,St,Zip:	REDWOOD CITY 94063
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

AL215 **OLD COURTHOUSE-SAN MATEO CNTY** **LUST S101303160**
NNW **711 HAMILTON** **HIST CORTESE N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.407 mi.
2149 ft. **Site 4 of 4 in cluster AL**

Relative:
Lower

Actual:
12 ft.

LUST:

Region:	STATE
Global Id:	T0608100361
Latitude:	37.4873852
Longitude:	-122.2301605
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	03/25/1993
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0380
LOC Case Number:	330093
File Location:	Local Agency
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100361
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id: T0608100361

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OLD COURTHOUSE-SAN MATEO CNTY (Continued) **S101303160**

Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100361
Status: Completed - Case Closed
Status Date: 03/25/1993

Global Id: T0608100361
Status: Open - Case Begin Date
Status Date: 10/29/1990

Regulatory Activities:
Global Id: T0608100361
Action Type: Other
Date: 10/29/1990
Action: Leak Discovery

Global Id: T0608100361
Action Type: ENFORCEMENT
Date: 08/06/1991
Action: Notice of Responsibility - #1

Global Id: T0608100361
Action Type: Other
Date: 10/29/1990
Action: Leak Reported

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330093
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330093
Facility Status: 9- Case Closed

DRAFT

OLD COURTHOUSE-SAN MATEO CNTY (Continued) **S101303160**

Global ID: T0608100361
APN Number: 052367010
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0380

AI216 **SEQUOIA STATION PROJECT** **LUST** **S103472791**
WNW **1001 EL CAMINO REAL** **HIST CORTESE** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.408 mi.
2155 ft. **Site 2 of 3 in cluster AI**

Relative:
Higher

Actual:
13 ft.

LUST:
Region: STATE
Global Id: T0608100453
Latitude: 37.484505
Longitude: -122.232838
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 11/09/2000
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-0477
LOC Case Number: 330072
File Location: Local Agency
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608100453
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608100453
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:

DRAFT

SEQUOIA STATION PROJECT (Continued) **S103472791**

Global Id: T0608100453
Status: Completed - Case Closed
Status Date: 11/09/2000

Global Id: T0608100453
Status: Open - Case Begin Date
Status Date: 04/27/1990

Regulatory Activities:
Global Id: T0608100453
Action Type: ENFORCEMENT
Date: 06/28/1990
Action: Notice of Responsibility - #1

Global Id: T0608100453
Action Type: Other
Date: 04/27/1990
Action: Leak Discovery

Global Id: T0608100453
Action Type: Other
Date: 06/28/1990
Action: Leak Reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330072
Facility Status: 9- Case Closed
Global ID: T0608100453
APN Number: 052550110/052550070/052550080/052550120
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0477

AI217 **SCR-SOUTHERN PACIFIC** **LUST** **S100752178**
WNW **1001 EL CAMINO REAL** **SWEEPS UST** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **HIST CORTESE**
0.408 mi.
2155 ft. **Site 3 of 3 in cluster AI**

Relative:
Higher

Actual:
13 ft.

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330072
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST

DRAFT

SCR-SOUTHERN PACIFIC (Continued) **S100752178**

Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SWEEPS UST:
Status: Not reported
Comp Number: 330204
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: 41-000-330204-000004
Tank Status: Not reported
Capacity: 100
Active Date: Not reported
Tank Use: OIL
STG: WASTE
Content: WASTE OIL
Number Of Tanks: 1

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0533

Region: CORTESE
Facility County Code: 41
Reg By: WBC&D
Reg Id: 2 417147N01

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218 **ARTISTIC CLEANERS** **LUST S113062584**
NNE **860 MAPLE ST** **SLIC N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **HAZNET**
0.420 mi.
2218 ft.

Relative:
Lower

Actual:
9 ft.

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 339235
Facility Status: 3B- Preliminary Assessment Underway
Global ID: T10000007273
APN Number: 053205230
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

SLIC:
Region: STATE
Facility Status: **Open - Site Assessment**
Status Date: 08/13/2015
Global Id: T10000007273

DRAFT

ARTISTIC CLEANERS (Continued) **S113062584**

Lead Agency:	SAN MATEO COUNTY LOP
Lead Agency Case Number:	339235
Latitude:	37.48724
Longitude:	-122.22307
Case Type:	Cleanup Program Site
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	Not reported
File Location:	All Files are on GeoTracker or in the Local Agency Database
Potential Media Affected:	Other Groundwater (uses other than drinking water), Soil, Soil Vapor
Potential Contaminants of Concern:	Dichloroethene (DCE), Tetrachloroethylene (PCE), Trichloroethylene (TCE)
Site History:	Investigation conducted at 1800 Broadway downgradient of this site reported the presence of PCE and daughter products in the groundwater. 1800 Broadway was historically occupied by a gas station. Investigation was requested of this property to determine if it is the source of the contamination detected downgradient.

Click here to access the California GeoTracker records for this facility:

HAZNET:

envid:	S113062584
Year:	2003
GEPAID:	CAL000110297
Contact:	OHANNES HARIJIAN
Telephone:	--
Mailing Name:	Not reported
Mailing Address:	860 MAPLE ST
Mailing City,St,Zip:	REDWOOD CITY, CA 940630000
Gen County:	Not reported
TSD EPA ID:	CAT000646117
TSD County:	Not reported
Waste Category:	Other inorganic solid waste
Disposal Method:	Disposal, Other
Tons:	0.75
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

envid:	S113062584
Year:	2002
GEPAID:	CAL000110297
Contact:	OHANNES HARIJIAN
Telephone:	--
Mailing Name:	Not reported
Mailing Address:	860 MAPLE ST
Mailing City,St,Zip:	REDWOOD CITY, CA 940630000
Gen County:	Not reported
TSD EPA ID:	CA0000084517
TSD County:	Not reported
Waste Category:	Liquids with halogenated organic compounds >= 1,000 Mg./L
Disposal Method:	Transfer Station
Tons:	0.42
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	San Mateo

DRAFT

ARTISTIC CLEANERS (Continued) **S113062584**

envid: S113062584
Year: 1999
GEPAID: CAL000110297
Contact: JOHN HARIKIAN
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 860 MAPLE ST
Mailing City,St,Zip: REDWOOD CITY, CA 940630000
Gen County: Not reported
TSD EPA ID: CA0000084517
TSD County: Not reported
Waste Category: Liquids with halogenated organic compounds >= 1,000 Mg./L
Disposal Method: Transfer Station
Tons: .2250
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: S113062584
Year: 1999
GEPAID: CAL000110297
Contact: JOHN HARIKIAN
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 860 MAPLE ST
Mailing City,St,Zip: REDWOOD CITY, CA 940630000
Gen County: Not reported
TSD EPA ID: CA0000084517
TSD County: Not reported
Waste Category: Liquids with halogenated organic compounds >= 1,000 Mg./L
Disposal Method: Not reported
Tons: .2250
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

envid: S113062584
Year: 1998
GEPAID: CAL000110297
Contact: JOHN HARIKIAN
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 860 MAPLE ST
Mailing City,St,Zip: REDWOOD CITY, CA 940630000
Gen County: Not reported
TSD EPA ID: CA0000084517
TSD County: Not reported
Waste Category: Liquids with halogenated organic compounds >= 1,000 Mg./L
Disposal Method: Transfer Station
Tons: .0975
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

Click this hyperlink while viewing on your computer to access
5 additional CA_HAZNET: record(s) in the EDR Site Report.

DRAFT

AM219 **NURBURG RING** **SLIC** **S113755360**
SE **1202 SHASTA** **San Mateo Co. BI** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.421 mi.
2225 ft. **Site 1 of 2 in cluster AM**

Relative:
Higher

Actual:
23 ft.

SLIC:

Region:	STATE
Facility Status:	**Open - Inactive**
Status Date:	04/27/2016
Global Id:	T10000006805
Lead Agency:	SAN FRANCISCO BAY RWQCB (REGION 2)
Lead Agency Case Number:	339233
Latitude:	37.47774
Longitude:	-122.21954
Case Type:	Cleanup Program Site
Case Worker:	UUU
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41S0202
File Location:	All Files are on GeoTracker or in the Local Agency Database
Potential Media Affected:	Other Groundwater (uses other than drinking water), Soil
Potential Contaminants of Concern:	Diesel, Gasoline
Site History:	On April 3, 2015, Bureau Veritas North America Incorporated submitted to San Mateo County Groundwater Protection Program (GPP) staff the data obtained from the drilling of Borings BV-1 and BV-2 on the subject site. Up to 1,600 mg/kg of TPH as gasoline was reported in saturated zone soil and up to 11,000 ug/l of TPH as gasoline, 150,000 ug/l of TPH as diesel, and 73,000 ug/l of TPH as motor oil were reported in groundwater near the sump. These concentrations significantly exceed the Table F-1a Regional Water Quality Control Board (RWQCB) Environmental Screening Levels (ESLs) for beneficial groundwater use. Although contaminant concentrations exceeding ESLs do not necessarily indicate an unacceptable risk to human health and the environment, they do indicate further investigation is warranted to evaluate the extent and potential impact of the contamination. Therefore, GPP staff have opened an environmental oversight case under our voluntary cleanup program in accordance with California Health and Safety Code (CH&SC) Sections 101480 and 25260.

Click here to access the California GeoTracker records for this facility:

San Mateo Co. BI:

Region:	SAN MATEO
Facility ID:	FA0007138
Prog Element Code:	GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id:	PR0011207
Description:	GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status:	INACTIVE

Region:	SAN MATEO
Facility ID:	FA0007138
Prog Element Code:	STORES MV FUELS OR WASTE ONLY
Record Id:	PR0003835
Description:	STORES MV FUELS OR WASTE ONLY
Facility Status:	INACTIVE

Draft

AM220 **NURBURG RING AUTO** **LUST** **S109285817**
SE **1202 SHASTA** **BROWNFIELDS** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.421 mi.
2225 ft. **Site 2 of 2 in cluster AM**

Relative:
Higher

Actual:
23 ft.

LUST:

Region:	STATE
Global Id:	T0608158232
Latitude:	37.477849
Longitude:	-122.219487
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	09/10/1999
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	Not reported
LOC Case Number:	339172
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Waste Oil / Motor / Hydraulic / Lubricating
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608158232
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608158232
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608158232
Status:	Completed - Case Closed
Status Date:	09/10/1999

Global Id:	T0608158232
Status:	Open - Case Begin Date
Status Date:	11/24/1998

Regulatory Activities:

Global Id:	T0608158232
Action Type:	Other
Date:	11/24/1998
Action:	Leak Reported

DRAFT

NURBURG RING AUTO (Continued) **S109285817**

Global Id: T0608158232
Action Type: ENFORCEMENT
Date: 09/10/1999
Action: Closure/No Further Action Letter - #19990910

Global Id: T0608158232
Action Type: ENFORCEMENT
Date: 01/15/1999
Action: Staff Letter - #19990115

Global Id: T0608158232
Action Type: REMEDIATION
Date: 12/27/1998
Action: Excavation

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 339172
Facility Status: 9- Case Closed
Global ID: T0608158232
APN Number: 053375060
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

BROWNFIELDS:
Global ID: T10000006805
Latitude: 37.47774
Longitude: -122.21954
Project Type: Cleanup Program Site
Status: Open - Inactive
Status Date: 04/27/2016
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Last Correspondence Date: 12/06/2016
Release Type: Unknown
Contaminant(s) of Concern: Diesel, Gasoline
Media of Concern: Other Groundwater (uses other than drinking water), Soil
Past Use(s) that Caused Contamination: Not reported
Human Health Exposure Controlled: INSUFFICIENT DATA
Human Health Exposure Controlled Date: 05/07/2015
Groundwater Migration Controlled: UNDETERMINED
Groundwater Migration Controlled Date: 05/07/2015
Primary Caseworker Name: Regional Water Board
Primary Caseworker Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Primary Caseworker Phone Number: 510-622-3277
Primary Caseworker Address: 1515 CLAY ST SUITE 1400
Primary Caseworker Address: OAKLAND
Primary Caseworker Address: CA
Primary Caseworker Email: Not reported

DRAFT

221
NNE
1/4-1/2
0.422 mi.
2227 ft.

ALOHA STATE FLOWERS, INC.
1260 MARSHALL STREET
REDWOOD CITY, CA 94063

LUST **S104161770**
HIST CORTESE **N/A**

Relative:
Lower

Actual:
9 ft.

LUST:

Region:	STATE
Global Id:	T0608100014
Latitude:	37.487373532798
Longitude:	-122.221806049347
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	10/12/2010
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0014
LOC Case Number:	330004
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Extracted from Green Environment's March 3, 2010 SITE CLOSURE SUMMARY REPORT, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report. The property consists of a rectangular parcel identified as San Mateo County Parcel No. 053-205-040. The parcel of approximately 6,000 square-feet measures fifty (50) feet wide and one-hundred-and-twenty (120) feet long. The parcel is relatively flat and surface elevation is at approximately nine (9) feet above mean sea level. In a predominantly commercial area of Redwood City, the property is improved with a two-story building of concrete construction. The ground floor is commercial office space, and the second floor is residential. The north end of the subject property consists of a concrete surfaced yard, approximately 50 feet by 30 feet in area, used for parking and building access from Marshall Street. Historical documents indicate the building and other property improvements were constructed in the late-1950s. An ambulance service firm, Peninsula Ambulance, occupied the premises from the late-1950s to mid-1970s. The northeast portion of the buildings ground floor was used for office space, and the northwest portion served as a garage for vehicles. From the mid-1970s to 2000s, the subject property was occupied by a flower sales business, Aloha State Flowers, Inc. (Aloha Flowers). Since then, the building has been leased out to various commercial firms for office and storage space. The buildings second floor has been used as a residential dwelling. In March 1986, one (1) 550-gallon capacity UST was excavated and removed along with the dispenser from the north end of the subject property. The UST system was used for the storage and dispensing of gasoline until approximately the mid-1980s. The tank pit measured approximately 10 feet by 7 feet in area. On March 12, 1986, after the tank was removed, Blaine Tech reportedly collected soil and groundwater samples from the tank pit. The analytical results of two (2) soil samples taken from the pit sidewalls indicated, respectively, 130 and 290 milligrams per kilogram (mg/Kg) of total petroleum hydrocarbons as gasoline (TPHg) as quantified via Environmental Protection Agency (EPA) Method 8015M. The analytical results of a grab groundwater sample taken from the tank pit indicated 38,000 micrograms per liter ("g/L) of TPHg. By letter dated

ALOHA STATE FLOWERS, INC. (Continued) **S104161770**

October 3, 1990, the San Mateo County LUFT Enforcement Program requested Aloha Flowers to implement investigation and remedial action to address the release of petroleum hydrocarbons from the former UST system. June 1992 to November 1993: In May and June 1992, Brunsing Associates, Inc. (BAI) completed three (3) exploratory borings (B-1, B-2 and B-3) adjacent to the east, south and west sides of the former UST pit, respectively. A groundwater monitoring well (MW-1) was installed in June 1992 on the north side of the former UST pit. From June 1992 to November 1993, Well MW-1 was gauged for depth-towater and sampled on a quarterly frequency. January 1994 to May 1997: In January 1994, BAI completed an additional boring (B-4) east of the former UST pit, and installed two (2) groundwater monitoring wells. Well MW-2 was installed on-site near the former fuel dispenser at the northwest corner of the subject property. Well MW-3 was installed off-site on Marshall Street to the north of the subject property. From February 1994 to May 1997, BAI conducted quarterly groundwater monitoring of Wells MW-1, MW-2 and MW-3. The results were presented in technical reports by BAI. In July 1995, BAI completed six (6) borings (B-5 to B-10) to evaluate soil and groundwater impact off-site and in the vicinity of underground utilities. Boring B-5 was completed northwest of the former dispenser on the adjoining property at 1738-1740 Broadway Street. The remaining borings (B-6 to B-10) were completed to the north of thesubject property on Marshall Street. In December 1995, a Site Conceptual Model (SCM) and risk assessment was completed by BAI that identified a potential building soil-gas intrusion concern with the subject property building. The risk assessment concluded that potable well water, recreational use, and sensitive ecological habitat exposure pathways were not significant for the subject case. March 1998 to June 2001: In 1998, SMCoGPP approved a reduction in the groundwater monitoring frequency from quarterly to semi-annual. Based on depth-to- water and well survey data for 1994 to 2001, groundwater flow was inferred by BAI to be predominantly north-northeast to north-northwest with a gradient ranging from 0.001 to 0.003 ft/ft. Groundwater monitoring results for 1998 to 2001 were presented in technical reports by BAI. In March 1998, BAI performed a soil vapor extraction (SVE) pilot test in the former UST area, the pilot test included one (1) temporary vacuum probe (SVE-1) and three (3) temporary soil vapor probes (P-1, P-2 and P-3). BAI concluded SVE to be a feasible remediation technology, and estimated the radius of vapor-extraction influence to exceed twenty-five (25) feet. A remedial action plan for soil vapor extraction was prepared by BAI. Between April and August 2000, BAI installed a soil vapor extraction and treatment system that included two (2) soil vapor extraction wells (SVE-1 and SVE-2) in the former UST area. The remediation system operated intermittently from August 2000 until May 2001 when the system was shut down. July 2001 to December 2001: In response to a request by SMCoGPP (July 11, 2001) for further site characterization, BAI completed Boring B-11 in December 2001 southwest of the former UST pit, and Boring B-12 in April 2002 northeast of the former dispenser. Based on a well and sensitive receptor survey completed in December 2001, BAI reported no potential water wells within three-hundred (300) feet of the subject property, and no municipal water wells within the city limits of Redwood City. The nearest surface waters were identified as Redwood Creek, approximately 1,350 feet to the northwest, and the San Francisco Bay approximately 500 feet to the northeast, of the subject property.

ALOHA STATE FLOWERS, INC. (Continued) **S104161770**

October 2002 to November 2004: In a work plan dated October 24, 2002, BAI proposed remedial excavation in the area of the former dispenser, the dismantling of the vapor extraction and treatment system, and the permanent destruction of the vapor extraction and groundwater monitoring wells. In May 2003, Borings B-13 to B-16 were completed to further characterize subsurface conditions near the former dispenser. Groundwater monitoring Wells MW-1 and MW-2, and vapor extraction Wells SVE-1 and SVE-2 were destroyed in March 2004. Groundwater monitoring Well MW-3 was destroyed in October 2004. In November 2004, the area around the former dispenser was excavated by BAI to approximately 5.5 feet depth. Soil beneath a gas, electrical and telecommunication utilities corridor that crossed the area of excavation was reportedly left in-situ so as to maintain the integrity of the utilities servicing the subject property building. Approximately thirty (30) cubic yards of soil were removed and off-hauled to a landfill for disposition. Confirmation soil samples for laboratory analyses were taken from the floor and sidewalls of the excavation. The excavation was backfilled and compacted with imported fill. April 2005 to October 2005: By letter dated April 5, 2005, SMCoGPP requested a work plan for further soil and groundwater characterization around Boring B-12, and south of Borings B-11 and B-14. In a letter response dated May 3, 2005, BAI argued for no further work and regulatory case closure. By letter dated September 9, 2005, BAI similarly petitioned the Regional Board for case closure. The petition for case closure was denied by SMCoGPP by letter dated September 12, 2005, with greater discussion presented in a follow-up letter dated October 20, 2005. In February 2006, the Regional Board followed suit and agreed with SMCoGPPs recommendation for additional work before closure could be granted . SMCoGPP denied case closure for the following reasons: (i) the potential for NAPL at Boring B-12 had not been evaluated; (ii) dissolved-phase hydrocarbons south of Borings B-11 and B-14 had not been sufficiently assessed; and (iii) site data remained to be entered into the State's Geotracker database. However, SMCoGPP suggested at the time that 1260 Marshall Street met most of the low risk criteria for case closure. July 2006 to November 2006: In July 2006, GEI took over from BAI the project and prepared a work plan to address the issues identified by SMCoGPP. In August 2006, a sub-slab soil-gas sample was collected via a soil-gas sampling probe (SV-1) in the former garage area inside the subject property building. In September 2006, two (2) borings (B-17A and B-17B) were completed near Boring B-12, and Boring B-18 was completed next to Probe SV-1. Soil and groundwater samples were collected from the borings for laboratory analyses. The results of the August-September 2006 investigation were presented in GEI. Elevated concentrations of fuel hydrocarbons were detected in the soil and groundwater sampled from Borings B-17B and B-18. Fuel hydrocarbons (TPHg, BTEX, MTBE) were not detected in soil gas sampled at Probe SV-1, suggesting vapor intrusion into the buildings garage space may not be significant. July 2007 to November 2007: In July 2007, GEI advanced three (3) borings (B-19, B-22 and B-23) to the west, south, and east of Boring B-18, respectively, to further evaluate groundwater impact below the buildings footprint. Following the recommendation of SMCoGPP, GEI conducted in November 2007 a utilities assessment to identify the location and depth of underground utilities and evaluate the potential for preferential pathways for groundwater-borne contaminants along utility trench backfill. The utilities assessment concluded that on-site sewer,

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ALOHA STATE FLOWERS, INC. (Continued) **S104161770**

water, and other utilities were set within less than three (3) feet depth. The municipal water, natural gas, electrical, and telecommunication lines below Marshall Street were also estimated to be buried within less than three (3) feet depth. Because these utility alignments were above the static water table, preferential pathway for groundwater movement was not considered to be significant along these shallow utilities. Municipal storm and sanitary sewers north and downgradient of the subject property were set deeper, about or below the water table, and were identified as potential preferential pathways for groundwater below Marshall Street: (i) A twenty-four (24) inch diameter, reinforced concrete pipe (RCP) storm water sewer extends east-west below Marshall Street, approximately eighteen (18) feet north of the subject property. Set at between five (5) and seven (7) feet depth, the 24-inch RCP pipe slopes and drains to the west. (ii) A ten (10) inch diameter vitrified clay pipe (VCP) sanitary sewer extends eastwest below Marshall Street, parallel to the 24-inch RCP and approximately thirty (30) feet north of the subject property. Set at between seven (7) and eight (8) feet depth, the sanitary sewer slopes and drains to the west. December 2007 to December 2008: In December 2007, GEI submitted a work plan to address SMCoGPP's letter of October 4, 2007. Following work plan approval, GEI completed in September 2008 Boring B-24 off-site to the east of the former UST on the adjacent property at 1718 Broadway Street; Boring B-25 off-site to the southwest of the former dispenser on the adjacent property at 1738-1740 Broadway Street; and five (5) borings (B-26, B-27, B-27B, B-28 and B-29) adjacent to municipal storm and sanitary sewers on Marshall Street to the north of the subject property. The results of the investigation found no significant hydrocarbon impact below Marshall Street, suggesting that municipal sewers did not serve as significant preferential pathways for migration of groundwater-borne hydrocarbons from the subject property. In November 2008, GEI installed a groundwater monitoring well (MW-4) next to Boring B-18 in the buildings former garage area. The well construction and initial groundwater sampling event were presented along with the results of the off-site borings (B-24 to B-29) in a technical report by GEI dated December 20, 2008. Well MW-4 was subsequently gauged for depth-to-water and sampled for laboratory analyses in February and May 2009. By letter dated August 3, 2009, SMCoGPP recommended cessation of groundwater sampling of Well MW-4, and reducing the depth-to-water monitoring frequency to once annually. According to SMCoGPP, case closure of 1260 Marshal Street may be appropriate based on the level of investigation completed since September 2006.

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100014
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100014
Contact Type:	Regional Board Caseworker

ALOHA STATE FLOWERS, INC. (Continued) **S104161770**

Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100014
Status: Completed - Case Closed
Status Date: 10/12/2010

Global Id: T0608100014
Status: Open - Case Begin Date
Status Date: 03/24/1986

Global Id: T0608100014
Status: Open - Site Assessment
Status Date: 05/24/2001

Regulatory Activities:
Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 12/18/2009
Action: Technical Correspondence / Assistance / Other - #20091218

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 05/10/2010
Action: Notification - Public Notice of Case Closure - #20100510

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 08/07/2008
Action: Staff Letter - #20080807

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 08/03/2009
Action: Staff Letter - #20090803

Global Id: T0608100014
Action Type: RESPONSE
Date: 02/28/2010
Action: Request for Closure

Global Id: T0608100014
Action Type: RESPONSE
Date: 06/29/2005
Action: Other Report / Document

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 10/12/2010
Action: Closure/No Further Action Letter - #20101012

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ALOHA STATE FLOWERS, INC. (Continued) **S104161770**

Global Id: T0608100014
Action Type: RESPONSE
Date: 10/19/2005
Action: Respond to Petition

Global Id: T0608100014
Action Type: RESPONSE
Date: 10/20/2005
Action: Respond to Petition

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 10/03/1990
Action: Notice of Responsibility - #19901003

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 06/28/2007
Action: Staff Letter - #20070628

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 04/23/2008
Action: Staff Letter - #20080423A

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 05/30/2006
Action: Staff Letter - #20060530

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 07/24/2006
Action: Staff Letter - #20060724

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 05/30/2006
Action: Notice of Violation - #20060530

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 04/23/2008
Action: Staff Letter - #20080423B

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 05/15/2007
Action: Staff Letter - #20070515

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 12/12/2006
Action: Staff Letter - #20061212

Global Id: T0608100014
Action Type: ENFORCEMENT

DRAFT

ALOHA STATE FLOWERS, INC. (Continued) **S104161770**

Date: 10/04/2007
Action: Staff Letter - #20071004

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 12/17/2003
Action: Staff Letter - #20031217

Global Id: T0608100014
Action Type: RESPONSE
Date: 08/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608100014
Action Type: RESPONSE
Date: 08/04/2009
Action: Other Report / Document

Global Id: T0608100014
Action Type: Other
Date: 03/18/1986
Action: Leak Reported

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 06/09/2010
Action: Staff Letter - #20100610

Global Id: T0608100014
Action Type: Other
Date: 03/10/1986
Action: Leak Stopped

Global Id: T0608100014
Action Type: RESPONSE
Date: 11/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608100014
Action Type: RESPONSE
Date: 09/09/2010
Action: Well Destruction Report

Global Id: T0608100014
Action Type: Other
Date: 03/11/1986
Action: Leak Discovery

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 09/12/2005
Action: Staff Letter - #20050912

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 06/12/2006
Action: Staff Letter - #20060612

DRAFT

ALOHA STATE FLOWERS, INC. (Continued) **S104161770**

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 08/11/2005
Action: Staff Letter - #20050811

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 02/22/2006
Action: Staff Letter - #20060222

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 03/17/2004
Action: Technical Correspondence / Assistance / Other - #20040317

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 04/05/2005
Action: Staff Letter - #20050405

Global Id: T0608100014
Action Type: ENFORCEMENT
Date: 08/03/2009
Action: Staff Letter - #20090803

Global Id: T0608100014
Action Type: RESPONSE
Date: 05/17/2006
Action: Soil and Water Investigation Workplan

Global Id: T0608100014
Action Type: RESPONSE
Date: 10/16/2006
Action: Soil and Water Investigation Report

Global Id: T0608100014
Action Type: RESPONSE
Date: 06/30/2006
Action: Other Workplan

Global Id: T0608100014
Action Type: RESPONSE
Date: 10/16/2006
Action: Risk Assessment Report

Global Id: T0608100014
Action Type: RESPONSE
Date: 02/20/2007
Action: Other Report / Document

Global Id: T0608100014
Action Type: RESPONSE
Date: 01/16/2007
Action: Other Report / Document

Global Id: T0608100014
Action Type: RESPONSE

DRAFT

ALOHA STATE FLOWERS, INC. (Continued) **S104161770**

Date: 02/20/2007
Action: Electronic Reporting Submittal Due

Global Id: T0608100014
Action Type: RESPONSE
Date: 07/27/2007
Action: Soil and Water Investigation Workplan

Global Id: T0608100014
Action Type: RESPONSE
Date: 11/30/2007
Action: Soil and Water Investigation Report

Global Id: T0608100014
Action Type: RESPONSE
Date: 11/05/2007
Action: Electronic Reporting Submittal Due

Global Id: T0608100014
Action Type: RESPONSE
Date: 11/05/2007
Action: Other Report / Document

Global Id: T0608100014
Action Type: RESPONSE
Date: 03/28/2008
Action: Soil and Water Investigation Workplan

Global Id: T0608100014
Action Type: RESPONSE
Date: 11/04/2008
Action: Site Assessment Report

Global Id: T0608100014
Action Type: RESPONSE
Date: 05/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0608100014
Action Type: RESPONSE
Date: 09/22/2009
Action: Clean Up Fund - 5-Year Review Summary - Regulator Responded

Global Id: T0608100014
Action Type: RESPONSE
Date: 06/29/2005
Action: Electronic Reporting Submittal Due

Global Id: T0608100014
Action Type: REMEDIATION
Date: 11/15/2004
Action: Excavation

Global Id: T0608100014
Action Type: REMEDIATION
Date: 03/12/1986
Action: Pump & Treat (P&T) Groundwater

DRAFT

ALOHA STATE FLOWERS, INC. (Continued) **S104161770**

Global Id: T0608100014
Action Type: REMEDIATION
Date: 10/22/2000
Action: Soil Vapor Extraction (SVE)

Global Id: T0608100014
Action Type: REMEDIATION
Date: 08/09/2000
Action: Soil Vapor Extraction (SVE)

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Pollution Characterization
Case Number: 330004
How Discovered: Tank Closure
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: 5/24/2001
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330004
Facility Status: 9- Case Closed
Global ID: T0608100014
APN Number: 053205040
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0014

AN222 **AMERICAN SAVINGS BANK** **HIST CORTESE** **S103472801**
NW **201 MARSHALL** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.450 mi.
2378 ft. **Site 1 of 2 in cluster AN**

Relative:
Higher

Actual:
14 ft.

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-1187

DRAFT

223
NNW
1/4-1/2
0.451 mi.
2380 ft.

BRADFORD STREET PARCELS
707 BRADFORD STREET
REDWOOD CITY, CA 94063

ENVIROSTOR **S108974338**
VCP **N/A**

Relative:
Lower

Actual:
8 ft.

ENVIROSTOR:

Facility ID:	60000784
Status:	Inactive - Needs Evaluation
Status Date:	03/28/2012
Site Code:	201775
Site Type:	Voluntary Cleanup
Site Type Detailed:	Voluntary Cleanup
Acres:	1
NPL:	NO
Regulatory Agencies:	SMBRP, SAN MATEO COUNTY
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Julie Pettijohn
Division Branch:	Cleanup Berkeley
Assembly:	22
Senate:	13
Special Program:	Polanco Redevelopment MOA
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Responsible Party
Latitude:	37.48911
Longitude:	-122.2273
APN:	052-372-170, 052-372-200, 052-372-240, 052-372-999, 052372200
Past Use:	LDF
Potential COC:	Polynuclear aromatic hydrocarbons (PAHs
Confirmed COC:	Polynuclear aromatic hydrocarbons (PAHs
Potential Description:	OTH, SOIL, SURFW
Alias Name:	052-372-170
Alias Type:	APN
Alias Name:	052-372-200
Alias Type:	APN
Alias Name:	052-372-240
Alias Type:	APN
Alias Name:	052-372-999
Alias Type:	APN
Alias Name:	052372200
Alias Type:	APN
Alias Name:	110033619207
Alias Type:	EPA (FRS #)
Alias Name:	SL0608123721
Alias Type:	GeoTracker Global ID
Alias Name:	201775
Alias Type:	Project Code (Site Code)
Alias Name:	60000784
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Correspondence
Completed Date:	11/01/2010
Comments:	Not reported
Completed Area Name:	PROJECT WIDE

DRAFT

BRADFORD STREET PARCELS (Continued) **S108974338**

Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 03/18/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 05/08/2008
Comments: Final Signed Document signed May 8, 2008.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 10/24/2007
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 04/17/2006
Comments: DTSC received this document as part of the MOA application and the EOA.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 10/28/2004
Comments: DTSC received this Phase I Report as part of the MOA application and the EOA.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 11/26/2004
Comments: DTSC received this report as part of the MOA application and the EOA.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Risk Assessment Report
Completed Date: 04/19/2010
Comments: Based on GSU's comments on Reports submitted for review, some chemicals of concern exist above screening levels on Site. Redwood City Redevelopment Agency agrees to perform pump test to determine GW use. A new risk assessment is subject to the pump test results.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Workplan
Completed Date: 11/18/2010
Comments: Approval ltr send.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 04/08/2011
Comments: Not reported

DRAFT

BRADFORD STREET PARCELS (Continued) **S108974338**

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 01/03/1979
Comments: Soil report submitted with EOA on Feb. 18, 2010.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 04/09/1998
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 09/19/2007
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 01/18/2007
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

VCP:
Facility ID: 60000784
Site Type: Voluntary Cleanup
Site Type Detail: Voluntary Cleanup
Site Mgmt. Req.: NONE SPECIFIED
Acres: 1
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP, SAN MATEO COUNTY
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Not reported
Supervisor: Julie Pettijohn
Division Branch: Cleanup Berkeley
Site Code: 201775
Assembly: 22
Senate: 13
Special Programs Code: Polanco Redevelopment MOA
Status: Inactive - Needs Evaluation
Status Date: 03/28/2012
Restricted Use: NO
Funding: Responsible Party
Lat/Long: 37.48911 / -122.2273
APN: 052-372-170, 052-372-200, 052-372-240, 052-372-999, 052372200

DRAFT

BRADFORD STREET PARCELS (Continued) **S108974338**

Past Use:	LDF
Potential COC:	30019
Confirmed COC:	30019
Potential Description:	OTH, SOIL, SURFW
Alias Name:	052-372-170
Alias Type:	APN
Alias Name:	052-372-200
Alias Type:	APN
Alias Name:	052-372-240
Alias Type:	APN
Alias Name:	052-372-999
Alias Type:	APN
Alias Name:	052372200
Alias Type:	APN
Alias Name:	1100336192O7
Alias Type:	EPA (FRS #)
Alias Name:	SL0608123721
Alias Type:	GeoTracker Global ID
Alias Name:	201775
Alias Type:	Project Code (Site Code)
Alias Name:	60000784
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Correspondence
Completed Date:	11/01/2010
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	03/18/2010
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	05/08/2008
Comments:	Final Signed Document signed May 8, 2008.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Correspondence
Completed Date:	10/24/2007
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Technical Report
Completed Date:	04/17/2006
Comments:	DTSC received this document as part of the MOA application and the EOA.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1

DRAFT

BRADFORD STREET PARCELS (Continued) **S108974338**

Completed Date: 10/28/2004
Comments: DTSC received this Phase I Report as part of the MOA application and the EOA.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 11/26/2004
Comments: DTSC received this report as part of the MOA application and the EOA.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Risk Assessment Report
Completed Date: 04/19/2010
Comments: Based on GSU's comments on Reports submitted for review, some chemicals of concern exist above screening levels on Site. Redwood City Redevelopment Agency agrees to perform pump test to determine GW use. A new risk assessment is subject to the pump test results.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Characterization Workplan
Completed Date: 11/18/2010
Comments: Approval ltr send.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 04/08/2011
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 01/03/1979
Comments: Soil report submitted with EOA on Feb. 18, 2010.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 04/09/1998
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 09/19/2007
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Correspondence - Received
Completed Date: 01/18/2007
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported

DRAFT

BRADFORD STREET PARCELS (Continued) **S108974338**

Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

AO224 **RAY'S AUTO** **LUST** **S103893028**
ESE **2233 MIDDLEFIELD RD** **SWEEPS UST** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94062** **HIST CORTESE**
0.452 mi.
2386 ft. **Site 1 of 2 in cluster AO**

Relative:
Higher

Actual:
17 ft.

LUST:
Region: STATE
Global Id: T0608191150
Latitude: 37.480541
Longitude: -122.217094
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 11/28/2007
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-1283
LOC Case Number: 330185
File Location: Local Agency Warehouse
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608191150
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608191150
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608191150
Status: Completed - Case Closed
Status Date: 11/28/2007

DRAFT

RAY'S AUTO (Continued) **S103893028**

Global Id: T0608191150
Status: Open - Case Begin Date
Status Date: 05/01/2000

Global Id: T0608191150
Status: Open - Site Assessment
Status Date: 05/01/2000

Regulatory Activities:
Global Id: T0608191150
Action Type: Other
Date: 06/01/2000
Action: Leak Reported

Global Id: T0608191150
Action Type: ENFORCEMENT
Date: 03/27/2001
Action: Notice of Responsibility - #1

Global Id: T0608191150
Action Type: ENFORCEMENT
Date: 11/28/2007
Action: Closure/No Further Action Letter - #20071128

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330185
Facility Status: 9- Case Closed
Global ID: T0608191150
APN Number: 053364100
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

SWEEPS UST:
Status: Active
Comp Number: 330198
Number: 1
Board Of Equalization: Not reported
Referral Date: 05-04-94
Action Date: 05-04-94
Created Date: 04-29-94
Owner Tank Id: UNK
SWRCB Tank Id: 41-000-330198-000001
Tank Status: A
Capacity: 200
Active Date: 04-29-94
Tank Use: OIL
STG: W
Content: WASTE OIL
Number Of Tanks: 1

HIST CORTESE:
Region: CORTESE
Facility County Code: 41

DRAFT

RAY'S AUTO (Continued) **S103893028**

Reg By: LTNKA
Reg Id: 41-0354

AO225 **OPFER PROPERTY** **LUST** **S105031176**
ESE **2233 MIDDLEFIELD** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.452 mi.
2386 ft. **Site 2 of 2 in cluster AO**

Relative:
Higher

Actual:
17 ft.

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Remedial action (cleanup) Underway
Case Number: 330185
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: 1/1/1965
Date Post Remedial Action Monitoring Began: Not reported

AP226 **1661 BROADWAY ST - UST SITE** **LUST** **S112931805**
NE **1661 BROADWAY** **San Mateo Co. BI** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **HAZNET**
0.454 mi.
2397 ft. **Site 1 of 4 in cluster AP**

Relative:
Lower

Actual:
10 ft.

LUST:
Region: STATE
Global Id: T10000005776
Latitude: 37.4865863804586
Longitude: -122.219907559525
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 03/10/2015
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: Not reported
LOC Case Number: 330230
File Location: All Files are on GeoTracker or in the Local Agency Database
Potential Media Affect: Soil
Potential Contaminants of Concern: Gasoline
Site History: UST was filled with concrete slurry in May 1986. Low concentrations of TPHg were reported in soil beneath the UST when it was removed in March 2014.

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T10000005776
Contact Type: Local Agency Caseworker

DRAFT

1661 BROADWAY ST - UST SITE (Continued) **S112931805**

Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T10000005776
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T10000005776
Status: Completed - Case Closed
Status Date: 03/10/2015

Global Id: T10000005776
Status: Open - Case Begin Date
Status Date: 03/11/2014

Global Id: T10000005776
Status: Open - Eligible for Closure
Status Date: 12/10/2014

Global Id: T10000005776
Status: Open - Site Assessment
Status Date: 03/17/2014

Regulatory Activities:
Global Id: T10000005776
Action Type: Other
Date: 03/11/2014
Action: Leak Discovery

Global Id: T10000005776
Action Type: ENFORCEMENT
Date: 10/01/2014
Action: Staff Letter - #20141001

Global Id: T10000005776
Action Type: ENFORCEMENT
Date: 03/17/2014
Action: Staff Letter - #20140317

Global Id: T10000005776
Action Type: ENFORCEMENT
Date: 03/18/2014
Action: Technical Correspondence / Assistance / Other - #20140318

Global Id: T10000005776
Action Type: ENFORCEMENT

DRAFT

1661 BROADWAY ST - UST SITE (Continued) **S112931805**

Date: 05/06/2014
Action: Site Visit / Inspection / Sampling

Global Id: T10000005776
Action Type: ENFORCEMENT
Date: 01/06/2015
Action: Notification - Preclosure - #20150106

Global Id: T10000005776
Action Type: ENFORCEMENT
Date: 03/19/2014
Action: Staff Letter - #20140319

Global Id: T10000005776
Action Type: ENFORCEMENT
Date: 03/19/2014
Action: Technical Correspondence / Assistance / Other - #20140319

Global Id: T10000005776
Action Type: ENFORCEMENT
Date: 03/24/2014
Action: Technical Correspondence / Assistance / Other - #20140324

Global Id: T10000005776
Action Type: ENFORCEMENT
Date: 07/17/2014
Action: Technical Correspondence / Assistance / Other - #20140717

Global Id: T10000005776
Action Type: Other
Date: 03/12/2014
Action: Leak Reported

Global Id: T10000005776
Action Type: RESPONSE
Date: 04/30/2014
Action: Tank Removal Report / UST Sampling Report

Global Id: T10000005776
Action Type: RESPONSE
Date: 04/30/2014
Action: Correspondence

Global Id: T10000005776
Action Type: RESPONSE
Date: 04/30/2014
Action: Unauthorized Release Form

Global Id: T10000005776
Action Type: RESPONSE
Date: 03/12/2014
Action: Tank Removal Report / UST Sampling Report

Global Id: T10000005776
Action Type: RESPONSE
Date: 10/27/2014
Action: Request for Closure - Regulator Responded

DRAFT

1661 BROADWAY ST - UST SITE (Continued) **S112931805**

Global Id: T10000005776
Action Type: ENFORCEMENT
Date: 03/19/2014
Action: Notice of Responsibility - #20140319

Global Id: T10000005776
Action Type: ENFORCEMENT
Date: 03/17/2014
Action: Staff Letter - #20140317

Global Id: T10000005776
Action Type: ENFORCEMENT
Date: 03/26/2014
Action: Technical Correspondence / Assistance / Other - #20140326

Global Id: T10000005776
Action Type: ENFORCEMENT
Date: 12/23/2014
Action: Staff Letter - #20141223

Global Id: T10000005776
Action Type: ENFORCEMENT
Date: 03/10/2015
Action: Staff Letter - #20150310

Global Id: T10000005776
Action Type: RESPONSE
Date: 03/25/2014
Action: Correspondence

Global Id: T10000005776
Action Type: RESPONSE
Date: 03/25/2014
Action: Correspondence

Global Id: T10000005776
Action Type: RESPONSE
Date: 06/17/2014
Action: Soil and Water Investigation Report

Global Id: T10000005776
Action Type: RESPONSE
Date: 03/26/2014
Action: Correspondence

Global Id: T10000005776
Action Type: REMEDIATION
Date: 03/11/2014
Action: Excavation

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330230
Facility Status: 9- Case Closed
Global ID: T10000005776
APN Number: 053222080

DRAFT

1661 BROADWAY ST - UST SITE (Continued) **S112931805**

Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0055055
Prog Element Code: UNDERGROUND TANK - GENERAL
Record Id: PR0075950
Description: UNDERGROUND TANK - GENERAL
Facility Status: INACTIVE

HAZNET:
envid: S112931805
Year: 2003
GEPAID: CAC002568488
Contact: ELIZABETH KENNEDY
Telephone: 6503676341
Mailing Name: Not reported
Mailing Address: 335 HARCROSS RD
Mailing City,St,Zip: WOODSIDE, CA 94062
Gen County: Not reported
TSD EPA ID: CAD009452657
TSD County: Not reported
Waste Category: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
Disposal Method: Recycler
Tons: 0.22
Cat Decode: Not reported
Method Decode: Not reported
Facility County: San Mateo

227
ESE
1/4-1/2
0.477 mi.
2519 ft.

PRICE CLUB #409 **ENVIROSTOR** **S103643864**
2300 MIDDLEFIELD **CHMIRS** **N/A**
REDWOOD CITY, CA 94063

Relative:
Higher

Actual:
20 ft.

ENVIROSTOR:
Facility ID: 71003269
Status: Inactive - Needs Evaluation
Status Date: Not reported
Site Code: Not reported
Site Type: Tiered Permit
Site Type Detailed: Tiered Permit
Acres: Not reported
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: Not reported
Division Branch: Cleanup Berkeley
Assembly: 22
Senate: 13
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 37.47865

DRAFT

PRICE CLUB #409 (Continued) **S103643864**

Longitude: -122.2165
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: CAL000063559
Alias Type: EPA Identification Number
Alias Name: 71003269
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: Not reported
Completed Sub Area Name: Not reported
Completed Document Type: Not reported
Completed Date: Not reported
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

CHMIRS:
OES Incident Number: 1-0010
OES notification: 01/02/2011
OES Date: Not reported
OES Time: Not reported
Date Completed: **Not reported**
Property Use: Not reported
Agency Id Number: Not reported
Agency Incident Number: Not reported
Time Notified: Not reported
Time Completed: Not reported
Surrounding Area: Not reported
Estimated Temperature: Not reported
Property Management: Not reported
More Than Two Substances Involved?: Not reported
Resp Agncy Personel # Of Decontaminated: Not reported
Responding Agency Personel # Of Injuries: Not reported
Responding Agency Personel # Of Fatalities: Not reported
Others Number Of Decontaminated: Not reported
Others Number Of Injuries: Not reported
Others Number Of Fatalities: Not reported
Vehicle Make/year: Not reported
Vehicle License Number: Not reported
Vehicle State: Not reported
Vehicle Id Number: Not reported
CA DOT PUC/ICC Number: Not reported
Company Name: Not reported
Reporting Officer Name/ID: Not reported
Report Date: Not reported

DRAFT

PRICE CLUB #409 (Continued) **S103643864**

Facility Telephone:	Not reported
Waterway Involved:	Yes
Waterway:	Storm Drain
Spill Site:	Merchant/Business
Cleanup By:	Reporting Party
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Gal(s)
Other:	Not reported
Date/Time:	1137
Year:	2011
Agency:	County of San Mateo
Incident Date:	1/2/2011
Admin Agency:	San Mateo County Environmental Health
Amount:	Not reported
Contained:	Yes
Site Type:	Storm Drain
E Date:	Not reported
Substance:	Sewage
Quantity Released:	1,950
Unknown:	Not reported
Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	Not reported
Number of Injuries:	Not reported
Number of Fatalities:	Not reported
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported
#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Not reported
Description:	Caller states that a grease blockage and debris caused the back up out of a man hole.

228
West
1/4-1/2
0.484 mi.
2556 ft.

SEQUOIA TRANSPORTATION DEPT
480 JAMES AVENUE
REDWOOD CITY, CA 94062

LUST **S104494030**
HIST UST **N/A**
NPDES

Relative:
Higher

Actual:
18 ft.

LUST:

Region:	STATE
Global Id:	T10000008751
Latitude:	37.48238
Longitude:	-122.23641
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	06/15/2016
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	Not reported

DRAFT

SEQUOIA TRANSPORTATION DEPT (Continued) **S104494030**

LOC Case Number: 330236
File Location: All Files are on GeoTracker or in the Local Agency Database
Potential Media Affect: Other Groundwater (uses other than drinking water), Soil
Potential Contaminants of Concern: Diesel, Gasoline, Waste Oil / Motor / Hydraulic / Lubricating
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T10000008751
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Status History:
Global Id: T10000008751
Status: Completed - Case Closed
Status Date: 06/15/2016

Global Id: T10000008751
Status: Open - Assessment & Interim Remedial Action
Status Date: 04/05/2016

Global Id: T10000008751
Status: Open - Case Begin Date
Status Date: 02/19/2015

Global Id: T10000008751
Status: Open - Eligible for Closure
Status Date: 04/06/2016

Regulatory Activities:
Global Id: T10000008751
Action Type: Other
Date: 02/19/2015
Action: Leak Discovery

Global Id: T10000008751
Action Type: ENFORCEMENT
Date: 04/07/2016
Action: Notice of Responsibility - #20160407

Global Id: T10000008751
Action Type: ENFORCEMENT
Date: 04/06/2016
Action: Staff Letter - #20160406

Global Id: T10000008751
Action Type: ENFORCEMENT
Date: 04/12/2016
Action: Notification - Preclosure - #20160412

Global Id: T10000008751

DRAFT

SEQUOIA TRANSPORTATION DEPT (Continued) **S104494030**

Action Type:	RESPONSE
Date:	01/22/2016
Action:	Tank Removal Report / UST Sampling Report
Global Id:	T10000008751
Action Type:	RESPONSE
Date:	12/14/2012
Action:	CEQA Reports
Global Id:	T10000008751
Action Type:	ENFORCEMENT
Date:	06/15/2016
Action:	Closure/No Further Action Letter - #20160615
Global Id:	T10000008751
Action Type:	Other
Date:	01/22/2016
Action:	Leak Reported
Region:	STATE
Global Id:	T0608100454
Latitude:	37.480882
Longitude:	-122.234855
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	03/03/1995
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0441
LOC Case Number:	330033
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Heating Oil / Fuel Oil
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100454
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292
Global Id:	T0608100454
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

DRAFT

SEQUOIA TRANSPORTATION DEPT (Continued) **S104494030**

Status History:
Global Id: T0608100454
Status: Completed - Case Closed
Status Date: 03/03/1995

Global Id: T0608100454
Status: Open - Case Begin Date
Status Date: 08/27/1985

Regulatory Activities:
Global Id: T0608100454
Action Type: ENFORCEMENT
Date: 09/11/1990
Action: Notice of Responsibility - #19900911

Global Id: T0608100454
Action Type: Other
Date: 08/27/1985
Action: Leak Reported

Global Id: T0608100454
Action Type: ENFORCEMENT
Date: 03/03/1995
Action: Closure/No Further Action Letter - #19950303

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330033
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330033
Facility Status: 9- Case Closed
Global ID: T0608100454
APN Number: 052201010
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

Region: SAN MATEO
Facility ID: 330236
Facility Status: 9- Case Closed

DRAFT

SEQUOIA TRANSPORTATION DEPT (Continued) **S104494030**

Global ID: T10000008751
APN Number: 052201010
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST UST:
File Number: 0002C26E
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002C26E.pdf
Region: Not reported
Facility ID: Not reported
Facility Type: Not reported
Other Type: Not reported
Contact Name: Not reported
Telephone: Not reported
Owner Name: Not reported
Owner Address: Not reported
Owner City,St,Zip: Not reported
Total Tanks: Not reported

Tank Num: Not reported
Container Num: Not reported
Year Installed: Not reported
Tank Capacity: Not reported
Tank Used for: Not reported
Type of Fuel: Not reported
Container Construction Thickness: Not reported
Leak Detection: Not reported

Click here for Geo Tracker PDF:

NPDES:
Npdes Number: Not reported
Facility Status: Not reported
Agency Id: Not reported
Region: 2
Regulatory Measure Id: 346261
Order No: Not reported
Regulatory Measure Type: Construction
Place Id: Not reported
WDID: 2 41C352258
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: 4/3/2013
Discharge Name: Not reported
Discharge Address: Not reported
Discharge City: Not reported
Discharge State: Not reported
Discharge Zip: Not reported
RECEIVED DATE: 6/3/2008
PROCESSED DATE: 6/17/2008
STATUS CODE NAME: Terminated
STATUS DATE: 6/19/2013
PLACE SIZE: 5.2
PLACE SIZE UNIT: Acres

DRAFT

SEQUOIA TRANSPORTATION DEPT (Continued) **S104494030**

FACILITY CONTACT NAME:	Steve Tsuruoka
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	650-815-5646
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	SEQUIOA UNION HIGH SCHOOL DISTRICT
OPERATOR ADDRESS:	480 JAMES AVENUE
OPERATOR CITY:	REDWOOD CITY
OPERATOR STATE:	California
OPERATOR ZIP:	94062
OPERATOR CONTACT NAME:	Rich Haywood
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	650-444-2990
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Special District
DEVELOPER NAME:	Alpha Tech Cambridge Group
DEVELOPER ADDRESS:	345 S California #3
DEVELOPER CITY:	Palo Alto
DEVELOPER STATE:	California
DEVELOPER ZIP:	94306
DEVELOPER CONTACT NAME:	Steve Tsuruoka
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Y
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Y
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	San Francisco Bay
CERTIFIER NAME:	BRUCE ROLLIN
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	06-MAY-10
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

DRAFT

AQ229 **U HAUL** **LUST** **1000160010**
SSE **2200 EL CAMINO REAL** **HIST CORTESE** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.485 mi.
2560 ft. **Site 1 of 3 in cluster AQ**

Relative:
Higher

Actual:
25 ft.

LUST REG 2:

Region:	2
Facility Id:	Not reported
Facility Status:	Post remedial action monitoring
Case Number:	330149
How Discovered:	Tank Closure
Leak Cause:	Unknown
Leak Source:	Unknown
Date Leak Confirmed:	Not reported
Oversight Program:	LUST
Prelim. Site Assesment Wokplan Submitted:	Not reported
Preliminary Site Assesment Began:	Not reported
Pollution Characterization Began:	Not reported
Pollution Remediation Plan Submitted:	Not reported
Date Remediation Action Underway:	Not reported
Date Post Remedial Action Monitoring Began:	2/26/2001

HIST CORTESE:

Region:	CORTESE
Facility County Code:	41
Reg By:	LTNKA
Reg Id:	41-0581

AQ230 **U-HAUL** **LUST** **U001594599**
SSE **2200 EL CAMINO REAL** **HIST UST** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94061**
0.485 mi.
2560 ft. **Site 2 of 3 in cluster AQ**

Relative:
Higher

Actual:
25 ft.

LUST:

Region:	STATE
Global Id:	T0608184532
Latitude:	37.475447
Longitude:	-122.221276
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	04/29/1992
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0581
LOC Case Number:	330035
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Trichloroethylene (TCE)
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608184532
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP

DRAFT

U-HAUL (Continued) **U001594599**

Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292
Global Id:	T0608184532
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608184532
Status:	Completed - Case Closed
Status Date:	04/29/1992
Global Id:	T0608184532
Status:	Open - Case Begin Date
Status Date:	12/08/1986

Regulatory Activities:

Global Id:	T0608184532
Action Type:	Other
Date:	12/11/1986
Action:	Leak Reported
Global Id:	T0608184532
Action Type:	ENFORCEMENT
Date:	12/08/1986
Action:	Notice of Responsibility - #1
Global Id:	T0608184532
Action Type:	Other
Date:	12/11/1986
Action:	Leak Discovery

Region:	STATE
Global Id:	T0608100555
Latitude:	37.475554422
Longitude:	-122.221249
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	03/23/2005
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0581
LOC Case Number:	330149
File Location:	Local Agency
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

DRAFT

U-HAUL (Continued) **U001594599**

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100555
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100555
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100555
Status:	Completed - Case Closed
Status Date:	03/23/2005

Global Id:	T0608100555
Status:	Open - Case Begin Date
Status Date:	06/12/1996

Global Id:	T0608100555
Status:	Open - Verification Monitoring
Status Date:	02/26/2001

Regulatory Activities:

Global Id:	T0608100555
Action Type:	ENFORCEMENT
Date:	03/23/2005
Action:	Closure/No Further Action Letter - #20050323

Global Id:	T0608100555
Action Type:	ENFORCEMENT
Date:	03/05/2003
Action:	Staff Letter - #20030305

Global Id:	T0608100555
Action Type:	Other
Date:	06/12/1996
Action:	Leak Discovery

Global Id:	T0608100555
Action Type:	Other
Date:	09/16/1996
Action:	Leak Reported

Global Id:	T0608100555

DRAFT

U-HAUL (Continued) **U001594599**

Action Type: RESPONSE
Date: 09/05/2003
Action: Unknown

Global Id: T0608100555
Action Type: ENFORCEMENT
Date: 06/18/1997
Action: Notice of Responsibility - #1

Global Id: T0608100555
Action Type: REMEDIATION
Date: 02/16/2000
Action: Excavation

Global Id: T0608100555
Action Type: REMEDIATION
Date: 02/16/2000
Action: Pump & Treat (P&T) Groundwater

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330035
Facility Status: 9- Case Closed
Global ID: T0608184532
APN Number: 053308220
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

Region: SAN MATEO
Facility ID: 330149
Facility Status: 9- Case Closed
Global ID: T0608100555
APN Number: 053308220
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST UST:
File Number: 0002C3AF
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002C3AF.pdf
Region: STATE
Facility ID: 00000058915
Facility Type: Other
Other Type: RETAIL
Contact Name: JUNIUS HOPE
Telephone: 4153656233
Owner Name: U-HAUL COMPANY OF SAN FRANCISC
Owner Address: 1575 BAYSHORE BOULEVARD
Owner City,St,Zip: SAN FRANCISCO, CA 94124
Total Tanks: 0002

Tank Num: 001
Container Num: 1
Year Installed: Not reported
Tank Capacity: 00010000
Tank Used for: PRODUCT

DRAFT

U-HAUL (Continued) **U001594599**

Type of Fuel:	06
Container Construction Thickness:	Not reported
Leak Detection:	None
Tank Num:	002
Container Num:	2
Year Installed:	Not reported
Tank Capacity:	00000580
Tank Used for:	WASTE
Type of Fuel:	WASTE OIL
Container Construction Thickness:	Not reported
Leak Detection:	Not reported

Click here for Geo Tracker PDF:

AQ231 **U-HAUL MOVING & STORAGE OF REDWOOD CITY** **LUST S104494007**
SSE **2200 EL CAMINO REAL** **CHMIRS N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **San Mateo Co. BI**
0.485 mi.
2560 ft. **Site 3 of 3 in cluster AQ**

Relative:
Higher

Actual:
25 ft.

LUST REG 2:

Region:	2
Facility Id:	Not reported
Facility Status:	Case Closed
Case Number:	330035
How Discovered:	OM
Leak Cause:	Unknown
Leak Source:	Unknown
Date Leak Confirmed:	Not reported
Oversight Program:	LUST
Prelim. Site Assesment Wokplan Submitted:	Not reported
Preliminary Site Assesment Began:	Not reported
Pollution Characterization Began:	Not reported
Pollution Remediation Plan Submitted:	Not reported
Date Remediation Action Underway:	Not reported
Date Post Remedial Action Monitoring Began:	Not reported

CHMIRS:

OES Incident Number:	15-0860
OES notification:	02/12/2015
OES Date:	Not reported
OES Time:	Not reported
Date Completed:	**Not reported**
Property Use:	Not reported
Agency Id Number:	Not reported
Agency Incident Number:	Not reported
Time Notified:	Not reported
Time Completed:	Not reported
Surrounding Area:	Not reported
Estimated Temperature:	Not reported
Property Management:	Not reported
More Than Two Substances Involved?:	Not reported
Resp Agncy Personel # Of Decontaminated:	Not reported
Responding Agency Personel # Of Injuries:	Not reported
Responding Agency Personel # Of Fatalities:	Not reported
Others Number Of Decontaminated:	Not reported

DRAFT

U-HAUL MOVING & STORAGE OF REDWOOD CITY (Continued) **S104494007**

Others Number Of Injuries:	Not reported
Others Number Of Fatalities:	Not reported
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	Not reported
Report Date:	Not reported
Facility Telephone:	Not reported
Waterway Involved:	Yes
Waterway:	Storm Drain
Spill Site:	Merchant/Business
Cleanup By:	Contractor
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Not reported
Other:	Not reported
Type:	PETROLEUM
Measure:	Gal(s)
Other:	Not reported
Date/Time:	1130
Year:	2015
Agency:	U-Haul International
Incident Date:	02/12/2015
Admin Agency:	San Mateo County Environmental Health
Amount:	Not reported
Contained:	Yes
Site Type:	Storm Drain
E Date:	Not reported
Substance:	Cooking Oil
Quantity Released:	5
Unknown:	Not reported
Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	Not reported
Number of Injuries:	Not reported
Number of Fatalities:	Not reported
#1 Pipeline:	No
#2 Pipeline:	No
#3 Pipeline:	No
#1 Vessel >= 300 Tons:	No
#2 Vessel >= 300 Tons:	No
#3 Vessel >= 300 Tons:	No
Evacs:	No
Injuries:	No
Fatals:	No
Comments:	Not reported
Description:	Caller states a bottle of cooking oil dropped and oil went into the storm drain located in the parking lot. Caller states he has no further information on how spill occurred

San Mateo Co. BI:
Region: SAN MATEO

DRAFT

U-HAUL MOVING & STORAGE OF REDWOOD CITY (Continued) **S104494007**

Facility ID: FA0017326
Prog Element Code: STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id: PR0003860
Description: STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0017326
Prog Element Code: HAZARDOUS WASTE PROGRAM - GENERAL
Record Id: PR0067396
Description: HAZARDOUS WASTE PROGRAM - GENERAL
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0017326
Prog Element Code: UNDERGROUND TANK - GENERAL
Record Id: PR0022416
Description: UNDERGROUND TANK - GENERAL
Facility Status: INACTIVE

AP232 **CHEVRON** **LUST** **S110060466**
NE **1603 BROADWAY** **HIST CORTESE** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.485 mi.
2561 ft. **Site 2 of 4 in cluster AP**

Relative:
Lower

Actual:
12 ft.

LUST:
Region: STATE
Global Id: T0608100120
Latitude: 37.4867605800961
Longitude: -122.218823432922
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 06/20/2003
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Case Worker: UUU
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-0127
LOC Case Number: 330079
File Location: Not reported
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608100120
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608100120
Contact Type: Regional Board Caseworker

DRAFT

CHEVRON (Continued) **S110060466**

Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100120
Status: Completed - Case Closed
Status Date: 06/20/2003

Global Id: T0608100120
Status: Open - Case Begin Date
Status Date: 09/01/1982

Global Id: T0608100120
Status: Open - Remediation
Status Date: 12/14/1993

Global Id: T0608100120
Status: Open - Remediation
Status Date: 12/19/1994

Global Id: T0608100120
Status: Open - Site Assessment
Status Date: 09/01/1982

Global Id: T0608100120
Status: Open - Site Assessment
Status Date: 07/10/1992

Global Id: T0608100120
Status: Open - Verification Monitoring
Status Date: 05/30/1995

Regulatory Activities:
Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 06/23/2003
Action: Rescission of Enforcement Action

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 06/25/2003
Action: Staff Letter

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 05/09/2003
Action: Rescission of Enforcement Action

Global Id: T0608100120
Action Type: Other
Date: 03/29/1991
Action: Leak Discovery

DRAFT

CHEVRON (Continued) **S110060466**

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 12/10/2002
Action: File review

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 04/21/1993
Action: Clean-up and Abatement Order - #93-040

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 02/07/1995
Action: Closure/No Further Action Letter

Global Id: T0608100120
Action Type: Other
Date: 03/25/1991
Action: Leak Reported

Global Id: T0608100120
Action Type: RESPONSE
Date: 07/29/2002
Action: Monitoring Report - Quarterly

Global Id: T0608100120
Action Type: RESPONSE
Date: 01/29/2003
Action: Monitoring Report - Quarterly

Global Id: T0608100120
Action Type: RESPONSE
Date: 12/26/2002
Action: Monitoring Report - Quarterly

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 06/23/2003
Action: Closure/No Further Action Letter

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 06/23/2003
Action: Closure/No Further Action Letter

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 03/17/1993
Action: Clean-up and Abatement Order - #93-027

Global Id: T0608100120
Action Type: Other
Date: 03/29/1991
Action: Leak Stopped

Global Id: T0608100120
Action Type: RESPONSE

DRAFT

CHEVRON (Continued) **S110060466**

Date: 09/22/2003
Action: Well Destruction Workplan

Global Id: T0608100120
Action Type: RESPONSE
Date: 05/09/2003
Action: Monitoring Report - Semi-Annually

Global Id: T0608100120
Action Type: RESPONSE
Date: 11/14/2002
Action: Monitoring Report - Semi-Annually

Global Id: T0608100120
Action Type: RESPONSE
Date: 03/24/1995
Action: Tank Removal Report / UST Sampling Report

Global Id: T0608100120
Action Type: RESPONSE
Date: 05/29/1996
Action: Well Installation Report

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 06/04/2003
Action: Site Visit / Inspection / Sampling

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 06/18/2003
Action: Rescission of Enforcement Action - #93-027

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 06/23/2003
Action: Closure/No Further Action Letter

Global Id: T0608100120
Action Type: RESPONSE
Date: 02/04/2004
Action: Well Destruction Report

Global Id: T0608100120
Action Type: RESPONSE
Date: 04/18/2003
Action: Request for Closure

Global Id: T0608100120
Action Type: RESPONSE
Date: 10/01/1998
Action: Monitoring Report - Quarterly

Global Id: T0608100120
Action Type: RESPONSE
Date: 12/12/2002
Action: Request for Closure

DRAFT

CHEVRON (Continued) **S110060466**

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 06/18/2003
Action: Staff Letter

Global Id: T0608100120
Action Type: RESPONSE
Date: 12/10/2002
Action: Other Report / Document

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 05/30/2002
Action: Staff Letter

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 06/18/2003
Action: Rescission of Enforcement Action

Global Id: T0608100120
Action Type: ENFORCEMENT
Date: 03/18/1993
Action: * Historical Enforcement

Global Id: T0608100120
Action Type: REMEDIATION
Date: 12/01/1994
Action: Excavation

Global Id: T0608100120
Action Type: REMEDIATION
Date: 06/01/1993
Action: Free Product Removal

Global Id: T0608100120
Action Type: REMEDIATION
Date: 01/15/1992
Action: Free Product Removal

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: LTNKA
Reg Id: 41-0127

AP233 **CHEVRON** **LUST** **S105030320**
NE **1603 BROADWAY** **San Mateo Co. BI** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.485 mi.
2561 ft. **Site 3 of 4 in cluster AP**

Relative:
Lower

Actual:
12 ft.

LUST REG 2:
Region: 2
Facility Id: 41-0127
Facility Status: Case Closed

DRAFT

CHEVRON (Continued) **S105030320**

Case Number: 330079
How Discovered: Tank Closure
Leak Cause: Structure Failure
Leak Source: Tank
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: 9/1/1982
Pollution Characterization Began: 7/10/1992
Pollution Remediation Plan Submitted: 12/14/1993
Date Remediation Action Underway: 12/19/1994
Date Post Remedial Action Monitoring Began: 5/30/1995

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0057492
Prog Element Code: GENERATES <27 GAL/YEAR
Record Id: PR0079926
Description: GENERATES <27 GAL/YEAR
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0057492
Prog Element Code: STORES MV FUELS OR WASTE ONLY
Record Id: PR0079925
Description: STORES MV FUELS OR WASTE ONLY
Facility Status: ACTIVE

Region: SAN MATEO
Facility ID: FA0057492
Prog Element Code: UNDERGROUND TANK - GENERAL
Record Id: PR0079927
Description: UNDERGROUND TANK - GENERAL
Facility Status: ACTIVE

---

234 **KAISER PERMANENTE** **LUST** **1000380351**
NNE **1150 VETERANS** **SWEEPS UST** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063** **HIST UST**
0.487 mi. **NPDES**
2570 ft.

Relative:
Lower

Actual:
8 ft.

LUST:
Region: STATE
Global Id: T0608100290
Latitude: 37.489842
Longitude: -122.225304
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 09/08/1993
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-0304
LOC Case Number: 330041
File Location: Local Agency
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Gasoline

DRAFT

KAISER PERMANENTE (Continued) **1000380351**

Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608100290
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608100290
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100290
Status: Completed - Case Closed
Status Date: 09/08/1993

Global Id: T0608100290
Status: Open - Case Begin Date
Status Date: 04/01/1987

Regulatory Activities:
Global Id: T0608100290
Action Type: ENFORCEMENT
Date: 03/27/1989
Action: Notice of Responsibility - #1

Global Id: T0608100290
Action Type: Other
Date: 08/06/1987
Action: Leak Reported

Global Id: T0608100290
Action Type: Other
Date: 04/01/1987
Action: Leak Discovery

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 330041
How Discovered: OM
Leak Cause: Unknown

DRAFT

KAISER PERMANENTE (Continued) **1000380351**

Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330041
Facility Status: 9- Case Closed
Global ID: T0608100290
APN Number: 053204050
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

SWEEPS UST:
Status: Active
Comp Number: 330087
Number: 9
Board Of Equalization: Not reported
Referral Date: 05-04-94
Action Date: 05-04-94
Created Date: 04-29-94
Owner Tank Id: Not reported
SWRCB Tank Id: Not reported
Tank Status: Not reported
Capacity: Not reported
Active Date: Not reported
Tank Use: Not reported
STG: Not reported
Content: Not reported
Number Of Tanks: Not reported

HIST UST:
File Number: Not reported
URL: Not reported
Region: STATE
Facility ID: 00000046596
Facility Type: Other
Other Type: EMERGENCY GENERATOR
Contact Name: CHARLES K. GREEN
Telephone: 4157803251
Owner Name: KAISER PERMANENTE HOSPITAL
Owner Address: 1150 VETERANS BOULEVARD
Owner City,St,Zip: REDWOOD CITY, CA 94063
Total Tanks: 0001

Tank Num: 001
Container Num: 101
Year Installed: 1978
Tank Capacity: 00010000
Tank Used for: PRODUCT

DRAFT

KAISER PERMANENTE (Continued) **1000380351**

Type of Fuel: DIESEL
Container Construction Thickness: Not reported
Leak Detection: None

NPDES:
Npdes Number: Not reported
Facility Status: Not reported
Agency Id: Not reported
Region: 2
Regulatory Measure Id: 402750
Order No: Not reported
Regulatory Measure Type: Construction
Place Id: Not reported
WDID: 2 41C357760
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: 3/10/2015
Discharge Name: Not reported
Discharge Address: Not reported
Discharge City: Not reported
Discharge State: Not reported
Discharge Zip: Not reported
RECEIVED DATE: 3/22/2010
PROCESSED DATE: 3/29/2010
STATUS CODE NAME: Terminated
STATUS DATE: 3/11/2015
PLACE SIZE: 8.5
PLACE SIZE UNIT: Acres
FACILITY CONTACT NAME: Mark Srebnik
FACILITY CONTACT TITLE: Not reported
FACILITY CONTACT PHONE: 650-299-4919
FACILITY CONTACT PHONE EXT: Not reported
FACILITY CONTACT EMAIL: Mark.R.Srebnik@nsmtp.kp.org
OPERATOR NAME: Kaiser Foundation Health Plan Inc
OPERATOR ADDRESS: 901 Marshall Street 4th Floor
OPERATOR CITY: Redwood City
OPERATOR STATE: California
OPERATOR ZIP: 94063
OPERATOR CONTACT NAME: Mark Srebnik
OPERATOR CONTACT TITLE: Project Director
OPERATOR CONTACT PHONE: 650-299-4919
OPERATOR CONTACT PHONE EXT: Not reported
OPERATOR CONTACT EMAIL: Mark.R.Srebnik@kp.org
OPERATOR TYPE: Private Business
DEVELOPER NAME: BKF Engineers
DEVELOPER ADDRESS: 255 Shoreline Drive Suite 200
DEVELOPER CITY: Redwood City
DEVELOPER STATE: California
DEVELOPER ZIP: 94065
DEVELOPER CONTACT NAME: Ed Boscacci
DEVELOPER CONTACT TITLE: Not reported
CONSTYPE LINEAR UTILITY IND: N
EMERGENCY PHONE NO: 510-461-4041
EMERGENCY PHONE EXT: Not reported
CONSTYPE ABOVE GROUND IND: N

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KAISER PERMANENTE (Continued) **1000380351**

CONSTYPE BELOW GROUND IND:	N
CONSTYPE CABLE LINE IND:	N
CONSTYPE COMM LINE IND:	N
CONSTYPE COMMERTIAL IND:	N
CONSTYPE ELECTRICAL LINE IND:	N
CONSTYPE GAS LINE IND:	N
CONSTYPE INDUSTRIAL IND:	Y
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	N
CONSTYPE RECONS IND:	N
CONSTYPE RESIDENTIAL IND:	N
CONSTYPE TRANSPORT IND:	N
CONSTYPE UTILITY DESCRIPTION:	new infrastructure
CONSTYPE UTILITY IND:	Y
CONSTYPE WATER SEWER IND:	N
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	San Francisco Bay
CERTIFIER NAME:	Mark Srebnik
CERTIFIER TITLE:	Proj Manager
CERTIFICATION DATE:	09-NOV-12
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	CAS000002
Facility Status:	Terminated
Agency Id:	0
Region:	2
Regulatory Measure Id:	402750
Order No:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	2 41C357760
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/29/2010
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	03/10/2015
Discharge Name:	Kaiser Foundation Health Plan Inc
Discharge Address:	901 Marshall Street 4th Floor
Discharge City:	Redwood City
Discharge State:	California
Discharge Zip:	94063
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported

DRAFT

KAISER PERMANENTE (Continued) **1000380351**

OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

AN235 **BRADFORD STREET PARCELS** **SLIC** **S106916473**
NW **0 BRADFORD STREET** **N/A**
1/4-1/2 **REDWOOD CITY, CA 94063**
0.497 mi.
2625 ft. **Site 2 of 2 in cluster AN**

Relative:
Higher

Actual:
14 ft.

SLIC:

Region:	STATE
Facility Status:	**Open - Site Assessment**
Status Date:	02/08/2005
Global Id:	SL0608123721
Lead Agency:	DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Lead Agency Case Number:	60000784
Latitude:	37.488578
Longitude:	-122.229311

DRAFT

BRADFORD STREET PARCELS (Continued) **S106916473**

Case Type:	Cleanup Program Site
Case Worker:	Not reported
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	Not reported
File Location:	Local Agency
Potential Media Affected:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Other Solvent or Non-Petroleum Hydrocarbon
Site History:	Extracted from Green Environment's April 17, 2006 Report On Additional Evaluation of Soil and Groundwater, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report. The subject property is bound to the north by a fuel service station at 990 Veterans Boulevard and an office building with an attached parking structure at 900 Veterans Boulevard; to the south by Bradford Street, a gravel covered parking lot at the northwest corner of Bradford and Main Streets and a city owned storm water pump station; to the east by Main Street and a gravel covered parking lot at the northeast corner of Bradford and Main Streets; and to the west by an office building and attached parking lot at 707 Bradford Street. In June-October 2004, GEI completed a Phase I Environmental Site Assessment (Phase I ESA) of the subject property. The Phase I ESA identified the following conditions that were considered to pose an environmental risk concern: Petroleum hydrocarbons releases from the adjacent property at 900 Veterans Boulevard (fuel service station site) may have impacted groundwater and groundwater-saturated soils beneath the subject property. Fill material was imported to the subject property during the relocation of Redwood Creek. Because the fill placed on the subject property was not characterized at the time, there was the possibility that the fill was not clean virgin material and may have included recycled or reused soil impacted with contaminants. Based on these findings, Redwood City contracted with GEI to investigate the subsurface conditions at the subject property. Redwood City informed GEI that they were considering constructing a child day care and/or senior housing facility on the subject property. In October 2004, GEI completed a Phase II Environmental Site Assessment of the subject property. The assessment included advancing six (6) soil borings (B-1 through B-6) and collecting soil and groundwater samples for laboratory analyses. The sampling and analytical results indicated concentrations of petroleum hydrocarbons in the oil- to diesel-range, and semivolatile organic compounds (SVOCs) in some of the soil and groundwater samples collected during this investigation. The maximum concentrations of petroleum hydrocarbons and SVOCs were reported in soil samples collected from Boring B-3. SVOCs detected in the suite of soil samples included phenol and various polynuclear aromatic compounds (PNAs), namely acenaphthylene, anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene and pyrene. Except for the groundwater sample collected from Boring B-4, SVOCs were not detected in the groundwater samples taken in October 2004. Analytical results identified the following PNAs in the groundwater sample from Boring B-4: acenaphthene, benzo(g,h,i)perylene, benzo(a)pyrene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene. Minor amounts of oil- to diesel-range petroleum hydrocarbons were reported in solution in the groundwater samples from Borings B-2 and B-4. The concentrations of CAM 17 metals in soil samples collected in October 2004 were found to

BRADFORD STREET PARCELS (Continued) **S106916473**

be comparable to background when the sample metal data are compared with background levels reported in the scientific literature, e.g. Scott (1995), Shacklette and Boerngen (1984), Bradford et al (1996), among others.

Click here to access the California GeoTracker records for this facility:

AP236 **REDWOOD GENERAL TIRE SERVICE** **ENVIROSTOR 1000438541**
NE **1630 BROADWAY** **LUST N/A**
1/2-1 **REDWOOD CITY, CA 94063** **HAULERS**
0.503 mi. **SWEEPS UST**
2655 ft. **Site 4 of 4 in cluster AP** **HIST UST**
CA FID UST
Relative: **FINDS**
Lower **ECHO**
Cortese
Actual: **ENF**
10 ft. **HIST CORTESE**

ENVIROSTOR:

Facility ID:	41590001
Status:	Refer: RWQCB
Status Date:	01/25/2000
Site Code:	201246
Site Type:	Evaluation
Site Type Detailed:	Evaluation
Acres:	0.6
NPL:	NO
Regulatory Agencies:	RWQCB 2 - San Francisco Bay
Lead Agency:	RWQCB 2 - San Francisco Bay
Program Manager:	Not reported
Supervisor:	Referred - Not Assigned
Division Branch:	Cleanup Berkeley
Assembly:	22
Senate:	13
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	37.48737
Longitude:	-122.2191
APN:	053212200
Past Use:	NONE SPECIFIED
Potential COC:	* HYDROCARBON SOLVENTS * WASTE OIL & MIXED OIL
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	REDWOOD GENERAL TIRE
Alias Type:	Alternate Name
Alias Name:	053212200
Alias Type:	APN
Alias Name:	CAD982500035
Alias Type:	EPA Identification Number
Alias Name:	110002833408
Alias Type:	EPA (FRS #)
Alias Name:	201246
Alias Type:	Project Code (Site Code)
Alias Name:	41590001
Alias Type:	Envirostor ID Number

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REDWOOD GENERAL TIRE SERVICE (Continued) **1000438541**

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Assessment/Site Inspection Report (PA/SI)
Completed Date: 06/06/2001
Comments: The USEPA Preliminary Assessment was approved by USEPA. A release of petroleum product from an underground storage tank (UST) was investigated and remediated under San Francisco Regional Water Quality Control Board (RWQCB) oversight in the early 1990s. Volatile organic compounds detected in onsite groundwater were determined to have originated from an upgradient offsite source (Rohm & Haas facility; 800 Chestnut Street). RWQCB determined that no further action related to the UST release was required in 1995.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

LUST:
Region: STATE
Global Id: T0608100421
Latitude: 37.4866112
Longitude: -122.2324242
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 02/07/1995
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Case Worker: UUU
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-0442
LOC Case Number: 330040
File Location: Not reported
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Diesel
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608100421
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608100421
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board

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REDWOOD GENERAL TIRE SERVICE (Continued) **1000438541**

Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608100421
Status: Completed - Case Closed
Status Date: 02/07/1995

Global Id: T0608100421
Status: Open - Case Begin Date
Status Date: 09/27/1988

Global Id: T0608100421
Status: Open - Site Assessment
Status Date: 08/07/1989

Regulatory Activities:
Global Id: T0608100421
Action Type: Other
Date: 09/27/1988
Action: Leak Discovery

Global Id: T0608100421
Action Type: ENFORCEMENT
Date: 12/06/1996
Action: Staff Letter

Global Id: T0608100421
Action Type: Other
Date: 09/27/1988
Action: Leak Reported

Global Id: T0608100421
Action Type: Other
Date: 09/27/1988
Action: Leak Stopped

Global Id: T0608100421
Action Type: ENFORCEMENT
Date: 12/18/1996
Action: Notice of Public Hearing / Board Action

LUST REG 2:
Region: 2
Facility Id: 41-0442
Facility Status: Case Closed
Case Number: 330040
How Discovered: Tank Closure
Leak Cause: Structure Failure
Leak Source: Tank
Date Leak Confirmed: Not reported
Oversight Program: LUST

DRAFT

REDWOOD GENERAL TIRE SERVICE (Continued) **1000438541**

Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: 8/7/1989
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

HAULERS:
Facility ID: 1000686
Facility Phone: (650) 369-0351
Business Email Address: Not reported
Contact Person: Alpio Barbara, alpio barbara, Carlos Perez
Mailing Address: PO Box 5037
Mailing City: Redwood City
Mailing State: CA
Mailing Zip: 94063-0037
Mailing County: San Mateo
Mailing Phone: (650) 369-0351
Waste Tire Permit Summary: No Permit record for this business.

SWEEPS UST:
Status: Not reported
Comp Number: 335133
Number: Not reported
Board Of Equalization: Not reported
Referral Date: Not reported
Action Date: Not reported
Created Date: Not reported
Owner Tank Id: Not reported
SWRCB Tank Id: Not reported
Tank Status: Not reported
Capacity: Not reported
Active Date: Not reported
Tank Use: Not reported
STG: Not reported
Content: Not reported
Number Of Tanks: 0

HIST UST:
File Number: 0002BED2
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002BED2.pdf
Region: STATE
Facility ID: 00000029724
Facility Type: Other
Other Type: RETAIL TIRE
Contact Name: C.D. REDFERN
Telephone: 4153690351
Owner Name: GENERAL TIRE, A GENCORP COM.
Owner Address: ONE GENERAL STREET
Owner City,St,Zip: AKRON, OH 44329
Total Tanks: 0001

Tank Num: 001
Container Num: 1
Year Installed: Not reported
Tank Capacity: 00000500

DRAFT

REDWOOD GENERAL TIRE SERVICE (Continued) **1000438541**

Tank Used for: WASTE
Type of Fuel: WASTE OIL
Container Construction Thickness: Not reported
Leak Detection: None

Click here for Geo Tracker PDF:

CA FID UST:
Facility ID: 41000421
Regulated By: UTNKA
Regulated ID: Not reported
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 4153690351
Mail To: Not reported
Mailing Address: 1630 BROADWAY
Mailing Address 2: Not reported
Mailing City,St,Zip: REDWOOD CITY 94063
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

FINDS:

Registry ID: 110002833408

Environmental Interest/Information System
California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1000438541
Registry ID: 110002833408
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110002833408

CORTESE:

DRAFT

REDWOOD GENERAL TIRE SERVICE (Continued) **1000438541**

Region:	CORTESE
Envirostor Id:	Not reported
Site/Facility Type:	Not reported
Cleanup Status:	Not reported
Status Date:	Not reported
Site Code:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Owner:	Not reported
Enf Type:	Not reported
Swat R:	Not reported
Flag:	CORTESE
Order No:	Not reported
Waste Discharge System No:	Not reported
Effective Date:	Not reported
Region 2:	2
WID Id:	2 417143N01
Solid Waste Id No:	Not reported
Waste Management Uit Name:	Not reported

Region:	CORTESE
Envirostor Id:	Not reported
Site/Facility Type:	Not reported
Cleanup Status:	Not reported
Status Date:	Not reported
Site Code:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Owner:	Not reported
Enf Type:	Not reported
Swat R:	Not reported
Flag:	CORTESE
Order No:	Not reported
Waste Discharge System No:	Not reported
Effective Date:	Not reported
Region 2:	2
WID Id:	2 417143N01
Solid Waste Id No:	Not reported
Waste Management Uit Name:	Not reported

ENF:

Region:	2
Facility Id:	252234
Agency Name:	General Tire, Inc.
Place Type:	Facility
Place Subtype:	Not reported
Facility Type:	Industrial
Agency Type:	Privately-Owned Business
# Of Agencies:	1
Place Latitude:	37.486952
Place Longitude:	-122.219192
SIC Code 1:	3011
SIC Desc 1:	Tires and Inner Tubes
SIC Code 2:	Not reported
SIC Desc 2:	Not reported
SIC Code 3:	Not reported
SIC Desc 3:	Not reported

DRAFT

REDWOOD GENERAL TIRE SERVICE (Continued) **1000438541**

NAICS Code 1:	Not reported
NAICS Desc 1:	Not reported
NAICS Code 2:	Not reported
NAICS Desc 2:	Not reported
NAICS Code 3:	Not reported
NAICS Desc 3:	Not reported
# Of Places:	1
Source Of Facility:	Reg Meas
Design Flow:	Not reported
Threat To Water Quality:	Not reported
Complexity:	Not reported
Pretreatment:	Not reported
Facility Waste Type:	Not reported
Facility Waste Type 2:	Not reported
Facility Waste Type 3:	Not reported
Facility Waste Type 4:	Not reported
Program:	UNREGS
Program Category1:	UNREGS
Program Category2:	UNREGS
# Of Programs:	1
WDID:	2 417143N01
Reg Measure Id:	162451
Reg Measure Type:	Unregulated
Region:	2
Order #:	Not reported
Npdes# CA#:	Not reported
Major-Minor:	Not reported
Npdes Type:	Not reported
Reclamation:	Not reported
Dredge Fill Fee:	Not reported
301H:	Not reported
Application Fee Amt Received:	Not reported
Status:	Never Active
Status Date:	02/21/2013
Effective Date:	Not reported
Expiration/Review Date:	Not reported
Termination Date:	Not reported
WDR Review - Amend:	Not reported
WDR Review - Revise/Renew:	Not reported
WDR Review - Rescind:	Not reported
WDR Review - No Action Required:	Not reported
WDR Review - Pending:	Not reported
WDR Review - Planned:	Not reported
Status Enrollee:	N
Individual/General:	I
Fee Code:	Not reported
Direction/Voice:	Passive
Enforcement Id(EID):	223055
Region:	2
Order / Resolution Number:	93-040
Enforcement Action Type:	Clean-up and Abatement Order
Effective Date:	04/21/1993
Adoption/Issuance Date:	Not reported
Achieve Date:	Not reported
Termination Date:	Not reported
ACL Issuance Date:	Not reported
EPL Issuance Date:	Not reported

DRAFT

REDWOOD GENERAL TIRE SERVICE (Continued) **1000438541**

Status:	Active
Title:	Enforcement - 2 417143N01
Description:	SCR-
Program:	UNREGS
Latest Milestone Completion Date:	Not reported
# Of Programs1:	1
Total Assessment Amount:	0
Initial Assessed Amount:	0
Liability $ Amount:	0
Project $ Amount:	0
Liability $ Paid:	0
Project $ Completed:	0
Total $ Paid/Completed Amount:	0
Region:	2
Facility Id:	252234
Agency Name:	General Tire, Inc.
Place Type:	Facility
Place Subtype:	Not reported
Facility Type:	Industrial
Agency Type:	Privately-Owned Business
# Of Agencies:	1
Place Latitude:	37.486952
Place Longitude:	-122.219192
SIC Code 1:	3011
SIC Desc 1:	Tires and Inner Tubes
SIC Code 2:	Not reported
SIC Desc 2:	Not reported
SIC Code 3:	Not reported
SIC Desc 3:	Not reported
NAICS Code 1:	Not reported
NAICS Desc 1:	Not reported
NAICS Code 2:	Not reported
NAICS Desc 2:	Not reported
NAICS Code 3:	Not reported
NAICS Desc 3:	Not reported
# Of Places:	1
Source Of Facility:	Reg Meas
Design Flow:	Not reported
Threat To Water Quality:	Not reported
Complexity:	Not reported
Pretreatment:	Not reported
Facility Waste Type:	Not reported
Facility Waste Type 2:	Not reported
Facility Waste Type 3:	Not reported
Facility Waste Type 4:	Not reported
Program:	UNREGS
Program Category1:	UNREGS
Program Category2:	UNREGS
# Of Programs:	1
WDID:	2 417143N01
Reg Measure Id:	162451
Reg Measure Type:	Unregulated
Region:	2
Order #:	Not reported
Npdes# CA#:	Not reported
Major-Minor:	Not reported

DRAFT

REDWOOD GENERAL TIRE SERVICE (Continued) **1000438541**

Npdes Type:	Not reported
Reclamation:	Not reported
Dredge Fill Fee:	Not reported
301H:	Not reported
Application Fee Amt Received:	Not reported
Status:	Never Active
Status Date:	02/21/2013
Effective Date:	Not reported
Expiration/Review Date:	Not reported
Termination Date:	Not reported
WDR Review - Amend:	Not reported
WDR Review - Revise/Renew:	Not reported
WDR Review - Rescind:	Not reported
WDR Review - No Action Required:	Not reported
WDR Review - Pending:	Not reported
WDR Review - Planned:	Not reported
Status Enrollee:	N
Individual/General:	I
Fee Code:	Not reported
Direction/Voice:	Passive
Enforcement Id(EID):	222278
Region:	2
Order / Resolution Number:	96-163
Enforcement Action Type:	Clean-up and Abatement Order
Effective Date:	12/18/1996
Adoption/Issuance Date:	Not reported
Achieve Date:	Not reported
Termination Date:	Not reported
ACL Issuance Date:	Not reported
EPL Issuance Date:	Not reported
Status:	Active
Title:	Enforcement - 2 417143N01
Description:	CAO-
Program:	UNREGS
Latest Milestone Completion Date:	Not reported
# Of Programs1:	1
Total Assessment Amount:	0
Initial Assessed Amount:	0
Liability $ Amount:	0
Project $ Amount:	0
Liability $ Paid:	0
Project $ Completed:	0
Total $ Paid/Completed Amount:	0

HIST CORTESE:

Region:	CORTESE
Facility County Code:	41
Reg By:	LTNKA
Reg Id:	41-0442

Region:	CORTESE
Facility County Code:	41
Reg By:	CALSI
Reg Id:	41590001

Region:	CORTESE
Facility County Code:	41

DRAFT

REDWOOD GENERAL TIRE SERVICE (Continued) **1000438541**

Reg By: WBC&D
Reg Id: 2 417143N01

237
ESE
1/2-1
0.547 mi.
2887 ft.

JOHNS-MANVILLE PRODUCTS CORPORATION **ENVIROSTOR** **S101482202**
2200 MIDDLEFIELD ROAD **N/A**
REDWOOD CITY, CA 94063

Relative:
Higher

Actual:
19 ft.

ENVIROSTOR:
Facility ID: 41100001
Status: Refer: Other Agency
Status Date: 06/07/1994
Site Code: Not reported
Site Type: Evaluation
Site Type Detailed: Evaluation
Acres: 18
NPL: NO
Regulatory Agencies: RWQCB 2 - San Francisco Bay
Lead Agency: RWQCB 2 - San Francisco Bay
Program Manager: Not reported
Supervisor: Denise Tsuji
Division Branch: Cleanup Berkeley
Assembly: 22
Senate: 13
Special Program: * Site Char & Assess Grant (CERCLA 104)
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 37.47972
Longitude: -122.2172
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: * CONTAMINATED SOIL Asbestos Containing Materials (ACM
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: PRICE CLUB
Alias Type: Alternate Name
Alias Name: REDWOOD FOOD PACKING COMPANY
Alias Type: Alternate Name
Alias Name: CAD980674105
Alias Type: EPA Identification Number
Alias Name: SLT2O228324
Alias Type: GeoTracker Global ID
Alias Name: 41100001
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 10/12/1983
Comments: FACILITY IDENTIFIED ID FROM ERRIS

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 08/01/1980

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JOHNS-MANVILLE PRODUCTS CORPORATION (Continued) **S101482202**

Comments: FACILITY IDENTIFIED INACTIVE SITE I.D'D IN INITIAL RESEARCH

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Assessment Report
Completed Date: 04/01/1985
Comments: SOURCE ACT: LETTER CO OF SAN MATEO 7/26/ 83 - MFG OF INSULATION MATLS USING ASBST SUBMIT TO EPA PRELIM ASSESS DONE CERCLA 104

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 01/21/2003
Comments: Site screening completed. Site referred to RWQCB.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

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238 WNW 1/2-1 0.548 mi. 2895 ft. **ROBISON PROPERTY** **ENVIROSTOR S106131297**
827 EL CAMINO REAL **SLIC N/A**
REDWOOD CITY, CA 94063 **VCP**

Relative: Higher

Actual: 17 ft.

ENVIROSTOR:
Facility ID: 60001444
Status: Active
Status Date: 04/12/2011
Site Code: 201905
Site Type: Voluntary Cleanup
Site Type Detailed: Voluntary Cleanup
Acres: 0.4
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Charles (Chip) Gribble
Supervisor: Julie Pettijohn
Division Branch: Cleanup Berkeley
Assembly: 24
Senate: 13
Special Program: Voluntary Cleanup Program
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Responsible Party
Latitude: 37.46007
Longitude: -122.1959
APN: NONE SPECIFIED
Past Use: DRY CLEANING
Potential COC: Tetrachloroethylene (PCE Trichloroethylene (TCE
Confirmed COC: 30022-NO 30027-NO
Potential Description: SOIL, SV, UE

DRAFT

ROBISON PROPERTY (Continued) **S106131297**

Alias Name: T0608127441
Alias Type: GeoTracker Global ID
Alias Name: 201905
Alias Type: Project Code (Site Code)
Alias Name: 60001444
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: Not reported
Completed Sub Area Name: Not reported
Completed Document Type: Not reported
Completed Date: Not reported
Comments: Not reported

Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: Site Screening
Future Due Date: 2017
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SLIC:
Region: STATE
Facility Status: **Open - Site Assessment**
Status Date: 05/05/2008
Global Id: T0608127441
Lead Agency: DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Lead Agency Case Number: 60001444
Latitude: 37.485911
Longitude: -122.234502
Case Type: Cleanup Program Site
Case Worker: Not reported
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: Not reported
File Location: Local Agency
Potential Media Affected: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: * Chlorinated Hydrocarbons
Site History: Can be extracted from most recent report in Geotracker or at San Mateo County offices if submitted prior to 2005, San Mateo County does not take responsibility for the accuracy of the statements made or any professional interpretations made in the referenced report.

Click here to access the California GeoTracker records for this facility:

VCP:
Facility ID: 60001444
Site Type: Voluntary Cleanup
Site Type Detail: Voluntary Cleanup
Site Mgmt. Req.: NONE SPECIFIED
Acres: 0.4
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program

DRAFT

ROBISON PROPERTY (Continued) **S106131297**

Project Manager:	Charles (Chip) Gribble
Supervisor:	Julie Pettijohn
Division Branch:	Cleanup Berkeley
Site Code:	201905
Assembly:	24
Senate:	13
Special Programs Code:	Voluntary Cleanup Program
Status:	Active
Status Date:	04/12/2011
Restricted Use:	NO
Funding:	Responsible Party
Lat/Long:	37.46007 / -122.1959
APN:	NONE SPECIFIED
Past Use:	DRY CLEANING
Potential COC:	30022, 30027
Confirmed COC:	30022-NO,30027-NO
Potential Description:	SOIL, SV, UE
Alias Name:	T0608127441
Alias Type:	GeoTracker Global ID
Alias Name:	201905
Alias Type:	Project Code (Site Code)
Alias Name:	60001444
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	Not reported
Completed Sub Area Name:	Not reported
Completed Document Type:	Not reported
Completed Date:	Not reported
Comments:	Not reported

Future Area Name:	PROJECT WIDE
Future Sub Area Name:	Not reported
Future Document Type:	Site Screening
Future Due Date:	2017
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

239
ESE
1/2-1
0.628 mi.
3318 ft.

EICHROME
2480 MIDDLEFIELD ROAD
REDWOOD CITY, CA 94063

RESPONSE **S102860953**
ENVIROSTOR **N/A**
HIST Cal-Sites

Relative:
Higher

Actual:
22 ft.

RESPONSE:

Facility ID:	41350026
Site Type:	State Response
Site Type Detail:	State Response or NPL
Acres:	1
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Denise Tsuji
Division Branch:	Cleanup Berkeley

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EICHROME (Continued) **S102860953**

Site Code:	Not reported
Site Mgmt. Req.:	NONE SPECIFIED
Assembly:	24
Senate:	13
Special Program Status:	Not reported
Status:	Certified
Status Date:	06/01/1986
Restricted Use:	NO
Funding:	Responsible Party
Latitude:	37.47772
Longitude:	-122.2148
APN:	054111060
Past Use:	MANUFACTURING - OTHER
Potential COC :	Asbestos Containing Materials (ACM
Confirmed COC:	Asbestos Containing Materials (ACM
Potential Description:	SOIL
Alias Name:	ER DEVELOPMENT COMPANY
Alias Type:	Alternate Name
Alias Name:	SAF KEEP SELF STORAGE FACILITY
Alias Type:	Alternate Name
Alias Name:	054111060
Alias Type:	APN
Alias Name:	110033616148
Alias Type:	EPA (FRS #)
Alias Name:	41350026
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Certification
Completed Date:	06/01/1986
Comments:	Certified Site.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Removal Action Completion Report
Completed Date:	07/12/1985
Comments:	Completed RA. Cleanup activities involved the removal and disposal of approximately 585 cubic yards of asbestos impacted soil.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	11/27/2001
Comments:	Site screening completed. No further action determination.
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

DRAFT

EICHROME (Continued) **S102860953**

ENVIROSTOR:
Facility ID: 41350026
Status: Certified
Status Date: 06/01/1986
Site Code: Not reported
Site Type: State Response
Site Type Detailed: State Response or NPL
Acres: 1
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Not reported
Supervisor: Denise Tsuji
Division Branch: Cleanup Berkeley
Assembly: 24
Senate: 13
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Responsible Party
Latitude: 37.47772
Longitude: -122.2148
APN: 054111060
Past Use: MANUFACTURING - OTHER
Potential COC: Asbestos Containing Materials (ACM
Confirmed COC: Asbestos Containing Materials (ACM
Potential Description: SOIL
Alias Name: ER DEVELOPMENT COMPANY
Alias Type: Alternate Name
Alias Name: SAF KEEP SELF STORAGE FACILITY
Alias Type: Alternate Name
Alias Name: 054111060
Alias Type: APN
Alias Name: 110033616148
Alias Type: EPA (FRS #)
Alias Name: 41350026
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Certification
Completed Date: 06/01/1986
Comments: Certified Site.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Completion Report
Completed Date: 07/12/1985
Comments: Completed RA. Cleanup activities involved the removal and disposal of approximately 585 cubic yards of asbestos impacted soil.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 11/27/2001
Comments: Site screening completed. No further action determination.

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EICHROME (Continued) **S102860953**

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

Calsite:

Region:	BERKELEY
Facility ID:	41350026
Facility Type:	RP
Type:	RESPONSIBLE PARTY
Branch:	NC
Branch Name:	NORTH COAST
File Name:	Not reported
State Senate District:	06011986
Status:	CERTIFIED AS HAVING BEEN REMEDIED SATISFACTORILY UNDER DTSC OVERSIGHT
Status Name:	CERTIFIED
Lead Agency:	N/A
NPL:	Not reported
SIC Code:	35
SIC Name:	MANU - INDUSTRIAL MACHINERY & EQUIPMENT
Access:	Not reported
Cortese:	Not reported
Hazardous Ranking Score:	Not reported
Date Site Hazard Ranked:	Not reported
Groundwater Contamination:	Not reported
Staff Member Responsible for Site:	EGILLERA
Supervisor Responsible for Site:	Not reported
Region Water Control Board:	Not reported
Region Water Control Board Name:	Not reported
Lat/Long Direction:	Not reported
Lat/Long (dms):	0 0 0 / 0 0 0
Lat/long Method:	Not reported
Lat/Long Description:	Not reported
State Assembly District Code:	21
State Senate District Code:	11
Facility ID:	41350026
Activity:	CERT
Activity Name:	CERTIFICATION
AWP Code:	Not reported
Proposed Budget:	0
AWP Completion Date:	Not reported
Revised Due Date:	Not reported
Comments Date:	06011986
Est Person-Yrs to complete:	0
Estimated Size:	Not reported
Request to Delete Activity:	Not reported
Activity Status:	CERT
Definition of Status:	CERTIFIED
Liquids Removed (Gals):	0
Liquids Treated (Gals):	0
Action Included Capping:	Not reported
Well Decommissioned:	Not reported

DRAFT

EICHROME (Continued) **S102860953**

Action Included Fencing:	Not reported
Removal Action Certification:	Not reported
Activity Comments:	Not reported
For Commercial Reuse:	0
For Industrial Reuse:	0
For Residential Reuse:	0
Unknown Type:	0
Facility ID:	41350026
Activity:	RA
Activity Name:	REMOVAL ACTION
AWP Code:	Not reported
Proposed Budget:	0
AWP Completion Date:	Not reported
Revised Due Date:	Not reported
Comments Date:	07121985
Est Person-Yrs to complete:	0
Estimated Size:	Not reported
Request to Delete Activity:	Not reported
Activity Status:	CERT
Definition of Status:	CERTIFIED
Liquids Removed (Gals):	585
Liquids Treated (Gals):	0
Action Included Capping:	Not reported
Well Decommissioned:	Not reported
Action Included Fencing:	Not reported
Removal Action Certification:	N
Activity Comments:	Not reported
For Commercial Reuse:	0
For Industrial Reuse:	0
For Residential Reuse:	0
Unknown Type:	0
Alternate Address:	2480 MIDDLEFIELD ROAD
Alternate City,St,Zip:	REDWOOD CITY, CA 94063
Background Info:	This property was owned by Johns Manville Corporation prior to 1965 for manufacture of asbestos insulation. It was then owned and occupied by Eichrome, which was a hardware and building supply company. Eichrome consisted of two slab-floor buildings, a storage yard, and a parking area. The whole structure's underlying soils were contaminated with asbestos. DTSC oversaw the site characterization and cleanup of the Site. Construction of the Safkeep self storage facility subsequently followed in September 1986.
Comments Date:	06011986
Comments:	Certified Site.
Comments Date:	07121985
Comments:	Completed RA. Cleanup activities involved the removal and
Comments Date:	07121985
Comments:	disposal of approximately 585 cubic yards of asbestos impacted
Comments Date:	07121985
Comments:	soil.
ID Name:	Not reported
ID Value:	Not reported
Alternate Name:	EICHROME
Alternate Name:	ER DEVELOPMENT COMPANY
Alternate Name:	SAF KEEP SELF STORAGE FACILITY
Alternate Name:	Not reported
Special Programs Code:	Not reported

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EICHROME (Continued) **S102860953**

Special Programs Name: Not reported

240
ENE
1/2-1
0.758 mi.
4000 ft.

STAR TOOL & ENGINEERING CO INC
860 CHARTER
REDWOOD CITY, CA 94063

ENVIROSTOR
SLIC
VCP
San Mateo Co. BI

S113756409
N/A

Relative:
Higher

Actual:
13 ft.

ENVIROSTOR:

Facility ID:	60002245
Status:	Active
Status Date:	09/28/2015
Site Code:	204277
Site Type:	Voluntary Cleanup
Site Type Detailed:	Voluntary Cleanup
Acres:	0.4
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Craig Sanchez
Supervisor:	Jose Salcedo
Division Branch:	Northern California Schools & Santa Susana
Assembly:	, 24
Senate:	, 13
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Responsible Party
Latitude:	37.48472
Longitude:	-122.2119
APN:	054-010-140, 054-081-010
Past Use:	UNKNOWN
Potential COC:	Under Investigation Benzene Tetrachloroethylene (PCE TPH-diesel TPH-gas 1,1,1-Trichloroethane (TCA Trichloroethylene (TCE Vinyl chloride
Confirmed COC:	Under Investigation
Potential Description:	IA, OTH, SOIL, SV, UE
Alias Name:	054-010-140
Alias Type:	APN
Alias Name:	054-081-010
Alias Type:	APN
Alias Name:	204277
Alias Type:	Project Code (Site Code)
Alias Name:	60002245
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Remedial Investigation Workplan
Completed Date:	06/28/2016
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Voluntary Cleanup Agreement
Completed Date:	09/06/2016
Comments:	Not reported

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STAR TOOL & ENGINEERING CO INC (Continued) **S113756409**

Future Area Name:	PROJECT WIDE
Future Sub Area Name:	Not reported
Future Document Type:	CEQA - Initial Study/ Mitigated Neg. Dec. (MND)
Future Due Date:	2017
Schedule Area Name:	PROJECT WIDE
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Preliminary Endangerment Assessment Report
Schedule Due Date:	04/15/2017
Schedule Revised Date:	Not reported

SLIC:

Region:	STATE
Facility Status:	**Open - Inactive**
Status Date:	06/02/2016
Global Id:	T10000006424
Lead Agency:	SAN FRANCISCO BAY RWQCB (REGION 2)
Lead Agency Case Number:	Not reported
Latitude:	37.4845390879181
Longitude:	-122.2118780760 57
Case Type:	Cleanup Program Site
Case Worker:	JGU
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	Not reported
File Location:	All Files are on GeoTracker or in the Local Agency Database
Potential Media Affected:	Indoor Air, Soil, Soil Vapor
Potential Contaminants of Concern:	Dichloroethene (DCE), Trichloroethylene (TCE), Vinyl chloride, Benzene
Site History:	Phase II investigation identified chlorinated VOCs and benzene in groundwater. The source is unkown. TCE was detected in subslab and subsurface soil vapor samples at 220 a%g/m3 and 2,600 a%g/m3, respectively. the site is currenly used for display of classic automobiles.

Click here to access the California GeoTracker records for this facility:

VCP:

Facility ID:	60002245
Site Type:	Voluntary Cleanup
Site Type Detail:	Voluntary Cleanup
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	0.4
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Craig Sanchez
Supervisor:	Jose Salcedo
Division Branch:	Northern California Schools & Santa Susana
Site Code:	204277
Assembly:	, 24
Senate:	, 13
Special Programs Code:	Not reported
Status:	Active
Status Date:	09/28/2015
Restricted Use:	NO
Funding:	Responsible Party
Lat/Long:	37.48472 / -122.2119

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STAR TOOL & ENGINEERING CO INC (Continued) **S113756409**

APN: 054-010-140, 054-081-010
Past Use: UNKNOWN
Potential COC: 31001, 30003, 30022, 30024, 30025, 30026, 30027, 30028
Confirmed COC: 31001
Potential Description: IA, OTH, SOIL, SV, UE
Alias Name: 054-010-140
Alias Type: APN
Alias Name: 054-081-010
Alias Type: APN
Alias Name: 204277
Alias Type: Project Code (Site Code)
Alias Name: 60002245
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Investigation Workplan
Completed Date: 06/28/2016
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 09/06/2016
Comments: Not reported

Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: CEQA - Initial Study/ Mitigated Neg. Dec. (MND)
Future Due Date: 2017
Schedule Area Name: PROJECT WIDE
Schedule Sub Area Name: Not reported
Schedule Document Type: Preliminary Endangerment Assessment Report
Schedule Due Date: 04/15/2017
Schedule Revised Date: Not reported

San Mateo Co. BI:
Region: SAN MATEO
Facility ID: FA0017433
Prog Element Code: GENERATES and RECYCLES WASTE OIL/SOLVENT
Record Id: PR0011103
Description: GENERATES & RECYCLES WASTE OIL/SOLVENT
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0017433
Prog Element Code: RECYCLER
Record Id: PR0037777
Description: RECYCLER
Facility Status: INACTIVE

Region: SAN MATEO
Facility ID: FA0017433
Prog Element Code: STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id: PR0024357
Description: STORES HAZ MAT <1,199GAL,9,999LB,4,799CF

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STAR TOOL & ENGINEERING CO INC (Continued) **S113756409**

Facility Status: INACTIVE

AR241 **PRESSURE VESSEL SERVICE INC** **ENVIROSTOR** **U001594594**
NNE **50 CHEMICAL WAY** **HIST UST** **N/A**
1/2-1 **REDWOOD CITY, CA 94063** **EMI**
0.794 mi.
4191 ft. **Site 1 of 3 in cluster AR**

Relative: Higher

Actual: 13 ft.

ENVIROSTOR:
Facility ID: 71003307
Status: Refer: RWQCB
Status Date: 11/25/2015
Site Code: Not reported
Site Type: Tiered Permit
Site Type Detailed: Tiered Permit
Acres: 1.5
NPL: NO
Regulatory Agencies: RWQCB 2 - San Francisco Bay
Lead Agency: RWQCB 2 - San Francisco Bay
Program Manager: Nicole Yuen
Supervisor: Referred - Not Assigned
Division Branch: Cleanup Berkeley
Assembly: 22
Senate: 13
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 37.49206
Longitude: -122.2190
APN: 052392210
Past Use: ABOVE GROUND STORAGE TANKS, DISTRIBUTOR - CHEMICAL, MANUFACTURING - CHEMICALS, UNDERGROUND STORAGE TANKS, TRANSPORTATION - WAREHOUSING
Potential COC: Benzene Lead Methane Tetrachloroethylene (PCE TPH-diesel TPH-gas Cadmium and compounds
Confirmed COC: Benzene Lead Methane Tetrachloroethylene (PCE TPH-diesel TPH-gas Cadmium and compounds
Potential Description: SOIL, SV
Alias Name: 052392210
Alias Type: APN
Alias Name: CAL000108225
Alias Type: EPA Identification Number
Alias Name: SL18340760
Alias Type: GeoTracker Global ID
Alias Name: 71003307
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1 Addendum
Completed Date: 11/25/2015
Comments: DTSC performed a site screening for Pressure Vessel Services, Inc. to determine whether any release of hazardous substances or wastes have occurred at the site that require corrective actions.
Commercial/industrial ESLs were deemed to be protective of future users of the site; it is currently under construction to become a corrective center. Cadmium, benzen, lead, and PCE were found at

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PRESSURE VESSEL SERVICE INC (Continued) **U001594594**

levels exceeding their residential ESLs but were under their commercial ESLs. Methane was in soil gas at concentrations up to 294,000 ppmv. A sublsab venting system is being built onsite. The site status has been set to No Further Action; San Mateo County is currently overseeing the project and building and corrective center on top.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

HIST UST:
File Number: 0002C18B
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002C18B.pdf
Region: STATE
Facility ID: 00000008438
Facility Type: Other
Other Type: CHEMICAL DISTRIBUTOR
Contact Name: Not reported
Telephone: 4153631661
Owner Name: PRESSURE VESSEL
Owner Address: SERVICE INC.
Owner City,St,Zip: REDWOOD CITY, CA 94063
Total Tanks: 0002

Tank Num: 001
Container Num: 1
Year Installed: 1982
Tank Capacity: 00005000
Tank Used for: WASTE
Type of Fuel: Not reported
Container Construction Thickness: 2
Leak Detection: Stock Inventor

Tank Num: 002
Container Num: 2
Year Installed: 1968
Tank Capacity: 00001200
Tank Used for: PRODUCT
Type of Fuel: DIESEL
Container Construction Thickness: 10
Leak Detection: Visual

Click here for Geo Tracker PDF:

EMI:
Year: 1995
County Code: 41
Air Basin: SF
Facility ID: 7431

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PRESSURE VESSEL SERVICE INC (Continued) **U001594594**

Air District Name:	BA
SIC Code:	2819
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	1
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

242
NNW
1/2-1
0.796 mi.
4205 ft.

BAY AREA CIRCUITS INC.
91 WINSLOW ST.
REDWOOD CITY, CA 94063

RCRA-LQG **1000102309**
ENVIROSTOR **CAD078761780**
FINDS
ECHO
EMI

Relative:
Lower

Actual:
9 ft.

RCRA-LQG:

Date form received by agency:	03/01/2014
Facility name:	BAY AREA CIRCUITS
Facility address:	91 WINSLOW ST REDWOOD CITY, CA 94063
EPA ID:	CAD078761780
Mailing address:	OLD WARM SPRINGS BLVD FREMONT, CA 94538
Contact:	DAVID MILLER
Contact address:	OLD WARM SPRINGS BLVD FREMONT, CA 94538
Contact country:	Not reported
Contact telephone:	(510) 933-9000
Contact email:	DMILLER@BACIRCUITS.COM
EPA Region:	09
Land type:	Private
Classification:	Large Quantity Generator
Description:	Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:

Owner/operator name:	BARBARA NOBRIGA
Owner/operator address:	OLD WARM SPRINGS BLVD FREMONT, CA 94538
Owner/operator country:	Not reported
Owner/operator telephone:	(510) 933-9000
Legal status:	Private
Owner/Operator Type:	Owner

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

Owner/Op start date: 04/01/1993
Owner/Op end date: Not reported

Owner/operator name: STEPHEN GARCIA
Owner/operator address: WINSLOW ST
REDWOOD CITY, CA 94063
Owner/operator country: Not reported
Owner/operator telephone: (510) 933-9000
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 06/01/2009
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F006
. Waste name: WASTEWATER TREATMENT SLUDGES FROM ELECTROPLATING OPERATIONS, EXCEPT FROM THE FOLLOWING PROCESSES: (1) SULFURIC ACID ANODIZING OF ALUMINUM; (2) TIN PLATING ON CARBON STEEL; (3) ZINC PLATING (SEGREGATED BASIS) ON CARBON STEEL; (4) ALUMINUM OR ZINC-ALUMINUM PLATING ON CARBON STEEL; (5) CLEANING/STRIPPING ASSOCIATED WITH TIN, ZINC, AND ALUMINUM PLATING ON CARBON STEEL; AND (6) CHEMICAL ETCHING AND MILLING OF ALUMINUM.

Historical Generators:
Date form received by agency: 03/01/2012
Site name: BAY AREA CIRCUITS, INC.
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F006
. Waste name: WASTEWATER TREATMENT SLUDGES FROM ELECTROPLATING OPERATIONS, EXCEPT FROM THE FOLLOWING PROCESSES: (1) SULFURIC ACID ANODIZING OF ALUMINUM; (2) TIN PLATING ON CARBON STEEL; (3) ZINC PLATING (SEGREGATED BASIS) ON CARBON STEEL; (4) ALUMINUM OR ZINC-ALUMINUM PLATING ON CARBON STEEL; (5) CLEANING/STRIPPING ASSOCIATED WITH TIN, ZINC, AND ALUMINUM PLATING ON CARBON STEEL; AND (6) CHEMICAL ETCHING AND MILLING OF ALUMINUM.

Date form received by agency: 08/03/2010

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

Site name: BAY AREA CIRCUITS, INC.
Classification: Large Quantity Generator

. Waste code: 132
. Waste name: 132

. Waste code: 181
. Waste name: 181

. Waste code: 343
. Waste name: 343

. Waste code: 352
. Waste name: 352

. Waste code: 541
. Waste name: 541

. Waste code: 726
. Waste name: 726

. Waste code: 792
. Waste name: 792

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D011
. Waste name: SILVER

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F006
. Waste name: WASTEWATER TREATMENT SLUDGES FROM ELECTROPLATING OPERATIONS, EXCEPT FROM THE FOLLOWING PROCESSES: (1) SULFURIC ACID ANODIZING OF ALUMINUM;

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

(2) TIN PLATING ON CARBON STEEL; (3) ZINC PLATING (SEGREGATED BASIS) ON CARBON STEEL; (4) ALUMINUM OR ZINC-ALUMINUM PLATING ON CARBON STEEL; (5) CLEANING/STRIPPING ASSOCIATED WITH TIN, ZINC, AND ALUMINUM PLATING ON CARBON STEEL; AND (6) CHEMICAL ETCHING AND MILLING OF ALUMINUM.

Date form received by agency: 01/31/2008
Site name: BAY AREA CIRCUITS, INC.
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D011
. Waste name: SILVER

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F006
. Waste name: WASTEWATER TREATMENT SLUDGES FROM ELECTROPLATING OPERATIONS, EXCEPT FROM THE FOLLOWING PROCESSES: (1) SULFURIC ACID ANODIZING OF ALUMINUM; (2) TIN PLATING ON CARBON STEEL; (3) ZINC PLATING (SEGREGATED BASIS) ON CARBON STEEL; (4) ALUMINUM OR ZINC-ALUMINUM PLATING ON CARBON STEEL; (5) CLEANING/STRIPPING ASSOCIATED WITH TIN, ZINC, AND ALUMINUM PLATING ON CARBON STEEL; AND (6) CHEMICAL ETCHING AND MILLING OF ALUMINUM.

Date form received by agency: 02/11/2006
Site name: BAY AREA CIRCUITS, INC
Classification: Large Quantity Generator

. Waste code: 541
. Waste name: 541

. Waste code: D001

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D011
. Waste name: SILVER

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F006
. Waste name: WASTEWATER TREATMENT SLUDGES FROM ELECTROPLATING OPERATIONS, EXCEPT FROM THE FOLLOWING PROCESSES: (1) SULFURIC ACID ANODIZING OF ALUMINUM; (2) TIN PLATING ON CARBON STEEL; (3) ZINC PLATING (SEGREGATED BASIS) ON CARBON STEEL; (4) ALUMINUM OR ZINC-ALUMINUM PLATING ON CARBON STEEL; (5) CLEANING/STRIPPING ASSOCIATED WITH TIN, ZINC, AND ALUMINUM PLATING ON CARBON STEEL; AND (6) CHEMICAL ETCHING AND MILLING OF ALUMINUM.

Date form received by agency: 02/20/2004
Site name: BAY AREA CIRCUITS, INC.
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

. Waste code: D011
. Waste name: SILVER

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F006
. Waste name: WASTEWATER TREATMENT SLUDGES FROM ELECTROPLATING OPERATIONS, EXCEPT FROM THE FOLLOWING PROCESSES: (1) SULFURIC ACID ANODIZING OF ALUMINUM; (2) TIN PLATING ON CARBON STEEL; (3) ZINC PLATING (SEGREGATED BASIS) ON CARBON STEEL; (4) ALUMINUM OR ZINC-ALUMINUM PLATING ON CARBON STEEL; (5) CLEANING/STRIPPING ASSOCIATED WITH TIN, ZINC, AND ALUMINUM PLATING ON CARBON STEEL; AND (6) CHEMICAL ETCHING AND MILLING OF ALUMINUM.

Date form received by agency: 02/15/2002
Site name: BAY AREA CIRCUITS, INC.
Classification: Large Quantity Generator

. Waste code: 121
. Waste name: 121

. Waste code: 132
. Waste name: 132

. Waste code: 134
. Waste name: 134

. Waste code: 171
. Waste name: 171

. Waste code: 181
. Waste name: 181

. Waste code: 221
. Waste name: 221

. Waste code: 343
. Waste name: 343

. Waste code: 541
. Waste name: 541

. Waste code: 792
. Waste name: 792

. Waste code: D002
. Waste name: CORROSIVE WASTE

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D011
. Waste name: SILVER

. Waste code: F006
. Waste name: WASTEWATER TREATMENT SLUDGES FROM ELECTROPLATING OPERATIONS, EXCEPT FROM THE FOLLOWING PROCESSES: (1) SULFURIC ACID ANODIZING OF ALUMINUM; (2) TIN PLATING ON CARBON STEEL; (3) ZINC PLATING (SEGREGATED BASIS) ON CARBON STEEL; (4) ALUMINUM OR ZINC-ALUMINUM PLATING ON CARBON STEEL; (5) CLEANING/STRIPPING ASSOCIATED WITH TIN, ZINC, AND ALUMINUM PLATING ON CARBON STEEL; AND (6) CHEMICAL ETCHING AND MILLING OF ALUMINUM.

Date form received by agency: 10/12/2000
Site name: BAY AREA CIRCIUTS
Classification: Large Quantity Generator

Date form received by agency: 03/16/1999
Site name: BAY AREA CIRCUITS INC
Classification: Large Quantity Generator

Date form received by agency: 09/01/1996
Site name: BAY AREA CIRCUITS INC
Classification: Large Quantity Generator

Date form received by agency: 02/28/1996
Site name: BAY AREA CIRCUITS 91
Classification: Large Quantity Generator

Date form received by agency: 03/30/1994
Site name: BAY AREA CIRCUITS
Classification: Large Quantity Generator

Date form received by agency: 02/21/1992
Site name: BAY AREA CIRCUITS INC
Classification: Large Quantity Generator

Date form received by agency: 04/11/1990
Site name: BAY AREA CIRCUITS INC
Classification: Large Quantity Generator

Date form received by agency: 12/10/1980
Site name: BAY AREA CIRCUITS INC
Classification: Large Quantity Generator

Biennial Reports:

Last Biennial Reporting Year: 2013

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

Annual Waste Handled:

Waste code:	D001
Waste name:	IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
Amount (Lbs):	5478.2
Waste code:	D002
Waste name:	A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
Amount (Lbs):	46699.9
Waste code:	D004
Waste name:	ARSENIC
Amount (Lbs):	36200
Waste code:	D006
Waste name:	CADMIUM
Amount (Lbs):	5478.2
Waste code:	D007
Waste name:	CHROMIUM
Amount (Lbs):	36200
Waste code:	D008
Waste name:	LEAD
Amount (Lbs):	41664.7
Waste code:	F003
Waste name:	THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs):	175
Waste code:	F006
Waste name:	WASTEWATER TREATMENT SLUDGES FROM ELECTROPLATING OPERATIONS EXCEPT FROM THE FOLLOWING PROCESSES: (1) SULFURIC ACID ANODIZING OF ALUMINUM; (2) TIN PLATING ON CARBON STEEL; (3) ZINC PLATING (SEGREGATED BASIS) ON CARBON STEEL; (4) ALUMINUM OR ZINC-ALUMINUM PLATING ON CARBON STEEL; (5) CLEANING/STRIPPING ASSOCIATED WITH TIN, ZINC AND ALUMINUM PLATING ON CARBON STEEL; AND (6) CHEMICAL ETCHING AND MILLING OF

DRAFT

BAY AREA CIRCUITS INC. (Continued) **1000102309**

ALUMINUM.
Amount (Lbs): 3186.5

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 03/20/1985
Date achieved compliance: 03/20/1985
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 03/20/1985
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 09/23/2015
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 09/22/2015
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 09/11/2015
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 07/30/2015
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 07/29/2015
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 05/26/2015
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

Evaluation date: 09/04/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 09/02/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 07/31/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 07/11/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 07/09/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/21/1994
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State Contractor/Grantee

Evaluation date: 05/13/1986
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State Contractor/Grantee

Evaluation date: 09/10/1985
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/20/1985
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 03/20/1985
Evaluation lead agency: State

ENVIROSTOR:
Facility ID: 71002593
Status: Inactive - Needs Evaluation
Status Date: Not reported

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

Site Code: Not reported
Site Type: Tiered Permit
Site Type Detailed: Tiered Permit
Acres: Not reported
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: Not reported
Division Branch: Cleanup Berkeley
Assembly: 22
Senate: 13
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 37.49214
Longitude: -122.2338
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: CAD078761780
Alias Type: EPA Identification Number
Alias Name: 110000482433
Alias Type: EPA (FRS #)
Alias Name: 71002593
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: Not reported
Completed Sub Area Name: Not reported
Completed Document Type: Not reported
Completed Date: Not reported
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

FINDS:

Registry ID: 110000482433

Environmental Interest/Information System
AIR EMISSIONS CLASSIFICATION UNKNOWN

US EPA TRIS (Toxics Release Inventory System) contains information from facilities on the amounts of over 300 listed toxic chemicals that these facilities release directly to air, water, land, or that are

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

transported off-site.

California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

HAZARDOUS WASTE BIENNIAL REPORTER

STATE MASTER

ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and it Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000102309
Registry ID:	110000482433
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110000482433

EMI:

Year:	1987
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3679
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3
Reactive Organic Gases Tons/Yr:	3
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Year: 1990
County Code: 41
Air Basin: SF
Facility ID: 1212
Air District Name: BA
SIC Code: 3671
Air District Name: BAY AREA AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 3
Reactive Organic Gases Tons/Yr: 2
Carbon Monoxide Emissions Tons/Yr: 0
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Year: 1993
County Code: 41
Air Basin: SF
Facility ID: 1212
Air District Name: BA
SIC Code: 3679
Air District Name: BAY AREA AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 3
Reactive Organic Gases Tons/Yr: 3
Carbon Monoxide Emissions Tons/Yr: 0
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Year: 1995
County Code: 41
Air Basin: SF
Facility ID: 1212
Air District Name: BA
SIC Code: 3679
Air District Name: BAY AREA AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 2
Reactive Organic Gases Tons/Yr: 1
Carbon Monoxide Emissions Tons/Yr: 0
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Year: 1996
County Code: 41

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3679
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	1
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1997
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3679
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	1
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1998
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3679
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	1
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1999
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3679
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2000
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3679
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2002
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3672
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	5
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2003
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3672
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	4
Reactive Organic Gases Tons/Yr:	4
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	5
SOX - Oxides of Sulphur Tons/Yr:	0

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0
Year:	2004
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3672
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	4.235
Reactive Organic Gases Tons/Yr:	4.0158746
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	5.399
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0
Year:	2005
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3672
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	4.235
Reactive Organic Gases Tons/Yr:	4.0158746
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	5.399
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0
Year:	2006
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3672
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3.957
Reactive Organic Gases Tons/Yr:	3.9259658
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	5.399
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0
Year:	2007
County Code:	41
Air Basin:	SF

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

Facility ID:	1212
Air District Name:	BA
SIC Code:	3672
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.874
Reactive Organic Gases Tons/Yr:	1.8429658
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	5.399
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2008
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3672
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3.053
Reactive Organic Gases Tons/Yr:	2.8418146
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	4.22
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2009
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3672
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2.9489999999999998
Reactive Organic Gases Tons/Yr:	2.753323
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	4.2199999999999998
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2010
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3672
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

Total Organic Hydrocarbon Gases Tons/Yr:	2.9489999999999998
Reactive Organic Gases Tons/Yr:	2.753323
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	4.2199999999999998
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2011
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3672
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3.456
Reactive Organic Gases Tons/Yr:	3.127723
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	4.22
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2012
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3672
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3.456
Reactive Organic Gases Tons/Yr:	3.127723
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	4.22
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2013
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3672
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3.456
Reactive Organic Gases Tons/Yr:	3.127723
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	4.22
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0

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BAY AREA CIRCUITS INC. (Continued) **1000102309**

Part. Matter 10 Micrometers and Smllr Tons/Yr:0

Year:	2014
County Code:	41
Air Basin:	SF
Facility ID:	1212
Air District Name:	BA
SIC Code:	3672
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3.454549384
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	4.219584402
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

AR243 **WILLARD PRODUCTS** **SSTS** **1005439790**
NNE **70 CHEMICAL WAY** **CA BOND EXP. PLAN** **N/A**
1/2-1 **REDWOOD CITY, CA 94063**
0.802 mi.
4236 ft. **Site 2 of 3 in cluster AR**

Relative:
Higher

Actual:
14 ft.

SSTS:

Product:	COPPER GREEN
Contact:	Not reported
Status:	Active
Registration Number:	009639CA 001
Report Year:	1990
Permit:	Registered
Product Number:	00963900002
Product Type:	End-use blend, formulation, or concentrate
Product Class:	Fungicide
Product Use:	All other products
UOM:	Not reported
Market:	Marketed in the United States
Region:	Not reported
Zero product:	Not reported
Pesticide RUP report:	Not reported

Product:	COPPERNATE 250
Contact:	Not reported
Status:	Active
Registration Number:	009639CA 001
Report Year:	1990
Permit:	Registered
Product Number:	00147600001
Product Type:	End-use blend, formulation, or concentrate
Product Class:	Fungicide
Product Use:	All other products
UOM:	Not reported
Market:	Marketed in the United States
Region:	Not reported
Zero product:	Not reported
Pesticide RUP report:	Not reported

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WILLARD PRODUCTS (Continued) **1005439790**

Product:	GERMICIDAL SOLUTION
Contact:	Not reported
Status:	Active
Registration Number:	009639CA 001
Report Year:	1990
Permit:	Registered
Product Number:	00963900018
Product Type:	End-use blend, formulation, or concentrate
Product Class:	Disinfectant, germicide, sanitizer
Product Use:	All other products
UOM:	Not reported
Market:	Marketed in the United States
Region:	Not reported
Zero product:	Not reported
Pesticide RUP report:	Not reported

Product:	GERMICIDE AQUEOUS
Contact:	Not reported
Status:	Active
Registration Number:	009639CA 001
Report Year:	1990
Permit:	Registered
Product Number:	00093900017
Product Type:	End-use blend, formulation, or concentrate
Product Class:	Disinfectant, germicide, sanitizer
Product Use:	All other products
UOM:	Not reported
Market:	Marketed in the United States
Region:	Not reported
Zero product:	Not reported
Pesticide RUP report:	Not reported

Product:	W/B COPPER GREEN 2%
Contact:	Not reported
Status:	Active
Registration Number:	009639CA 001
Report Year:	1990
Permit:	Registered
Product Number:	00963000017
Product Type:	End-use blend, formulation, or concentrate
Product Class:	Fungicide
Product Use:	All other products
UOM:	Not reported
Market:	Marketed in the United States
Region:	Not reported
Zero product:	Not reported
Pesticide RUP report:	Not reported

Product:	W/B ZINC TREAT 2%
Contact:	Not reported
Status:	Active
Registration Number:	009639CA 001
Report Year:	1990
Permit:	Registered
Product Number:	00963000018
Product Type:	End-use blend, formulation, or concentrate
Product Class:	Fungicide

DRAFT

WILLARD PRODUCTS (Continued) **1005439790**

Product Use: All other products
UOM: Not reported
Market: Marketed in the United States
Region: Not reported
Zero product: Not reported
Pesticide RUP report: Not reported

Product: ZINC TREAT 3%
Contact: Not reported
Status: Active
Registration Number: 009639CA 001
Report Year: 1990
Permit: Registered
Product Number: 00963900016
Product Type: End-use blend, formulation, or concentrate
Product Class: Other Pesticides (includes insect repellents such as DEET)
Product Use: All other products
UOM: Not reported
Market: Marketed in the United States
Region: Not reported
Zero product: Not reported
Pesticide RUP report: Not reported

Product: COPPER GREEN
Contact: Not reported
Status: Active
Registration Number: 009639CA 001
Report Year: 1991
Permit: Registered
Product Number: 00963900002
Product Type: End-use blend, formulation, or concentrate
Product Class: Fungicide
Product Use: All other products
UOM: Not reported
Market: Marketed in the United States
Region: Not reported
Zero product: Not reported
Pesticide RUP report: Not reported

Product: COPPERNATE 250
Contact: Not reported
Status: Active
Registration Number: 009639CA 001
Report Year: 1991
Permit: Registered
Product Number: 00047600001
Product Type: End-use blend, formulation, or concentrate
Product Class: Fungicide
Product Use: All other products
UOM: Not reported
Market: Marketed in the United States
Region: Not reported
Zero product: Not reported
Pesticide RUP report: Not reported

Product: GERMICIDAL AQUEOUS
Contact: Not reported

DRAFT

WILLARD PRODUCTS (Continued) **1005439790**

Status: Active
Registration Number: 009639CA 001
Report Year: 1991
Permit: Registered
Product Number: 00963900017
Product Type: End-use blend, formulation, or concentrate
Product Class: Disinfectant, germicide, sanitizer
Product Use: All other products
UOM: Not reported
Market: Marketed in the United States
Region: Not reported
Zero product: Not reported
Pesticide RUP report: Not reported

Product: GERMICIDAL SOLUTION
Contact: Not reported
Status: Active
Registration Number: 009639CA 001
Report Year: 1991
Permit: Registered
Product Number: 00963900018
Product Type: End-use blend, formulation, or concentrate
Product Class: Disinfectant, germicide, sanitizer
Product Use: All other products
UOM: Not reported
Market: Marketed in the United States
Region: Not reported
Zero product: Not reported
Pesticide RUP report: Not reported

Product: W/B COPPER GREEN
Contact: Not reported
Status: Active
Registration Number: 009639CA 001
Report Year: 1991
Permit: Registered
Product Number: 00963000017
Product Type: End-use blend, formulation, or concentrate
Product Class: Fungicide
Product Use: All other products
UOM: Not reported
Market: Marketed in the United States
Region: Not reported
Zero product: Not reported
Pesticide RUP report: Not reported

Product: W/B ZINC TREAT
Contact: Not reported
Status: Active
Registration Number: 009639CA 001
Report Year: 1991
Permit: Registered
Product Number: 00963000018
Product Type: End-use blend, formulation, or concentrate
Product Class: Fungicide
Product Use: All other products
UOM: Not reported

DRAFT

WILLARD PRODUCTS (Continued) **1005439790**

Market: Marketed in the United States
Region: Not reported
Zero product: Not reported
Pesticide RUP report: Not reported

Product: ZINC TREAT
Contact: Not reported
Status: Active
Registration Number: 009639CA 001
Report Year: 1991
Permit: Registered
Product Number: 00963900016
Product Type: End-use blend, formulation, or concentrate
Product Class: Other Pesticides (includes insect repellents such as DEET)
Product Use: All other products
UOM: Not reported
Market: Marketed in the United States
Region: Not reported
Zero product: Not reported
Pesticide RUP report: Not reported

CA BOND EXP. PLAN:
Reponsible Party: RESPONSIBLE PARTY-LEAD SITE CLEANUP WORKPLAN
Project Revenue Source Company: Not reported
Project Revenue Source Addr: Not reported
Project Revenue Source City,St,Zip: Not reported
Project Revenue Source Desc: DHS and Willard Products signed a settlement agreement October 22, 1984. DHS has budgeted $70,000 for oversight activities.
Site Description: Willard Products is an active chemical storage, repackaging and mixing firm. The firm has been operating at the site since 1967. The site is built on fill deposited on bay muds and is located 1,200 feet southeast of Redwood Creek and two miles southwest of San Francisco Bay.
Hazardous Waste Desc: Pentachlorophenol (PCP), acetone, xylene and polynuclear aromatics (PNAs) have been detected in soil samples. The ground water has been contaminated with xylene, methyl ethyl ketone, methanol, acetone and PNAs.
Threat To Public Health & Env: The ground water table has been contaminated. However, there are no public wells in Redwood City, and it is extremely unlikely that the ground water could be developed into a potable water supply.
Site Activity Status: The RAP for this site is being finalized. The responsible parties will be implementing the RAP which consists of a ground water extraction and treatment systems, ongoing ground water monitoring and capping of the site.

AR244 **SAN MATEO CNTY REPLACEMENT CORRECTIONAL FAC** **RCRA-LQG** **1000277577**
NNE **70 CHEMICAL WAY** **RESPONSE** **CAD981383987**
1/2-1 **REDWOOD CITY, CA 94063** **ENVIROSTOR**
0.808 mi. **SLIC**
4268 ft. **Site 3 of 3 in cluster AR** **HIST UST**
HIST CORTESE

Relative:
Higher

Actual:
14 ft.

RCRA-LQG:
Date form received by agency: 09/20/2012
Facility name: SAN MATEO CNTY REPLACEMENT CORRECTIONAL FAC
Facility address: 70 CHEMICAL WAY
REDWOOD CITY, CA 94063
EPA ID: CAD981383987
Mailing address: 400 COUNTY CENTER
REDWOOD CITY, CA 94063

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SAN MATEO CNTY REPLACEMENT CORRECTIONAL FAC (Continued) **1000277577**

Contact:	DEBORAH BAZAN
Contact address:	400 COUNTY CENTER REDWOOD CITY, CA 94063
Contact country:	US
Contact telephone:	650-508-6721
Contact email:	DBAZAN@SMCGOV.ORG
EPA Region:	09
Classification:	Large Quantity Generator
Description:	Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:

Owner/operator name:	SAN MATEO CNTY
Owner/operator address:	400 COUNTY CENTER REDWOOD CITY, CA 94063
Owner/operator country:	US
Owner/operator telephone:	650-508-6721
Legal status:	County
Owner/Operator Type:	Owner
Owner/Op start date:	12/01/2011
Owner/Op end date:	Not reported

Owner/operator name:	SAN MATEO CNTY SHERIFFS OFFICE
Owner/operator address:	Not reported Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Legal status:	County
Owner/Operator Type:	Operator
Owner/Op start date:	12/01/2011
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No

DRAFT

SAN MATEO CNTY REPLACEMENT CORRECTIONAL FAC (Continued) **1000277577**

Used oil transfer facility: No
Used oil transporter: No

. Waste code: 611
. Waste name: 611

. Waste code: D037
. Waste name: PENTACHLOROPHENOL

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F021
. Waste name: WASTES (EXCEPT WASTEWATER AND SPENT CARBON FROM HYDROGEN CHLORIDE PURIFICATION) FROM THE PRODUCTION OR MANUFACTURING USE (AS A REACTANT, CHEMICAL INTERMEDIATE, OR COMPONENT IN A FORMULATING PROCESS) OF PENTACHLOROPHENOL, OR OF INTERMEDIATES USED TO PRODUCE DERIVATIVES.

. Waste code: F027
. Waste name: DISCARDED UNUSED FORMULATIONS CONTAINING TRI-, TETRA-, OR PENTACHLOROPHENOL OR DISCARDED UNUSED FORMULATIONS CONTAINING COMPOUNDS DERIVED FROM THESE CHLOROPHENOLS. (THIS LISTING DOES NOT INCLUDE FORMULATIONS CONTAINING HEXACHLOROPHENE SYNTHESIZED FROM PREPURIFIED 2,4,5-TRICHLOROPHENOL AS THE SOLE COMPONENT.)

Historical Generators:
Date form received by agency: 12/26/2000
Site name: H K 2, INC
Classification: Small Quantity Generator

Date form received by agency: 12/26/2000

SAN MATEO CNTY REPLACEMENT CORRECTIONAL FAC (Continued) **1000277577**

Site name: H K 2, INC
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

Violation Status: No violations found

RESPONSE:
Facility ID: 41280076
Site Type: State Response
Site Type Detail: State Response or NPL
Acres: 2.3
National Priorities List: NO
Cleanup Oversight Agencies: RWQCB 2 - San Francisco Bay
Lead Agency Description: RWQCB 2 - San Francisco Bay
Project Manager: Claude Jemison
Supervisor: Mark Piros
Division Branch: Cleanup Berkeley
Site Code: 200110
Site Mgmt. Req.: REM, DAY, ELD, HOS, FEN, GW, NOWN, NDAM, EXT, SCH, RES
Assembly: 22
Senate: 13
Special Program Status: Not reported
Status: Certified O&M - Land Use Restrictions Only
Status Date: 08/11/2011
Restricted Use: YES
Funding: Responsible Party
Latitude: 37.49274
Longitude: -122.2187
APN: 052-392-200, 052392200
Past Use: MANUFACTURING - CHEMICALS
Potential COC : Benzene Polynuclear aromatic hydrocarbons (PAHs TPH-diesel TPH-gas Ethylbenzene Methyl ethyl ketone (2-Butanone Pentachlorophenol Toluene Xylenes
Confirmed COC: Toluene Polynuclear aromatic hydrocarbons (PAHs TPH-diesel TPH-gas Ethylbenzene Methyl ethyl ketone (2-Butanone Pentachlorophenol Benzene Xylenes
Potential Description: OTH, SOIL
Alias Name: ENVIRO SAFE, INC.
Alias Type: Alternate Name
Alias Name: KONA VENTURES, LLC
Alias Type: Alternate Name
Alias Name: LUX CHEMICAL CORPORATION
Alias Type: Alternate Name
Alias Name: MASOOD KHALID
Alias Type: Alternate Name
Alias Name: WILLIAM SCHOENFELD
Alias Type: Alternate Name
Alias Name: 052-392-200
Alias Type: APN
Alias Name: 052392200
Alias Type: APN
Alias Name: 110002146393
Alias Type: EPA (FRS #)
Alias Name: P22056
Alias Type: PCode
Alias Name: 200110

DRAFT

SAN MATEO CNTY REPLACEMENT CORRECTIONAL FAC (Continued) **1000277577**

Alias Type: Project Code (Site Code)
Alias Name: 41280076
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 10/22/1984
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Unilateral Order (I/SE, RAO, CAO, EPA AO)
Completed Date: 10/20/1990
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction
Completed Date: 08/03/1990
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 08/01/1980
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 10/13/2009
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 06/30/2009
Comments: Cracks were observed in the north west and northern portions of the property. The RP is notified to repair the cracks. There was no evidence of any activities prohibited by the Deed Restriction.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 04/19/2013
Comments: The email conveys DTSC's input on and questions regarding the Completion Report for the San Mateo County Replacement Correctional Facility. The Regional Water Quality Control Board requested DTSC's input prior to approving the report, which documents the excavation and disposal of contaminated soil from the 70 Chemical Way property prior to construction of the new correctional facility. The Completion Report can be found on the Geotracker database (ID # SL18340760).

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported

DRAFT

SAN MATEO CNTY REPLACEMENT CORRECTIONAL FAC (Continued) **1000277577**

Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 06/15/2007
Comments: Site conditions observed at the property comply with the deed restriction.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 09/10/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 08/05/2011
Comments: Significant deterioration/cracking was observed on the cap east and north of the building. There was no evidence of any activities prohibited by the Deed Restriction.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 05/30/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 05/30/2012
Comments: DTSC conducted its annual site visit to check the condition of the asphalt cap over contaminated soil and to verify compliance with the restrictions and requirements of the Land Use Covenant. Numerous cracks were observed during the inspection and two areas in the cap have significant deterioration/cracking. However, repair may not be necessary due to the development that is planned on the site. There was no evidence of any activities prohibited by the Land Use Covenant.
Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Design/Implementation Workplan
Completed Date: 03/30/1989
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Action Plan
Completed Date: 01/30/1989
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Engineering Evaluation / Cost Analysis - Non-Time Critical
Completed Date: 04/30/1988
Comments: Not reported

Completed Area Name: PROJECT WIDE

DRAFT

SAN MATEO CNTY REPLACEMENT CORRECTIONAL FAC (Continued) **1000277577**

Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 02/06/1987
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Certification
Completed Date: 06/28/1989
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: CEQA - Initial Study/ Neg. Declaration
Completed Date: 02/15/1989
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 08/18/2014
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 06/10/2008
Comments: Significant cracks were observed in the north west and northern portion of the property. There was no evidence of any activities prohibited by the Deed Restriction.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: PROJECT WIDE
Schedule Sub Area Name: Not reported
Schedule Document Type: Land Use Restriction - Release/Rescission
Schedule Due Date: 03/15/2016
Schedule Revised Date: 12/14/2016

ENVIROSTOR:
Facility ID: 41280076
Status: Certified O&M - Land Use Restrictions Only
Status Date: 08/11/2011
Site Code: 200110
Site Type: State Response
Site Type Detailed: State Response or NPL
Acres: 2.3
NPL: NO
Regulatory Agencies: RWQCB 2 - San Francisco Bay
Lead Agency: RWQCB 2 - San Francisco Bay
Program Manager: Claude Jemison
Supervisor: Mark Piros
Division Branch: Cleanup Berkeley
Assembly: 22
Senate: 13

DRAFT

SAN MATEO CNTY REPLACEMENT CORRECTIONAL FAC (Continued) **1000277577**

Special Program: Not reported
Restricted Use: YES
Site Mgmt Req: REM, DAY, ELD, HOS, FEN, GW, NOWN, NDAM, EXT, SCH, RES
Funding: Responsible Party
Latitude: 37.49274
Longitude: -122.2187
APN: 052-392-200, 052392200
Past Use: MANUFACTURING - CHEMICALS
Potential COC: Benzene Polynuclear aromatic hydrocarbons (PAHs TPH-diesel TPH-gas Ethylbenzene Methyl ethyl ketone (2-Butanone Pentachlorophenol Toluene Xylenes
Confirmed COC: Toluene Polynuclear aromatic hydrocarbons (PAHs TPH-diesel TPH-gas Ethylbenzene Methyl ethyl ketone (2-Butanone Pentachlorophenol Benzene Xylenes
Potential Description: OTH, SOIL
Alias Name: ENVIRO SAFE, INC.
Alias Type: Alternate Name
Alias Name: KONA VENTURES, LLC
Alias Type: Alternate Name
Alias Name: LUX CHEMICAL CORPORATION
Alias Type: Alternate Name
Alias Name: MASOOD KHALID
Alias Type: Alternate Name
Alias Name: WILLIAM SCHOENFELD
Alias Type: Alternate Name
Alias Name: 052-392-200
Alias Type: APN
Alias Name: 052392200
Alias Type: APN
Alias Name: 110002146393
Alias Type: EPA (FRS #)
Alias Name: P22056
Alias Type: PCode
Alias Name: 200110
Alias Type: Project Code (Site Code)
Alias Name: 41280076
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 10/22/1984
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Unilateral Order (I/SE, RAO, CAO, EPA AO)
Completed Date: 10/20/1990
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction
Completed Date: 08/03/1990
Comments: Not reported

Completed Area Name: PROJECT WIDE

DRAFT

SAN MATEO CNTY REPLACEMENT CORRECTIONAL FAC (Continued) **1000277577**

Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 08/01/1980
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 10/13/2009
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 06/30/2009
Comments: Cracks were observed in the north west and northern portions of the property. The RP is notified to repair the cracks. There was no evidence of any activities prohibited by the Deed Restriction.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 04/19/2013
Comments: The email conveys DTSC's input on and questions regarding the Completion Report for the San Mateo County Replacement Correctional Facility. The Regional Water Quality Control Board requested DTSC's input prior to approving the report, which documents the excavation and disposal of contaminated soil from the 70 Chemical Way property prior to construction of the new correctional facility. The Completion Report can be found on the Geotracker database (ID # SL18340760).

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 06/15/2007
Comments: Site conditions observed at the property comply with the deed restriction.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 09/10/2012
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 08/05/2011
Comments: Significant deterioration/cracking was observed on the cap east and north of the building. There was no evidence of any activities prohibited by the Deed Restriction.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 05/30/2012

DRAFT

SAN MATEO CNTY REPLACEMENT CORRECTIONAL FAC (Continued) **1000277577**

Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 05/30/2012
Comments: DTSC conducted its annual site visit to check the condition of the asphalt cap over contaminated soil and to verify compliance with the restrictions and requirements of the Land Use Covenant. Numerous cracks were observed during the inspection and two areas in the cap have significant deterioration/cracking. However, repair may not be necessary due to the development that is planned on the site. There was no evidence of any activities prohibited by the Land Use Covenant.
Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Design/Implementation Workplan
Completed Date: 03/30/1989
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Remedial Action Plan
Completed Date: 01/30/1989
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Engineering Evaluation / Cost Analysis - Non-Time Critical
Completed Date: 04/30/1988
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 02/06/1987
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Certification
Completed Date: 06/28/1989
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: CEQA - Initial Study/ Neg. Declaration
Completed Date: 02/15/1989
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 08/18/2014
Comments: Not reported

DRAFT

SAN MATEO CNTY REPLACEMENT CORRECTIONAL FAC (Continued) **1000277577**

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 06/10/2008
Comments: Significant cracks were observed in the north west and northern portion of the property. There was no evidence of any activities prohibited by the Deed Restriction.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: PROJECT WIDE
Schedule Sub Area Name: Not reported
Schedule Document Type: Land Use Restriction - Release/Rescission
Schedule Due Date: 03/15/2016
Schedule Revised Date: 12/14/2016

SLIC:
Region: STATE
Facility Status: **Open - Site Assessment**
Status Date: 01/01/2003
Global Id: SL183407760
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Lead Agency Case Number: Not reported
Latitude: 37.493353
Longitude: -122.218585
Case Type: Cleanup Program Site
Case Worker: RL
Local Agency: SAN MATEO COUNTY
RB Case Number: 41S0008
File Location: Regional Board
Potential Media Affected: Other Groundwater (uses other than drinking water), Soil
Potential Contaminants of Concern: * Volatile Organic Compounds (VOC)
Site History: Site remediation has been completed. Currently under long-term monitoring.

Click here to access the California GeoTracker records for this facility:

HIST UST:
File Number: 0002C45E
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002C45E.pdf
Region: STATE
Facility ID: 00000020413
Facility Type: Other
Other Type: Not reported
Contact Name: Not reported
Telephone: 4153653300
Owner Name: WILLARD PRODUCTS
Owner Address: 70 CHEMICAL WAY
Owner City,St,Zip: REDWOOD CITY, CA 94063
Total Tanks: 0001

Tank Num: 001
Container Num: 1
Year Installed: 1969

DRAFT

SAN MATEO CNTY REPLACEMENT CORRECTIONAL FAC (Continued) **1000277577**

Tank Capacity:	00001000
Tank Used for:	WASTE
Type of Fuel:	Not reported
Container Construction Thickness:	2
Leak Detection:	Not reported

Click here for Geo Tracker PDF:

HIST CORTESE:

Region:	CORTESE
Facility County Code:	41
Reg By:	CALSI
Reg Id:	41280076

---

245 North 1/2-1 0.811 mi. 4282 ft.

LIMA REALTY GROUP
350 CONVENTION WAY
REDWOOD CITY, CA 92257

CHMIRS EMI Notify 65 **S100178866 N/A**

Relative: Lower

Actual: 2 ft.

CHMIRS:

OES Incident Number:	1-1105
OES notification:	02/23/2001
OES Date:	Not reported
OES Time:	Not reported
Date Completed:	**Not reported**
Property Use:	Not reported
Agency Id Number:	Not reported
Agency Incident Number:	Not reported
Time Notified:	Not reported
Time Completed:	Not reported
Surrounding Area:	Not reported
Estimated Temperature:	Not reported
Property Management:	Not reported
More Than Two Substances Involved?:	Not reported
Resp Agncy Personel # Of Decontaminated:	Not reported
Responding Agency Personel # Of Injuries:	Not reported
Responding Agency Personel # Of Fatalities:	Not reported
Others Number Of Decontaminated:	Not reported
Others Number Of Injuries:	Not reported
Others Number Of Fatalities:	Not reported
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	Not reported
Report Date:	Not reported
Facility Telephone:	Not reported
Waterway Involved:	Yes
Waterway:	storm drain
Spill Site:	Not reported
Cleanup By:	Unknown
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported

DRAFT

LIMA REALTY GROUP (Continued) **S100178866**

Measure:	Not reported
Other:	Not reported
Date/Time:	Not reported
Year:	2001
Agency:	Redwood City FD
Incident Date:	2/23/200112:00:00 AM
Admin Agency:	San Mateo County Environmental Health
Amount:	Not reported
Contained:	No
Site Type:	Road
E Date:	Not reported
Substance:	Diesel Fuel
Gallons:	110
Unknown:	0.000000
Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	0
Number of Injuries:	0
Number of Fatalities:	0
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported
#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Not reported
Description:	Vandals tipped over two fifty-five (55) gallon drums which were near a storm drain, causing the spill. Firemen on scene state they believe a small amount must have entered the storm drain.

EMI:

Year:	2003
County Code:	41
Air Basin:	SF
Facility ID:	15312
Air District Name:	BA
SIC Code:	7373
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2004
County Code:	41
Air Basin:	SF
Facility ID:	15312
Air District Name:	BA

DRAFT

LIMA REALTY GROUP (Continued) **S100178866**

SIC Code:	7373
Air District Name:	BAY AREA AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.002
Reactive Organic Gases Tons/Yr:	0.0016734
Carbon Monoxide Emissions Tons/Yr:	0.004
NOX - Oxides of Nitrogen Tons/Yr:	0.019
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0.001
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.000976

NOTIFY 65:

Date Reported:	Not reported
Staff Initials:	Not reported
Board File Number:	Not reported
Facility Type:	Not reported
Discharge Date:	Not reported
Issue Date:	Not reported
Incident Description:	Not reported

246
NW
1/2-1
0.817 mi.
4313 ft.

ARTON MANAGEMENT/INVESTMENT COMPANY **ENVIROSTOR** **U001594591**
570 EL CAMINO REAL **LUST** **N/A**
REDWOOD CITY, CA 94063 **HIST UST**

Relative:
Higher

Actual:
22 ft.

ENVIROSTOR:

Facility ID:	41550010
Status:	Refer: Other Agency
Status Date:	04/24/2002
Site Code:	Not reported
Site Type:	Evaluation
Site Type Detailed:	Evaluation
Acres:	Not reported
NPL:	NO
Regulatory Agencies:	SMBRP, SAN MATEO COUNTY
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	Denise Tsuji
Division Branch:	Cleanup Berkeley
Assembly:	22
Senate:	13
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	37.48894
Longitude:	-122.2386
APN:	052181250
Past Use:	RETAIL - SERVICE STATION, RETAIL - VEHICLES
Potential COC:	* WASTE OIL & MIXED OIL TPH-diesel
Confirmed COC:	TPH-diesel * WASTE OIL & MIXED OIL
Potential Description:	SOIL
Alias Name:	052181250
Alias Type:	APN
Alias Name:	41550010

DRAFT

ARTON MANAGEMENT/INVESTMENT COMPANY (Continued) **U001594591**

Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 02/28/1991
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 04/24/2002
Comments: Site screening completed. Site referred to San Mateo County Environmental Health Department.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

LUST:
Region: STATE
Global Id: T0608101054
Latitude: 37.488925
Longitude: -122.238638
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 04/30/1991
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-1150
LOC Case Number: 330066
File Location: Local Agency Warehouse
Potential Media Affect: Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern: Not reported
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608101054
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608101054
Contact Type: Regional Board Caseworker

DRAFT

ARTON MANAGEMENT/INVESTMENT COMPANY (Continued) **U001594591**

Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608101054
Status: Completed - Case Closed
Status Date: 04/30/1991

Global Id: T0608101054
Status: Open - Case Begin Date
Status Date: 01/01/1989

Regulatory Activities:
Global Id: T0608101054
Action Type: ENFORCEMENT
Date: 01/01/1989
Action: Notice of Responsibility - #1

Global Id: T0608101054
Action Type: Other
Date: 02/01/1990
Action: Leak Reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330066
Facility Status: 9- Case Closed
Global ID: T0608101054
APN Number: 052181250
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

HIST UST:
File Number: 0002C0B3
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002C0B3.pdf
Region: STATE
Facility ID: 00000009927
Facility Type: Other
Other Type: AUTO DEALERSHIP
Contact Name: DENNIS HOYT, SERVICE MGR.
Telephone: 4153694131
Owner Name: MRS. PAULINE M. BARNESON
Owner Address: 1523 HOPKINS ST
Owner City,St,Zip: REDWOOD CITY, CA 94063
Total Tanks: 0001

Tank Num: 001
Container Num: 3
Year Installed: Not reported
Tank Capacity: 00000200

DRAFT

ARTON MANAGEMENT/INVESTMENT COMPANY (Continued) **U001594591**

Tank Used for: WASTE
Type of Fuel: WASTE OIL
Container Construction Thickness: Not reported
Leak Detection: Not reported

Click here for Geo Tracker PDF:

247
NNE
1/2-1
0.843 mi.
4450 ft.

FORMER FRANK'S TANNERY
1548 MAPLE STREET
REDWOOD CITY, CA 94063

ENVIROSTOR **S103632855**
LUST **N/A**
SLIC
BROWNFIELDS
CHMIRS

Relative:
Lower

Actual:
8 ft.

ENVIROSTOR:
Facility ID: 60001000
Status: No Further Action
Status Date: 06/30/2010
Site Code: Not reported
Site Type: Evaluation
Site Type Detailed: Evaluation
Acres: 0.11
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Not reported
Supervisor: Denise Tsuji
Division Branch: Cleanup Berkeley
Assembly: 22
Senate: 13
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not Applicable
Latitude: 37.49477
Longitude: -122.2215
APN: 052532010
Past Use: UNKNOWN
Potential COC: Under Investigation
Confirmed COC: 31001-NO
Potential Description: UE
Alias Name: 052532010
Alias Type: APN
Alias Name: 60001000
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 06/30/2010
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported

DRAFT

FORMER FRANK'S TANNERY (Continued) **S103632855**

Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

LUST:
Region: STATE
Global Id: T0608101082
Latitude: 37.494518
Longitude: -122.2222
Case Type: LUST Cleanup Site
Status: Completed - Case Closed
Status Date: 09/27/1990
Lead Agency: SAN MATEO COUNTY LOP
Case Worker: DGM
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41-1184
LOC Case Number: 330022
File Location: Local Agency
Potential Media Affect: Soil
Potential Contaminants of Concern: Not reported
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

Contact:
Global Id: T0608101082
Contact Type: Local Agency Caseworker
Contact Name: DENO MILANO
Organization Name: SAN MATEO COUNTY LOP
Address: 2000 ALAMEDA DE LAS PULGAS
City: SAN MATEO
Email: dmilano@smcgov.org
Phone Number: 6503726292

Global Id: T0608101082
Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

Status History:
Global Id: T0608101082
Status: Completed - Case Closed
Status Date: 09/27/1990

Global Id: T0608101082
Status: Open - Case Begin Date
Status Date: 07/10/1990

Regulatory Activities:
Global Id: T0608101082
Action Type: ENFORCEMENT
Date: 07/10/1990

DRAFT

FORMER FRANK'S TANNERY (Continued) **S103632855**

Action: Notice of Responsibility - #1

Global Id: T0608101082
Action Type: Other
Date: 02/28/1985
Action: Leak Reported

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330022
Facility Status: 9- Case Closed
Global ID: T0608101082
APN Number: Not reported
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

SLIC:
Region: STATE
Facility Status: **Open - Site Assessment**
Status Date: 01/09/2017
Global Id: T10000003443
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Lead Agency Case Number: Not reported
Latitude: 37.4944221273787
Longitude: -122.221999168396
Case Type: Cleanup Program Site
Case Worker: RL
Local Agency: SAN MATEO COUNTY LOP
RB Case Number: 41S0194
File Location: Not reported
Potential Media Affected: Soil
Potential Contaminants of Concern: Polynuclear aromatic hydrocarbons (PAHs)
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

BROWNFIELDS:
Global ID: T10000003443
Latitude: 37.494422127
Longitude: -122.22199917
Project Type: Cleanup Program Site
Status: Completed - Case Closed
Status Date: 10/12/2012
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Last Correspondence Date: 10/12/2012
Release Type: Unknown
Contaminant(s) of Concern: Polynuclear aromatic hydrocarbons (PAHs)
Media of Concern: Soil
Past Use(s) that Caused Contamination: UNKNOWN
Human Health Exposure Controlled: YES
Human Health Exposure Controlled Date: 10/12/2012
Groundwater Migration Controlled: YES
Groundwater Migration Controlled Date: 10/12/2012
Primary Caseworker Name: RANDY LEE
Primary Caseworker Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)

DRAFT

FORMER FRANK'S TANNERY (Continued) **S103632855**

Primary Caseworker Phone Number:	510-622-2375
Primary Caseworker Address:	1515 CLAY STREET; SUITE 1400
Primary Caseworker Address:	OAKLAND
Primary Caseworker Address:	CA
Primary Caseworker Email:	rylee@waterboards.ca.gov

CHMIRS:

OES Incident Number:	08-5471
OES notification:	07/27/2008
OES Date:	Not reported
OES Time:	Not reported
Date Completed:	**Not reported**
Property Use:	Not reported
Agency Id Number:	Not reported
Agency Incident Number:	Not reported
Time Notified:	Not reported
Time Completed:	Not reported
Surrounding Area:	Not reported
Estimated Temperature:	Not reported
Property Management:	Not reported
More Than Two Substances Involved?:	Not reported
Resp Agncy Personel # Of Decontaminated:	Not reported
Responding Agency Personel # Of Injuries:	Not reported
Responding Agency Personel # Of Fatalities:	Not reported
Others Number Of Decontaminated:	Not reported
Others Number Of Injuries:	Not reported
Others Number Of Fatalities:	Not reported
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	Not reported
Report Date:	Not reported
Facility Telephone:	Not reported
Waterway Involved:	Yes
Waterway:	San Francisco Bay
Spill Site:	Waterways
Cleanup By:	Unknown
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Sheen
Other:	Not reported
Date/Time:	0932
Year:	2008
Agency:	NRC
Incident Date:	7/27/2008
Admin Agency:	San Mateo County Environmental Health
Amount:	Not reported
Contained:	Unknown
Site Type:	San Francisco Bay
E Date:	Not reported
Substance:	Sheen
Quantity Released:	20 ft x 75
Unknown:	Not reported

DRAFT

FORMER FRANK'S TANNERY (Continued) **S103632855**

Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	0
Number of Injuries:	0
Number of Fatalities:	0
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported
#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Not reported
Description:	Per the NRC report, Caller is reporting an unknown sheen that is unrecoverable.

AS248 **TYDEMAN MACHINE WORKS** **ENVIROSTOR** **S118756934**
ENE **BROADWAY AND CHARTER** **N/A**
1/2-1 **REDWOOD CITY, CA 94063**
0.846 mi.
4469 ft. **Site 1 of 2 in cluster AS**

Relative:
Higher

Actual:
13 ft.

ENVIROSTOR:

Facility ID:	41340062
Status:	No Action Required
Status Date:	12/22/2005
Site Code:	201571
Site Type:	Evaluation
Site Type Detailed:	Evaluation
Acres:	0.48
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	Denise Tsuji
Division Branch:	Cleanup Berkeley
Assembly:	22
Senate:	13
Special Program:	* CERC2
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	37.48695
Longitude:	-122.2111
APN:	054-023-110
Past Use:	MACHINE SHOP
Potential COC:	TPH-MOTOR OIL
Confirmed COC:	TPH-MOTOR OIL
Potential Description:	SOIL
Alias Name:	HELLER HELICOPTERS
Alias Type:	Alternate Name
Alias Name:	054-023-110
Alias Type:	APN
Alias Name:	201571
Alias Type:	Project Code (Site Code)
Alias Name:	41340062

DRAFT

TYDEMAN MACHINE WORKS (Continued) **S118756934**

Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 03/13/1981
Comments: FACILITY IDENTIFIED ACTIVE SITE ID'DON DRIVEBY DHS, DURING A DRIVE/BY, OBSERVED SOIL STAINING & UNSAFE DRUMS STORAGE AREA FACILITY DRIVE-BY EVIDENCE OF WASTE

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Assessment Report
Completed Date: 01/01/1989
Comments: PRELIM ASSESS DONE NFA: BASED ON AVAILABLE INFORMATION

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 05/08/1987
Comments: SITE SCREENING DONE OBSERVED NUMEROUS 55 GAL DRUMS, LACK OF VEGITATION AND OIL ON GROUND

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 08/30/2002
Comments: Site screening completed. Preliminary endangerment assessment required.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

249
ESE
1/2-1
0.862 mi.
4551 ft.

COORS WEST **Notify 65** **S100179570**
2700 MIDDLEFIELD ROAD **N/A**
REDWOOD CITY, CA 92257

Relative:
Higher

Actual:
28 ft.

NOTIFY 65:
Date Reported: Not reported
Staff Initials: Not reported
Board File Number: Not reported
Facility Type: Not reported
Discharge Date: Not reported
Issue Date: Not reported
Incident Description: Not reported

DRAFT

AS250 **COORS WEST** **LUST** **S100178861**
ENE **890 BROADWAY** **Notify 65** **N/A**
1/2-1 **REDWOOD CITY, CA 94063**
0.885 mi.
4675 ft. **Site 2 of 2 in cluster AS**

Relative:
Lower

Actual:
12 ft.

LUST:

Region:	STATE
Global Id:	T0608100270
Latitude:	37.485947
Longitude:	-122.209245
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	07/03/1995
Lead Agency:	SAN MATEO COUNTY LOP
Case Worker:	DGM
Local Agency:	SAN MATEO COUNTY LOP
RB Case Number:	41-0284
LOC Case Number:	330031
File Location:	Local Agency Warehouse
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0608100270
Contact Type:	Local Agency Caseworker
Contact Name:	DENO MILANO
Organization Name:	SAN MATEO COUNTY LOP
Address:	2000 ALAMEDA DE LAS PULGAS
City:	SAN MATEO
Email:	dmilano@smcgov.org
Phone Number:	6503726292

Global Id:	T0608100270
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

Status History:

Global Id:	T0608100270
Status:	Completed - Case Closed
Status Date:	07/03/1995

Global Id:	T0608100270
Status:	Open - Case Begin Date
Status Date:	12/20/1988

Regulatory Activities:

Global Id:	T0608100270
Action Type:	Other
Date:	12/20/1988
Action:	Leak Reported

DRAFT

COORS WEST (Continued) **S100178861**

Global Id: T0608100270
Action Type: ENFORCEMENT
Date: 12/20/1988
Action: Notice of Responsibility - #1

SAN MATEO CO. LUST:
Region: SAN MATEO
Facility ID: 330031
Facility Status: 9- Case Closed
Global ID: T0608100270
APN Number: 054040270
Case Type: SAN MATEO CO. LUST
EDR Link ID: SAN MATEO CO. LUST

NOTIFY 65:
Date Reported: Not reported
Staff Initials: Not reported
Board File Number: Not reported
Facility Type: Not reported
Discharge Date: Not reported
Issue Date: Not reported
Incident Description: Not reported

251
NNW
1/2-1
0.934 mi.
4932 ft.

SERVICE STATION **Notify 65** **S100178949**
503 WHIPPLE AVENUE **N/A**
REDWOOD CITY, CA 92257

Relative:
Lower

Actual:
8 ft.

NOTIFY 65:
Date Reported: Not reported
Staff Initials: Not reported
Board File Number: Not reported
Facility Type: Not reported
Discharge Date: Not reported
Issue Date: Not reported
Incident Description: Not reported

AT252
East
1/2-1
0.941 mi.
4971 ft.

KLIKLOK CO. (BUILDING #4) **ENVIROSTOR** **S101482216**
2661 SPRING **HIST CORTESE** **N/A**
REDWOOD CITY, CA 90000

Site 1 of 2 in cluster AT

Relative:
Higher

Actual:
16 ft.

ENVIROSTOR:
Facility ID: 41340063
Status: Inactive - Needs Evaluation
Status Date: 10/25/2005
Site Code: Not reported
Site Type: Evaluation
Site Type Detailed: Evaluation
Acres: < 1
NPL: NO
Regulatory Agencies: SMBRP, SAN MATEO COUNTY

DRAFT

KLIKLOK CO. (BUILDING #4) (Continued) **S101482216**

Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: Denise Tsuji
Division Branch: Cleanup Berkeley
Assembly: 24
Senate: 13
Special Program: * CERC2
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 37.48264
Longitude: -122.2080
APN: 054161130
Past Use: METAL PLATING - CHROME, METAL PLATING - OTHER
Potential COC: Aluminum Cadmium and compounds Chromium III Copper and compounds Cyanide (free Nickel
Confirmed COC: Aluminum Cadmium and compounds Chromium III Copper and compounds Cyanide (free Nickel
Potential Description: OTH, SOIL
Alias Name: SUNSET PLATING INC
Alias Type: Alternate Name
Alias Name: 054161130
Alias Type: APN
Alias Name: 41340063
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 01/15/1981
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Assessment Report
Completed Date: 11/04/1988
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 05/20/1987
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 04/22/2002
Comments: Site screening completed. Preliminary endangerment assessment required.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported

DRAFT

KLIKLOK CO. (BUILDING #4) (Continued) **S101482216**

Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

HIST CORTESE:
Region: CORTESE
Facility County Code: 41
Reg By: CALSI
Reg Id: 41340063

253
NW
1/2-1
0.949 mi.
5010 ft.

Relative:
Lower

Actual:
10 ft.

MOBILE STATION # 10-169 **Notify 65** **S100178936**
640 WHIPPLE STREET **N/A**
REDWOOD CITY, CA 92257

NOTIFY 65:
Date Reported: Not reported
Staff Initials: Not reported
Board File Number: Not reported
Facility Type: Not reported
Discharge Date: Not reported
Issue Date: Not reported
Incident Description: Not reported

AT254
East
1/2-1
0.952 mi.
5028 ft.

Relative:
Higher

Actual:
14 ft.

UNKNOWN **Notify 65** **S100179087**
860 HURLINGAMES **N/A**
REDWOOD CITY, CA 92257

Site 2 of 2 in cluster AT

NOTIFY 65:
Date Reported: Not reported
Staff Initials: Not reported
Board File Number: Not reported
Facility Type: Not reported
Discharge Date: Not reported
Issue Date: Not reported
Incident Description: Not reported

DRAFT

Count: 5 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
REDWOOD CITY	S109149555	SEQUOIA ALTERNATIVE SCHOOL	435, 455, 461 5TH AVENUE AND 4	94063	ENVIROSTOR, SCH
REDWOOD CITY	S105954452	SEQUOIA STATION SHOPPING CENTER	INTERSECTION OF EL CAMINO REAL	94063	ENVIROSTOR
REDWOOD CITY	1003878892	PG&E GAS PLANT REDWOOD CITY	E MARSHALL WASHINGTON BROADWAY	94063	SEMS-ARCHIVE
REDWOOD CITY	1003878856	JOHNS MANVILLE CORP	MIDDLEFIELD RD	94062	SEMS-ARCHIVE
REDWOOD CITY	1003878515	IDEAL BASIC INDS OLD PLT SITE	PORT OF REDWOOD CITY	94063	SEMS-ARCHIVE

DRAFT

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/05/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 06/08/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/05/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

DRAFT

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/05/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/07/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/08/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

DRAFT

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/08/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

DRAFT

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 01/04/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 93

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/15/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 101

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/31/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 101

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/31/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

DRAFT

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/26/2016
Date Data Arrived at EDR: 09/29/2016
Date Made Active in Reports: 11/11/2016
Number of Days to Update: 43

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 01/31/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 112

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 01/31/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 112

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/15/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 76

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/17/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

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LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 49
Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22
Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14
Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30
Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29
Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

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Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Semi-Annually

DRAFT

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Varies

DRAFT

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

DRAFT

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/11/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 03/12/2017
Date Data Arrived at EDR: 03/16/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 57

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Semi-Annually

DRAFT

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/14/2017
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

DRAFT

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Semi-Annually

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/27/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 01/31/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 112

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Quarterly

DRAFT

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 01/03/2017
Date Data Arrived at EDR: 01/04/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 57

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 03/02/2017
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/20/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

DRAFT

Date of Government Version: 01/13/2017
Date Data Arrived at EDR: 01/17/2017
Date Made Active in Reports: 05/31/2017
Number of Days to Update: 134

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/15/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Services, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 02/09/2017
Date Data Arrived at EDR: 03/08/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 93

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database
The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

DRAFT

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 01/31/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 112

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 54

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/09/2017
Date Data Arrived at EDR: 03/08/2017
Date Made Active in Reports: 06/09/2017
Number of Days to Update: 93

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/31/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

DRAFT

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 67

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 03/06/2017
Date Data Arrived at EDR: 03/07/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 45

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

DEED: Deed Restriction Listing

DRAFT

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/06/2017
Date Data Arrived at EDR: 03/07/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 77

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 06/06/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 37

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System
California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/06/2016
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 105

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing (GEOTRACKER)
Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 49

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)
Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

DRAFT

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 02/24/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

DRAFT

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/19/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/15/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 05/17/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

DRAFT

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 11/24/2015
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 133

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/26/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/26/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2017
Date Data Arrived at EDR: 02/09/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

DRAFT

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 06/06/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2016
Date Data Arrived at EDR: 04/28/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 127

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/19/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/19/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

DRAFT

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 06/05/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/05/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/04/2017
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 35
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/06/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

DRAFT

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 11/18/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 77

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/24/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/26/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

DRAFT

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 12/05/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Annually

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 38

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/31/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing
This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

DRAFT

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/31/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/14/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 21

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/04/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 35

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 06/07/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 03/19/2017
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 06/07/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 10/25/2015
Date Data Arrived at EDR: 01/29/2016
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 67

Source: Department of Defense
Telephone: 571-373-0407
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Varies

DRAFT

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 06/02/2016
Date Data Arrived at EDR: 06/03/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 91
Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/22/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 79
Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6
Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 64
Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/28/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 42
Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Annually

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 09/23/2016
Date Made Active in Reports: 10/24/2016
Number of Days to Update: 31
Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/23/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Varies

DRAFT

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 01/23/2017
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 118

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 04/25/2016
Date Data Arrived at EDR: 04/29/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 53

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/14/2017
Date Data Arrived at EDR: 02/17/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 97

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/15/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 10/12/2016
Date Made Active in Reports: 12/15/2016
Number of Days to Update: 64

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 11/21/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 62

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DRAFT

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 11/21/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 62
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/11/2017
Date Data Arrived at EDR: 04/13/2017
Date Made Active in Reports: 04/26/2017
Number of Days to Update: 13
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/13/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/12/2016
Date Data Arrived at EDR: 09/14/2016
Date Made Active in Reports: 10/14/2016
Number of Days to Update: 30
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Varies

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 12/02/2016
Date Data Arrived at EDR: 12/06/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 86
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 06/06/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 11/15/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 107
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/17/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 12/06/2016
Date Data Arrived at EDR: 12/06/2016
Date Made Active in Reports: 03/03/2017
Number of Days to Update: 87
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 06/07/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Quarterly

DRAFT

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 12/16/2016
Date Data Arrived at EDR: 12/22/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 06/16/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 01/20/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water board?s review found that more than one-third of the region?s active disposal pits are operating without permission.

Date of Government Version: 04/15/2015
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/23/2015
Number of Days to Update: 67

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/27/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

DRAFT

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/10/2017
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 31

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/10/2017
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 21

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List

Cupa Facility List

Date of Government Version: 03/06/2017
Date Data Arrived at EDR: 03/08/2017
Date Made Active in Reports: 04/14/2017
Number of Days to Update: 37

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 06/16/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

DRAFT

Date of Government Version: 01/31/2017
Date Data Arrived at EDR: 02/07/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 94

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/27/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 02/23/2017
Date Data Arrived at EDR: 02/24/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 77

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 11/17/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 01/26/2017
Number of Days to Update: 65

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 01/31/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/14/2017
Number of Days to Update: 70

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

DRAFT

Date of Government Version: 02/24/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 73

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/06/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 40

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 12/02/2016
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 111

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 03/20/2017
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 57

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

IMPERIAL COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 01/23/2017
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 36

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INYO COUNTY:

DRAFT

CUPA Facility List
Cupa facility list.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/09/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 77

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 81

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 03/06/2017
Date Data Arrived at EDR: 03/07/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 71

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/18/2017
Date Data Arrived at EDR: 01/20/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 41

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/17/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 11/30/2016
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 111

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 11/30/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

LOS ANGELES COUNTY:

DRAFT

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 06/16/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 11/18/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 66

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/17/2017
Date Data Arrived at EDR: 04/18/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 14

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/18/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2016
Date Data Arrived at EDR: 01/26/2016
Date Made Active in Reports: 03/22/2016
Number of Days to Update: 56

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/17/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 03/29/2016
Date Data Arrived at EDR: 04/06/2016
Date Made Active in Reports: 06/13/2016
Number of Days to Update: 68

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/17/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/17/2017
Date Data Arrived at EDR: 01/18/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 112

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/17/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Annually

DRAFT

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 01/10/2017
Date Data Arrived at EDR: 01/13/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 110

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 03/03/2017
Date Data Arrived at EDR: 03/07/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 71

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 03/31/2017
Date Data Arrived at EDR: 04/06/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 27

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 02/22/2017
Date Data Arrived at EDR: 02/23/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 83

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 02/21/2017
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 76

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Varies

MONTEREY COUNTY:

DRAFT

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 06/24/2016
Date Data Arrived at EDR: 06/27/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 43

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 03/16/2017
Date Made Active in Reports: 05/09/2017
Number of Days to Update: 54

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 02/09/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 96

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/06/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 70

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 11/04/2016
Date Data Arrived at EDR: 11/11/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 73

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

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List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/06/2017
Date Data Arrived at EDR: 02/07/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 85

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/09/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 09/02/2016
Date Data Arrived at EDR: 09/06/2016
Date Made Active in Reports: 10/14/2016
Number of Days to Update: 38

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 01/31/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 111

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/18/2017
Date Data Arrived at EDR: 04/20/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 1

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/19/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/19/2017
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 98

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/19/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

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Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 56

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/04/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/08/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 56

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/04/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 11/30/2016
Date Data Arrived at EDR: 02/09/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 105

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 12/09/2016
Date Data Arrived at EDR: 12/13/2016
Date Made Active in Reports: 03/03/2017
Number of Days to Update: 80

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 10/05/2016
Date Data Arrived at EDR: 12/06/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 86

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 06/07/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Quarterly

DRAFT

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2015
Date Data Arrived at EDR: 11/07/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 58

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 06/05/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 02/28/2017
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 62

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/21/2017
Date Data Arrived at EDR: 03/23/2017
Date Made Active in Reports: 05/09/2017
Number of Days to Update: 47

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/16/2017
Next Scheduled EDR Contact: 10/02/2017
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 02/21/2017
Date Data Arrived at EDR: 02/21/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 91

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

SAN MATEO COUNTY:

DRAFT

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 33
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 14
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28
Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 02/22/2017
Date Data Arrived at EDR: 02/23/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 89
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22
Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 05/24/2017
Next Scheduled EDR Contact: 09/11/2017
Data Release Frequency: Annually

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Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 11/10/2016
Date Made Active in Reports: 01/24/2017
Number of Days to Update: 75

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 03/14/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 67

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 11/29/2016
Date Data Arrived at EDR: 12/21/2016
Date Made Active in Reports: 12/22/2016
Number of Days to Update: 1

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 47

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/09/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

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Date of Government Version: 03/01/2017
Date Data Arrived at EDR: 03/30/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 54

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/04/2017
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 55

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/21/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/20/2017
Date Data Arrived at EDR: 01/24/2017
Date Made Active in Reports: 05/18/2017
Number of Days to Update: 114

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 11/30/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Varies

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 12/02/2016
Date Data Arrived at EDR: 12/06/2016
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 35

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 06/02/2017
Next Scheduled EDR Contact: 09/18/2017
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA Facility List
Cupa facilities

Date of Government Version: 01/05/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 104

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/23/2017
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 05/18/2017
Number of Days to Update: 113

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

TULARE COUNTY:

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CUPA Facility List
Cupa program facilities

Date of Government Version: 01/05/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 05/25/2017
Number of Days to Update: 104

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/25/2017
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 34

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/27/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 103

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/15/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 09/26/2016
Date Data Arrived at EDR: 10/27/2016
Date Made Active in Reports: 01/24/2017
Number of Days to Update: 89

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

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Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/27/2017
Date Data Arrived at EDR: 03/15/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/14/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 03/31/2017
Date Data Arrived at EDR: 04/06/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 27

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/29/2017
Next Scheduled EDR Contact: 10/16/2017
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 01/31/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 112

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/15/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 09/29/2016
Date Made Active in Reports: 01/03/2017
Number of Days to Update: 96

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/11/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Annually

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NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 02/01/2017
Date Made Active in Reports: 02/13/2017
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/03/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 07/22/2016
Date Made Active in Reports: 11/22/2016
Number of Days to Update: 123

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/18/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/15/2015
Number of Days to Update: 26

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/22/2017
Next Scheduled EDR Contact: 09/04/2017
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 04/14/2016
Date Made Active in Reports: 06/03/2016
Number of Days to Update: 50

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/12/2017
Next Scheduled EDR Contact: 09/25/2017
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

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Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.
Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.
Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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APPENDIX D

HISTORICAL SOURCES

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EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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DRAFT

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EDR


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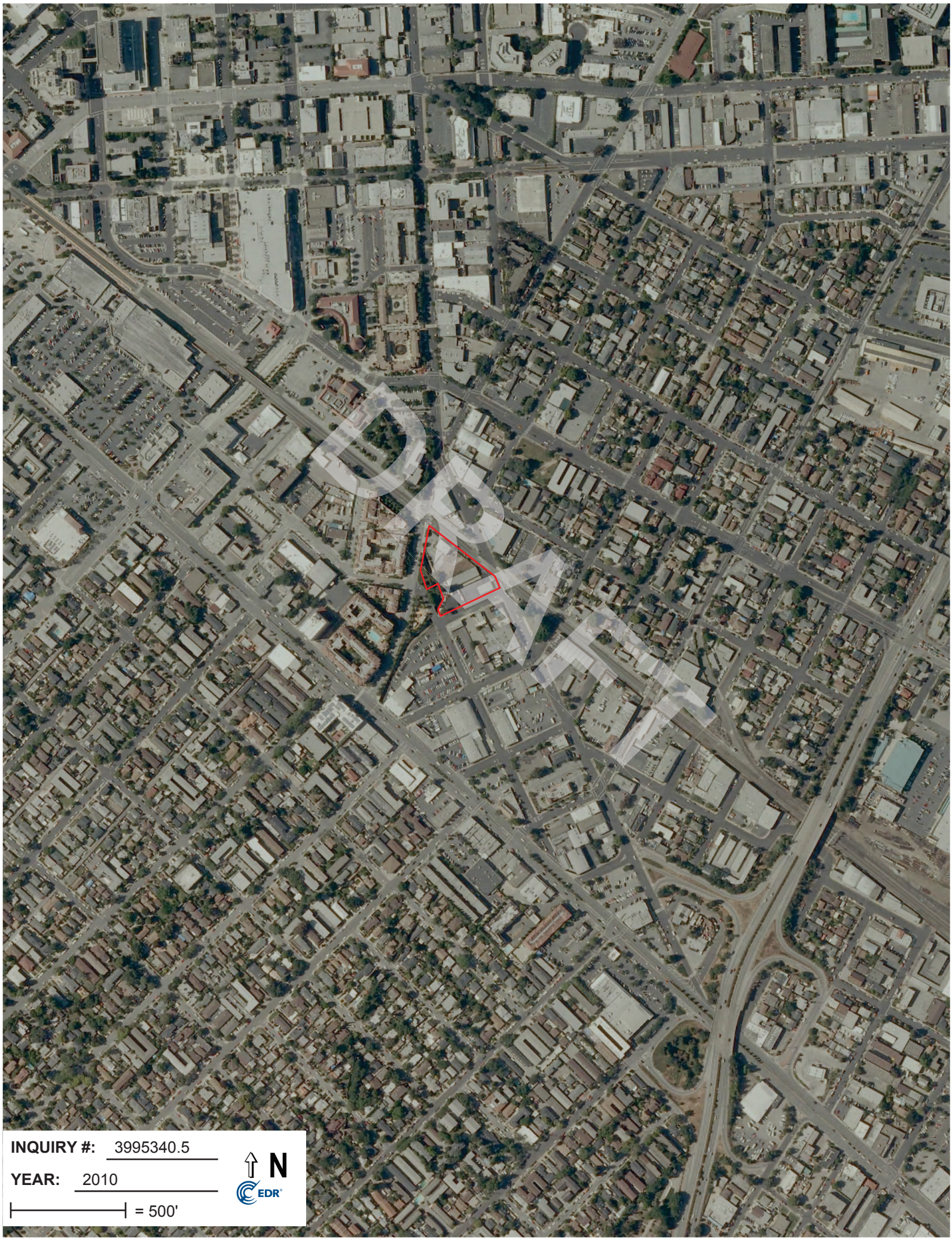

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Sanborn Sheet Thumbnails

This Certified Sanborn Map Report is based upon the following Sanborn Fire Insurance map sheets.

1968 Source Sheets


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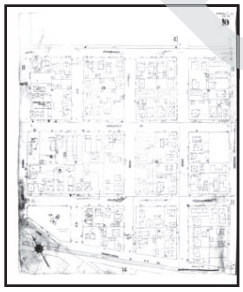

Volume 1, Sheet 10

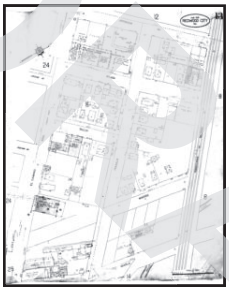

Volume 1, Sheet 13


Volume 1, Sheet 14

1962 Source Sheets


Volume 1, Sheet 8


Volume 1, Sheet 10

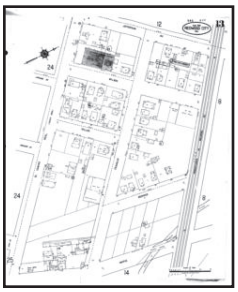

Volume 1, Sheet 13


Volume 1, Sheet 14

1950 Source Sheets


Volume 1, Sheet 8

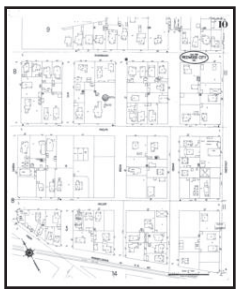

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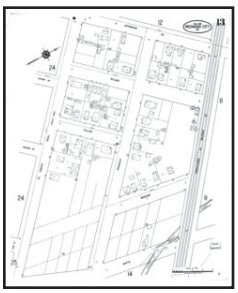

Volume 1, Sheet 13


Volume 1, Sheet 14

1919 Source Sheets


Volume 1, Sheet 8


Volume 1, Sheet 10


Volume 1, Sheet 13


Volume 1, Sheet 14

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1907 Source Sheets



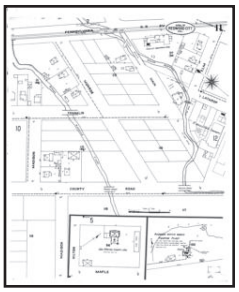
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Volume 1, Sheet 7



Volume 1, Sheet 8



Volume 1, Sheet 11

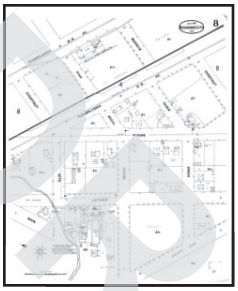
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Volume 1, Sheet 3



Volume 1, Sheet 4



Volume 1, Sheet 8

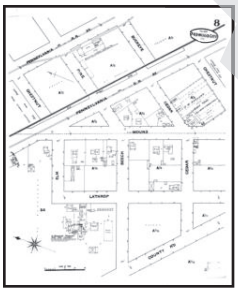
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Volume 1, Sheet 3



Volume 1, Sheet 4



Volume 1, Sheet 8

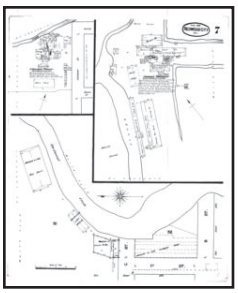
1888 Source Sheets



Volume 1, Sheet 3



Volume 1, Sheet 4



Volume 1, Sheet 7

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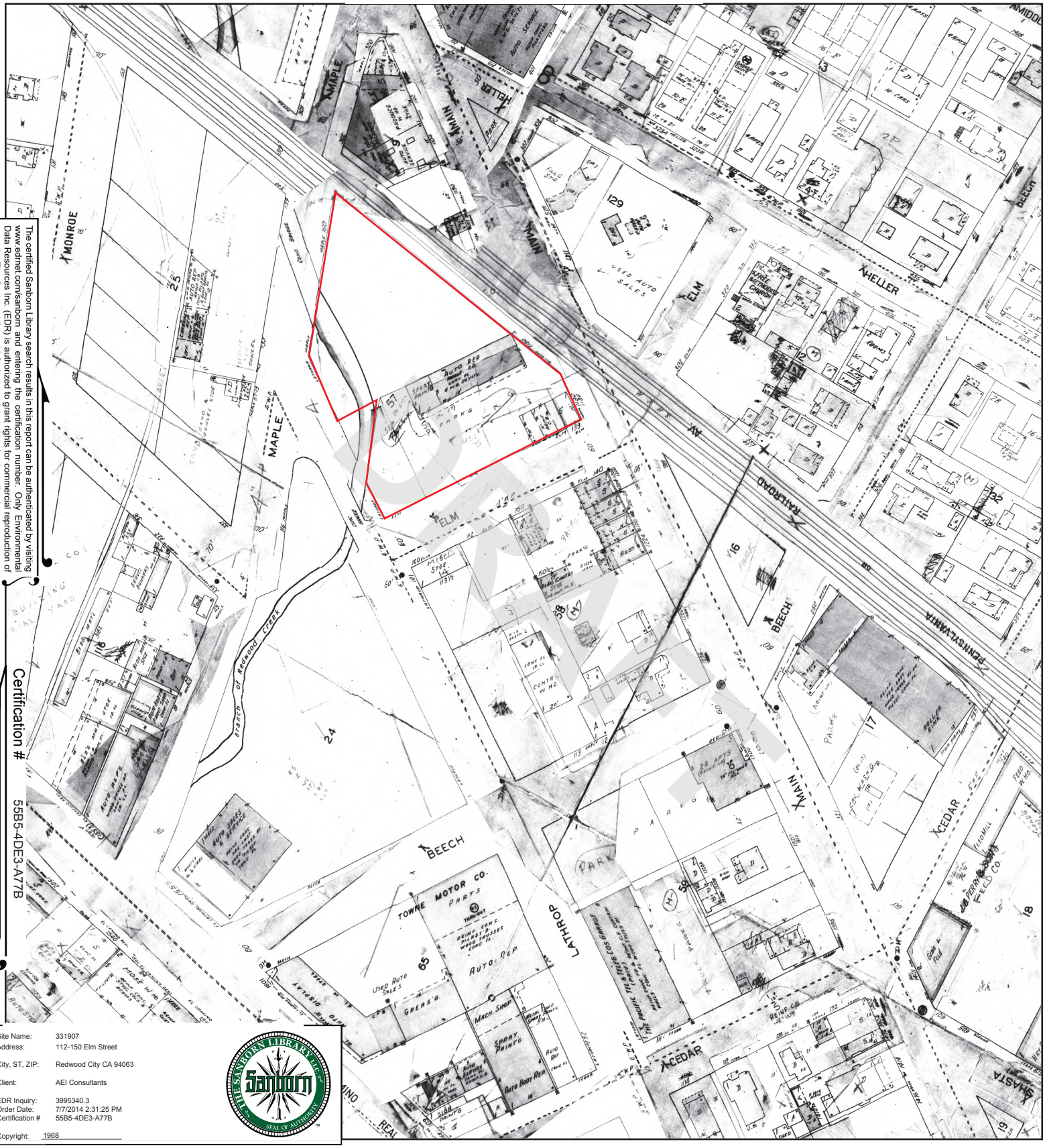
1884 Source Sheets



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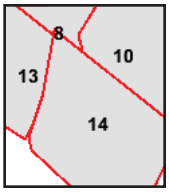
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Address:	112-150 Elm Street
City, ST, ZIP:	Redwood City CA 94063
Client:	AEI Consultants
EDR Inquiry:	3995340.3
Order Date:	7/7/2014 2:31:25 PM
Certification #	55B5-4DE3-A77B
Copyright:	1968

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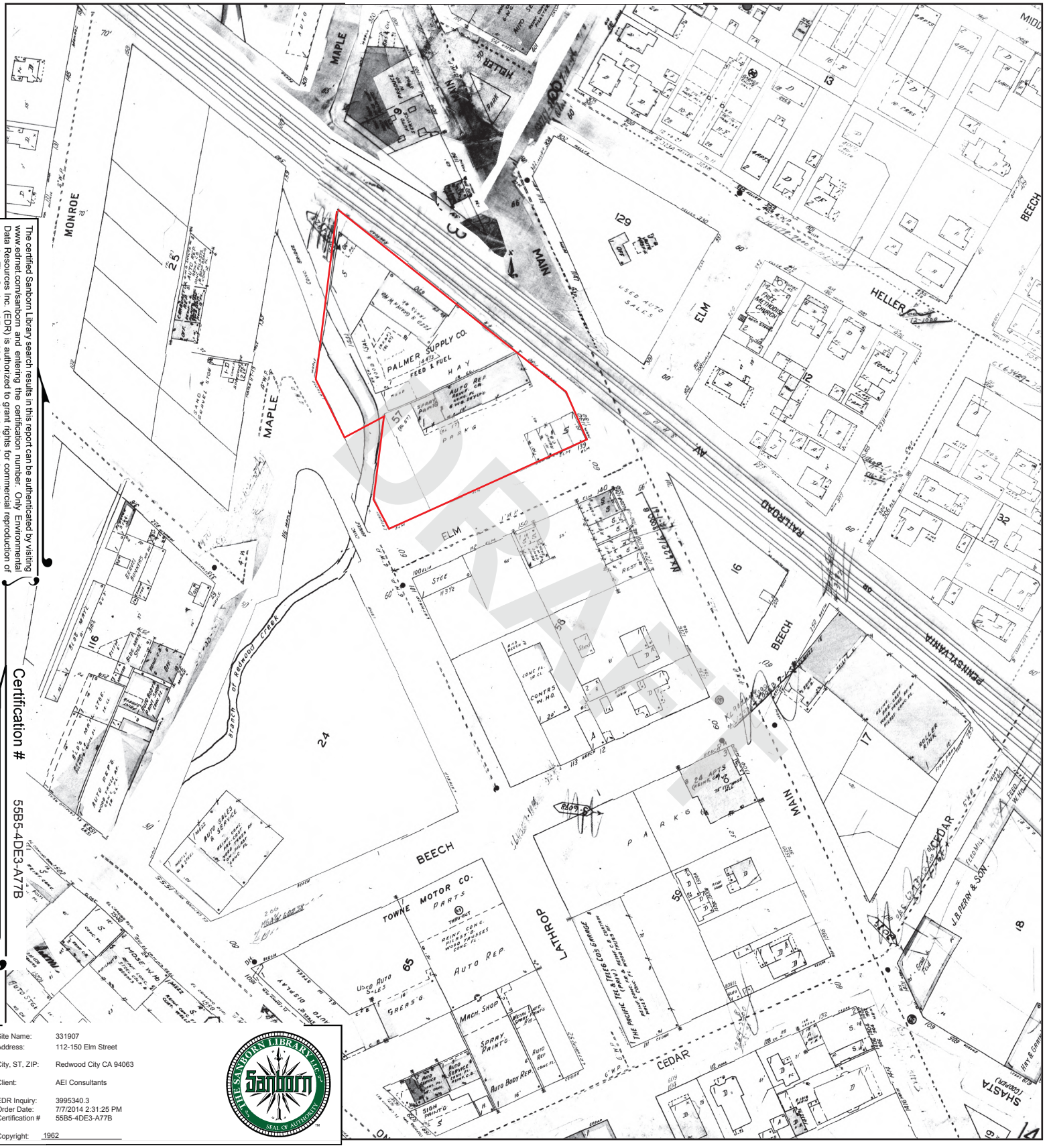


Volume 1, Sheet 8
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Volume 1, Sheet 13
Volume 1, Sheet 14

0 Feet 150 300 600

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1962 Certified Sanborn Map



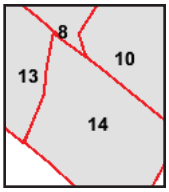
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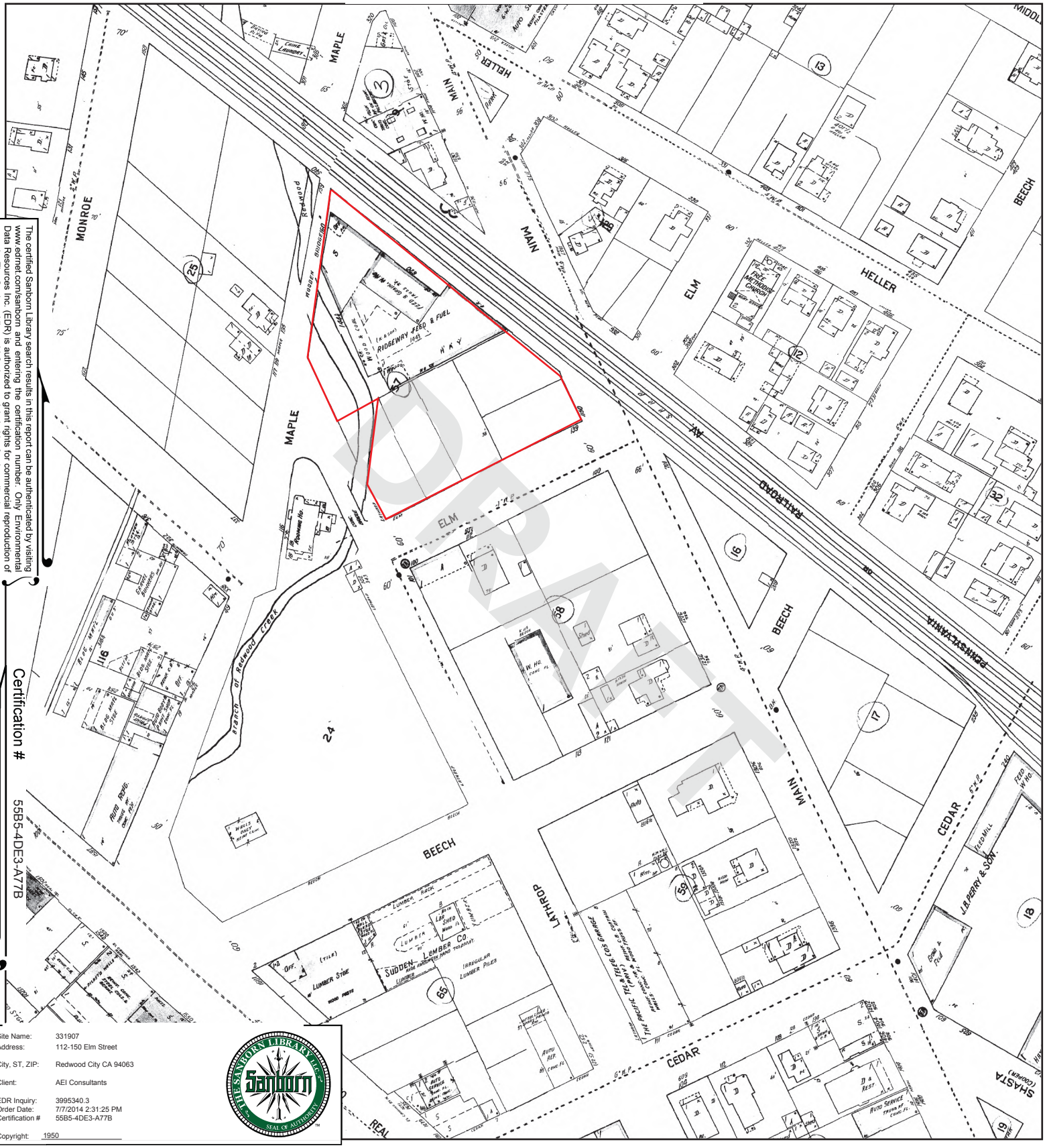


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Volume 1, Sheet 14

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1950 Certified Sanborn Map



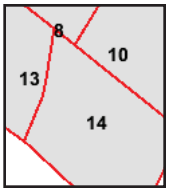
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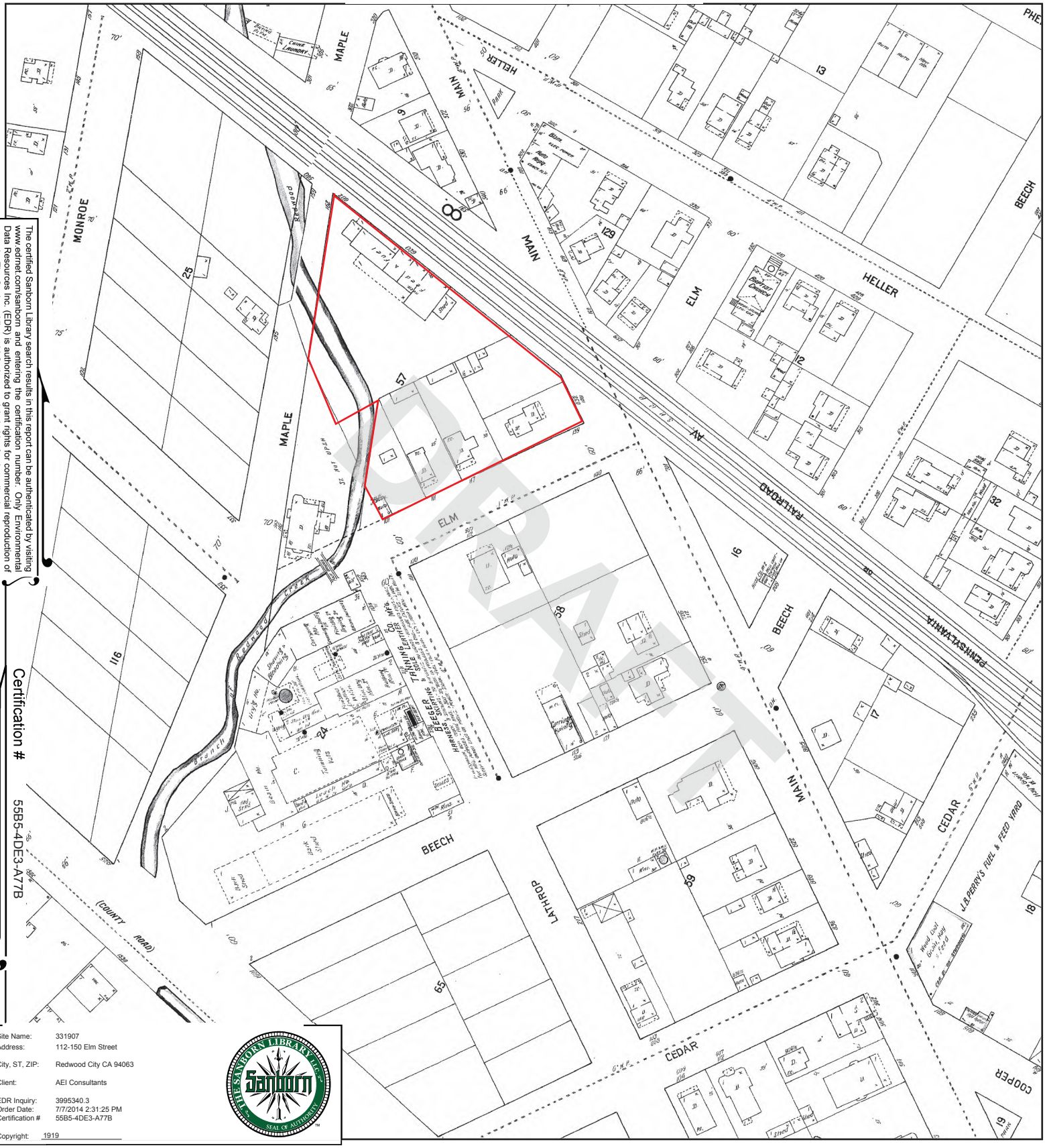


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Volume 1, Sheet 13
Volume 1, Sheet 14

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1919 Certified Sanborn Map



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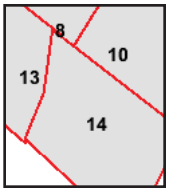
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City, ST, ZIP: Redwood City CA 94063
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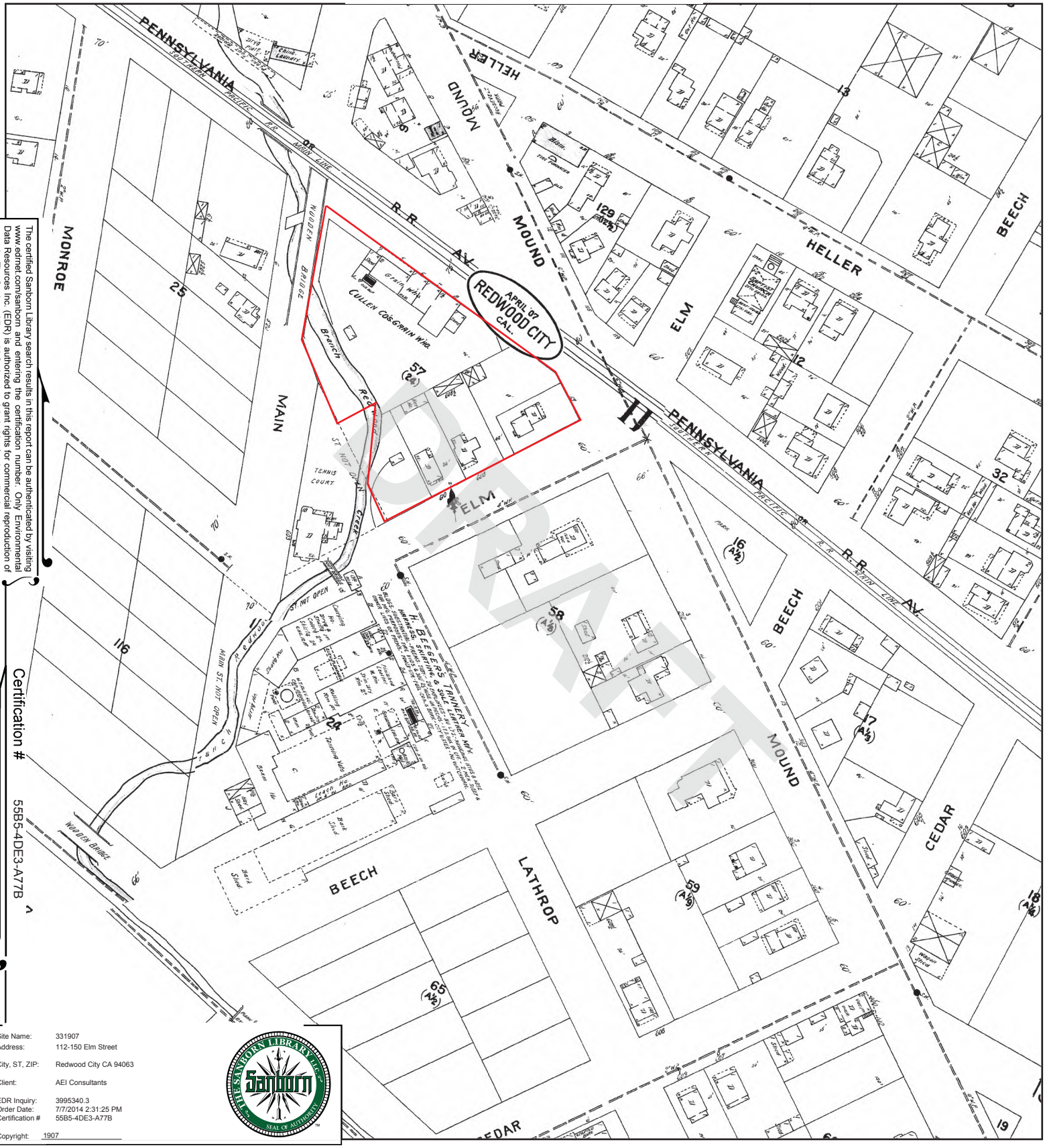


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Volume 1, Sheet 14

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1907 Certified Sanborn Map



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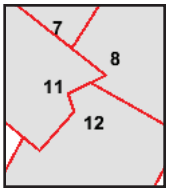
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Copyright: 1907

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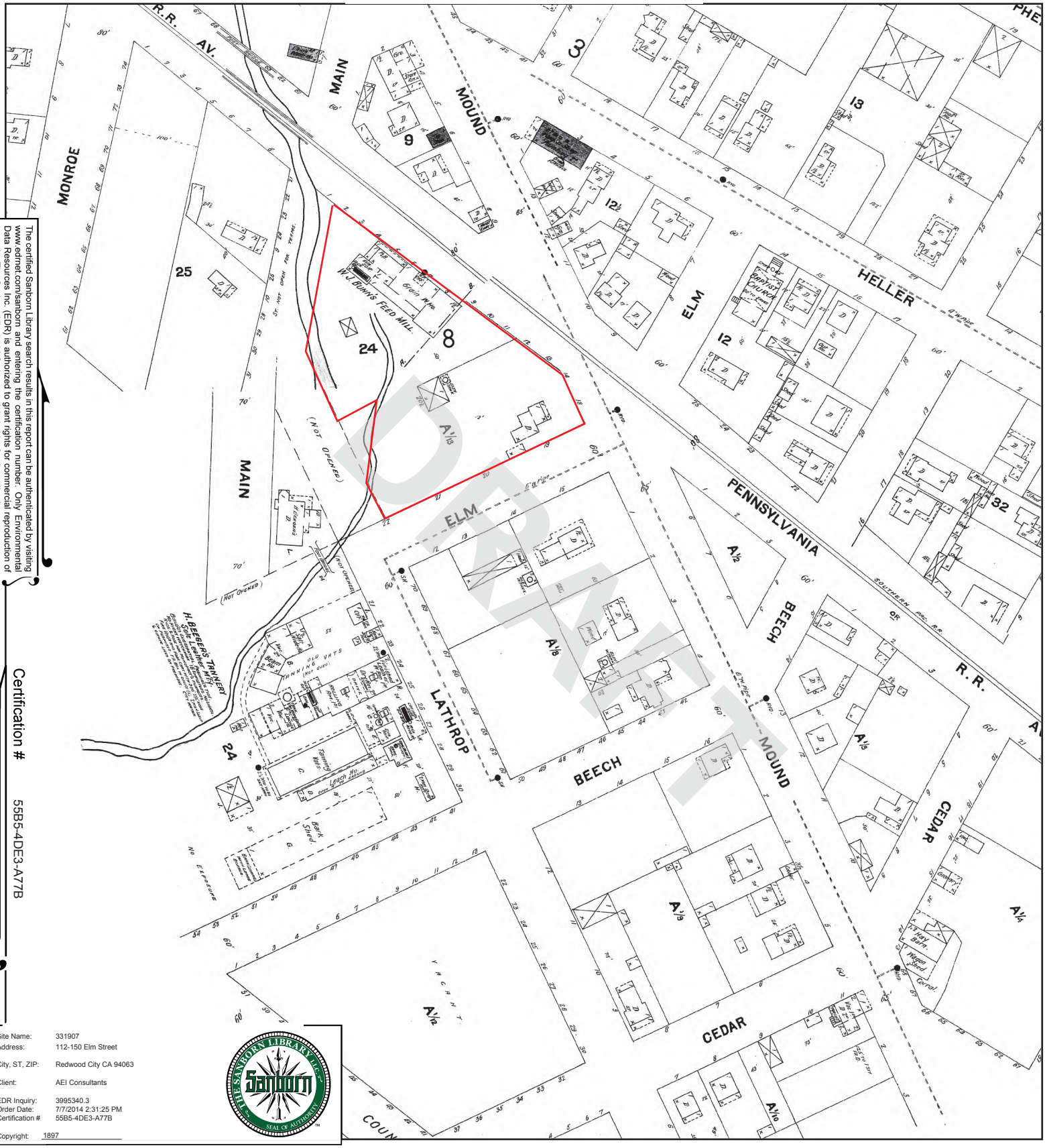


Volume 1, Sheet 12
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Volume 1, Sheet 11

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1897 Certified Sanborn Map



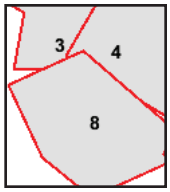
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Copyright: 1897

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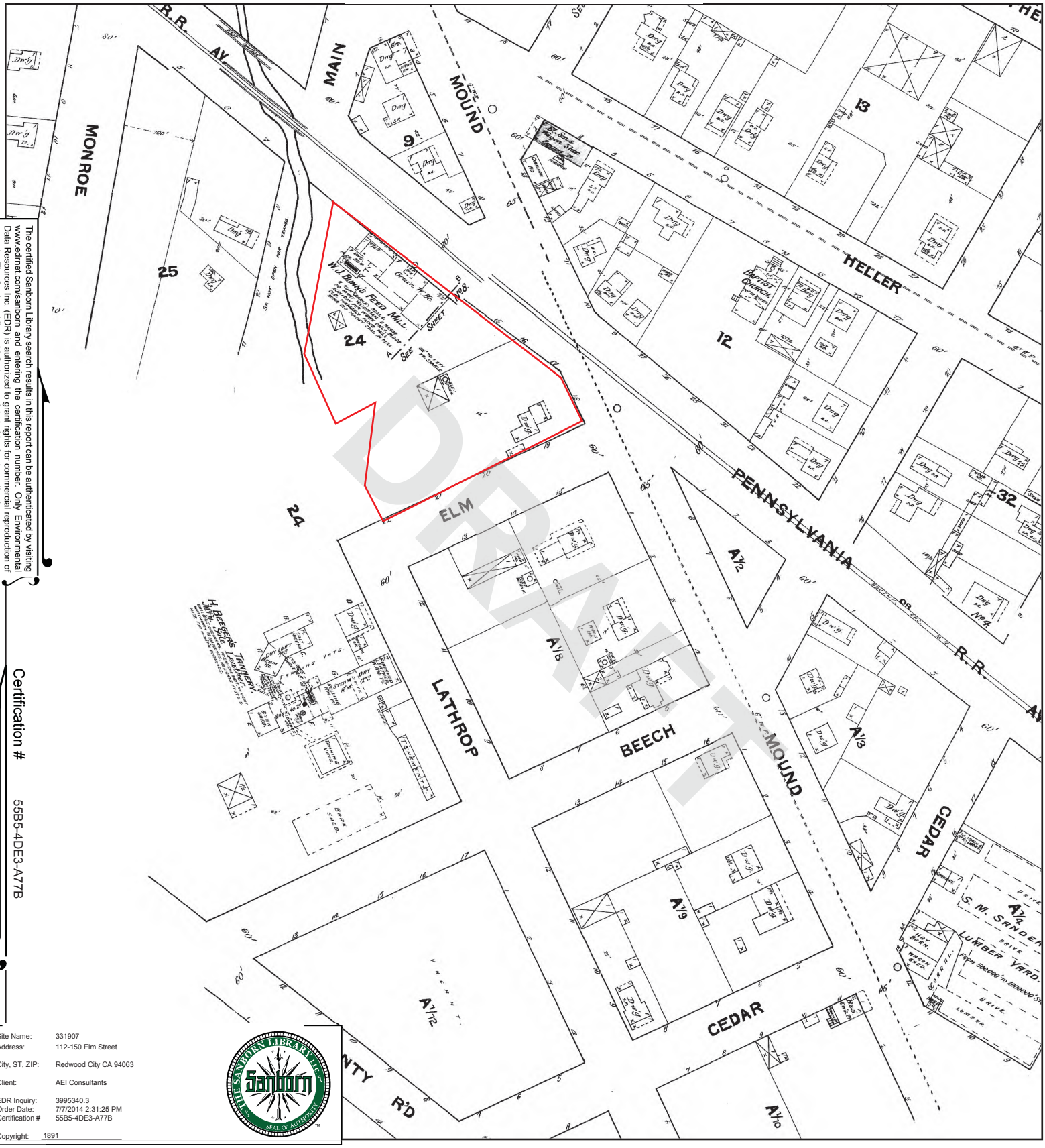


Volume 1, Sheet 3
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Volume 1, Sheet 8

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1891 Certified Sanborn Map



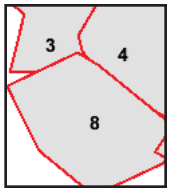
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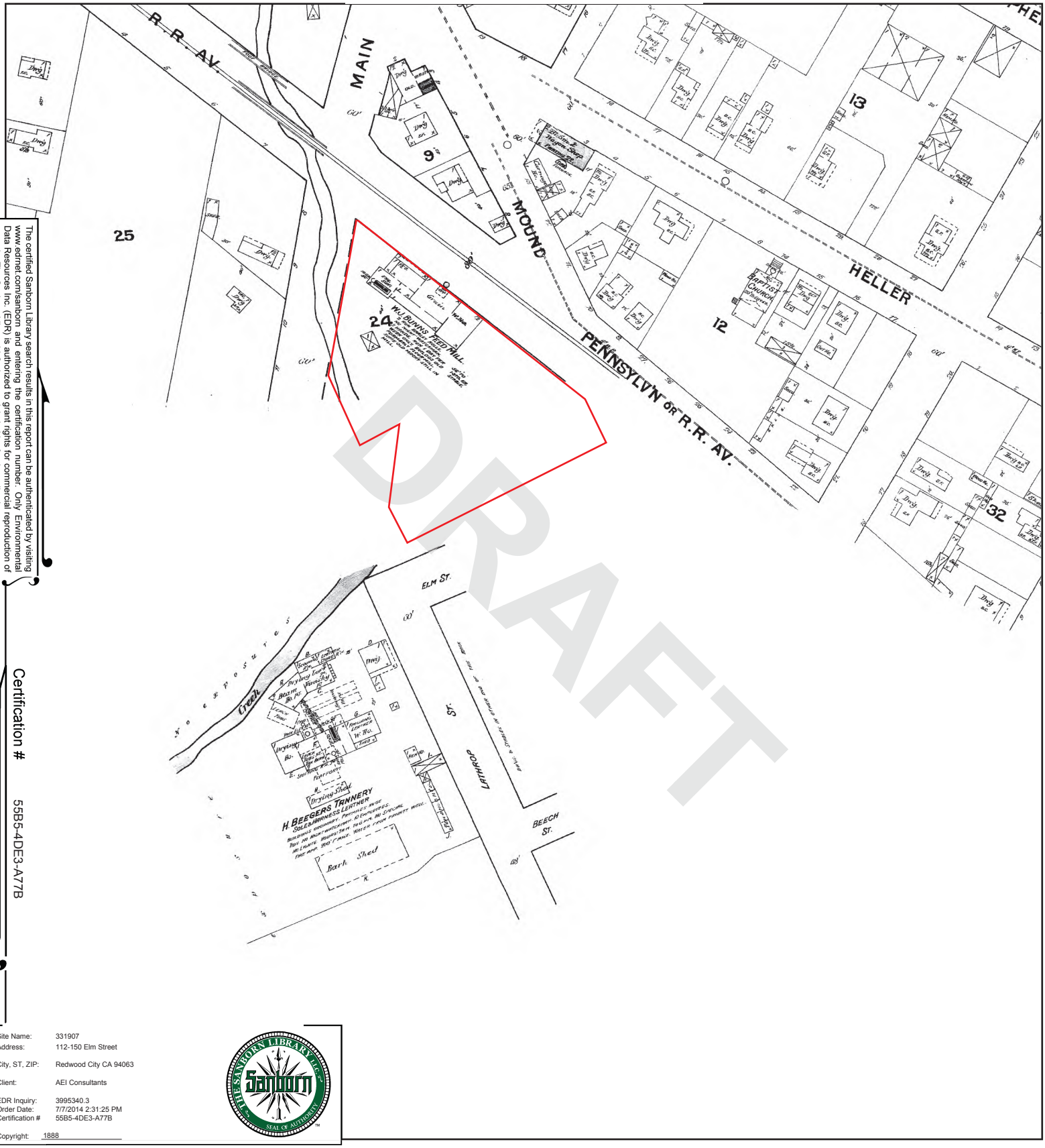


Volume 1, Sheet 3
Volume 1, Sheet 4
Volume 1, Sheet 8

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1888 Certified Sanborn Map



DRAFT

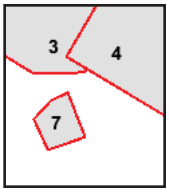
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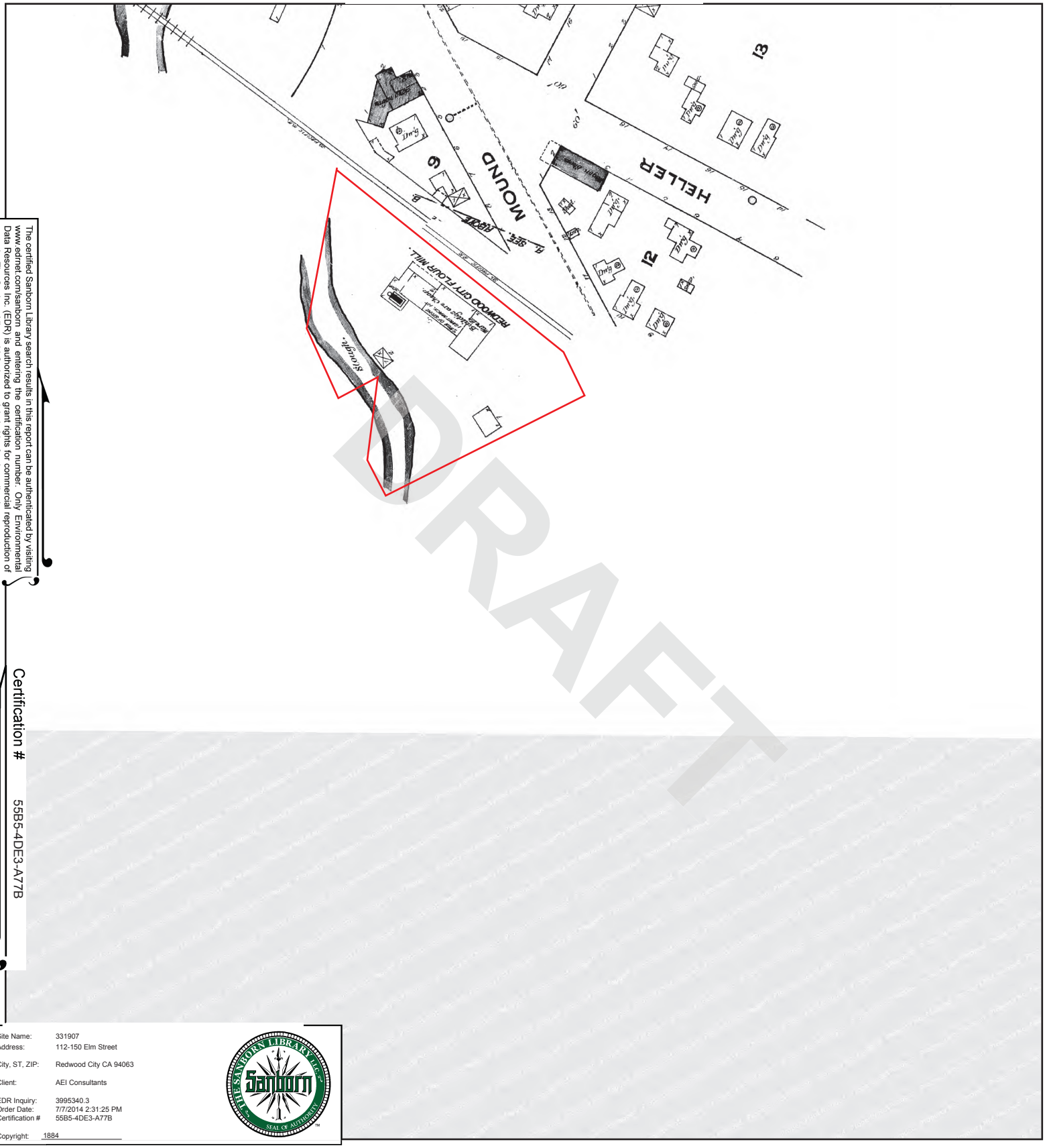


Volume 1, Sheet 3
Volume 1, Sheet 4
Volume 1, Sheet 7

0 Feet 150 300 600

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1884 Certified Sanborn Map



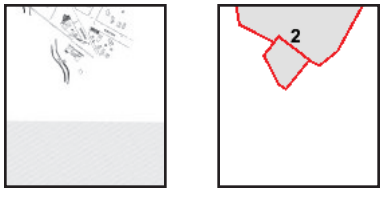
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Volume 1, Sheet 2

0 Feet 150 300 600

N

APPENDIX E

REGULATORY AGENCY RECORDS

DRAFT

S E M C O
ENVIRONMENTAL CONTRACTORS & GENERAL ENGINEERING
1741 LESLIE STREET
SAN MATEO, CALIFORNIA 94402

(1)

February 2, 1994

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
FEB 03 1994
RECEIVED

Gail Lee
San Mateo County
Environmental Health Dept.
590 Hamilton Street
Redwood City, California 94063

Re: 1180 Main Street, Redwood City

Dear Gail:

Please find enclosed the workplan for the above mentioned property.

Mr. Chubick is in a bit of a hurry to get this completed, so any help in expediting this workplan would be appreciated.

If you have any questions, please give me a call.

Sincerely,

Chuck Kiper

Chuck Kiper
Vice-President
SEMCO-SAN MATEO

CK/rrk

DRAFT

WORK PLAN FOR OVER-EXCAVATION
AT 1180 MAIN STREET, REDWOOD CITY
FEBRUARY 2, 1994

1.0 BACKGROUND

SEMCO was contracted by Larry Chubick, property owner of 1180 Main Street, Redwood City, to remove one underground waste oil storage tank at the referenced addressed (see site map for location)

2.0 SITE HISTORY

The site is a commercial property and is the process of change of ownership. Mr. Chubick has also contracted with SEMCO for the required remedial work.

2.1 During excavation and removal of the known waste oil tank, an additional gasoline underground storage tank was discovered. Both tanks were removed on January 14, 1994. The tanks were transported to Erickson, Inc. by RHT, under manifest # 92885656. Tank # 12816 and 12817 were assigned to these two UST's. Please see enclosed sample map for location of samples collected from each tank excavation. Samples were collected and observed in the presence of Teresa Belasco of San Mateo County Environmental Health.

2.2 The condition of the tanks were noted by SEMCO and Teresa Belasco as follows:
Tank # 12816 (waste oil) had several surface holes with several hole at the end seam at the 11:00 position and no apparent holes in the tank bottom.
Tank # 12883 (regular gasoline tank) had pitting, but no holes were observed.

3.0 ANALYTICAL PROTOCOLS AND RESULTS

Tank # 12816- TPH GAS/DIESEL, BTXE, TOG CLHC, ICAP 5 METALS
Tank # 12883- TPH AS GAS, BTXE, TOTAL LEAD

4.0 CONCLUSIONS AND RECOMMENDATIONS

Upon receipt of the analytical, it appears the regular gasoline tank excavation is non detected on all three samples. However, the waste oil tank has elevated levels at the West end (fill end) of diesel as does the excavated material. All other analysis except metals were non-detected.

SEMCO proposes to overexcavate the fill end approximately 10 cubic yards or 2' in all directions. All previously excavated materials will be excavated. graded, transported and disposed of a Certified State Recycle Center. After excavation, a confirmation sample will be collected and requested to be analyzed for TPH as diesel.

The Excavation will be backfilled with approved material and compacted grade for resurfacing.

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
JAN 25 1994
Received

SEMCO
Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 01/21/94

TOTAL PETROLEUM HYDROCARBONS

Lab #	Sample Identification	Sampled	Analyzed	Matrix
90950- 1	E-8'-WO	01/14/94	01/19/94	Soil
90950- 2	W-8 1/2'-WO	01/14/94	01/21/94	Soil
90950- 3	COMPWO	01/14/94	01/21/94	Soil
90950- 4	N-8'-G	01/14/94	01/19/94	Soil
90950- 5	S-91/2-G	01/14/94	01/19/94	Soil
90950- 6	COMP GAS	01/14/94	01/20/94	Soil

RESULTS OF ANALYSIS

Laboratory Number:	90950- 1	90950- 2	90950- 3	90950- 4	90950- 5
		waste oil	composite		
Gasoline:	ND<1	ND<1	4	ND<1	ND<1
Benzene:	ND<.005	ND<.005	ND<.005	ND<.005	ND<.005
Toluene:	ND<.005	ND<.005	0.048	ND<.005	ND<.005
Ethyl Benzene:	ND<.005	ND<.005	0.036	ND<.005	ND<.005
Total Xylenes:	ND<.005	ND<.005	0.28	ND<.005	ND<.005
Diesel Range:	ND<10	810	1100	NA	NA
Oil and Grease:	ND<50	ND<50	ND<50	NA	NA
Concentration:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg

Laboratory Number:	90950- 6
Gasoline:	ND<1
Benzene:	ND<.005
Toluene:	ND<.005
Ethyl Benzene:	ND<.005
Total Xylenes:	ND<.005
Concentration:	mg/Kg

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Superior Precision Analytical, Inc.
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SEMCO

JAN 25 1994

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C E R T I F I C A T E O F A N A L Y S I S

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 90950

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
mg/kg = parts per million (ppm)

OIL AND GREASE ANALYSIS By Standard Methods Method 5520F:
Minimum Detection Limit in Soil: 50mg/kg

Modified EPA SW-846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Soil: 1mg/kg

EPA SW-846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Soil: 1mg/kg

EPA SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Soil: 0.005mg/kg

ANALYTE	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Gasoline:	124/117	6%	70-130
Benzene:	118/110	7%	70-130
Toluene:	113/107	5%	70-130
Ethyl Benzene:	110/100	10%	70-130
Total Xylenes:	118/108	9%	70-130
Diesel Range:	112/114	2%	75-125
Oil and Grease:	83/82	1%	75-125

Michael P. Vrooman
Senior Chemist

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
JAN 25 1994
Received

SEMCO
Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 21-January-1994

HALOGENATED VOLATILE ORGANICS by EPA SW-846 Methods 5030/8010.

DRAFT

Chronology

Laboratory Number 90950

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
E-8'-WO	01/14/94	01/17/94	/ /	01/18/94		1
W-8 1/2'-WO	01/14/94	01/17/94	/ /	01/18/94		2
COMPWO	01/14/94	01/17/94	/ /	01/18/94		3

Superior Precision Analytical, Inc.
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JAN 25 1994
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SEMCO
Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 21-January-1994

HALOGENATED VOLATILE ORGANICS by EPA SW-846 Methods 5030/8010.

Laboratory Number	Sample Identification	Matrix
90950- 1	E-8'-WO	Soil
90950- 2	W-8 1/2'-WO	Soil
90950- 3	COMPWO	Soil

RESULTS OF ANALYSIS

Laboratory Number:	90950- 1	90950- 2	90950- 3
Chloromethane/Vinyl Ch:	ND<10	ND<10	ND<10
Bromomethane:	ND<5	ND<5	ND<5
Chloroethane:	ND<5	ND<5	ND<5
Trichlorofluoromethane:	ND<5	ND<5	ND<5
1,1-Dichloroethene:	ND<5	ND<5	ND<5
Dichloromethane:	ND<5	17	ND<5
t-1,2-Dichloroethene:	ND<5	ND<5	ND<5
1,1-Dichloroethane:	ND<5	ND<5	ND<5
c-1,2-Dichloroethene:	ND<5	ND<5	ND<5
Chloroform:	ND<5	ND<5	ND<5
1,1,1-Trichloroethane:	ND<5	ND<5	ND<5
Carbon tetrachloride:	ND<5	ND<5	ND<5
1,2-Dichloroethane:	ND<5	ND<5	ND<5
Trichloroethene:	ND<5	ND<5	ND<5
c-1,3-Dichloropropene:	ND<5	ND<5	ND<5
1,2-Dichloropropane:	ND<5	ND<5	ND<5
t-1,3-Dichloropropene:	ND<5	ND<5	ND<5
Bromodichloromethane:	ND<5	ND<5	ND<5
1,1,2-Trichloroethane:	ND<5	ND<5	ND<5
Tetrachloroethene:	ND<5	ND<5	ND<5
Dibromochloromethane:	ND<5	ND<5	ND<5
Chlorobenzene:	ND<5	ND<5	ND<5
Bromoform:	ND<5	ND<5	ND<5
1,1,2,2-Tetrachloroeth:	ND<5	ND<5	ND<5
1,3-Dichlorobenzene:	ND<5	ND<5	ND<5
1,2-Dichlorobenzene:	ND<5	ND<5	ND<5
1,4-Dichlorobenzene:	ND<5	ND<5	ND<5
Concentration:	ug/Kg	ug/Kg	ug/Kg

DRAFT

Superior Precision Analytical, Inc.
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SEMCO
JAN 25 1994
Received

HALOGENATED VOLATILE ORGANICS by EPA SW-846 Methods 5030/8010.
Quality Assurance and Control Data - Soil

Laboratory Number 90950

Compound	Method Blank (ug/Kg)	RL (ug/Kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Chloromethane/Vinyl Ch:	ND<10	10			
Bromomethane:	ND<5	5			
Chloroethane:	ND<5	5			
Trichlorofluoromethane:	ND<5	5			
1,1-Dichloroethene:	ND<5	5	126/137	78-158	8%
Dichloromethane:	ND<5	5			
t-1,2-Dichloroethene:	ND<5	5			
1,1-Dichloroethane:	ND<5	5			
c-1,2-Dichloroethene:	ND<5	5			
Chloroform:	ND<5	5			
1,1,1-Trichloroethane:	ND<5	5			
Carbon tetrachloride:	ND<5	5			
1,2-Dichloroethane:	ND<5	5			
Trichloroethene:	ND<5	5	102/105	83-128	3%
c-1,3-Dichloropropene:	ND<5	5			
1,2-Dichloropropane:	ND<5	5			
t-1,3-Dichloropropene:	ND<5	5			
Bromodichloromethane:	ND<5	5			
1,1,2-Trichloroethane:	ND<5	5			
Tetrachloroethene:	ND<5	5			
Dibromochloromethane:	ND<5	5			
Chlorobenzene:	ND<5	5	103/109	90-124	6%
Bromoform:	ND<5	5			
1,1,2,2-Tetrachloroeth:	ND<5	5			
1,3-Dichlorobenzene:	ND<5	5			
1,2-Dichlorobenzene:	ND<5	5			
1,4-Dichlorobenzene:	ND<5	5			

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
ug/Kg = Parts per billion (ppb)
QC File No. 90950

Senior Chemist
Account Manager

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
JAN 25 1994
Received

SEMCO
Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 21-January-1994

ANALYSIS FOR CADMIUM, CHROMIUM, LEAD, NICKEL, & ZINC
by EPA Method SW-846 6010

DRAFT

Chronology

Laboratory Number 90950

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
E-8'-WO	01/14/94	01/14/94	01/18/94	01/19/94		1
W-8 1/2'-WO	01/14/94	01/14/94	01/18/94	01/19/94		2
COMPWO	01/14/94	01/14/94	01/18/94	01/19/94		3

Superior Precision Analytical, Inc.
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SEMCO
JAN 25 1994
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SEMCO
Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 21-January-1994

ANALYSIS FOR CADMIUM, CHROMIUM, LEAD, NICKEL, & ZINC

Laboratory Number	Sample Identification	Matrix
90950- 1	E-8'-WO	Soil
90950- 2	W-8 1/2'-WO	Soil
90950- 3	COMPWO	Soil

RESULTS OF ANALYSIS

Laboratory Number:		90950- 1	90950- 2	90950- 3
Cadmium	(Cd):	0.6	0.5	ND<0.5
Chromium	(Cr):	60	69	81
Lead	(Pb):	7	7	35
Nickel	(Ni):	52	55	79
Zinc	(Zn):	90	84	94
Concentration:		mg/Kg	mg/Kg	mg/Kg

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SEMCO
JAN 25 1994
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ANALYSIS FOR CADMIUM, CHROMIUM, LEAD, NICKEL, & ZINC
Quality Assurance and Control Data - Soil

Laboratory Number 90950

Compound		Method Blank (mg/Kg)	RL (mg/Kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Cadmium	(Cd):	ND<0.5	0.5	102/101	75-125	1%
Chromium	(Cr):	ND<5	5	96/96	75-125	0%
Lead	(Pb):	ND<5	5	102/97	75-125	5%
Nickel	(Ni):	ND<5	5	102/101	75-125	1%
Zinc	(Zn):	ND<5	5	97/97	75-125	0%

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
mg/Kg = Parts per million (ppm)
QC File No. 90950

Michael R. Vuono
Senior Chemist
Account Manager

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
JAN 25 1994
Received

SEMCO
Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 21-January-1994

ANALYSIS FOR TOTAL LEAD
by EPA Method SW-846 6010

Chronology

Laboratory Number 90950

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
N-8'-G	01/14/94	01/14/94	01/18/94	01/19/94		4
S-91/2-G	01/14/94	01/14/94	01/18/94	01/19/94		5
COMP GAS	01/14/94	01/14/94	01/18/94	01/19/94		6

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO

JAN 25 1994

Received

SEMCO
Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 21-January-1994

ANALYSIS FOR TOTAL LEAD

Laboratory Number	Sample Identification	Matrix
90950- 4	N-8'-G	Soil
90950- 5	S-91/2-G	Soil
90950- 6	COMP GAS	Soil

RESULTS OF ANALYSIS

Laboratory Number:	90950- 4	90950- 5	90950- 6
Lead (Pb):	8	7	30
Concentration:	mg/Kg	mg/Kg	mg/Kg

DRAFT

Superior Precision Analytical, Inc.
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SEMCO
JAN 25 1994
Received

ANALYSIS FOR TOTAL LEAD
Quality Assurance and Control Data - Soil

Laboratory Number 90950

Compound	Method Blank (mg/Kg)	RL (mg/Kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Lead (Pb):	ND<5	5	102/97	75-125	5%

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
mg/Kg = Parts per million (ppm)
QC File No. 90950

Michael R. Young
Senior Chemist
Account Manager

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
JAN 27 1994
Received

SEMCO
Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 22-January-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
by GAS CHROMATOGRAPHY - MASS SPECTROMETRY

DRAFT

Chronology

Laboratory Number 90950

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
E-8'-WO	01/14/94	01/17/94	/ /	01/21/94		1
W-8 1/2'-WO	01/14/94	01/17/94	/ /	01/19/94		2
COMP WO	01/14/94	01/17/94	/ /	01/19/94		3

Certified Laboratories

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO

JAN 27 1994

Received

SEMCO
Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 22-January-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS

Laboratory Number	Sample Identification	Matrix
90950- 1	E-8'-WO	Soil
90950- 2	W-8 1/2'-WO	Soil
90950- 3	COMP WO	Soil

RESULTS OF ANALYSIS

Laboratory Number:	90950- 1	90950- 2	90950- 3
Chloromethane:	ND<50	ND<50	ND<50
Bromomethane:	ND<50	ND<50	ND<50
Vinyl Chloride:	ND<50	ND<50	ND<50
Chloroethane:	ND<50	ND<50	ND<50
Methylene Chloride:	ND<50	ND<50	ND<50
Acetone:	ND<100	ND<100	ND<100
Carbon Disulfide:	ND<15	ND<15	ND<15
Trichlorofluoromethane:	ND<15	ND<15	ND<15
1,1-Dichloroethene:	ND<15	ND<15	ND<15
1,1-Dichloroethane:	ND<15	ND<15	ND<15
t-1,2-Dichloroethene:	ND<15	ND<15	ND<15
Chloroform:	ND<15	ND<15	ND<15
1,2-Dichloroethane:	ND<5	ND<5	ND<5
2-Butanone:	ND<100	ND<100	ND<100
1,1,1-Trichloroethane:	ND<15	ND<15	ND<15
Carbon tetrachloride:	ND<15	ND<15	ND<15
Vinyl Acetate:	ND<50	ND<50	ND<50
Bromodichloromethane:	ND<15	ND<15	ND<15
1,2-Dichloropropane:	ND<15	ND<15	ND<15
c-1,2-Dichloroethene:	ND<15	ND<15	ND<15
c-1,3-Dichloropropene:	ND<15	ND<15	ND<15
Trichloroethene:	ND<15	ND<15	ND<15
Dibromochloromethane:	ND<15	ND<15	ND<15
1,1,2-Trichloroethane:	ND<15	ND<15	ND<15
Benzene:	ND<5	ND<5	ND<5
t-1,3-Dichloropropene:	ND<15	ND<15	ND<15
Bromoform:	ND<15	ND<15	ND<15
4-Methyl-2-Pentanone:	ND<50	ND<50	ND<50
2-Hexanone:	ND<50	ND<50	ND<50
Concentration:	ug/kg	ug/kg	ug/kg

DRAFT

Superior Precision Analytical, Inc.
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SEMCO

JAN 27 1994

Received

SEMCO
Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 22-January-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS

Laboratory Number	Sample Identification	Matrix
90950- 1	E-8'-WO	Soil
90950- 2	W-8 1/2'-WO	Soil
90950- 3	COMP WO	Soil

RESULTS OF ANALYSIS

Laboratory Number:	90950- 1	90950- 2	90950- 3
Tetrachloroethene:	ND<15	ND<15	ND<15
1,1,2,2-Tetracl-ethane:	ND<15	ND<15	ND<15
Toluene:	ND<15	ND<15	29
Chlorobenzene:	ND<15	ND<15	ND<15
Ethyl Benzene:	ND<15	ND<15	28
Styrene:	ND<15	ND<15	ND<15
Xylenes:	ND<15	ND<15	230
1,3-Dichlorobenzene:	ND<15	ND<15	ND<15
1,4-Dichlorobenzene:	ND<15	ND<15	ND<15
1,2-Dichlorobenzene:	ND<15	ND<15	ND<15
Concentration:	ug/kg	ug/kg	ug/kg
-- Surrogate % Recoveries --			
1,2-Dichloroethane-d4:	103	96	97
Toluene-d8:	101	104	109
Bromofluorobenzene:	91	97	98

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7125

SEMCO

JAN 27 1994
Received

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
Quality Assurance and Control Data - Soil

Laboratory Number 90950

Compound	Method Blank (ug/kg)	RL (ug/kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Chloromethane:	ND<50	50			
Bromomethane:	ND<50	50			
Vinyl Chloride:	ND<50	50			
Chloroethane:	ND<50	50			
Methylene Chloride:	ND<50	50			
Acetone:	ND<100	100			
Carbon Disulfide:	ND<15	15			
Trichlorofluoromethane:	ND<15	15			
1,1-Dichloroethene:	ND<15	15	101/105	59-172	4%
1,1-Dichloroethane:	ND<15	15			
t-1,2-Dichloroethene:	ND<15	15			
Chloroform:	ND<15	15			
1,2-Dichloroethane:	ND<5	5			
2-Butanone:	ND<100	100			
1,1,1-Trichloroethane:	ND<15	15			
Carbon tetrachloride:	ND<15	15			
Vinyl Acetate:	ND<50	50			
Bromodichloromethane:	ND<15	15			
1,2-Dichloropropane:	ND<15	15			
c-1,2-Dichloroethene:	ND<15	15			
c-1,3-Dichloropropene:	ND<15	15			
Trichloroethene:	ND<15	15	95/98	62-137	3%
Dibromochloromethane:	ND<15	15			
1,1,2-Trichloroethane:	ND<15	15			
Benzene:	ND<5	5	91/95	66-142	4%
t-1,3-Dichloropropene:	ND<15	15			
Bromoform:	ND<15	15			
4-Methyl-2-Pentanone:	ND<50	50			
2-Hexanone:	ND<50	50			

DRAFT

Superior Precision Analytical, Inc.
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SEMCO

JAN 27 1994

Received

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
Quality Assurance and Control Data - Soil

Laboratory Number 90950

Compound	Method Blank (ug/kg)	RL (ug/kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Tetrachloroethene:	ND<15	15			
1,1,2,2-Tetracl-ethane:	ND<15	15			
Toluene:	ND<15	15	94/90	59-139	4%
Chlorobenzene:	ND<15	15	99/99	60-133	0%
Ethyl Benzene:	ND<15	15			
Styrene:	ND<15	15			
Xylenes:	ND<15	15			
1,3-Dichlorobenzene:	ND<15	15			
1,4-Dichlorobenzene:	ND<15	15			
1,2-Dichlorobenzene:	ND<15	15			
1,2-Dichloroethane-d4:	102			70-121	
Toluene-d8:	101			81-117	
Bromofluorobenzene:	91			74-121	

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
ug/kg = Parts per billion (ppb)
QC File No. 90950

Cecilia G. Joaquin
Senior Chemist
Account Manager

Section I: Chain of Custody and Analysis Request

page ___ of ___

From: Superior Precision Analytical, Inc.
825 Arnold Drive Suite 114
Martinez, CA 94553
Phone No. (415) 229-1512 Fax No. (415) 229-1526
Contact: SAJID SYED
P.O. No. 90950

Turn Around Time (circle one)
Same Day 72 Hrs
24 Hrs (5 Day)
48 Hrs 10 Day

Superior Precision Analytical, Inc.
P.O. Box 1545
Martinez, California 94553

Work Subcontracted to: SPA SF

Section II: Analysis Request

	Laboratory Sample Identification	S = Soil A = Air W = Water Matrix	8240	8270	8010	8080	Client Sample Identification	Number of Containers	Preservative (yes or no)	DATE SAMPLED
1	90950-1	S	X				E-81-WO	1	H	01/14/94
2	-2						E-81/2-WO	1		
3	-3						CompWO	1		
4										
5										
6										
7										
8										
9										
10										
11										
12										

Sampling Remarks
☐ Chevron
☒ Non-Chevron
** Please Fax Results **

Please fax invoice with results

SEMCO
JAN 27 1994
Received

Relinquished by / Organization	Date/Time 1/17/94 5:30	Received by / Organization	Date/Time	Lab please initial the following:
Relinquished by / Organization	Date/Time	Received by / Organization	Date/Time	Samples Stored in Ice ___ Appropriate Containers ___ Samples Preserved ___ VOAs without Headspace ___ Comments ___
Relinquished by / Organization	Date/Time	Received by / Organization	Date/Time 1/17/94	

90950

CHAIN OF CUSTODY AND ANALYSIS REQUEST

LAB NO. _____

Section I

Consultant Name: SEMCO
Office Location: 1741 Leslie Rd. San Mateo, CA 94402
Fax No.: (415) 572-9734
Project Manager: Chuck Kiper
Phone: (415) 572 8033

TURN AROUND TIME (Circle One)
Same Day | 24 Hrs | 48 Hrs | 72 Hrs | (5 Day)

SUPERIOR ANALYTICAL, INC.
Martinez 415/229-1512 | San Francisco 415/647-2081

Send Coolers to : Modesto ☐ San Mateo ☒
Project No. / P.O. No.: Larry Chubick
Sampler: SEMCO - Pat Vigil
Regulatory Agency: San Mateo County - Texas

Section II Analysis Request | Section III Sample Information

Sample Identification	Matrix (S=Soil A=Air W=Water)	TPH - G & D	TPH - Low Level D	TPH - G	BTXE	O&G	8010	8240	Metals (Cd Cr Pb Zn Ni)	Others * Subject to Subcontracting	TOTAL LEAD	Date	Time	Containers: Quantity	Containers: Pres.	Sampling Remarks
1 - E-S [illegible]	Soil	✓			✓	✓	✓	✓	✓			1/14/94	2:25	1		Cd, Cr, Ld, Zn, Ni
2 - [illegible]	"	✓			✓	✓	✓	✓	✓			1	2:30	1		" " " "
3 - [illegible]	"	✓			✓	✓	✓	✓	✓			1	2:35	4		
4 - [illegible]	"			✓	✓					✓		1	3:07	1		4°C
5 - [illegible]	"			✓	✓					✓		1	3:12	1		4°C
6 - [illegible]	"			✓	✓					✓			3:14	4		yes
7																NA
8																NA
9																
10																
11																
12																

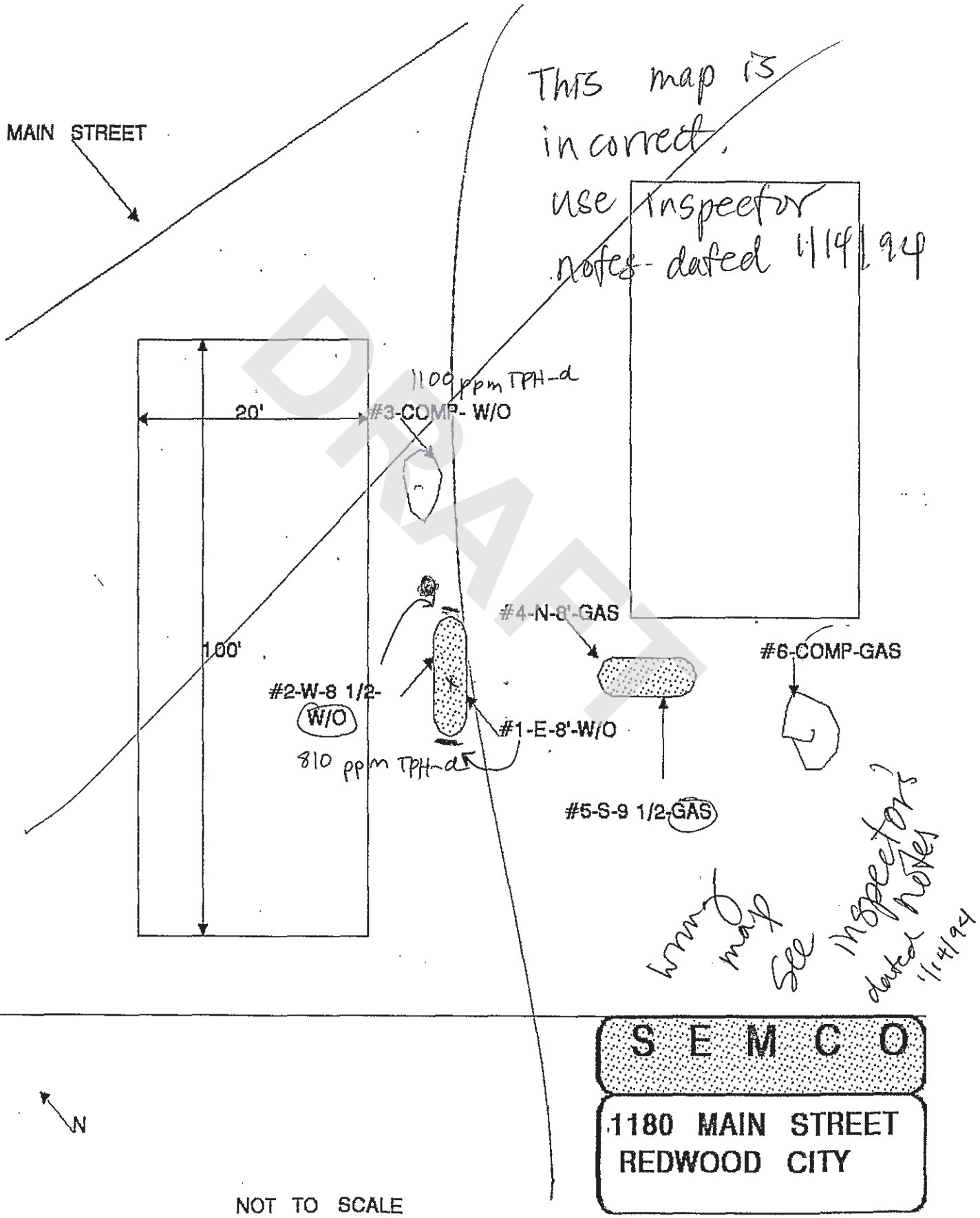
Bioremediation ☐
Contamination ☐

DRAFT

Relinquished by	Date/Time	Received by
[illegible]	1-14-94 3:34	Chuck Kiper
Organization: SEMCO		Organization: Semco
Relinquished by: Chuck Kiper	Date/Time: 1/17/94 10:08	Received by: Mirek Serban
Organization: Semco		Organization: AERO DEL.
Relinquished by: Mirek Serban	Date/Time: 1/17/94 11:40	Received by: K Carlson
Organization: AERO DEL.		Organization: SPA-MTZ

Please Initial _____
Samples Stored in Ice _____
Appropriate Containers _____
Samples Preserved _____
VOA's without Headspace _____
Comments _____

Received JAN 25 1994 SEMCO


This map is incorrect. use Inspector notes - dated 1/14/94
MAIN STREET
20'
100'
1100 ppm TPH-d
#3-COMP- W/O
#4-N-8'-GAS
#6-COMP-GAS
#2-W-8 1/2-
W/O
#1-E-8'-W/O
810 ppm TPH-d
#5-S-9 1/2-GAS
see map
see Inspectors dated notes 1/14/94
DRAFT
N
NOT TO SCALE
S E M C O
1180 MAIN STREET
REDWOOD CITY

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

(2) SEMCO FEB 26 1994

Chubick

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 24-February-1994

SAN MATEO COUNTY ENVIRONMENTAL HEALTH
MAR 18 1994
RECEIVED

SUPERIOR PRECISION ANALYTICAL INC.

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
by GAS CHROMATOGRAPHY - MASS SPECTROMETRY

Chronology

Laboratory Number 57675

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
PIT H2O #1	02/17/94	02/17/94	02/21/94	02/21/94		1

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

Chubs Auto Repair
1180 Main St.
Redwood City

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 24-February-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS

Laboratory Number	Sample Identification	Matrix
57675- 1	PIT H2O #1	Water

RESULTS OF ANALYSIS

Laboratory Number: 57675- 1

Chloromethane:	ND<10
Bromomethane:	ND<10
Vinyl Chloride:	ND<10
Chloroethane:	ND<10
Methylene Chloride:	ND<10
Acetone:	ND<20
Carbon Disulfide:	ND<3
Trichlorofluoromethane:	ND<3
1,1-Dichloroethene:	ND<3
1,1-Dichloroethane:	ND<3
t-1,2-Dichloroethene:	ND<3
Chloroform:	ND<3
1,2-Dichloroethane:	ND<1
2-Butanone:	ND<20
1,1,1-Trichloroethane:	ND<3
Carbon tetrachloride:	ND<3
Vinyl Acetate:	ND<10
Bromodichloromethane:	ND<3
1,2-Dichloropropane:	ND<3
c-1,2-Dichloroethene:	ND<3
c-1,3-Dichloropropene:	ND<3
Trichloroethene:	ND<3
Dibromochloromethane:	ND<3
1,1,2-Trichloroethane:	ND<3
Benzene:	ND<1
t-1,3-Dichloropropene:	ND<3
Bromoform:	ND<3
4-Methyl-2-Pentanone:	ND<10
2-Hexanone:	ND<10
Concentration:	ug/L

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 24-February-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS

Laboratory Number	Sample Identification	Matrix
57675- 1	PIT H2O #1	Water

RESULTS OF ANALYSIS

Laboratory Number: 57675- 1

Tetrachloroethene:	ND<3
1,1,2,2-Tetracl-ethane:	ND<3
Toluene:	ND<3
Chlorobenzene:	ND<3
Ethyl Benzene:	ND<3
Styrene:	ND<3
Xylenes:	ND<3
1,3-Dichlorobenzene:	ND<3
1,4-Dichlorobenzene:	ND<3
1,2-Dichlorobenzene:	ND<3
Concentration:	ug/L

-- Surrogate % Recoveries --

1,2-Dichloroethane-d4:	100
Toluene-d8:	105
Bromofluorobenzene:	102

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
Quality Assurance and Control Data - Water

Laboratory Number 57675

Compound	Method Blank (ug/L)	RL (ug/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Chloromethane:	ND<10	10			
Bromomethane:	ND<10	10			
Vinyl Chloride:	ND<10	10			
Chloroethane:	ND<10	10			
Methylene Chloride:	ND<10	10			
Acetone:	ND<20	20			
Carbon Disulfide:	ND<3	3			
Trichlorofluoromethane:	ND<3	3			
1,1-Dichloroethene:	ND<3	3	109/114	55-130	4%
1,1-Dichloroethane:	ND<3	3			
t-1,2-Dichloroethene:	ND<3	3			
Chloroform:	ND<3	3			
1,2-Dichloroethane:	ND<1	1			
2-Butanone:	ND<20	20			
1,1,1-Trichloroethane:	ND<3	3			
Carbon tetrachloride:	ND<3	3			
Vinyl Acetate:	ND<10	10			
Bromodichloromethane:	ND<3	3			
1,2-Dichloropropane:	ND<3	3			
c-1,2-Dichloroethene:	ND<3	3			
c-1,3-Dichloropropene:	ND<3	3			
Trichloroethene:	ND<3	3	99/106	70-119	7%
Dibromochloromethane:	ND<3	3			
1,1,2-Trichloroethane:	ND<3	3			
Benzene:	ND<1	1	107/112	70-119	5%
t-1,3-Dichloropropene:	ND<3	3			
Bromoform:	ND<3	3			
4-Methyl-2-Pentanone:	ND<10	10			
2-Hexanone:	ND<10	10			

DRAFT

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1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
Quality Assurance and Control Data - Water

Laboratory Number 57675

Compound	Method Blank (ug/L)	RL (ug/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Tetrachloroethene:	ND<3	3			
1,1,2,2-Tetracl-ethane:	ND<3	3			
Toluene:	ND<3	3	108/111	73-114	3%
Chlorobenzene:	ND<3	3	106/109	79-122	3%
Ethyl Benzene:	ND<3	3			
Styrene:	ND<3	3			
Xylenes:	ND<3	3			
1,3-Dichlorobenzene:	ND<3	3			
1,4-Dichlorobenzene:	ND<3	3			
1,2-Dichlorobenzene:	ND<3	3			
Freon 113:					
Tetrahydrofuran:					
Cyclohexanone:					
1,2-Dichloroethane-d4:	98			76-114	
Toluene-d8:	103			88-110	
Bromofluorobenzene:	98			86-115	

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
ug/L = Parts per billion (ppb)
QC File No. 57675

2/24/94
Senior Chemist
Account Manager

Certified Laboratories

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 23-February-1994

ANALYSIS FOR GASOLINE, BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
by EPA SW-846 Methods 5030/8015M/8020.

Superior Precision Analytical Inc

Chronology

Laboratory Number 57675

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
PIT H2O #1	02/17/94	02/17/94	02/22/94	02/22/94		1

DRAFT

Certified Laboratories

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 23-February-1994

ANALYSIS FOR GASOLINE, BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES

Laboratory Number	Sample Identification	Matrix
57675- 1	PIT H2O #1	Water

RESULTS OF ANALYSIS

Laboratory Number: 57675- 1

Gasoline:	ND<50
Benzene:	ND<0.5
Toluene:	ND<0.5
Ethyl Benzene:	ND<0.5
Total Xylenes:	ND<0.5
Concentration:	ug/L

-- Surrogate % Recoveries --
Trifluorotoluene (SS): 104

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

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FEB 26 19
Received

ANALYSIS FOR GASOLINE, BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
Quality Assurance and Control Data - Water

Laboratory Number 57675

Compound	Method Blank (ug/L)	RL (ug/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Gasoline:	ND<50	50	117/118	60-134	1%
Benzene:	ND<0.5	0.5	96/109	60-140	13%
Toluene:	ND<0.5	0.5	95/105	75-125	10%
Ethyl Benzene:	ND<0.5	0.5	94/101	75-125	7%
Total Xylenes:	ND<0.5	0.5	101/110	75-125	9%

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
ug/L = Parts per billion (ppb)
QC File No. 57675

2/24/94
Senior Chemist
Account Manager

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 21-February-1994

TOTAL PETROLEUM HYDROCARBONS AS DIESEL
BY EPA METHOD 8015M

Chronology

Laboratory Number 57675

Identification	Sampled	Received	Extracted	Analyzed	Run. #	Lab #
PIT H2O #1	02/17/94	02/17/94	02/17/94	02/18/94		1

DRAFT

Certified Laboratories

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415

SEMCO
Attn: CHUCK KIPER

Pr
Reported 21-

TOTAL PETROLEUM HYDROCARBONS AS DIESEL

Laboratory Number	Sample Identification
57675- 1	PIT H2O #1

RESULTS OF ANALYSIS

Laboratory Number: 57675- 1

Diesel:	*530
Concentration:	ug/L

* Does not match the typical diesel pattern.

DRAFT

Superior Precision Analytical, Inc.
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SEMCO
FEB 26 1994
Received

TOTAL PETROLEUM HYDROCARBONS AS DIESEL
Quality Assurance and Control Data - Water

Laboratory Number 57675

Compound	Method Blank (ug/L)	RL (ug/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Diesel:	ND<50	50	88/91	33-179	3%

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
ug/L = Parts per billion (ppb)
QC File No. 57675

2/24/94
Senior Chemist
Account Manager

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 24-February-1994

OIL AND GREASE BY STANDARD METHODS 5520F

Superior Precision Analytical

Chronology

Laboratory Number 57675

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
PIT H2O #1	02/17/94	02/17/94	02/23/94	02/23/94		1

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

OIL AND GREASE BY STANDARD METHODS 5520F
Quality Assurance and Control Data - Water

Laboratory Number 57675

Compound	Method Blank (mg/L)	RL (mg/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Oil and Grease:	ND<5	5	69/59	57-89	16%

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
mg/L = Parts per million (ppm)
QC File No. 57675

2/24/94
Senior Chemist
Account Manager

Certified Laboratories

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-

SEMCO
FEB 26 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 24-February-1994

OIL AND GREASE BY STANDARD METHODS 5520F

Laboratory Number	Sample Identification	Matrix
57675- 1	PIT H2O #1	Water

RESULTS OF ANALYSIS

Laboratory Number: 57675- 1

Oil and Grease:	ND<5
Concentration:	mg/L

DRAFT

S7675

CHAIN OF CUSTODY AND ANALYSIS REQUEST

LAB NO. _____

Section I

Consultant Name: SEMCO
Office Location: 1741 Leslie Rd. San Mateo, CA 94402
Fax No.: (415) 572-9734
Project Manager: CHUCK Kiper
Phone: (415) 572 8033
Send Coolers to : Modesto ☐ San Mateo ☒
Project No. / P.O. No.: 93-3496

TURN AROUND TIME (Circle One)
Same Day 72 Hrs
24 Hrs 5 Day
48 Hrs

SUPERIOR ANALYTICAL, INC.
Martinez 415/229-1512
San Francisco 415/647-2081

Sampler: PAT Vigil
Regulatory Agency: MICHELLE SHOEMAKER, SAN MATEO COUNTY

Section II Analysis Request

Sample Identification	S=Soil A=Air W=Water Matrix	TPH - G & D	TPH - Low Level D	TPH - G	BTXE	O&G	8010	8240	Metals	Others * Subject to Subcontracting				
1 PIT H2O #1	W	✓			✓	✓		✓						
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Section III Sample Information

Date	Time	Containers Quantity	Containers Preserv.
2/17	1:10	3 AMBER 3 VOAS	

Please initial: _____
Samples Stored in Ice: _____
Appropriate containers: _____
Samples preserved: _____
VOA's without headspace: _____
Comments: _____

Sampling Remarks

Bioremediation ☐

Contamination ☐

Relinquished by: Chuck McVigil — Date/Time: 2-17-94 / (14:21) 2:20 PM — Received by: [illegible] — Organization: AERO
Relinquished by: ANDREA KACZMARSKI — Organization: Aero — Date/Time: Feb 17, 1994 — Received by: [illegible] — Organization: Superior SF
Relinquished by: _____ — Organization: _____ — Date/Time: _____ — Received by: _____ — Organization: _____

SEMCO FEB 22 1994 Received

Please initial _____
Samples Stored in Ice _____
Appropriate Containers _____
Samples Preserved _____
VOA's without Headspace _____
Comments _____

DRAFT

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

SEMCO
Attn: TERRY HAMILTON

Project CHUBS AUTO
Reported 25-February-1994

Chronology

Laboratory Number 91170

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
#1 PIT WATER	02/09/94	02/22/94	02/24/94	02/24/94		1

DRAFT

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

SEMCO
Attn: TERRY HAMILTON

Project CHUBS AUTO
Reported 25-February-1994

Laboratory Number	Sample Identification	Matrix
91170- 1	#1 PIT WATER	Water

RESULTS OF ANALYSIS

Laboratory Number: 91170- 1

Oil and Grease:	9.
Concentration:	mg/L

DRAFT

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

Quality Assurance and Control Data - Water

Laboratory Number 91170

Compound	Method Blank (mg/L)	RL (mg/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Oil and Grease:	ND<5	5	119/120	60-120	1%

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
mg/L = Parts per million (ppm)
QC File No. 91170

Senior Chemist
Account Manager



SEMCO

WORKING TO PRESERVE YOUR ENVIRONMENT

(415) 572-8033 FAX (415) 572-9734

(800) 831-2344

DATE: 3/3/94 TIME: 9 20

FAX TO: 363-7887

ATTN: MICHELE SHOEMAKER

FAX NUMBER:

OF PAGES FOLLOWING COVER: 3

COMMENTS: ANALYTICAL FOR CHUBS DUPE WATER SAMPLE

SENDER: RANDY

IF YOU DO NOT RECEIVE ALL PAGES, PLEASE CALL (415) 572-8033

DRAFT

sidewall sampling

SEMCO
1741 LESLIE STREET
SAN MATEO, CA 94402

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
FEB 18 1994
RECEIVED

DATE: Feb 17th 1994

TO: SM Co.-Enviro Health
590 Hamilton Street
RWC CA 94063
Attn: Michelle Shoemarker

Please find enclosed the soil analysis for:

1180 Main Street
RWC, CA

A final report containing manifests and sample locations will be forwarded to you after compilation of all receipts, documents and permits pertaining to this tank removal.

Sincerely,

Adrienne

DRAFT

Superior Precision Analytical, Inc.
P.O. Box 1545 • Martinez, California 94553 • (510) 229-1590 / fax (510) 229-0916

SEMCO
Attn: CHUCK KIPER

Project CHUB'S AUTO
Reported 02/17/94

TOTAL PETROLEUM HYDROCARBONS

Lab #	Sample Identification	Sampled	Analyzed	Matrix
91107- 2	#2 WEST SIDEWALL 8'	02/09/94	02/15/94	Soil

RESULTS OF ANALYSIS

Laboratory Number: 91107- 2

Gasoline:	ND<1
Benzene:	ND<.005
Toluene:	ND<.005
Ethyl Benzene:	ND<.005
Total Xylenes:	ND<.005
Diesel Range:	ND<10
Oil and Grease:	ND<50
Concentration:	mg/Kg

DRAFT

Superior Precision Analytical, Inc.
P.O. Box 1545 • Martinez, California 94553 • (510) 229-1590 / fax (510) 229-0916

C E R T I F I C A T E O F A N A L Y S I S

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 91107

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
mg/kg = parts per million (ppm)

DRAFT

OIL AND GREASE ANALYSIS By Standard Methods Method 5520F:
Minimum Detection Limit in Soil: 50mg/kg

Modified EPA SW-846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Soil: 1mg/kg

EPA SW-846 Method 8015b/5030 Purgable Petroleum Hydrocarbons:

EPA SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Soil: 0.005mg/kg

ANALYTE	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Gasoline:	78/80	3%	70-130
Benzene:	113/112	1%	70-130
Toluene:	108/107	1%	70-130
Ethyl Benzene:	105/103	2%	70-130
Total Xylenes:	110/110	0%	70-130
Diesel Range:	110/107	3%	75-125
Oil and Grease:	82/80	2%	56-106

Senior Chemist

Superior Precision Analytical, Inc.
P.O. Box 1545 • Martinez, California 94553 • (510) 229-1590 / fax (510) 229 0916

SEMCO
Attn: CHUCK KIPER

Project CHUB'S AUTO 93-3496
Reported 15-February-1994

HALOGENATED VOLATILE ORGANICS by EPA SW-846 Methods 5030/8010.

DRAFT

Chronology — Laboratory Number 91107

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
#2 WEST SIDEWALL	02/09/94	02/10/94	/ /	02/15/94		2

Superior Precision Analytical, Inc.
P.O. Box 1545 • Martinez, California 94553 • (510) 229-1590 / fax (510) 229-0916

SEMCO
Attn: CHUCK KIPER

Project CHUB'S AUTO
Reported 15-February-1994

HALOGENATED VOLATILE ORGANICS by EPA SW-846 Methods 5030/8010.

Laboratory Number	Sample Identification	Matrix
91107- 2	#2 WEST SIDEWALL 8'	Soil

RESULTS OF ANALYSIS

Laboratory Number: 91107- 2

Chloromethane/Vinyl Ch:	ND<10
Bromomethane:	ND<5
Chloroethane:	ND<5
Trichlorofluoromethane:	ND<5
1,1-Dichloroethene:	ND<5
Dichloromethane:	ND<50
t-1,2-Dichloroethene:	ND<5
c-1,2-Dichloroethene:	ND<5
Chloroform:	ND<5
1,1,1-Trichloroethane:	ND<5
Carbon tetrachloride:	ND<5
1,2-Dichloroethane:	ND<5
Trichloroethene:	ND<5
c-1,3-Dichloropropene:	ND<5
1,2-Dichloropropane:	ND<5
t-1,3-Dichloropropene:	ND<5
Bromodichloromethane:	ND<5
1,1,2-Trichloroethane:	ND<5
Tetrachloroethene:	ND<5
Dibromochloromethane:	ND<5
Chlorobenzene:	ND<5
Bromoform:	ND<5
1,1,2,2-Tetrachloroeth:	ND<5
1,3-Dichlorobenzene:	ND<5
1,2-Dichlorobenzene:	ND<5
1,4-Dichlorobenzene:	ND<5

Concentration: ug/Kg

DRAFT

Superior Precision Analytical, Inc.
P.O. Box 1545 • Martinez, California 94553 • (510) 229-1590 / fax (510) 229 0916

HALOGENATED VOLATILE ORGANICS by EPA SW-846 Methods 5030/8010.
Quality Assurance and Control Data - Soil

Laboratory Number 91107

Compound	Method Blank (ug/Kg)	RL (ug/Kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Chloromethane/Vinyl Ch:	ND<10	10			
Bromomethane:	ND<5	5			
Chloroethane:	ND<5	5			
Trichlorofluoromethane:	ND<5	5			
1,1-Dichloroethene:	ND<5	5	102/116	49-159	13%
Dichloromethane:	ND<50	50			
t-1,2-Dichloroethene:	ND<5	5			
1,1-Dichloroethane:	ND<5	5			
c-1,2-Dichloroethene:	ND<5	5			
Chloroform:	ND<5	5			
1,1,1-Trichloroethane:	ND<5	5			
Carbon tetrachloride:	ND<5	5			
1,2-Dichloroethane:	ND<5	5			
Trichloroethene:	ND<5	5	87/95	75-149	9%
c-1,3-Dichloropropene:	ND<5	5			
1,2 Dichloropropane:	ND<5	5			
t-1,3-Dichloropropene:	ND<5	5			
Bromodichloromethane:	ND<5	5			
1,1,2-Trichloroethane:	ND<5	5			
Tetrachloroethene:	ND<5	5			
Dibromochloromethane:	ND<5	5			
Chlorobenzene:	ND<5	5	106/123	81-146	15%
Bromoform:	ND<5	5			
1,1,2,2-Tetrachloroeth:	ND<5	5			
1,3-Dichlorobenzene:	ND<5	5			
1,2-Dichlorobenzene:	ND<5	5			
1,4-Dichlorobenzene:	ND<5	5			

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
ug/Kg = Parts per billion (ppb)
QC File No. 91107

Senior Chemist
Account Manager

CHAIN OF CUSTODY AND ANALYSIS REQUEST

Section I — LAB NO. _____

Consultant Name: SEMCO
Office Location: 1741 Leslie Rd. San Mateo, CA 94402
Fax No.: (415) 572-9734
Project Manager: _____
Phone: (415) 572 8033
Send Coolers to : Modesto ☐ San Mateo ☒
Project No. / P.O. No.: Chubb's Auto 93-3496

TURN AROUND TIME (Circle One)
Same Day | 72 Hrs
24 Hrs | 5 Day
48 Hrs

SUPERIOR ANALYTICAL, INC.
Martinez 415/229-1512 | San Francisco 415/647-2081

Sampler: Semco / Jim Nores
Regulatory Agency: San Mateo County

Section II — Analysis Request | Section III — Sample Information

Sample Identification	Matrix (S=Soil A=Air W=Water)	TPH - G & D	TPH - Low Level D	TPH - G	BTXE	O&G	8010	8240	Metals	Others * Subject to Subcontracting				Date	Time	Containers: Quantity	Containers: Pres.	Sampling Remarks
1 #1 Pit Water	W	X			X	X	X							2/9/94	1:40	1	HCL	hold until Notified
2 #2 West Sidewall 8'	S	X			X	X	X							2/9/94	1:54	1		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		

Bioremediation ☐
Contamination ✓

Relinquished by: Thomas Nores	Date/Time: 2/9/94 3:15	Received by: [illegible]
Organization: Semco		Organization: AERO
Relinquished by: _____	Date/Time:	Received by: _____
Organization:		Organization:
Relinquished by: _____	Date/Time:	Received by: _____
Organization:		Organization:

Please Initial _____
Samples Stored in Ice _____
Appropriate Containers _____
Samples Preserved _____
VOA's without Headspace _____
Comments _____

DRAFT

(3)

ASE
APPLIED SCIENCE AND ENGINEERING INC.

March 30, 1994

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH

MAR 31 1994

RECEIVED

Ms. Michele Shoemaker
Department of Health Services
County of San Mateo
590 Hamilton
Redwood City, CA

SUBJECT: Workplan
Monitor Well Construction, Development, and Sampling
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

Applied Science and Engineering, Inc. (ASE) respectfully submits the following workplan for construction of a monitor well at Chub's Auto Repair, 1180 Main Street in Redwood City, California (Figure 1). The proposed scope of work includes construction, development, and sampling of one monitor well, and preparation of a report documenting the activities completed.

1.0 Introduction

Reportedly, the above-referenced site formerly contained two underground storage tanks (USTs) used for waste oil and gasoline (Figure 2). The USTs were removed from the ground on January 14, 1994. The gasoline UST did not have any holes, but the waste oil UST was noted to have several holes at the end seam at the 11:00 position. Verification soil samples collected for the gasoline UST were found to contain no detectable hydrocarbons (Table 1). One of the two soil samples collected for the waste oil UST was found to contain 810 ppm of Total Petroleum Hydrocarbons (TPH) as diesel (Table 1). In addition, the laboratory reported 17 ppb of dichloromethane by EPA Methods 5030/8010, but re-analysis by EPA Method 8240 showed no detectable hydrocarbons.

On February 9, 1994 the waste oil UST pit was over-excavated. A soil sample collected at the end of overexcavation was found to contain no detectable hydrocarbons (Table 1). Water present in the pit was sampled, with analyses showing only 530 ppb of Total Petroleum Hydrocarbons (TPH) as diesel, described by the laboratory as not typical of diesel. No TPH as gasoline, benzene, toluene, ethylbenzene, xylenes (BTEX), oil and grease (O&G), or chlorinated hydrocarbons were detected in the water sample. The pit was pumped dry and no water recharged.

Regardless, the San Mateo County Department of Health Services (SMCDHS) requested construction and sampling of a monitor well. This workplan is designed to address the SMCDHS request.

DRAFT

2.0 Permit, Health and Safety Plan, and Utilities

Prior to initiation of field activities ASE will obtain a drilling permit from SMCDHS, notify Underground Service Alert (USA) for public utility clearance, and prepare a written health and safety plan.

3.0 Drill and Construct One (1) Monitor Well

25 Maple St

Based on data from other nearby sites (RMC Lonestar, Chevron), the groundwater gradient is generally towards the northeast, towards the San Francisco Bay. A monitor well (MW-1) will be drilled at a location to the east-northeast and within 10 feet of the former waste oil UST (Figure 2). The purpose of the monitor well is to determine whether the waste oil UST has impacted groundwater.

1501 El Camino

The well will be drilled by advancing a nominal 8-inch diameter boring using a hollow stem auger drilling rig operated by HEW Drilling, a licenced well driller in the State of California. Soils will be visually logged and samples collected every five feet. In addition, olfactory and visual observations of petroleum hydrocarbons will be noted on the logs. One soil sample from a depth of approximately 10 feet, just above the estimated depth of the water table, will be retained for subsequent laboratory analyses. Because only TPH as diesel was detected in the pit groundwater, the soil sample will be analyzed only for TPH as diesel, benzene, toluene, ethylbenzene, and xylenes (BTEX).

X

X no run for the full scan, 2/17 sample results were from over-pumped PIT.

Based on an assumed groundwater depth of approximately 10 feet at the site, it is anticipated that the boring will be terminated and the monitor well constructed at a depth of approximately 20 feet below ground surface. The final choice of screened interval will be selected by the site engineer on the basis of geologic field observations during drilling.

The well casing and screen for the monitor well will be constructed with 2-inch diameter, Schedule 40, flush-joint threaded material. The PVC screen will consist of factory-milled 0.020 inch slots. The screen will be installed at the interval from approximately 5 to 20 feet below ground surface. A sand pack of clean, washed, Lonestar #3 sand will be placed adjacent to the entire screened interval, extending one foot above the top of the screen. A one foot thick bentonite pellet seal will be placed above the sand pack. The annulus above the bentonite seal will be grouted with a cement/bentonite grout. Well completion will consist of a locking PVC cap. The well will be covered with a metal stove pipe or traffic-rated valve box set at or slightly above grade in concrete.

DRAFT

The drilling equipment will be steam-cleaned at the site following well construction. Soils generated by drilling and water generated by cleaning will be stored on site in 55-gallon drums pending analytical results.

4.0 Develop and Sample Monitor Well

After the concrete and cement/bentonite grout have set for a minimum of 24 hours, the well will be developed by bailing to prepare the well for collection of a representative groundwater sample. A minimum of five casing volumes will be purged from the well, or until the water is relatively clear. Electrical conductivity (EC), pH, and temperature will be measured periodically to ensure that these parameters stabilize during the course of development. The monitor well will be sampled immediately after the water level has re-equilibrated from development.

Because only TPH as diesel was detected in the excavation water, the groundwater sample will only be analyzed for TPH as diesel and BTEX. Water generated during development will be stored separately, on-site, in labelled 55-gallon drums pending analytical results.

5.0 Reporting

A report will be prepared which documents the investigation including boring logs, well development and sampling field notes, chain of custodies, and laboratory reports. The report will include recommendations for additional investigation or remedial actions, if applicable.

Please call me at (415) 363-2445 if you have any questions or require additional information. Field activities will not begin until this workplan has been approved by SMCDHS.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

cc: Mr. Larry Chubick

DRAFT

Table 1
Soil Analytical Results (ppm)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn
Gasoline UST Excavation														
North @ 8'	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	8	--	--
South @ 9.5	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	7	--	--
Waste Oil UST Excavation														
East @ 8'	1-14-94	ND	ND	ND	ND	ND	ND	ND	ND	0.6	60	7	52	90
West @ 8.5'	1-14-94	ND	810	ND	ND	ND	ND	ND	ND*	0.5	69	7	55	84
West @ 8'	2-09-94	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--
Stockpile Composites														
Gasoline	1-14-94	ND	--	ND	ND	ND	ND	ND	--	--	--	30	--	--
Waste Oil	1-14-94	4	1,100	ND	0.018	0.036	0.28	ND	ND	ND	81	35	79	94

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed
* = 17 ppb of dichloromethane (5030/8010), ND ppb of methylene chloride (8240)

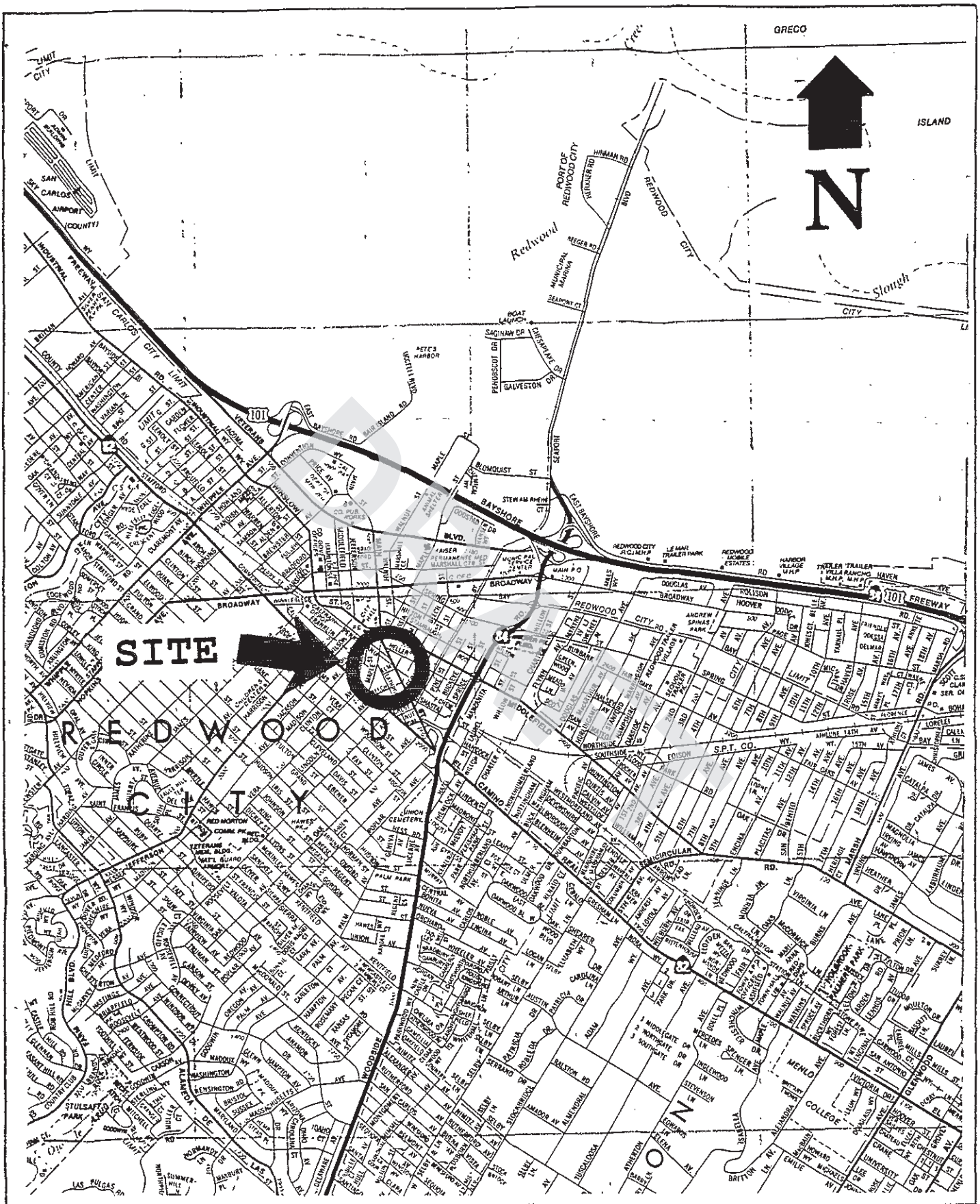
DRAFT

Table 2
Water Analytical Results (ppb)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn
Excavation	2-17-94	ND	530	ND	ND	ND	ND	ND	ND	--	--	--	--	--

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed

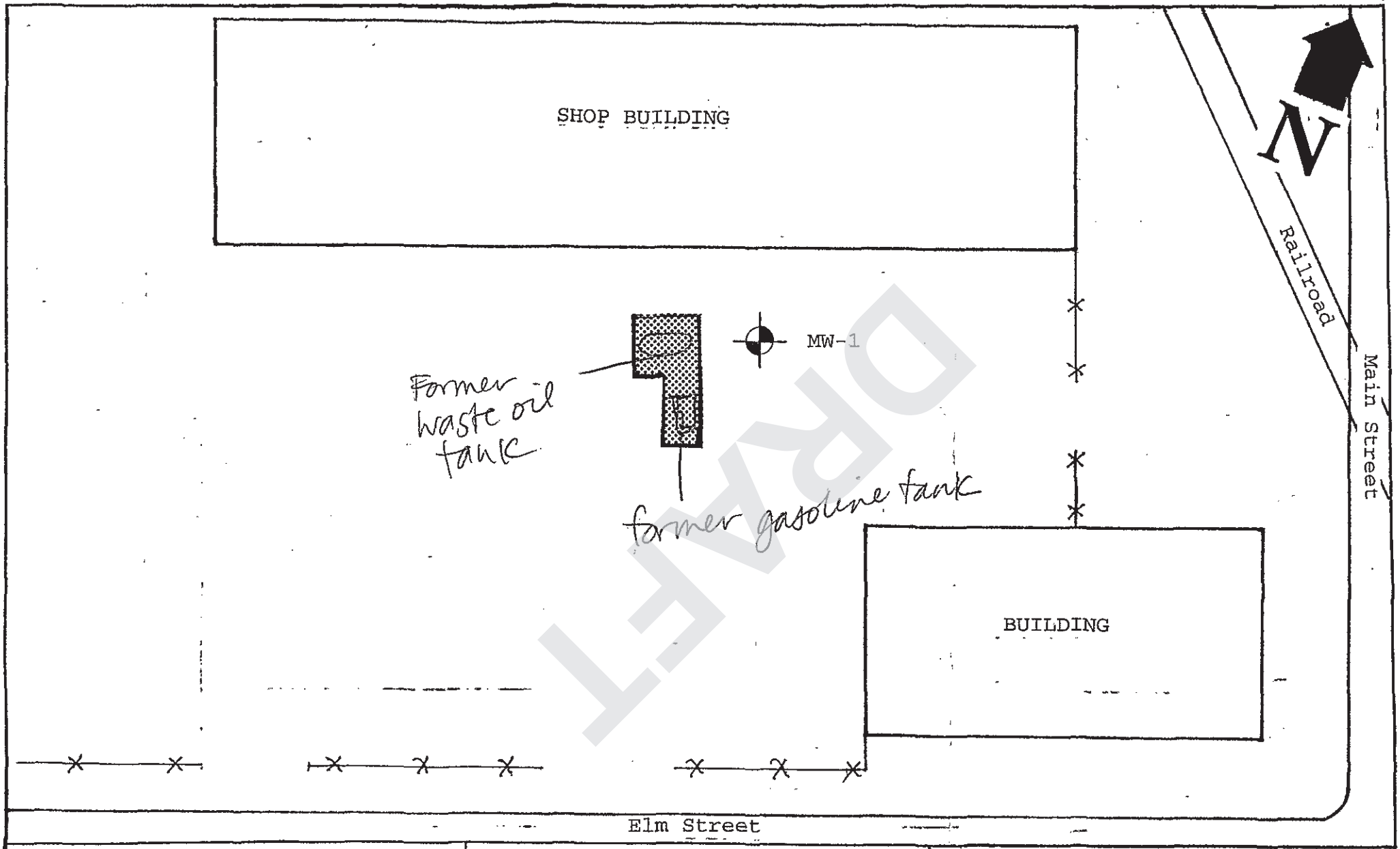
DRAFT



ASE

APPLIED SCIENCE AND ENGINEERING INC.

Figure 1: Location Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

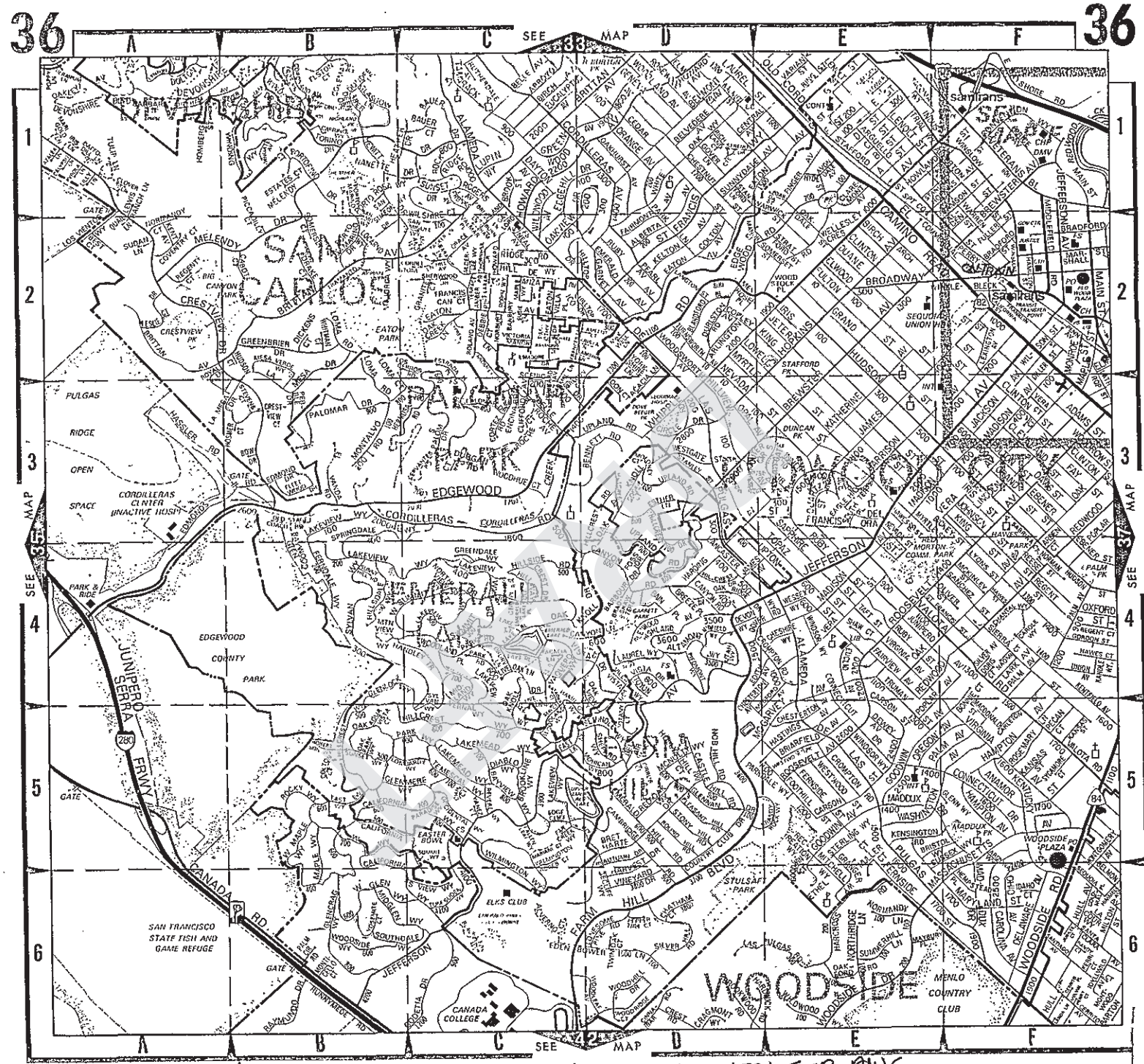


ASE
APPLIED SCIENCE AND ENGINEERING INC.

1" = 20'

PROPOSED MONITOR WELL

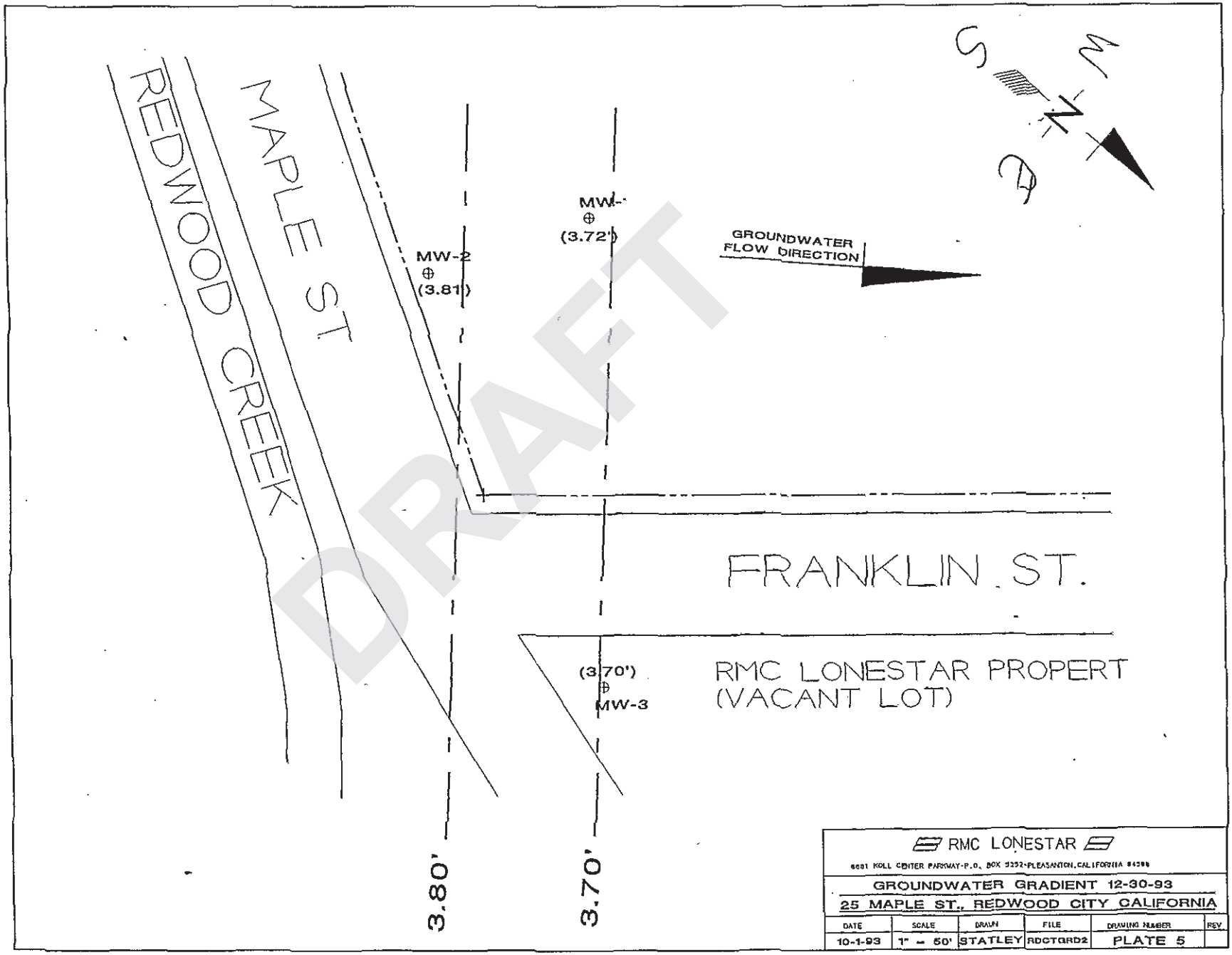
Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California



• 1150 Main St. subject site

✕ Former Chevron stn, 1501 ECR, RWC

○ RMC Lonestar, 25 Maple St, RWC



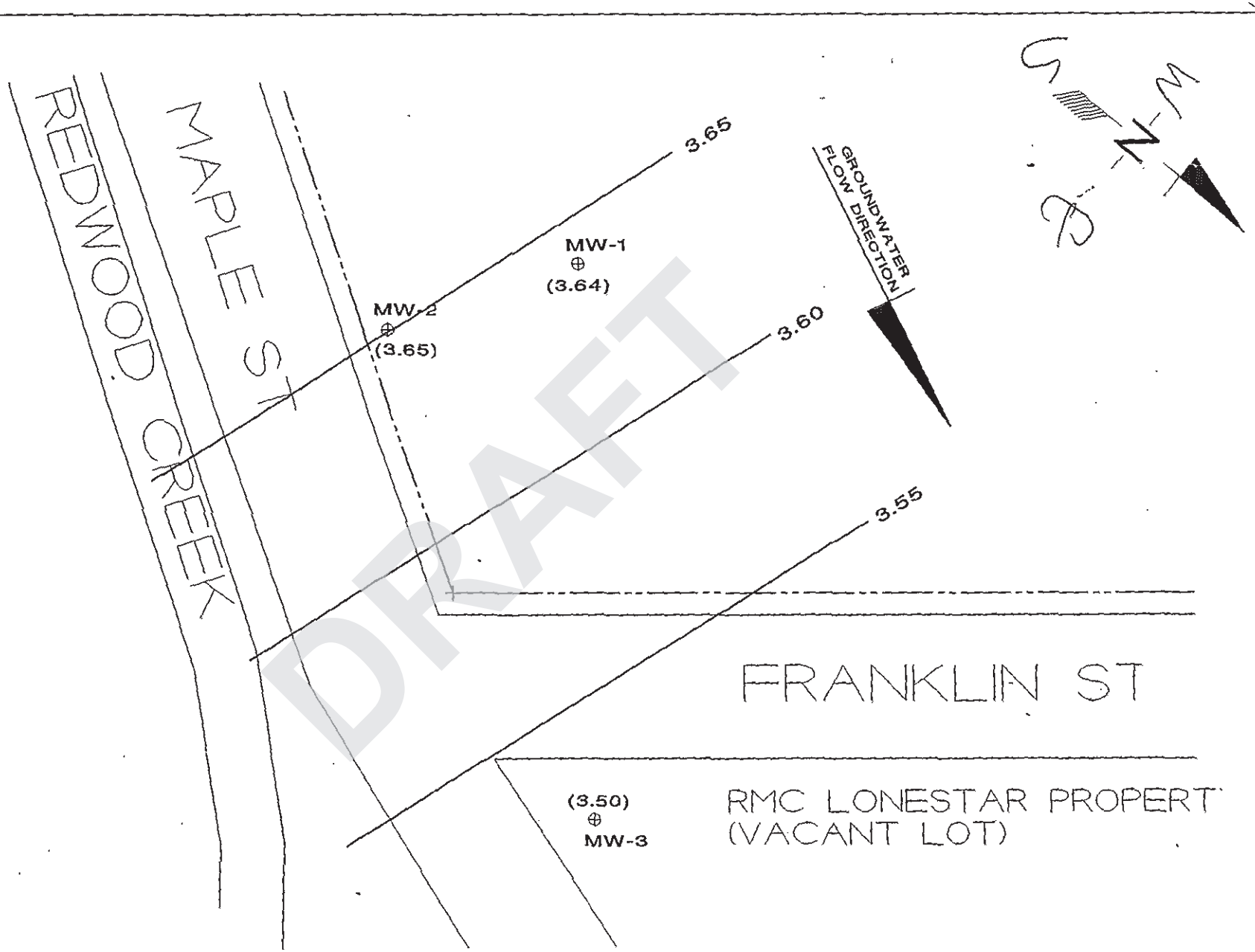
RMC LONESTAR

6601 KOLL CENTER PARKWAY-P.O. BOX 5352-PLEASANTON, CALIFORNIA 94566

GROUNDWATER GRADIENT 12-30-93

25 MAPLE ST., REDWOOD CITY CALIFORNIA

DATE	SCALE	DRAWN	FILE	DRAWING NUMBER	REV.
10-1-93	1" = 50'	STATLEY	RDCTGRD2	PLATE 5	



DRAFT

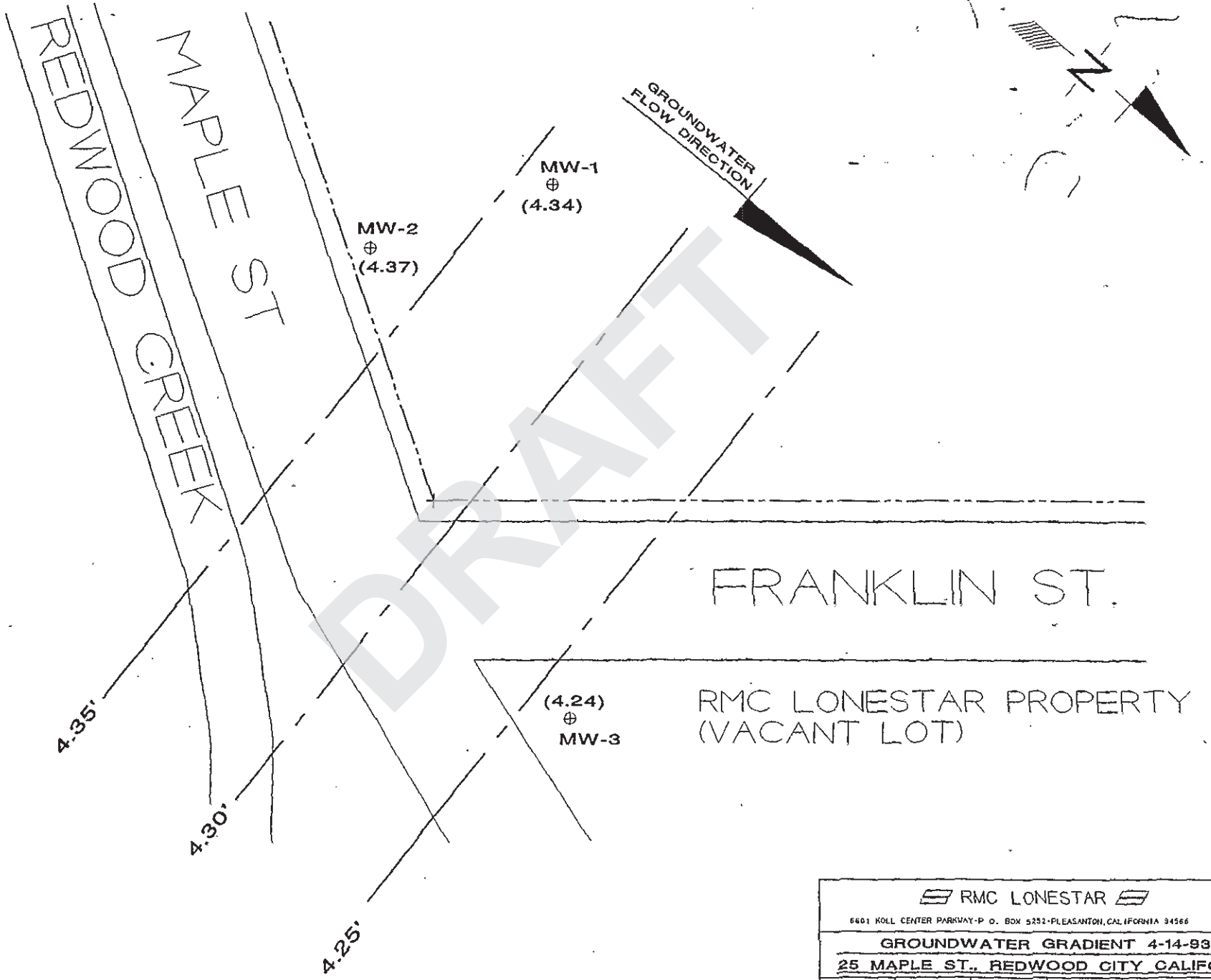
RMC LONESTAR

6601 KOLL CENTER PARKWAY-P.O. BOX 5252-PLEASANTON, CALIFORNIA 94588

GROUNDWATER GRADIENT 9-25-93

25 MAPLE ST., REDWOOD CITY CALIFORNI

DATE	SCALE	DRAWN	FILE	DRAWING NUMBER
10-1-93	1" = 40'	STATLEY	ROCTGRD2	PLATE 4



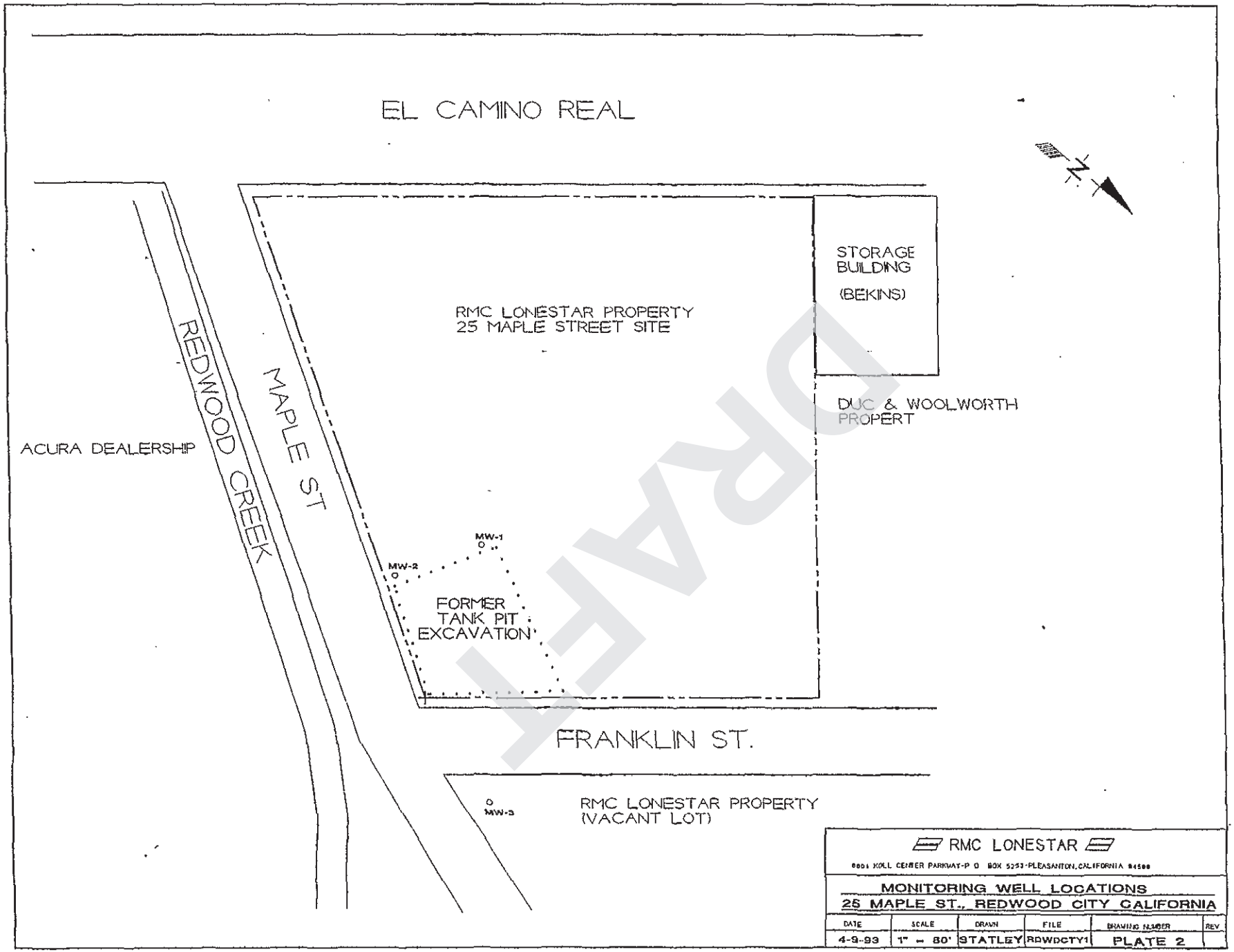
RMC LONESTAR

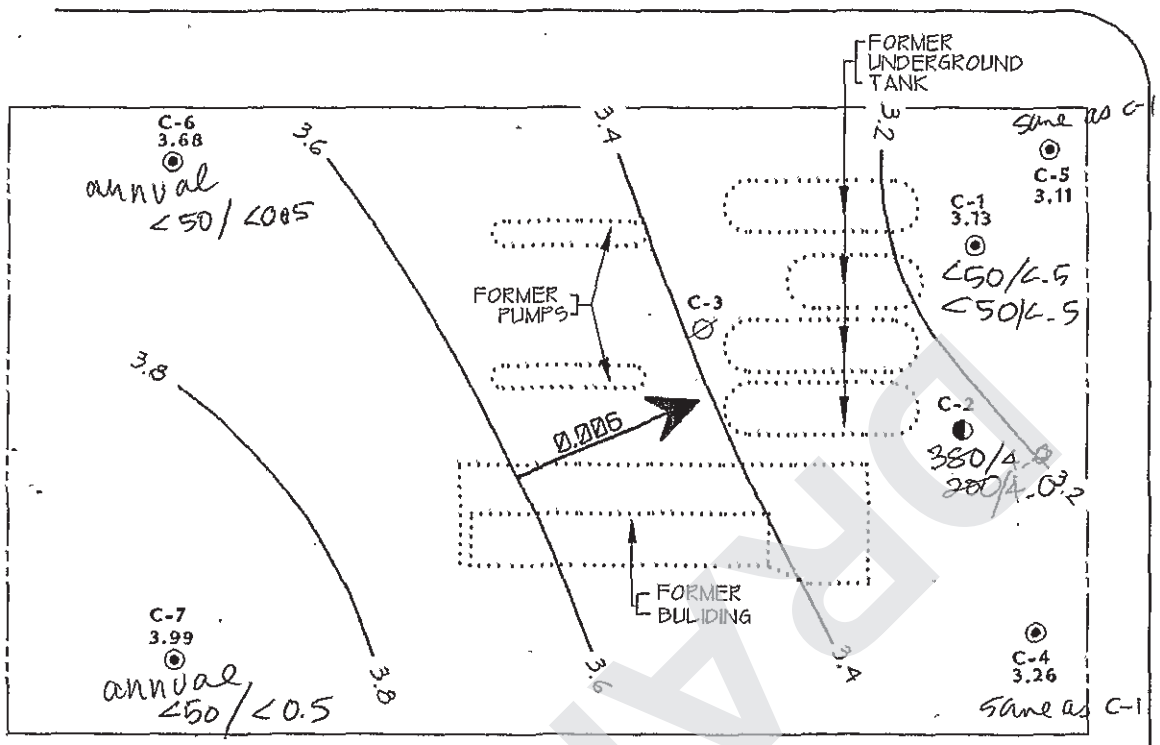
6601 KOLL CENTER PARKWAY-P. O. BOX 5252-PLEASANTON, CALIFORNIA 94566

GROUNDWATER GRADIENT 4-14-93

25 MAPLE ST., REDWOOD CITY CALIFORNIA

DATE	SCALE	DRAWN	FILE	DRAWING NUMBER	REV.
7-27-93	1" = 40'	STATLEY	RDCTGRAD	PLATE 3	


EL CAMINO REAL
N
STORAGE BUILDING
(BEKINS)
RMC LONESTAR PROPERTY
25 MAPLE STREET SITE
DUC & WOOLWORTH PROPERT
ACURA DEALERSHIP
REDWOOD CREEK
MAPLE ST
MW-1
MW-2
FORMER TANK PIT EXCAVATION
FRANKLIN ST.
MW-3
RMC LONESTAR PROPERTY
(VACANT LOT)
DRAFT
RMC LONESTAR
6801 KOLL CENTER PARKWAY-P O BOX 5253-PLEASANTON, CALIFORNIA 94588
MONITORING WELL LOCATIONS
25 MAPLE ST., REDWOOD CITY CALIFORNIA
DATE 4-9-99
SCALE 1" = 80'
DRAWN STATLEY
FILE RDWDCTY1
DRAWING NUMBER PLATE 2
REV



TPH-g-ppb / Benzene

8/24/93
10/29/93

REGISTERED GEOLOGIST
JOHN H. HOEFER
NO. 1065
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

DRAFT

NOTES:

TITLE : GROUND-WATER ELEVATION CONTOUR MAP - AUGUST 24, 1993

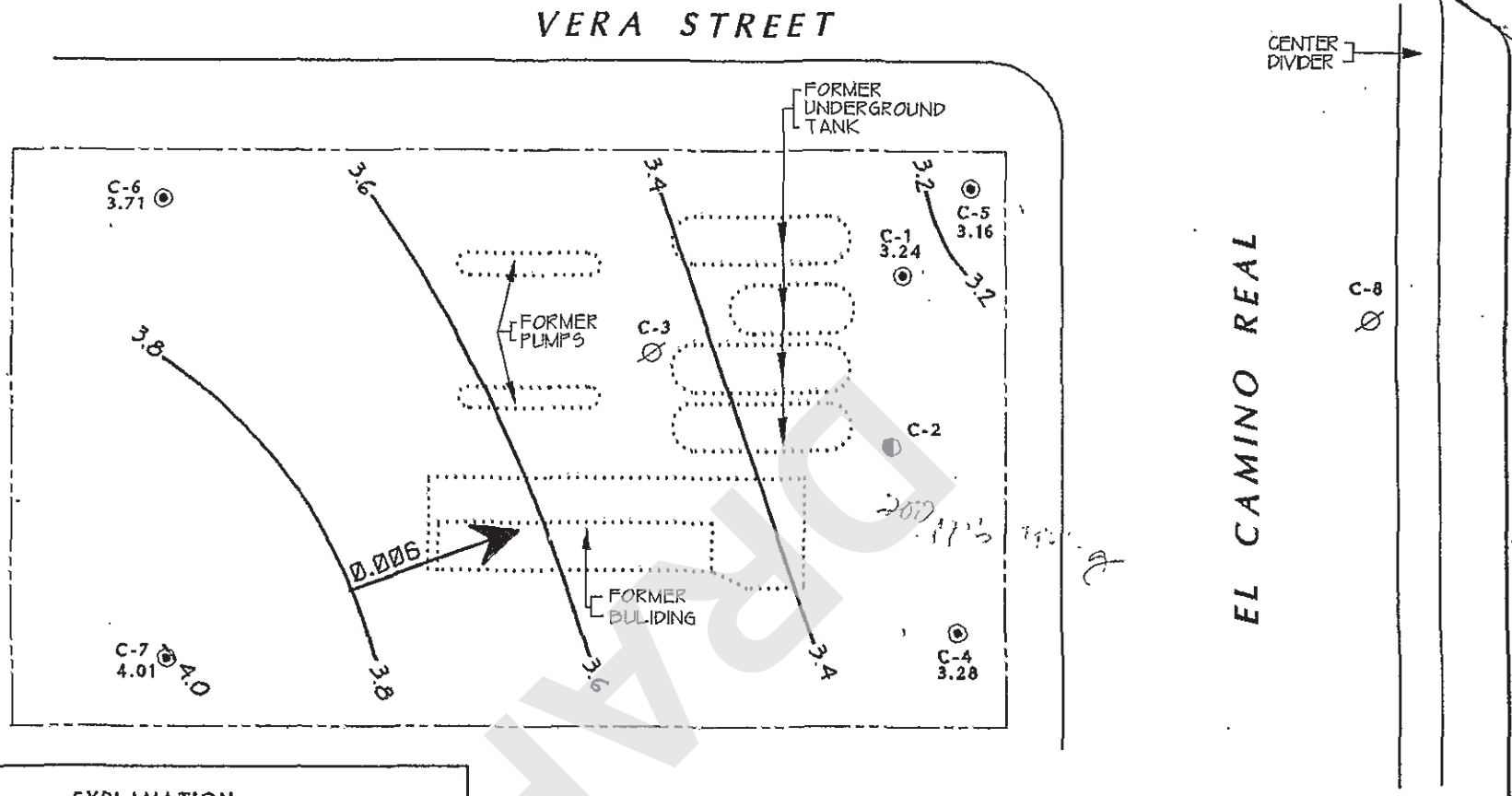
LOCATION : FORMER CHEVRON SERVICE STATION #9-4256
1501 EL CAMINO REAL, REDWOOD CITY, CALIFORNIA

SOURCE : WEISS ASSOCIATES.

GEOCONSULTANTS, INC

Project No. G758-09

DRWG NO: W082493 REV:



EXPLANATION

C-7	◉	GROUND-WATER MONITORING WELL
C-2	◐	EXTRACTION WELL, NOT MEASURED
C-8	∅	ABANDON WELL
4.01		GROUND-WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
3.8		GROUND-WATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL
Ø.ØØ6		APPROXIMATE DIRECTION OF GROUND-WATER FLOW. GRADIENT INDICATED IN FEET / FEET

N

0 15 30 FT
SCALE

DRAFT

REGISTERED GEOLOGIST
JOHN K. HOFFER, C.E.G.
NO. 1065
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

NOTES:

TITLE : GROUND-WATER ELEVATION CONTOUR MAP - OCTOBER 29, 1993

LOCATION : FORMER CHEVRON SERVICE STATION #9-4256
1501 EL CAMINO REAL, REDWOOD CITY, CALIFORNIA

SOURCE : RESNA

GEOCONSULTANTS, INC
SAN JOSE, CALIFORNIA
Project No. G758-09
DRWG NO: W102993 REV:

4

S E M C O
ENVIRONMENTAL CONTRACTORS & GENERAL ENGINEERING
1741 LESLIE STREET
SAN MATEO, CALIFORNIA 94402

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
APR 29 1994
RECEIVED

April 26, 1994

Michele Shoemaker
~~Michelle Shomarker~~
San Mateo County
Environmental Health Department
Remedial Oversite Program
590 Hamilton Street
Redwood City, California 94063

Re: Tank Removal Report, 1180 Main Street, Redwood City
Proposal# 93-3496

Dear Michelle:

Please find enclosed, a copy of the tank removal report for the above mentioned address.

If you have any questions, please give me a call.

Respectfully,

Rhonda Reames-Kiper

Rhonda Reames-Kiper
SEMCO-SAN MATEO

cc: Larry Chubick
File

DRAFT

S E M C O
ENVIRONMENTAL CONTRACTORS & GENERAL ENGINEERING
1741 LESLIE STREET
SAN MATEO, CALIFORNIA 94402

4

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
APR 29 1994
RECEIVED

TANK REMOVAL REPORT

DRAFT

PREPARED FOR:

LARRY CHUBICK
543 SUNSET WAY
REDWOOD CITY, CALIFORNIA 94062

SITE ADDRESS:

CHUB'S AUTO REPAIR
1180 MAIN STREET
REDWOOD CITY, CALIFORNIA

1.0 INTRODUCTION

In this report, we are presenting a detailed account of the tank removal activities at Chub's Auto Repair, located at 1180 Main Street, Redwood City, California. All work was performed by SEMCO, San Mateo and was done ~~in compliance~~ with the County of San Mateo and the Redwood City Fire Department. Tank preparation, excavation and removal occurred on January 14, 1994. Re-excavation activities occurred on February 9, 1994.

2.0 EXCAVATION AND TANK REMOVAL

On January 14, 1994, SEMCO excavated the site for the removal of one 1000 gallon Waste Oil tank. Upon arrival to the site and preparation for the removal, another tank was discovered, which was determined to be a 1000 gallon gasoline tank.

Both tanks were voided of their residual product, which was placed into barrels for disposal. It was later disposed of by Allied Petroleum on Manifest # 93267128. The tanks were then inerted by washing them with a hot water detergent wash, followed by solid carbon dioxide (dry Ice) until acceptable levels of oxygen and lower explosive limits were reached..

The tanks condition were noted as follows:

1) 1000 gallon waste oil was unwrapped steel with several 1/8" holes in surface and 2-3 1/4" holes at the East end. The piping had many holes.
2) 1000 gallon gasoline tank was unwrapped steel with pitting, but no holes were observed.

The inerted tanks were hauled by Rich Hamilton Trucking on Manifest # 92885656.

After the tanks were removed, it was noted that the soil beneath the waste oil tank was discolored, with a slight solvent odor. The soil in both excavations had a clayey/sandy consistency. The soil beneath the gas tank had no discoloration or odor.
At this time, soil samples were collected.

3.0 SOIL SAMPLING

Soil samples were retrieved out of the excavation by use of the backhoe bucket. Clean brass sample tubes were used by pushing them into the soil until a full sample was obtained. All samples were sealed with teflon tape, plastic end caps and sealed with masking tape, labeled and entered onto a chain of custody form. Samples taken to Superior Precision Analytical, a State certified laboratory.
Samples were collected from the waste oil excavation from the East end of the excavation at 8 feet and the West end at 8.5 feet. A four tube composite sample was collected from the excavated waste oil soil.

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These samples were to be analyzed for TPH as Gasoline, Diesel, BTXE, Oil and Grease, 8010, 8240 and ICAP 5 Metals.

Samples were collected from the gasoline tank excavation from the North end at 8 feet and the South end at 9.5 feet. A four tube composite was also collected from the excavated soil. These samples were to be analyzed for TPH as Gas, BTXE and Total Lead.

Analytical results demonstrated that the gasoline excavation had no detectable traces of the analyzed constituents, except for 8ppm lead in the North sample, 7ppm lead in the South sample and 30 ppm Lead in the Excavated spoils. The analytical for the waste oil tank demonstrated Non detectable levels in the East end of the excavation. The West end however, had 810 ppm Diesel with non detectable levels in Gasoline, BTXE and Oil and Grease. The excavated soil had 4 ppm TPH as gas, 1100 ppm Diesel, No Benzene, 0.048 ppm Toluene, 0.036 ppm Ethyl Benzene, 0.28 ppm Xylenes and no Oil and Grease.

Based on the analytical, it was determined that additional excavation work would be necessary for the Waste Oil tank excavation.

5.0 RE-EXCAVATION ACTIVITIES

After assessing the analytical results, it was decided in conjunction with the various lead agencies to re-excavate the site down to a level in which there would be no detectable traces of contaminants.

A workplan was submitted to San Mateo County on February 2, 1994, to over excavate the West end (fill end) by approximately 10 cubic yards. Upon approval of the workplan, the job was scheduled for February 9, 1994 with San Mateo County Environmental Health inspector ~~Michelle Shomarker~~. Michele Shoemaker

SEMCO arrived on site and excavated the West end laterally approximately 5 feet and removed the soil to the 8 foot level. The water table was reached at the 9 foot level. The water in the excavation was pumped and allowed to recharge. (This water was placed in barrels to be disposed of at a later date) A soil sample was collected at the 8 foot level, and a water sample was collected. The soil sample was analyzed for TPH as gas and diesel, BTXE and TOG. The water sample was to be analyzed for the same constituents, but not enough water was collected, so Oil and Grease was the only analysis run. Initially, San Mateo County Environmental Health Dept. had stated that this water sample, due to the inadequate amount, and obvious floating product, would not need to be analyzed. But it was later decided by San Mateo County to run the analysis.

DRAFT

Another water sample still needed to be collected, so an appointment was scheduled for February 17, 1994 with San Mateo County Environmental Health Department. A water storage tank (swing tank) was delivered to the site for the receiving of water from the excavation. The water was pumped and allowed to recharge. Three (3) amber liters and three (3) voas of water were collected and analyzed for TPH as gasoline, diesel, BTXE, TOG and 8240.

Analytical results demonstrated non detected levels in TPH as gas, BTXE, TOG and 8240. The analysis for TPH as Diesel had a level of 530 ppb, but was noted as not matching the typical diesel pattern.

The excavation was backfilled and compacted to prepare for resurfacing. The water from the original pumping of the excavation, was pumped from the barrels and was placed into the holding tank for disposal.

The water in the holding tank was then sampled on March 9, 1994 for TPH as gasoline, Diesel,BTXE, TOG and 8240, to determine how the disposal would be handled. The analysis demonstrated only 110 ppb diesel, while all other analysis were non detected.

Based on this information, the analytical was presented to South Bay Sewer Authority for pumping the water into the Sewer. On March 16, 1994, SBSA approved the discharge of the water into the sewer. (see attached permit) On March 17, 1994, the water was pumped from the tank into sewer.

The concrete was replaced on March 28, 1994

This report is for your files. If you have any questions, please give me a call.

Rhonda Reames-Kiper

Rhonda Reames-Kiper
SEMCO-SAN MATEO

DRAFT

SEMCO

SOIL/GROUND WATER SAMPLING DATA FORM

Underground Storage Tank Site Address: 1180 MAIN STREET, REDWOOD CITY

Business Site Name: CHUB'S AUTO REPAIR

Description Sample ID (Specify location; i.e., tank, pipe, stockpile) and number	Sample Depth (Indicate depth of sample from grade)	Media (soil/water)	Date (Date sample was collected)	Soil Type (specify if sand, clay, fill, etc.)	Laboratory Results*, express in mg/kg unless otherwise specified									
					TPHg	TPHd	B	T	E	X	Lead	TOG	5 ~~METAL~~	8010 Other 8240
(Example) Tank #1, east end, #T1-E12.5	12.5 feet	soil	2/29/93	sand	14		0.003	0.01	ND	ND	2.2		SEE ANACYTICAL	
#1-E@8' W.O.	8 FEET	SOIL	1/14/94	CLAYEY SANDY	ND	ND	ND	ND	ND	ND		ND		
#2-8½'-W W.O.	8½ FEET				ND	810	ND	ND	ND	ND		ND		
#3-Comp W/O	/				4	1100	ND	0.048	0.036	0.28		ND		
#4-N@8' G	8 FEET				ND	N/A	ND	ND	ND	ND	8	N/A		
#5-S-9½'-G	9½ FEET				ND	N/A	ND	ND	ND	ND	7	N/A		
#6-Comp-GAS	/				ND	N/A	ND	ND	ND	ND	30			

TPHg = Total Petroleum Hydrocarbon as Gasoline
BTEX = Benzene, Toluene, Ethylbenzene, Xylene
Cl HC = Chlorinated hydrocarbon compounds

TPHd = Total Petroleum Hydrocarbon as Diesel
TOG = Total Oil and Grease
Other = Semivolatile organic compounds, heavy metals, etc.

List additional analytical results and/or additional samples on a separate sheet

Submit this form as part of the closure final report. Attach soil/ground water sampling location map.

Superior Precision Analytical, Inc.
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SEMCO
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SEMCO
Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 01/21/94

TOTAL PETROLEUM HYDROCARBONS

Lab #	Sample Identification	Sampled	Analyzed	Matrix
90950- 1	E-8'-WO	01/14/94	01/19/94	Soil
90950- 2	W-8 1/2'-WO	01/14/94	01/21/94	Soil
90950- 3	COMPWO	01/14/94	01/21/94	Soil
90950- 4	N-8'-G	01/14/94	01/19/94	Soil
90950- 5	S-91/2-G	01/14/94	01/19/94	Soil
90950- 6	COMP GAS	01/14/94	01/20/94	Soil

DRAFT

RESULTS OF ANALYSIS

Laboratory Number:	90950- 1 WOT	90950- 2 WOT	90950- 3 WOT Composite	90950- 4 gas	90950- 5 gas
Gasoline:	ND<1	ND<1	4	ND<1	ND<1
Benzene:	ND<.005	ND<.005	ND<.005	ND<.005	ND<.005
Toluene:	ND<.005	ND<.005	0.048	ND<.005	ND<.005
Ethyl Benzene:	ND<.005	ND<.005	0.036	ND<.005	ND<.005
Total Xylenes:	ND<.005	ND<.005	0.28	ND<.005	ND<.005
Diesel Range:	ND<10	810	1100	NA	NA
Oil and Grease:	ND<50	ND<50	ND<50	NA	NA
Concentration:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg

Laboratory Number:	90950- 6 gas composite
Gasoline:	ND<1
Benzene:	ND<.005
Toluene:	ND<.005
Ethyl Benzene:	ND<.005
Total Xylenes:	ND<.005
Concentration:	mg/Kg

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C E R T I F I C A T E O F A N A L Y S I S

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 90950

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
mg/kg = parts per million (ppm)

OIL AND GREASE ANALYSIS By Standard Methods Method 5520F:
Minimum Detection Limit in Soil: 50mg/kg

Modified EPA SW-846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Soil: 1mg/kg

EPA SW-846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Soil: 1mg/kg

EPA SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Soil: 0.005mg/kg

ANALYTE	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Gasoline:	124/117	6%	70-130
Benzene:	118/110	7%	70-130
Toluene:	113/107	5%	70-130
Ethyl Benzene:	110/100	10%	70-130
Total Xylenes:	118/108	9%	70-130
Diesel Range:	112/114	2%	75-125
Oil and Grease:	83/82	1%	75-125

Michael R. Thom
Senior Chemist

DRAFT

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Project LARRY CHUBICK
Reported 21-January-1994

ANALYSIS FOR TOTAL LEAD
by EPA Method SW-846 6010

Chronology

Laboratory Number 90950

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
N-8'-G	01/14/94	01/14/94	01/18/94	01/19/94		4
S-91/2-G	01/14/94	01/14/94	01/18/94	01/19/94		5
COMP GAS	01/14/94	01/14/94	01/18/94	01/19/94		6

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Project LARRY CHUBICK
Reported 21-January-1994

ANALYSIS FOR TOTAL LEAD

Laboratory Number	Sample Identification	Matrix
90950- 4	N-8'-G	Soil
90950- 5	S-91/2-G	Soil
90950- 6	COMP GAS	Soil

RESULTS OF ANALYSIS

Laboratory Number:	90950- 4	90950- 5	90950- 6
	gas	gas	composite
Lead (Pb):	8	7	30
Concentration:	mg/Kg	mg/Kg	mg/Kg

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ANALYSIS FOR TOTAL LEAD
Quality Assurance and Control Data - Soil

Laboratory Number 90950

Compound	Method Blank (mg/Kg)	RL (mg/Kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Lead (Pb):	ND<5	5	102/97	75-125	5%

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
mg/Kg = Parts per million (ppm)
QC File No. 90950

Michael R. Young
Senior Chemist
Account Manager

Superior Precision Analytical, Inc.
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Project LARRY CHUBICK
Reported 22-January-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
by GAS CHROMATOGRAPHY - MASS SPECTROMETRY

DRAFT

Chronology

Laboratory Number 90950

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
E-8'-WO	01/14/94	01/17/94	/ /	01/21/94		1
W-8 1/2'-WO	01/14/94	01/17/94	/ /	01/19/94		2
COMP WO	01/14/94	01/17/94	/ /	01/19/94		3

Certified Laboratories

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Project LARRY CHUBICK
Reported 22-January-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS

Laboratory Number	Sample Identification	Matrix
90950- 1	E-8'-WO	Soil
90950- 2	W-8 1/2'-WO	Soil
90950- 3	COMP WO	Soil

RESULTS OF ANALYSIS

Laboratory Number:	90950- 1	90950- 2	90950- 3
Chloromethane:	ND<50	ND<50	ND<50
Bromomethane:	ND<50	ND<50	ND<50
Vinyl Chloride:	ND<50	ND<50	ND<50
Chloroethane:	ND<50	ND<50	ND<50
Methylene Chloride:	ND<50	ND<50	ND<50
Acetone:	ND<100	ND<100	ND<100
Carbon Disulfide:	ND<15	ND<15	ND<15
Trichlorofluoromethane:	ND<15	ND<15	ND<15
1,1-Dichloroethene:	ND<15	ND<15	ND<15
1,1-Dichloroethane:	ND<15	ND<15	ND<15
t-1,2-Dichloroethene:	ND<15	ND<15	ND<15
Chloroform:	ND<15	ND<15	ND<15
1,2-Dichloroethane:	ND<5	ND<5	ND<5
2-Butanone:	ND<100	ND<100	ND<100
1,1,1-Trichloroethane:	ND<15	ND<15	ND<15
Carbon tetrachloride:	ND<15	ND<15	ND<15
Vinyl Acetate:	ND<50	ND<50	ND<50
Bromodichloromethane:	ND<15	ND<15	ND<15
1,2-Dichloropropane:	ND<15	ND<15	ND<15
c-1,2-Dichloroethene:	ND<15	ND<15	ND<15
c-1,3-Dichloropropene:	ND<15	ND<15	ND<15
Trichloroethene:	ND<15	ND<15	ND<15
Dibromochloromethane:	ND<15	ND<15	ND<15
1,1,2-Trichloroethane:	ND<15	ND<15	ND<15
Benzene:	ND<5	ND<5	ND<5
t-1,3-Dichloropropene:	ND<15	ND<15	ND<15
Bromoform:	ND<15	ND<15	ND<15
4-Methyl-2-Pentanone:	ND<50	ND<50	ND<50
2-Hexanone:	ND<50	ND<50	ND<50
Concentration:	ug/kg	ug/kg	ug/kg

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JAN 27 1994

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Project LARRY CHUBICK
Reported 22-January-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS

Laboratory Number	Sample Identification	Matrix
90950- 1	E-8'-WO	Soil
90950- 2	W-8 1/2'-WO	Soil
90950- 3	COMP WO	Soil

RESULTS OF ANALYSIS

Laboratory Number:	90950- 1	90950- 2	90950- 3
Tetrachloroethene:	ND<15	ND<15	ND<15
1,1,2,2-Tetracl-ethane:	ND<15	ND<15	ND<15
Toluene:	ND<15	ND<15	29
Chlorobenzene:	ND<15	ND<15	ND<15
Ethyl Benzene:	ND<15	ND<15	28
Styrene:	ND<15	ND<15	ND<15
Xylenes:	ND<15	ND<15	230
1,3-Dichlorobenzene:	ND<15	ND<15	ND<15
1,4-Dichlorobenzene:	ND<15	ND<15	ND<15
1,2-Dichlorobenzene:	ND<15	ND<15	ND<15
Concentration:	ug/kg	ug/kg	ug/kg
-- Surrogate % Recoveries --			
1,2-Dichloroethane-d4:	103	96	97
Toluene-d8:	101	104	109
Bromofluorobenzene:	91	97	98

DRAFT

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SEMCO

JAN 27 1994
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EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
Quality Assurance and Control Data - Soil

Laboratory Number 90950

Compound	Method Blank (ug/kg)	RL (ug/kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Chloromethane:	ND<50	50			
Bromomethane:	ND<50	50			
Vinyl Chloride:	ND<50	50			
Chloroethane:	ND<50	50			
Methylene Chloride:	ND<50	50			
Acetone:	ND<100	100			
Carbon Disulfide:	ND<15	15			
Trichlorofluoromethane:	ND<15	15			
1,1-Dichloroethene:	ND<15	15	101/105	59-172	4%
1,1-Dichloroethane:	ND<15	15			
t-1,2-Dichloroethene:	ND<15	15			
Chloroform:	ND<15	15			
1,2-Dichloroethane:	ND<5	5			
2-Butanone:	ND<100	100			
1,1,1-Trichloroethane:	ND<15	15			
Carbon tetrachloride:	ND<15	15			
Vinyl Acetate:	ND<50	50			
Bromodichloromethane:	ND<15	15			
1,2-Dichloropropane:	ND<15	15			
c-1,2-Dichloroethene:	ND<15	15			
c-1,3-Dichloropropene:	ND<15	15			
Trichloroethene:	ND<15	15	95/98	62-137	3%
Dibromochloromethane:	ND<15	15			
1,1,2-Trichloroethane:	ND<15	15			
Benzene:	ND<5	5	91/95	66-142	4%
t-1,3-Dichloropropene:	ND<15	15			
Bromoform:	ND<15	15			
4-Methyl-2-Pentanone:	ND<50	50			
2-Hexanone:	ND<50	50			

DRAFT

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SEMCO
JAN 27 1994
Received

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
Quality Assurance and Control Data - Soil

Laboratory Number 90950

Compound	Method Blank (ug/kg)	RL (ug/kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Tetrachloroethene:	ND<15	15			
1,1,2,2-Tetracl-ethane:	ND<15	15			
Toluene:	ND<15	15	94/90	59-139	4%
Chlorobenzene:	ND<15	15	99/99	60-133	0%
Ethyl Benzene:	ND<15	15			
Styrene:	ND<15	15			
Xylenes:	ND<15	15			
1,3-Dichlorobenzene:	ND<15	15			
1,4-Dichlorobenzene:	ND<15	15			
1,2-Dichlorobenzene:	ND<15	15			
1,2-Dichloroethane-d4:	102			70-121	
Toluene-d8:	101			81-117	
Bromofluorobenzene:	91			74-121	

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
ug/kg = Parts per billion (ppb)
QC File No. 90950

Cecilia G. Joaquin
Senior Chemist
Account Manager

Certified Laboratories

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
JAN 25 1994
Received

SEMCO
Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 21-January-1994

ANALYSIS FOR CADMIUM, CHROMIUM, LEAD, NICKEL, & ZINC
by EPA Method SW-846 6010

DRAFT

Chronology

Laboratory Number 90950

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
E-8'-WO	01/14/94	01/14/94	01/18/94	01/19/94		1
W-8 1/2'-WO	01/14/94	01/14/94	01/18/94	01/19/94		2
COMPWO	01/14/94	01/14/94	01/18/94	01/19/94		3

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Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 21-January-1994

ANALYSIS FOR CADMIUM, CHROMIUM, LEAD, NICKEL, & ZINC

Laboratory Number	Sample Identification	Matrix
90950- 1	E-8'-WO	Soil
90950- 2	W-8 1/2'-WO	Soil
90950- 3	COMPWO	Soil

RESULTS OF ANALYSIS

Laboratory Number:		90950- 1	90950- 2	90950- 3
Cadmium	(Cd):	0.6	0.5	ND<0.5
Chromium	(Cr):	60	69	81
Lead	(Pb):	7	7	35
Nickel	(Ni):	52	55	79
Zinc	(Zn):	90	84	94
Concentration:		mg/Kg	mg/Kg	mg/Kg

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SEMCO
JAN 25 1994
Received

ANALYSIS FOR CADMIUM, CHROMIUM, LEAD, NICKEL, & ZINC
Quality Assurance and Control Data - Soil

Laboratory Number 90950

Compound		Method Blank (mg/Kg)	RL (mg/Kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Cadmium	(Cd):	ND<0.5	0.5	102/101	75-125	1%
Chromium	(Cr):	ND<5	5	96/96	75-125	0%
Lead	(Pb):	ND<5	5	102/97	75-125	5%
Nickel	(Ni):	ND<5	5	102/101	75-125	1%
Zinc	(Zn):	ND<5	5	97/97	75-125	0%

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
mg/Kg = Parts per million (ppm)
QC File No. 90950

Michael R. Vuono
Senior Chemist
Account Manager

Superior Precision Analytical, Inc.
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JAN 25 1994
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Project LARRY CHUBICK
Reported 21-January-1994

HALOGENATED VOLATILE ORGANICS by EPA SW-846 Methods 5030/8010.

DRAFT

Chronology

Laboratory Number 90950

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
E-8'-WO	01/14/94	01/17/94	/ /	01/18/94		1
W-8 1/2'-WO	01/14/94	01/17/94	/ /	01/18/94		2
COMPWO	01/14/94	01/17/94	/ /	01/18/94		3

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Attn: CHUCK KIPER

Project LARRY CHUBICK
Reported 21-January-1994

HALOGENATED VOLATILE ORGANICS by EPA SW-846 Methods 5030/8010.

Laboratory Number	Sample Identification	Matrix
90950- 1	E-8'-WO	Soil
90950- 2	W-8 1/2'-WO	Soil
90950- 3	COMPWO	Soil

RESULTS OF ANALYSIS

Laboratory Number:	90950- 1	90950- 2	90950- 3
Chloromethane/Vinyl Ch:	ND<10	ND<10	ND<10
Bromomethane:	ND<5	ND<5	ND<5
Chloroethane:	ND<5	ND<5	ND<5
Trichlorofluoromethane:	ND<5	ND<5	ND<5
1,1-Dichloroethene:	ND<5	ND<5	ND<5
Dichloromethane:	ND<5	17	ND<5
t-1,2-Dichloroethene:	ND<5	ND<5	ND<5
1,1-Dichloroethane:	ND<5	ND<5	ND<5
c-1,2-Dichloroethene:	ND<5	ND<5	ND<5
Chloroform:	ND<5	ND<5	ND<5
1,1,1-Trichloroethane:	ND<5	ND<5	ND<5
Carbon tetrachloride:	ND<5	ND<5	ND<5
1,2-Dichloroethane:	ND<5	ND<5	ND<5
Trichloroethene:	ND<5	ND<5	ND<5
c-1,3-Dichloropropene:	ND<5	ND<5	ND<5
1,2-Dichloropropane:	ND<5	ND<5	ND<5
t-1,3-Dichloropropene:	ND<5	ND<5	ND<5
Bromodichloromethane:	ND<5	ND<5	ND<5
1,1,2-Trichloroethane:	ND<5	ND<5	ND<5
Tetrachloroethene:	ND<5	ND<5	ND<5
Dibromochloromethane:	ND<5	ND<5	ND<5
Chlorobenzene:	ND<5	ND<5	ND<5
Bromoform:	ND<5	ND<5	ND<5
1,1,2,2-Tetrachloroeth:	ND<5	ND<5	ND<5
1,3-Dichlorobenzene:	ND<5	ND<5	ND<5
1,2-Dichlorobenzene:	ND<5	ND<5	ND<5
1,4-Dichlorobenzene:	ND<5	ND<5	ND<5
Concentration:	ug/Kg	ug/Kg	ug/Kg

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Superior Precision Analytical, Inc.
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SEMCO
JAN 25 1994
Received

HALOGENATED VOLATILE ORGANICS by EPA SW-846 Methods 5030/8010.
Quality Assurance and Control Data - Soil

Laboratory Number 90950

Compound	Method Blank (ug/Kg)	RL (ug/Kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Chloromethane/Vinyl Ch:	ND<10	10			
Bromomethane:	ND<5	5			
Chloroethane:	ND<5	5			
Trichlorofluoromethane:	ND<5	5			
1,1-Dichloroethene:	ND<5	5	126/137	78-158	8%
Dichloromethane:	ND<5	5			
t-1,2-Dichloroethene:	ND<5	5			
1,1-Dichloroethane:	ND<5	5			
c-1,2-Dichloroethene:	ND<5	5			
Chloroform:	ND<5	5			
1,1,1-Trichloroethane:	ND<5	5			
Carbon tetrachloride:	ND<5	5			
1,2-Dichloroethane:	ND<5	5			
Trichloroethene:	ND<5	5	102/105	83-128	3%
c-1,3-Dichloropropene:	ND<5	5			
1,2-Dichloropropane:	ND<5	5			
t-1,3-Dichloropropene:	ND<5	5			
Bromodichloromethane:	ND<5	5			
1,1,2-Trichloroethane:	ND<5	5			
Tetrachloroethene:	ND<5	5			
Dibromochloromethane:	ND<5	5			
Chlorobenzene:	ND<5	5	103/109	90-124	6%
Bromoform:	ND<5	5			
1,1,2,2-Tetrachloroeth:	ND<5	5			
1,3-Dichlorobenzene:	ND<5	5			
1,2-Dichlorobenzene:	ND<5	5			
1,4-Dichlorobenzene:	ND<5	5			

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
ug/Kg = Parts per billion (ppb)
QC File No. 90950

Senior Chemist
Account Manager

DRAFT

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

SEMCO
MAR - 2 1994
Received

Larry Chubick

Superior Precision Analytical	Client Project ID:	#57637	Sampled:	Jan 10, 1994
1555 Burke St., Unit 1	Sample Descript:	Soil, 57637-1	Received:	Feb 9, 1994
San Francisco, CA 94124			Analyzed:	Feb 18, 1994
	Lab Number:	4B58201	Reported:	Feb 24, 1994

REACTIVITY

Analyte	Detection Limit	Sample Results
Reactivity:		
Sulfide, mg/kg	13	N.D.
Cyanide, mg/kg	0.50	N.D.
Reaction with water	N.A.	Negative

DRAFT

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Suzanne Chin
Project Manager

SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

SEMCO
MAR - 2 1994
Received

Superior Precision Analytical
1555 Burke St., Unit 1
San Francisco, CA 94124

Client Project ID: #57637
Matrix: Soil

QC Sample Group: 4B58201

Reported: Feb 24, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Reactive Cyanide	Reactive Sulfide
Method:	SW 846	SW 846
Analyst:	J. Heider	K. Newberry
Date Analyzed:	2/18/94	2/18/94
Sample #:	4B83702	4B83702
Sample Concentration:	N.D.	N.D.
Sample Duplicate Concentration:	N.D.	N.D.
% RPD:	0.0	0.0
Control Limits:	±20	±20

DRAFT

SEQUOIA ANALYTICAL

Suzanne Chin
Project Manager

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
MAR - 2 1994
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CERTIFICATE OF ANALYSIS

Laboratory No.: 57637
Client : SEMCO
Client job No.: LARRY CHUBICK

Date received : 02/08/94
Date reported : 02/15/94

FLASHPOINT BY EPA SW-846 METHOD 1010

Lab	Sample ID	Date Sampled	Date Analyzed	Analyte	Result	Unit
1	#3-COMP W/O	01/10/94	02/15/94	FLASHPOINT	>100	°C

DRAFT

Cecilia H. Joaquin
Senior Chemist
Account Manager

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
MAR - 2 1994
Received

CERTIFICATE OF ANALYSIS

Laboratory No.: 57637
Client : SEMCO
Client job No.: LARRY CHUBICK

Date received : 02/08/94
Date reported : 02/08/94

pH BY EPA METHOD 9045

Lab Sample ID	Date Sampled	Date Analyzed	Analyte	Result
1 #3-COMP W/O	01/10/94	02/08/94	pH	8.8

Cecilia G. Jaquin
Senior Chemist
Account Manager

DRAFT

Section I

CHAIN OF CUSTODY AND ANALYSIS REQUEST

LAB NO. 5737

Consultant Name: SEMCO
Office Location: 1741 Leslie Rd. San Mateo, CA 94402
Fax No.: (415) 572-9734
Project Manager: Chuck Kipps
Phone: (415) 572 9033

TURN AROUND TIME (Circle One)
Same Day | 24 Hrs | 48 Hrs | 72 Hrs | (5 Day)

SUPERIOR ANALYTICAL, INC.
Martinez 415/229-1512 | San Francisco 415/547-2081

Send Coolers to : Modesto ☐ San Mateo ☒
Project No. / P.O. No.: Larry Chubick
Sampler: SEMCO - Dan Vigil
Regulatory Agency: San Mateo County - Teresa

Section II — Analysis Request

Sample Identification	Matrix (S=Soil A=Air W=Water)	TPH - G & D	TPH - Low Level D	TPH - G	BTXE	O&G	8010	8240	Metals	Others * Subject to Subcontracting	Total Lead				
1 - E-8'-WO	SOIL	✓			✓	✓	✓	✓	✓						
2 - W-8½'-WO	"	✓			✓	✓	✓	✓	✓						
3 - Comp WO	"	✓			✓	✓	✓	✓	✓						
4 - N-8'-G	"			✓	✓						✓				
5 S-9½'-G	"			✓	✓						✓				
6 - Comp BAS	"			✓	✓						✓				
7															
8															
9															
10															
11															
12															

Section III — Sample Information

Date	Time	Containers Quantity	Containers Pres.	Sampling Remarks
1/6	2:25	1		CD, CR, LD, ZN, NI
1	2:30	1		" " " "
1	2:35	4	3/8/94	PIS RUN FOR RCT
1	3:07	1		
1	3:12	1		
	3:14	4		

Bioremediation ☐
Contamination ☐

SEMCO MAR - 2 1994 Received

Relinquished by: Daniel M Vigil	Date/Time: 1-14-94 3:34	Received by: Chuck Kipps	Please Initial: JK
Organization: Semco		Organization: Semco	Samples Stored in Ice: ✓
Relinquished by: Chuck Kipps	Date/Time: 1/17/94 10:08	Received by: Mike Erbert	Appropriate Containers: ✓
Organization: Semco		Organization: AERO DEL.	Samples Preserved: N/A
Relinquished by:	Date/Time:	Received by: [illegible]	VOA's without Headspace: N/A
Organization:		Organization: hyperion 2/8/94	Comments:

LIMS

SEMCO

SOIL/GROUND WATER SAMPLING DATA FORM

Underground Storage Tank Site Address: 1180 MAIN STREET, REDWOOD CITY

Business Site Name: CHUB'S AUTO REPAIR

Description Sample ID (Specify location; i.e., tank, pipe, stockpile) and number	Sample Depth (Indicate depth of sample from grade)	Media (soil/water)	Date (Date sample was collected)	Soil Type (specify if sand, clay, fill, etc.)	Laboratory Results*, express in mg/kg unless otherwise specified									
					TPHg	TPHd	B	T	E	X	Lead	TOG	Cl HC	~~Other~~ 8010
(Example) Tank #1, east end, #T1-E12.5	12.5 feet	soil	2/29/93	sand	14		0.003	0.01	ND	ND	2.2			
#2- WEST SIDEWALL @8'	8 FEET	SOIL	2/9/94	CLAYEY SANDY	ND	ND	ND	ND	ND	ND		ND		ND
#1- PIT WATER		WATER	↓									9		

DRAFT

TPHg = Total Petroleum Hydrocarbon as Gasoline
BTEX = Benzene, Toluene, Ethylbenzene, Xylene
Cl HC = Chlorinated hydrocarbon compounds

TPHd = Total Petroleum Hydrocarbon as Diesel
TOG = Total Oil and Grease
Other = Semivolatile organic compounds, heavy metals, etc.

List additional analytical results and/or additional samples on a separate sheet

Submit this form as part of the closure final report. Attach soil/ground water sampling location map.

Superior Precision Analytical, Inc.
P.O. Box 1545 • Martinez, California 94553 • (510) 229-1590 / fax (510) 229-09

SEMCO
FEB 22 1994
Received

SEMCO
Attn: CHUCK KIPER

Project CHUB'S AUTO
Reported 02/17/94

TOTAL PETROLEUM HYDROCARBONS

Lab #	Sample Identification	Sampled	Analyzed	Matrix
91107- 2	#2 WEST SIDEWALL 8'	02/09/94	02/15/94	Soil

RESULTS OF ANALYSIS

Laboratory Number: 91107- 2

Gasoline:	ND<1
Benzene:	ND<.005
Toluene:	ND<.005
Ethyl Benzene:	ND<.005
Total Xylenes:	ND<.005
Diesel Range:	ND<10
Oil and Grease:	ND<50
Concentration:	mg/Kg

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SEMCO
FEB 22 1994
Received

CERTIFICATE OF ANALYSIS

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 91107

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
mg/kg = parts per million (ppm)

OIL AND GREASE ANALYSIS By Standard Methods Method 5520F:
Minimum Detection Limit in Soil: 50mg/kg

Modified EPA SW-846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Soil: 1mg/kg

EPA SW-846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Soil: 1mg/kg

EPA SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Soil: 0.005mg/kg

ANALYTE	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Gasoline:	78/80	3%	70-130
Benzene:	113/112	1%	70-130
Toluene:	108/107	1%	70-130
Ethyl Benzene:	105/103	2%	70-130
Total Xylenes:	110/110	0%	70-130
Diesel Range:	110/107	3%	75-125
Oil and Grease:	82/80	2%	56-106

Asawari Sahasrabudhe
Senior Chemist

DRAFT

Superior Precision Analytical, Inc.
P.O. Box 1545 ▪ Martinez, California 94553 ▪ (510) 229-1590 / fax (510) 229-0916

SEMCO
FEB 22 1994
Received

SEMCO
Attn: CHUCK KIPER

Project CHUB'S AUTO 93-3496
Reported 15-February-1994

HALOGENATED VOLATILE ORGANICS by EPA SW-846 Methods 5030/8010.

DRAFT

Chronology — Laboratory Number 91107

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
#2 WEST SIDEWALL	02/09/94	02/10/94	/ /	02/15/94		2

Superior Precision Analytical, Inc.
P.O. Box 1545 • Martinez, California 94553 • (510) 229-1590 / fax (510) 229-0816

SEMCO

FEB 22 1994

Received

SEMCO
Attn: CHUCK KIPER

Project CHUB'S AUTO
Reported 15-February-1994

HALOGENATED VOLATILE ORGANICS by EPA SW-846 Methods 5030/8010.

Laboratory Number	Sample Identification	Matrix
91107- 2	#2 WEST SIDEWALL 8'	Soil

RESULTS OF ANALYSIS

Laboratory Number: 91107- 2

Chloromethane/Vinyl Ch:	ND<10
Bromomethane:	ND<5
Chloroethane:	ND<5
Trichlorofluoromethane:	ND<5
1,1-Dichloroethene:	ND<5
Dichloromethane:	ND<50
t-1,2-Dichloroethene:	ND<5
1,1-Dichloroethane:	ND<5
c-1,2-Dichloroethene:	ND<5
Chloroform:	ND<5
1,1,1-Trichloroethane:	ND<5
Carbon tetrachloride:	ND<5
1,2-Dichloroethane:	ND<5
Trichloroethene:	ND<5
c-1,3-Dichloropropene:	ND<5
1,2-Dichloropropane:	ND<5
t-1,3-Dichloropropene:	ND<5
Bromodichloromethane:	ND<5
1,1,2-Trichloroethane:	ND<5
Tetrachloroethene:	ND<5
Dibromochloromethane:	ND<5
Chlorobenzene:	ND<5
Bromoform:	ND<5
1,1,2,2-Tetrachloroeth:	ND<5
1,3-Dichlorobenzene:	ND<5
1,2-Dichlorobenzene:	ND<5
1,4-Dichlorobenzene:	ND<5
Concentration:	ug/Kg

DRAFT

SEMCO

Superior Precision Analytical, Inc.

FEB 22 1994

P.O. Box 1545 ▪ Martinez, California 94553 ▪ (510) 229-1590 / fax (510) 229-0161

Received

HALOGENATED VOLATILE ORGANICS by EPA SW-846 Methods 5030/8010.
Quality Assurance and Control Data - Soil

Laboratory Number 91107

Compound	Method Blank (ug/Kg)	RL (ug/Kg)	Spike Recovery (%)	Limits (%)	RPD (%)
Chloromethane/Vinyl Ch:	ND<10	10			
Bromomethane:	ND<5	5			
Chloroethane:	ND<5	5			
Trichlorofluoromethane:	ND<5	5			
1,1-Dichloroethene:	ND<5	5	102/116	49-159	13%
Dichloromethane:	ND<50	50			
t-1,2-Dichloroethene:	ND<5	5			
1,1-Dichloroethane:	ND<5	5			
c-1,2-Dichloroethene:	ND<5	5			
Chloroform:	ND<5	5			
1,1,1-Trichloroethane:	ND<5	5			
Carbon tetrachloride:	ND<5	5			
1,2-Dichloroethane:	ND<5	5			
Trichloroethene:	ND<5	5	87/95	75-149	9%
c-1,3-Dichloropropene:	ND<5	5			
1,2-Dichloropropane:	ND<5	5			
t-1,3-Dichloropropene:	ND<5	5			
Bromodichloromethane:	ND<5	5			
1,1,2-Trichloroethane:	ND<5	5			
Tetrachloroethene:	ND<5	5			
Dibromochloromethane:	ND<5	5			
Chlorobenzene:	ND<5	5	106/123	81-146	15%
Bromoform:	ND<5	5			
1,1,2,2-Tetrachloroeth:	ND<5	5			
1,3-Dichlorobenzene:	ND<5	5			
1,2-Dichlorobenzene:	ND<5	5			
1,4-Dichlorobenzene:	ND<5	5			

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
ug/Kg = Parts per billion (ppb)
QC File No. 91107

Senior Chemist
Account Manager

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

SEMCO
MAR - 2 1994
Received

SEMCO
Attn: TERRY HAMILTON

Project CHUBS AUTO
Reported 25-February-1994

DRAFT

Chronology

Laboratory Number 91170

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
#1 PIT WATER	02/09/94	02/22/94	02/24/94	02/24/94		1

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 ▪ Martinez, California 94553 ▪ (510) 229-1512 / fax (510) 229-1526

SEMCO
MAR - 2 1994
Received

SEMCO
Attn: TERRY HAMILTON

Project CHUBS AUTO
Reported 25-February-1994

Laboratory Number	Sample Identification	Matrix
91170- 1	#1 PIT WATER	Water

RESULTS OF ANALYSIS

Laboratory Number: 91170- 1

Oil and Grease:	9
Concentration:	mg/L
	ppm

DRAFT

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

SEMCO

MAR - 2 1994

Received

Quality Assurance and Control Data - Water

Laboratory Number 91170

Compound	Method Blank (mg/L)	RL (mg/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Oil and Grease:	ND<5	5	119/120	60-120	1%

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
mg/L = Parts per million (ppm)
QC File No. 91170

Senior Chemist
Account Manager

9170 9407

CHAIN OF CUSTODY AND ANALYSIS REQUEST

LAB NO. _____

Section I

Consultant Name: SEMCO
Office Location: 1741 Leslie Rd. San Mateo, CA 94402
Fax No.: (415) 572-9734
Project Manager:
Phone: (415) 572 9933

TURN AROUND TIME (Circle One)
Same Day | 72 Hrs
24 Hrs | 5 Day
48 Hrs

SUPERIOR ANALYTICAL, INC.
Martinez 415/228-1512 | San Francisco 415/647-2081

Send Coolers to : Modesto ☐ San Mateo ☒
Project No. / P.O. No.: Chubb's Auto 93-3496
Sampler: Semco / Jim Nores
Regulatory Agency: San Mateo County

Section II — Analysis Request

SEMCO MAR - 2 1994 Received

Sample Identification	Matrix (S=Soil A=Air W=Water)	TPH - G & D	TPH - Low Level D	TPH - G	BTXE	O&G	8010	8240	Metals	Others * Subject to subcontracting					Date	Time	Containers: Quantity	Containers: Preservative	Sampling Remarks
1 #1 Pit Water	W	X			X	X	X								2/24	1:10	1	HCL	hold until Notified
2 #2 West Stock 8'	S	X			X	X	X								2/24	4:54	1		
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			

Section III — Sample Information

Bioremediation ☐
Contamination ☑

Relinquished by: Jim Nores — Date/Time: 2/9/94 3:15 — Received by: [illegible] — Organization: AERO
Relinquished by: _____ — Date/Time: _____ — Received by: _____ — Organization: _____
Relinquished by: _____ — Date/Time: _____ — Received by: Pratt — Organization: _____

Please Initial: _____
Samples Stored in Ice: Refrig
Appropriate Containers: ✓
Samples Preserved: ✓
VOA's without Headspace: _____
Comments: _____

SUPERIOR ANALYTICAL

S E M C O

SOIL/GROUND WATER SAMPLING DATA FORM

Underground Storage Tank Site Address: 1180 MAIN STREET, REDWOOD CITY

Business Site Name: _____

Description Sample ID (Specify location; i.e., tank, pipe, stockpile) and number	Sample Depth (Indicate depth of sample from grade)	Media (soil/water)	Date (Date sample was collected)	Soil Type (specify if sand, clay, fill, etc.)	Laboratory Results*, express in mg/kg unless otherwise specified									
					TPHg	TPHd	B	T	E	X	Lead	TOG	Cl HC	~~Other~~ 8240
(Example) Tank #1, east end, #T1-E12.5	12.5 feet	soil	2/29/93	sand	14		0.003	0.01	ND	ND	2.2			
#1-PT-1420		WATER	2/17/94		ND	*530 PPB	ND	ND	ND	ND		ND		ND
						* NOT TYPICAL DIESEL PATTERN								

TPHg = Total Petroleum Hydrocarbon as Gasoline
BTEX = Benzene, Toluene, Ethylbenzene, Xylene
Cl HC = Chlorinated hydrocarbon compounds

TPHd = Total Petroleum Hydrocarbon as Diesel
TOG = Total Oil and Grease
Other = Semivolatile organic compounds, heavy metals, etc.

List additional analytical results and/or additional samples on a separate sheet

Submit this form as part of the closure final report. Attach soil/ground water sampling location map.

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 23-February-1994

ANALYSIS FOR GASOLINE, BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
by EPA SW-846 Methods 5030/8015M/8020.

Superior Precision Analytical Inc

Chronology

Laboratory Number 57675

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
PIT H2O #1	02/17/94	02/17/94	02/22/94	02/22/94		1

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 23-February-1994

ANALYSIS FOR GASOLINE, BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES

Laboratory Number	Sample Identification	Matrix
57675- 1	PIT H2O #1	Water

RESULTS OF ANALYSIS

Laboratory Number: 57675- 1

Gasoline:	ND<50
Benzene:	ND<0.5
Toluene:	ND<0.5
Ethyl Benzene:	ND<0.5
Total Xylenes:	ND<0.5
Concentration:	ug/L

-- Surrogate % Recoveries --
Trifluorotoluene (SS): 104

DRAFT

Superior Precision Analytical, Inc.
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SEMC
FEB 26 19
Received

ANALYSIS FOR GASOLINE, BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
Quality Assurance and Control Data - Water

Laboratory Number 57675

Compound	Method Blank (ug/L)	RL (ug/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Gasoline:	ND<50	50	117/118	60-134	1%
Benzene:	ND<0.5	0.5	96/109	60-140	13%
Toluene:	ND<0.5	0.5	95/105	75-125	10%
Ethyl Benzene:	ND<0.5	0.5	94/101	75-125	7%
Total Xylenes:	ND<0.5	0.5	101/110	75-125	9%

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
ug/L = Parts per billion (ppb)
QC File No. 57675

2/24/94
Senior Chemist
Account Manager

Certified Laboratories

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 21-February-1994

TOTAL PETROLEUM HYDROCARBONS AS DIESEL
BY EPA METHOD 8015M

Superior Precision Analytical, Inc.

DRAFT

Chronology — Laboratory Number 57675

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
PIT H2O #1	02/17/94	02/17/94	02/17/94	02/18/94		1

Certified Laboratories

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415

SEMCO
Attn: CHUCK KIPER

Pr
Reported 21-

TOTAL PETROLEUM HYDROCARBONS AS DIESEL

Laboratory Number	Sample Identification
57675- 1	PIT H2O #1

RESULTS OF ANALYSIS

Laboratory Number: 57675- 1

Diesel:	*530
Concentration:	ug/L

* Does not match the typical diesel pattern.

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

TOTAL PETROLEUM HYDROCARBONS AS DIESEL
Quality Assurance and Control Data -- Water

Laboratory Number 57675

Compound	Method Blank (ug/L)	RL (ug/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Diesel:	ND<50	50	88/91	33-179	3%

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
ug/L = Parts per billion (ppb)
QC File No. 57675

2/24/94
Senior Chemist
Account Manager

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 24-February-1994

OIL AND GREASE BY STANDARD METHODS 5520F

Chronology

Laboratory Number 57675

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
PIT H2O #1	02/17/94	02/17/94	02/23/94	02/23/94		1

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 24-February-1994

OIL AND GREASE BY STANDARD METHODS 5520F

Laboratory Number	Sample Identification	Matrix
57675- 1	PIT H2O #1	Water

RESULTS OF ANALYSIS

Laboratory Number: 57675- 1

Oil and Grease:	ND<5
Concentration:	mg/L

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

OIL AND GREASE BY STANDARD METHODS 5520F
Quality Assurance and Control Data - Water

Laboratory Number 57675

Compound	Method Blank (mg/L)	RL (mg/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Oil and Grease:	ND<5	5	69/59	57-89	16%

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
mg/L = Parts per million (ppm)
QC File No. 57675

2/24/94
Senior Chemist
Account Manager

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Rec...

(Chubick)

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 24-February-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
by GAS CHROMATOGRAPHY - MASS SPECTROMETRY

Superior Precision Analytical, Inc.

Chronology

Laboratory Number 57675

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
PIT H2O #1	02/17/94	02/17/94	02/21/94	02/21/94		1

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7125

SEMCO
FEB 26 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 24-February-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS

Laboratory Number	Sample Identification	Matrix
57675- 1	PIT H2O #1	Water

RESULTS OF ANALYSIS

Laboratory Number: 57675- 1

Chloromethane:	ND<10
Bromomethane:	ND<10
Vinyl Chloride:	ND<10
Chloroethane:	ND<10
Methylene Chloride:	ND<10
Acetone:	ND<20
Carbon Disulfide:	ND<3
Trichlorofluoromethane:	ND<3
1,1-Dichloroethene:	ND<3
1,1-Dichloroethane:	ND<3
t-1,2-Dichloroethene:	ND<3
Chloroform:	ND<3
1,2-Dichloroethane:	ND<1
2-Butanone:	ND<20
1,1,1-Trichloroethane:	ND<3
Carbon tetrachloride:	ND<3
Vinyl Acetate:	ND<10
Bromodichloromethane:	ND<3
1,2-Dichloropropane:	ND<3
c-1,2-Dichloroethene:	ND<3
c-1,3-Dichloropropene:	ND<3
Trichloroethene:	ND<3
Dibromochloromethane:	ND<3
1,1,2-Trichloroethane:	ND<3
Benzene:	ND<1
t-1,3-Dichloropropene:	ND<3
Bromoform:	ND<3
4-Methyl-2-Pentanone:	ND<10
2-Hexanone:	ND<10
Concentration:	ug/L

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496
Reported 24-February-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS

Laboratory Number	Sample Identification	Matrix
57675- 1	PIT H2O #1	Water

RESULTS OF ANALYSIS

Laboratory Number: 57675- 1

Tetrachloroethene:	ND<3
1,1,2,2-Tetracl-ethane:	ND<3
Toluene:	ND<3
Chlorobenzene:	ND<3
Ethyl Benzene:	ND<3
Styrene:	ND<3
Xylenes:	ND<3
1,3-Dichlorobenzene:	ND<3
1,4-Dichlorobenzene:	ND<3
1,2-Dichlorobenzene:	ND<3
Concentration:	ug/L

-- Surrogate % Recoveries --

1,2-Dichloroethane-d4:	100
Toluene-d8:	105
Bromofluorobenzene:	102

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
Quality Assurance and Control Data - Water

Laboratory Number 57675

Compound	Method Blank (ug/L)	RL (ug/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Chloromethane:	ND<10	10			
Bromomethane:	ND<10	10			
Vinyl Chloride:	ND<10	10			
Chloroethane:	ND<10	10			
Methylene Chloride:	ND<10	10			
Acetone:	ND<20	20			
Carbon Disulfide:	ND<3	3			
Trichlorofluoromethane:	ND<3	3			
1,1-Dichloroethene:	ND<3	3	109/114	55-130	4%
1,1-Dichloroethane:	ND<3	3			
t-1,2-Dichloroethene:	ND<3	3			
Chloroform:	ND<3	3			
1,2-Dichloroethane:	ND<1	1			
2-Butanone:	ND<20	20			
1,1,1-Trichloroethane:	ND<3	3			
Carbon tetrachloride:	ND<3	3			
Vinyl Acetate:	ND<10	10			
Bromodichloromethane:	ND<3	3			
1,2-Dichloropropane:	ND<3	3			
c-1,2-Dichloroethene:	ND<3	3			
c-1,3-Dichloropropene:	ND<3	3			
Trichloroethene:	ND<3	3	99/106	70-119	7%
Dibromochloromethane:	ND<3	3			
1,1,2-Trichloroethane:	ND<3	3			
Benzene:	ND<1	1	107/112	70-119	5%
t-1,3-Dichloropropene:	ND<3	3			
Bromoform:	ND<3	3			
4-Methyl-2-Pentanone:	ND<10	10			
2-Hexanone:	ND<10	10			

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
FEB 26 1994
Received

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
Quality Assurance and Control Data - Water

Laboratory Number 57675

Compound	Method Blank (ug/L)	RL (ug/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Tetrachloroethene:	ND<3	3			
1,1,2,2-Tetracl-ethane:	ND<3	3			
Toluene:	ND<3	3	108/111	73-114	3%
Chlorobenzene:	ND<3	3	106/109	79-122	3%
Ethyl Benzene:	ND<3	3			
Styrene:	ND<3	3			
Xylenes:	ND<3	3			
1,3-Dichlorobenzene:	ND<3	3			
1,4-Dichlorobenzene:	ND<3	3			
1,2-Dichlorobenzene:	ND<3	3			
Freon 113:					
Tetrahydrofuran:					
Cyclohexanone:					
1,2-Dichloroethane-d4:	98			76-114	
Toluene-d8:	103			88-110	
Bromofluorobenzene:	98			86-115	

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
ug/L = Parts per billion (ppb)
QC File No. 57675

2/24/94
Senior Chemist
Account Manager

S7675

Section I

CHAIN OF CUSTODY AND ANALYSIS REQUEST

LAB NO. _____

Consultant Name: SEMCO
Office Location: 1741 Leslie Rd. San Mateo, CA 94402
Fax No.: (415) 572-9734
Project Manager: CHUCK Kiper
Phone: (415) 572 8033

TURN AROUND TIME (Circle One)
Same Day | 72 Hrs
24 Hrs | 5 Day
48 Hrs

SUPERIOR ANALYTICAL, INC.
Martinez 415/229-1512
San Francisco 415/647-2081

Send Coolers to : Modesto ☐ San Mateo ☒
Project No. / P.O. No.: 93-3496
Sampler: Art Vigil
Regulatory Agency: MICHELLE SNOEMAKER, SAN MATEO COUNTY

Section II — Analysis Request

Sample Identification	Matrix (S=Soil A=Air W=Water)	TPH - G & D	TPH - Low Level D	TPH - G	BTXE	O&G	8010	8240	Metals	Others * Subject to Subcontracting
1 Pit H2O #1	W	✓			✓	✓		✓		
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

Section III — Sample Information

Date	Time	Containers Quantity	Containers Pres.
2/17	1:10	3 Amber 3 VOAs	

Please Initials: _____
Samples Stored in Ice: _____
Appropriate containers: _____
Samples preserved: _____
VOA's without headspace: _____
Comments: _____

Sampling Remarks
Bioremediation ☐
Contamination ☐

Relinquished by: Art Vigil — Date/Time: 2-17-94 / 14:21 — Received by: [illegible] — Organization: AERO
Relinquished by: ANDREA KACZMARSKI — Organization: Aero — Date/Time: Feb 17 1994 / 12:20 PM — Received by: [illegible] — Organization: Superior SF
Relinquished by: _____ — Organization: _____ — Date/Time: _____ — Received by: _____ — Organization: _____

Please Initial
Samples Stored in Ice
Appropriate Containers
Samples Preserved
VOA's without Headspace
Comments

SEMCO FEB 23 1994 Received

DRAFT

SEMCO

SOIL/GROUND WATER SAMPLING DATA FORM

Underground Storage Tank Site Address: 1180 MAIN STREET, REDWOOD CITY

Business Site Name: CHUB'S AUTO REPAIR

Description Sample ID (Specify location; i.e., tank, pipe, stockpile) and number	Sample Depth (Indicate depth of sample from grade)	Media (soil/water)	Date (Date sample was collected)	Soil Type (specify if sand, clay, fill, etc.)	Laboratory Results*, express in mg/kg unless otherwise specified									
					TPHg	TPHd	B	T	E	X	Lead	TOG	Cl HC	~~Other~~ 8240
(Example) Tank #1, east end, #T1-E12.5	12.5 feet	soil	2/29/93	sand	14		0.003	0.01	ND	ND	2.2			
SWING TANK		WATER	3/9/94		ND	110 PPB	ND	ND	ND	ND		ND		ND

TPHg = Total Petroleum Hydrocarbon as Gasoline
BTEX = Benzene, Toluene, Ethylbenzene, Xylene
Cl HC = Chlorinated hydrocarbon compounds

TPHd = Total Petroleum Hydrocarbon as Diesel
TOG = Total Oil and Grease
Other = Semivolatile organic compounds, heavy metals, etc.

List additional analytical results and/or additional samples on a separate sheet

Submit this form as part of the closure final report. Attach soil/ground water sampling location map.

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
MAR 18 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496 CHUB'S
Reported 03/16/94

TOTAL PETROLEUM HYDROCARBONS

Lab #	Sample Identification	Sampled	Analyzed	Matrix
57762- 1	SWING TANK	03/09/94	03/10/94	Water

RESULTS OF ANALYSIS

Laboratory Number: 57762- 1

Gasoline:	ND<50
Benzene:	ND<0.5
Toluene:	ND<0.5
Ethyl Benzene:	ND<0.5
Total Xylenes:	ND<0.5
Oil and Grease:	ND<5000
Diesel:	110
Concentration:	ug/L

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 82

SEMCO
MAR 18 1994
Received

C E R T I F I C A T E O F A N A L Y S I S

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 57762

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
ug/L = parts per billion (ppb)

OIL AND GREASE ANALYSIS By Standard Methods Method 5520F:
Minimum Detection Limit in Water: 5000ug/L

Modified EPA SW-846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 50ug/L

EPA SW-846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 50ug/L

EPA SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Water: 0.5ug/L

ANALYTE	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Gasoline:	87/86	1%	60-134
Benzene:	109/109	0%	60-140
Toluene:	105/104	1%	75-125
Ethyl Benzene:	106/105	1%	75-125
Total Xylenes:	107/106	1%	75-125
Oil and Grease:	61/66	8%	57-89
Diesel:	128/102	23%	36-163

3/16/94

Senior Chemist
Account Manager

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

SEMCO
MAR 18 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496 CHUB'S
Reported 16-March-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
by GAS CHROMATOGRAPHY - MASS SPECTROMETRY

DRAFT

Chronology

Laboratory Number 57762

Identification	Sampled	Received	Extracted	Analyzed	Run #	Lab #
SWING TANK	03/09/94	03/09/94	/ /	03/16/94		1

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
MAR 18 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496 CHUB'S
Reported 16-March-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS

Laboratory Number	Sample Identification	Matrix
57762- 1	SWING TANK	Water

RESULTS OF ANALYSIS

Laboratory Number: 57762- 1

Chloromethane:	ND<10
Bromomethane:	ND<10
Vinyl Chloride:	ND<10
Chloroethane:	ND<10
Methylene Chloride:	ND<10
Acetone:	ND<20
Carbon Disulfide:	ND<3
Trichlorofluoromethane:	ND<3
1,1-Dichloroethene:	ND<3
1,1-Dichloroethane:	ND<3
t-1,2-Dichloroethene:	ND<3
Chloroform:	ND<3
1,2-Dichloroethane:	ND<1
2-Butanone:	ND<20
1,1,1-Trichloroethane:	ND<3
Carbon tetrachloride:	ND<3
Vinyl Acetate:	ND<10
Bromodichloromethane:	ND<3
1,2-Dichloropropane:	ND<3
c-1,2-Dichloroethene:	ND<3
c-1,3-Dichloropropene:	ND<3
Trichloroethene:	ND<3
Dibromochloromethane:	ND<3
1,1,2-Trichloroethane:	ND<3
Benzene:	ND<1
t-1,3-Dichloropropene:	ND<3
Bromoform:	ND<3
4-Methyl-2-Pentanone:	ND<10
2-Hexanone:	ND<10
Concentration:	ug/L

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO
MAR 18 1994
Received

SEMCO
Attn: CHUCK KIPER

Project 93-3496 CHUB'S
Reported 16-March-1994

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS

Laboratory Number	Sample Identification	Matrix
57762- 1	SWING TANK	Water

RESULTS OF ANALYSIS

Laboratory Number: 57762- 1

Tetrachloroethene:	ND<3
1,1,2,2-Tetracl-ethane:	ND<3
Toluene:	ND<3
Chlorobenzene:	ND<3
Ethyl Benzene:	ND<3
Styrene:	ND<3
Xylenes:	ND<3
1,3-Dichlorobenzene:	ND<3
1,4-Dichlorobenzene:	ND<3
1,2-Dichlorobenzene:	ND<3
Concentration:	ug/L
-- Surrogate % Recoveries --	
1,2-Dichloroethane-d4:	94
Toluene-d8:	101
Bromofluorobenzene:	98

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7129

SEMCO
MAR 18 1994
Received

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
Quality Assurance and Control Data - Water

Laboratory Number 57762

Compound	Method Blank (ug/L)	RL (ug/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Chloromethane:	ND<10	10			
Bromomethane:	ND<10	10			
Vinyl Chloride:	ND<10	10			
Chloroethane:	ND<10	10			
Methylene Chloride:	ND<10	10			
Acetone:	ND<20	20			
Carbon Disulfide:	ND<3	3			
Trichlorofluoromethane:	ND<3	3			
1,1-Dichloroethene:	ND<3	3	116/116	55-130	0%
1,1-Dichloroethane:	ND<3	3			
t-1,2-Dichloroethene:	ND<3	3			
Chloroform:	ND<3	3			
1,2-Dichloroethane:	ND<1	1			
2-Butanone:	ND<20	20			
1,1,1-Trichloroethane:	ND<3	3			
Carbon tetrachloride:	ND<3	3			
Vinyl Acetate:	ND<10	10			
Bromodichloromethane:	ND<3	3			
1,2-Dichloropropane:	ND<3	3			
c-1,2-Dichloroethene:	ND<3	3			
c-1,3-Dichloropropene:	ND<3	3			
Trichloroethene:	ND<3	3	94/95	70-119	1%
Dibromochloromethane:	ND<3	3			
1,1,2-Trichloroethane:	ND<3	3			
Benzene:	ND<1	1	110/108	70-119	2%
t-1,3-Dichloropropene:	ND<3	3			
Bromoform:	ND<3	3			
4-Methyl-2-Pentanone:	ND<10	10			
2-Hexanone:	ND<10	10			

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-0123

SEMCO
MAR 18 1994
Received

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
Quality Assurance and Control Data - Water

Laboratory Number 57762

Compound	Method Blank (ug/L)	RL (ug/L)	Spike Recovery (%)	Limits (%)	RPD (%)
Tetrachloroethene:	ND<3	3			
1,1,2,2-Tetracl-ethane:	ND<3	3			
Toluene:	ND<3	3	109/111	73-114	2%
Chlorobenzene:	ND<3	3	107/107	79-122	0%
Ethyl Benzene:	ND<3	3			
Styrene:	ND<3	3			
Xylenes:	ND<3	3			
1,3-Dichlorobenzene:	ND<3	3			
1,4-Dichlorobenzene:	ND<3	3			
1,2-Dichlorobenzene:	ND<3	3			
1,2-Dichloroethane-d4:	96			76-114	
Toluene-d8:	102			88-110	
Bromofluorobenzene:	97			86-115	

DRAFT

Definitions:
ND = Not Detected
RPD = Relative Percent Difference
RL = Reporting Limit
ug/L = Parts per billion (ppb)
QC File No. 57762

3/16/94
Senior Chemist
Account Manager

57762

CHAIN OF CUSTODY AND ANALYSIS REQUEST

LAB NO. _____

Section I

Consultant Name: SEMCO
Office Location: 1741 Leslie Rd. San Mateo, CA 94402
Fax No.: (415) 572-9734
Project Manager: CHUCK Kiper
Phone: (415) 572 8033
Send Coolers to : Modesto ☐ San Mateo ☒
Project No. / P.O. No.: 93-3496 CHUBS

TURN AROUND TIME (Circle One)
Same Day | 24 Hrs | 48 Hrs | 72 Hrs | (5 Day)

SUPERIOR ANALYTICAL, INC.
Martinez 415/229-1512 | San Francisco 415/647-2081

Sampler: PAT Vigil
Regulatory Agency: _____

Section II — Analysis Request

Sample Identification	S=Soil A=Air W=Water Matrix	TPH - G & D	TPH - Low Level D	TPH - G	BTXE	O&G	8010	8240	Metals	Others * Subject to Subcontracting
1 SWING TANK	W	✓			✓	✓		✓		
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

Section III — Sample Information

Date	Time	Containers Quantity	Containers Pres.
3/9	9:30	2 Liters 3 VOAS	

Sampling Remarks
Bioremediation ☐
Contamination ☒

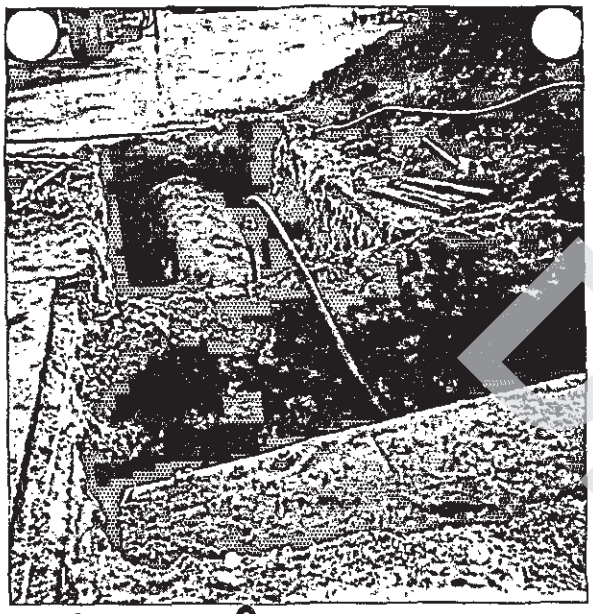
Please initial:
Samples Stored in ice. 10°C
Appropriate containers
Samples preserved
VOA's without headspace.
Comments:

MAR 18 1994 Received SEMCO

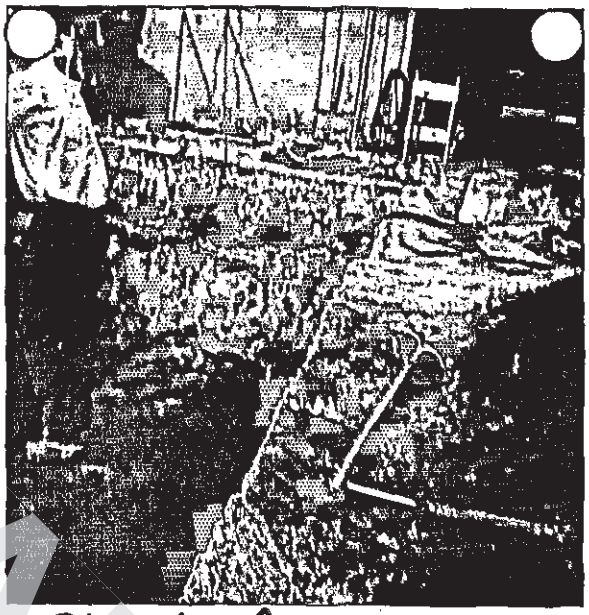
Relinquished by: Chuck JC Vigil	Date/Time: 3-9-94 / 9:38 AM	Received by: Randy McMorris
Organization: Semco		Organization: SEMCO
Relinquished by: Randy McMorris	Date/Time: 3-9-94 4:20 PM	Received by: Jill L. Usy (H2O)
Organization: SEMCO		Organization:
Relinquished by: Jill L. Usy (H2O)	Date/Time: [illegible] PM	Received by: Nicki Heath 3/4/94
Organization:		Organization: Superior SF 4:45

Please Initial
Samples Stored in Ice
Appropriate Containers
Samples Preserved
VOA's without Headspace
Comments

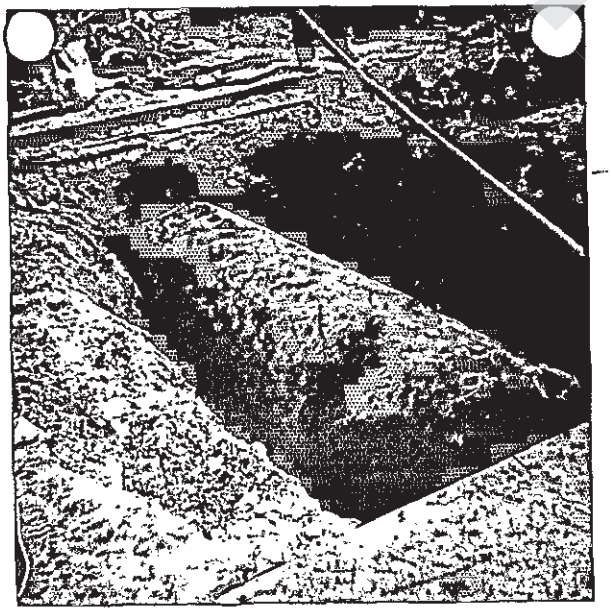
CHUBS AUTO REPAIR
93-3496
1180 MAIN STREET
REDWOOD CITY
TANK REMOVAL, JANUARY 14, 1994



Chubs Auto
93-3496 1/14/94



Chub's Auto
93-3496 1/14/96



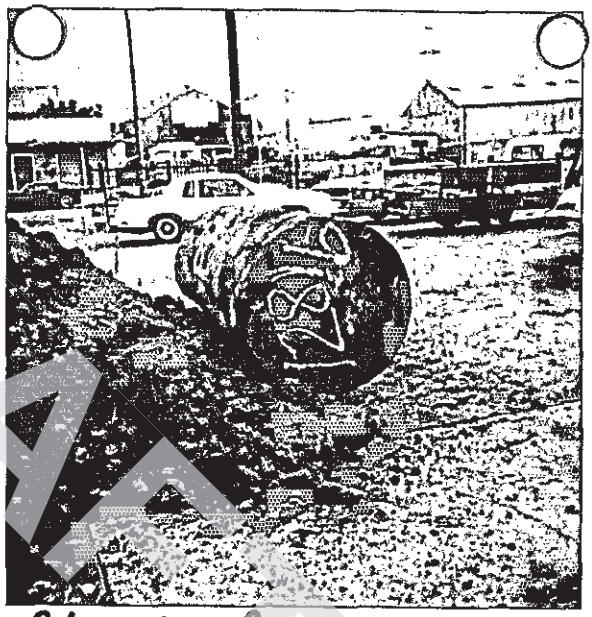
Chub's Auto
93-3496 1/14/96

DRAFT

CHUBS AUTO REPAIR
93-3496
1180 MAIN STREET
REDWOOD CITY
TANK REMOVAL, JANUARY 14, 1994



Chub's Auto
93-3496 1/14/96



Chub's Auto
93-3496 1/14/96

DRAFT

S E M C O
ENVIRONMENTAL CONTRACTORS & GENERAL ENGINEERING
1741 LESLIE STREET
SAN MATEO, CALIFORNIA 94402

February 2, 1994

Gail Lee
San Mateo County
Environmental Health Dept.
590 Hamilton Street
Redwood City, California 94063

Re: 1180 Main Street, Redwood City

Dear Gail:

Please find enclosed the workplan for the above mentioned property.

Mr. Chubick is in a bit of a hurry to get this completed, so any help in expediting this workplan would be appreciated.

If you have any questions, please give me a call.

Sincerely,

Chuck Kiper

Chuck Kiper
Vice-President
SEMCO-SAN MATEO

CK/rrk

DRAFT

WORK PLAN FOR OVER-EXCAVATION
AT 1180 MAIN STREET, REDWOOD CITY
FEBRUARY 2, 1994

1.0 BACKGROUND

SEMCO was contracted by Larry Chubick, property owner of 1180 Main Street, Redwood City, to remove one underground waste oil storage tank at the referenced addressed (see site map for location)

2.0 SITE HISTORY

The site is a commercial property and is the process of change of ownership. Mr. Chubick has also contracted with SEMCO for the required remedial work.

2.1 During excavation and removal of the known waste oil tank, an additional gasoline underground storage tank was discovered. Both tanks were removed on January 14, 1994. The tanks were transported to Erickson, Inc. by RHT, under manifest # 92885656. Tank # 12816 and 12817 were assigned to these two UST's. Please see enclosed sample map for location of samples collected from each tank excavation. Samples were collected and observed in the presence of Teresa Belasco of San Mateo County Environmental Health.

2.2 The condition of the tanks were noted by SEMCO and Teresa Belasco as follows:
Tank # 12816 (waste oil) had several surface holes with several hole at the end seam at the 11:00 position and no apparent holes in the tank bottom.
Tank # 12883 (regular gasoline tank) had pitting, but no holes were observed.

3.0 ANALYTICAL PROTOCOLS AND RESULTS

Tank # 12816- TPH GAS/DIESEL, BTXE, TOG CLHC, ICAP 5 METALS
Tank # 12883- TPH AS GAS, BTXE, TOTAL LEAD

4.0 CONCLUSIONS AND RECOMMENDATIONS

Upon receipt of the analytical, it appears the regular gasoline tank excavation is non detected on all three samples. However, the waste oil tank has elevated levels at the West end (fill end) of diesel as does the excavated material. All other analysis except metals were non-detected.

SEMCO proposes to overexcavate the fill end approximately 10 cubic yards or 2' in all directions. All previously excavated materials will be excavated. graded, transported and disposed of a Certified State Recycle Center. After excavation, a confirmation sample will be collected and requested to be analyzed for TPH as diesel.

The Excavation will be backfilled with approved material and compacted grade for resurfacing.

DRAFT

ENVIRONMENTAL HEALTH PERMIT

San Mateo County Department of Health Services
590 Hamilton Street, Redwood City, CA 94063

SEMCO
DEC 27 1993
Received

Permit to REMOVE UNDERGROUND HAZARDOUS MATERIALS
ONE (1) TANK

At 1180 MAIN STREET
REDWOOD CITY

No.	HM-817-93
Date	12/20/93
Fee paid	$378.00
APN	
Ordinance No.	02865

This permit has been granted to:

LARRY CHUBICK
543 SUNSET WAY
REDWOOD CITY, CA 94062

ISSUED BY: JORGE GOMAR

Contractor:

SEMCO
1741 LESLIE STREET
SAN MATEO, CA 94402

For the Director of
Environmental Health

THIS PERMIT IS NONTRANSFERABLE AND MUST BE ON JOB SITE
Permit shall be void if construction is not started
within 90 days of date of this permit.

recycled paper CC: RWC FIRE & BLDG. DEPTS.

DRAFT

SEMCO

JAN 22 1994

Received

ENVIRONMENTAL HEALTH PERMIT

San Mateo County Department of Health Services
590 Hamilton Street, Redwood City, CA 94063

Permit to Remove Underground Hazardous Materials
1 tank
Tank discovered during excavation.
Removed 1-14-94.
At 1180 Main Street
Redwood City, CA

No.	HM-004-94
Date	1-21-94
Fee paid	$378.00
APN	S340141
Ordinance No.	02865

and issued by T. Belasco

This permit has been granted to:
OWNER
Larry Chubick
543 Sunset Way
Redwood City, CA 94062

Contractor:
Semco
1741 Leslie Street
San Mateo, CA 94402

cc: fire & bldg dept

For the Director of
Environmental Health

THIS PERMIT IS NONTRANSFERABLE AND MUST BE ON JOB SITE
Permit shall be void if construction is not started
within 90 days of date of this permit.

DRAFT

recycled paper

REDWOOD CITY FIRE DEPARTMENT
755 Marshall Street
Redwood City, CA 94063
(415) 780-7400

APPLICATION FOR PERMIT

Address of Operation 1180 main st Business Name Chub's Auto Repair

	Business Owner	Building Owner	Contractor*
Name:	Larry Chubick	Larry Chubick / Chub's Auto Repair	SEMCO
Address:	543 Sunset Way	1180 main st	1741 Leslie st
City:	RWC CA 94062	RWC CA 94062	SM CA 94402
Telephone:	366-8977	366-8977	572-8033

Redwood City Business License: 14863

Person(s) to contact in case of emergency: (PLEASE PRINT)

Larry Chubick Tel:# 366-8977

Tel:#

$4,200.00
VALUATION OF JOB

Please submit the completed application to the Fire Prevention Bureau at 755 Marshall Street, Redwood City 94063

Bonne Titus
Signature

1/14/94
Date

*Contractors: Please fill in address & type of work in description below.

(FOR FIRE DEPARTMENT USE ONLY)

Code Section (s)	Description

CITY OF REDWOOD CITY SEMCO CASH RECEIPT NO. 074448

JAN 22 1994
Received

DEPARTMENT FIRE DATE 1/19/94

PAYOR Semco

ADDRESS 1741 Leslie St., San Mateo Ca. 94402

PURPOSE Permit: Remove 1 ea. UG tank at 1180 Main St.

FUND	ACCOUNT	OBJ.	PROJECT	AMOUNT	FUND	ACCOUNT	OBJ.	PROJECT	AMOUNT
1603	1431			40.00					
			SUBTOTAL	40.00				SUBTOTAL	

RECEIVED BY Susan James
CITY OF REDWOOD CITY

TOTAL RECEIVED ▶ 40.00

Check #9466

DRAFT

SEMCO

PERMIT

Redwood City Fire Department

JAN 2 2 1994
Received

TO KEEP, STORE, USE, MANUFACTURE, HANDLE, TRANSPORT OR OTHERWISE DISPOSE OF FLAMMABLE, COMBUSTIBLE OR EXPLOSIVE MATERIALS; TO ENGAGE IN ACTIVITIES WHICH MAY PRODUCE CONDITIONS HAZARDOUS TO LIFE OR PROPERTY; TO INSTALL EQUIPMENT USED IN CONNECTION WITH SUCH ACTIVITIES; AND/OR TO MAINTAIN, OPERATE OR USE PLACES OF ASSEMBLY IN THE OPERATION OF SUCH ACTIVITIES.

DATE January 19, 1994 MAXIMUM OCCUPANT LOAD -

PURSUANT TO THE APPLICABLE PROVISIONS OF THE LAWS OF THE STATE OF CALIFORNIA, THE CODE OF THE CITY OF REDWOOD CITY, AND THE UNIFORM FIRE CODE, AND UPON RECEIPT OF PROPER APPLICATION THEREFOR, THE REDWOOD CITY FIRE DEPARTMENT DOES HEREBY GRANT THIS PERMIT TO:

SEMCO/CHUB'S AUTO REPAIR (Permittee) . 1180 Main Street (Address)

FOR THE FOLLOWING SPECIFIED PURPOSES:

UFC 79.103 (Remove 1 ea. Underground Tank)

PERMITTEE, HIS AGENTS AND EMPLOYEES SHALL CARRY OUT SUCH SPECIFIED ACTIVITY IN COMPLIANCE WITH ALL REQUIREMENTS OF APPLICABLE FIRE PREVENTION CODES AND LAWS, WHETHER SPECIFIED OR NOT, AND IN COMPLETE ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS ON FILE IN THE REDWOOD CITY FIRE DEPARTMENT.

THIS PERMIT DOES NOT TAKE THE PLACE OF ANY LICENSE REQUIRED BY LAW AND IS NOT TRANSFERRABLE. ANY CHANGE IN THE USE OR OCCUPANCY OF PREMISES SHALL REQUIRE A NEW PERMIT.

Bureau of Fire Prevention

Anthony L. Fink
~~Peter J. O'Brien~~
XXXXXXXXXX

Chief of Fire Department

VALID UNTIL DECEMBER 31, 1994

THIS PERMIT SHALL BE POSTED ON THE PREMISES ABOVE AND SHALL AT ALL TIMES BE SUBJECT TO INSPECTION.

DRAFT

CITY OF REDWOOD CITY CASH RECEIPT NO. 074436

DEPARTMENT Fire DATE 1/7/94

PAYOR SEMCO

ADDRESS 1710 Leslie St., San Mateo, Ca. 94402

PURPOSE Permit: Remove 1 ea. UG Tank - 1180 Main St.

FUND	ACCOUNT	OBJ.	PROJECT	AMOUNT	FUND	ACCOUNT	OBJ.	PROJECT	AMOUNT
1503	1431			40.00 XX					
			SUBTOTAL	40.00 XX				SUBTOTAL	

RECEIVED BY Susan Gomes
CITY OF REDWOOD CITY

TOTAL RECEIVED ▶ 40.00 XX

Jamie Lee 1/7/94

Ck. #9457

NON-ROUTINE DISCHARGE APPLICATION

Requested By SEMCO Phone No. (415). 572-8033

1741 Leslie Street, San Mateo, CA 94402 Fax No. (415) 572-9734

Affected Business Larry Chubick, Chub's Auto Repair Assors Parcel No.

Address 1180 Main Street City Redwood City Zip 94063

Waste Description Water from excavation was put into a swing tank.

Constituents in Wastewater	concentration	units
Gasoline	ND	ppb
Benzene	ND	ppb
Toluene	ND	ppb
Ethyl Benzene	ND	ppb
Total Xylenes	ND	ppb
Oil and Grease	ND	ppb
Diesel	110	ppb

Volume approx. 400 gallons gal. Preferred Time 3-17-94 tomorrow Date 3-17-94 of Discharge

Preferred Discharge Method Pumping from tank, batch discharge from storage tank

Sanitary Sewer Discharge Point Sewer Clean Out

Comments Analytical attached

Certification: I certify that the information above is true and complete to the best of my knowledge.

Signed Bonnie Litwo Date 3-16-94 Title =

Submit Application to: South Bayside System Authority
Source Control Division
1400 Radio Road
Redwood City, CA 94065
Phone: (415) 591-7121
Fax: (415) 591-7122

Received at SBSA: Date 3/16/94 Time 1620

Application Received by [signature] File 70-50.04

Page 1 of 2

DRAFT

NON-ROUTINE DISCHARGE APPLICATION

Expected Impact of Discharge:

Collection system NONE
Pump Station
SBSA Plant Processes
Effluent Quality
Sludge Quality
Air quality/Odors
Worker Health & Safety
Additional Discussion

DRAFT

SBSA Authorization:

Discharge Approved [X] By Kenneth J. Kaufman
Discharge Not Approved [ ] Title Technical Services Manager
Refer to Policy Memo 6/30/88 Date 2/17/94

Allowable Flow Rate 400 gal/day 20 gal/min;

Time/Date of Discharge: Time/Date Start 0700 3/17 Time/Date Stop 1600 3/24

Other Conditions NONE

Sanitary Sewer District/City Authorization:

Date application received
Local Authorization Not Required [X]
Discharge Approved [ ]
Discharge Not Approved [ ]

By Date
Title
District /City
Additional Discussion/Conditions

District Use:
Permit #
Permit Fee $
Sampling & Monitoring $
Total Fees $
Invoice #
Date Fees Paid
Fees must be paid prior to discharge.

FOR WATER QUALITY

SOUTH BAYSIDE SYSTEM AUTHORITY

JOINT POWERS AUTHORITY — A Public Entity

1400 Radio Road • Redwood City, California 94065 •

415/591-7121

FAX 415/591-7122

City of Belmont

City of Redwood City

City of San Carlos

West Bay Sanitary District

FACSIMILE TRANSMITTAL

TO: _____
Individual

CENCO
Organization

FROM: KEN KAHAN
South Bayside System Authority-Facsimile #(415)591-7122

DATE: 3/17/94

Number of pages (including transmittal page): 3

Comments: _____

DRAFT

☒ Original will not follow.	FAX # 592-9734
☐ Original will follow by:	

ALT'H FACSIMIL

DRAFT

Abel Carbonic

CUSTOMER NUMBER	PURCHASE ORDER NO.	DATE	DELIVERY NUMBER
		1/14/19	9-930961

BY ACCEPTING THIS ORDER, CUSTOMER AGREES TO ALL OF THE TERMS AND CONDITIONS SET FORTH HEREIN, INCLUDING THOSE PRINTED ON THE REVERSE SIDE.

NAME Steve

SHIPPED TO

ACCEPTED BY: Patrick K Vigil

20 SOLID	21 HALF	22 SLICES	23 ROCKS	24 AIRPORT	29 WET ICE	

UNIT	DESCRIPTION	CODE	POUNDS
	DRY ICE ORM-A UN1845		
2		23	100

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-94)
Please print or type. *Form designed for use on elite (12-pitch) typewriter.*

See Instructions on back of page 6. 4704

Department of Toxic Substances Control
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
CAC000114139	93496		

GENERATOR

3. Generator's Name and Mailing Address
Larry Chubick
543 Sunset Way, Redwood City, CA 94062
4. Generator's Phone (415) 366-8977

A. State Manifest Document Number: 92885656
B. State Generator's ID:
C. State Transporter's ID: HCS118
D. Transporter's Phone: (209) 578-4100
E. State Transporter's ID:
F. Transporter's Phone:
G. State Facility's ID: CAD009416631912
H. Facility's Phone: (510) 235-1599

5. Transporter 1 Company Name: RICH HAMILTON TRUCKING
6. US EPA ID Number: CAL000112413
7. Transporter 2 Company Name:
8. US EPA ID Number:
9. Designated Facility Name and Site Address: ERICKSON, INC. 255 PARR BLVD. RICHMOND, CA 94801
10. US EPA ID Number: CAD009466391 2

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. WASTE EMPTY STORAGE TANK NON RCRA HAZARDOUS WASTE SOLID.	002	T	02000	P	State 512 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above: QTY: 2 EMPTY STORAGE TANK(S) #12883-20 TANK(S) HAVE BEEN INERTED WITH 15 LBS DRY ICE PER 1000 GAL. CAPACITY
K. Handling Codes for Wastes Listed Above: 01

15. Special Handling Instructions and Additional Information: Site: 1180 Main Street, Redwood City
KEEP AWAY FROM SOURCES OF IGNITION. ALWAYS WEAR HARD HATS WHEN WORKING AROUND U.S.T's 24 HR, CONNTACT NAME Larry Chubick & PHONE (415) 366-8977

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable federal, state and international laws.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
LAWRENCE H Chubick	Lawrence H Chubick	JAN	18	94

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
TIM HOWARD	Tim Howard	01	14	94

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space
16. DATE 01-14-94

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
DAVID SATO	DAVE SATO	01	19	94

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

92885656

SEMCO

DO NOT WRITE BELOW THIS LINE.

FEB - 4 1994

Received

DTSC 8022A (7/92)
EPA 8700—22

DRAFT

DAY OR NIGHT
TELEPHONE
(510) 235-1393

CERTIFICATE

CERTIFIED SERVICES COMPANY

255 Parr Boulevard • Richmond, California 94801

NO. 21735

CUSTOMER
SEMCO
JOB NO.
83880

FOR: Erickson, Inc. TANK NO. 12883

SEMCO
FEB - 4 1994
Received

LOCATION: Richmond DATE: 01/27/94 TIME: 08:45:42

TEST METHOD Visual Gastech/1314 SMPN LAST PRODUCT LG

This is to certify that I have personally determined that this tank is in accordance with the American Petroleum Institute and have found the condition to be in accordance with its assigned designation. This certificate is based on conditions existing at the time the inspection herein set forth was completed and is issued subject to compliance with all qualifications and instructions.

TANK SIZE 1000 Gallon Tank CONDITION SAFE FOR FIRE

REMARKS: OXYGEN 20.9%
LOWER EXPLOSIVE LIMIT LESS THAN 0.1%

"ERICKSON INC. HEREBY CERTIFIES THAT THE ABOVE NUMBERED TANK HAS BEEN CUT OPEN, PROCESSED, AND THEREFORE DESTROYED AT OUR PERMITTED HAZARDOUS WASTE FACILITY."

DRAFT

In the event of any physical or atmospheric changes affecting the gas-free conditions of the above tanks, or if in any doubt, immediately stop all hot work and contact the undersigned. This permit is valid for 24 hours if no physical or atmospheric changes occur.

STANDARD SAFETY DESIGNATION

SAFE FOR MEN: Means that in the compartment or space so designated (a) The oxygen content of the atmosphere is at least 19.5 percent by volume; and that (b) Toxic materials in the atmosphere are within permissable concentrations; and (c) In the judgment of the Inspector, the residues are not capable of producing toxic materials under existing atmospheric conditions while maintained as directed on the Inspector's certificate.

SAFE FOR FIRE: Means that in the compartment so designated (a) The concentration of flammable materials in the atmosphere is below 10 percent of the lower explosive limit; and that (b) In the judgment of the Inspector, the residues are not capable of producing a higher concentration that permitted under existing atmospheric conditions in the presence of fire and while maintained as directed on the Inspector's certificate, and further, (c) All adjacent spaces have either been cleaned sufficiently to prevent the spread of fire, are satisfactorily inerted, or in the case of fuel tanks, have been treated as deemed necessary by the Inspector.

The undersigned representative acknowledges receipt of this certificate and understands the conditions and limitations under which it was issued.

REPRESENTATIVE TITLE INSPECTOR

CP5995

DAY OR NIGHT TELEPHONE (510) 235-1393

CERTIFICATE

CERTIFIED SERVICES COMPANY

255 Parr Boulevard • Richmond, California 94801

NO. 21864

CUSTOMER	SEMCO
JOB NO.	83880

FOR: Erickson, Inc. TANK NO. 12816

SEMCO
FEB - 4 1994
Received

LOCATION: Richmond DATE: 01/21/94 TIME: 07:20:38

TEST METHOD Visual, Gastech/1314 SMPN LAST PRODUCT UO

This is to certify that I have personally determined that this tank is in accordance with the American Petroleum Institute and have found the condition to be in accordance with its assigned designation. This certificate is based on conditions existing at the time the inspection herein set forth was completed and is issued subject to compliance with all qualifications and instructions.

TANK SIZE 1000 Gallon Tank CONDITION SAFE FOR FIRE

REMARKS: OXYGEN 20.9%

LOWER EXPLOSIVE LIMIT LESS THAN 0.1%

"ERICKSON INC. HEREBY CERTIFIES THAT THE ABOVE NUMBERED TANK HAS BEEN CUT OPEN, PROCESSED, AND THEREFORE DESTROYED AT OUR PERMITTED HAZARDOUS WASTE FACILITY."

DRAFT

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The undersigned representative acknowledges receipt of this certificate and understands the conditions and limitations under which it was issued.

REPRESENTATIVE _____ TITLE _____ INSPECTOR DS

CP5995

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

GENERATOR

TRANSPORTER

FACILITY

...ency ...es 9-30-94) ...for use on elite (1... typewriter.

See Instructions on bac... page 6.

Department of Toxic Substances Cont... Sacramento, California

...KM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1	Information in the shaded areas is not required by Federal law.
CAC001001139	6711 82	1 of 1	

3. Generator's Name and Mailing Address
CHUB'S AUTO REPAIR C/O. LARRY CHUBICK
543 SUNSET WAY REDWOOD CITY, CA 94062
4. Generator's Phone (415) 366-8977

A. State Manifest Document Number: 93267182
B. State Generator's ID:
C. State Transporter's ID: 405125
D. Transporter's Phone: (209) 576-8500
E. State Transporter's ID:
F. Transporter's Phone:
G. State Facility's ID: CAD083166728
H. Facility's Phone: (600) 874-4444

5. Transporter 1 Company Name: ALLIED PETROLEUM
6. US EPA ID Number: CAL000112314
7. Transporter 2 Company Name:
8. US EPA ID Number:
9. Designated Facility Name and Site Address: REFINERIES SERVICE, 13331 N HYW 33, PATTERSON, CA 95363
10. US EPA ID Number: CAD083166728

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. NON RCRA Hazardous waste Liquid	001	TT	00100	G	State 223 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above: Water 90% Oil 10%
K. Handling Codes for Wastes Listed Above: a. 01 b. d.

15. Special Handling Instructions and Additional Information
USE APPROPRIATE PROTECTIVE GEAR
DESIGNATED FACILITY EMERGNECY CONTACT # (800) 874-4444
GENERATOR EMERGENCY CONTACT # (415) 366-8977
PICK-UP AT: 1180 MAIN STREET REDWOOD CITY, CA

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable federal, state and international laws.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
Douglas Pyburn	Douglas Pyburn	02	03	94

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Colin Kelly	Colin Kelly	02	03	94

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Martin Wragg	Martin Wragg	02	07	94

DO NOT WRITE BELOW THIS LINE.

DRAFT

DISC 8022A (7/92)
EPA 8700—22

Green: HAULER RETAINS

REMEDIAL ENVIRONMENTAL MARKETING, INC.
2717 GOODRICK AVE.
RICHMOND, CA 94801
(510) 237-5866

SEMCO
FEB 16 1994
Received

Invoice

DATE	INVOICE #
14 Feb 94	1376

BILL TO:
SEMCO
1741 LESLIE ST.
SAN MATEO, CA.
94402

SHIP TO:
REMCO
2717 GOODRICK AVE.
RICHMOND, CA
94801

Chubick

P.O. NUMBER	TERMS	REP	SHIP	VIA	F.O.B.	PROJECT
93-3496	NET 15 DAYS	SH	9 Feb 94	TRUCK	REDWOOD CITY	94-0111-266

QUANTITY	ITEM CODE	DESCRIPTION	PRICE EACH	AMOUNT
48.51		TONS CONTAMINATED SOIL #S-145		

DRAFT

TOTAL

BALANCE DUE:

ALM

2-9-94

SCALE	LOG TIME	GROSS	TARE	NET	JOB	TONS/
ER	IN	WEIGHT	WEIGHT	WEIGHT	NUM	LOAD
950	1215	72,120	32,300	39,820	266	19.91
990	1247	76,280	33,770	42,510	266	21.25
950	1623	46,990	32,300	14,690	266	7.34
0	0	0	0	0	0	0.00
0	0	0	0	0	0	0.00
0	0	0	0	0	0	0.00
0	0	0	0	0	0	0.00
0	0	0	0	0	0	0.00
0	0	0	0	0	0	0.00
0	0	0	0	0	0	0.00
0	0	0	0	0	0	0.00
		0	0	0	0	0.00
		195390.0	98370.0	97020.0		48.51
		TOTAL GROSS	TOTAL TARE	TOTAL NET WEIGHT		TOTAL TONS

SEMCO

FEB 16 1994

Received

DRAFT

PERMANENT TANK CLOSURE INSPECTION SHEET

SITE NAME: Chubs Auto Repair DATE: 1/14/93
ADDRESS: 1180 Main St, Redwood City CA
RESPONSIBLE PARTY: Larry Chubick CONTACT: Larry Chubick
ADDRESS: Same PHONE: (415) 368-2224

PRE-INSPECTION INFORMATION | HAS PERMIT BEEN ISSUED? X Y ___ N
PERMIT # HM81793

AND SIZE OF TANKS: ___ UL 1000 REG ___ D
1000 WO ___ OTHER

REASON FOR REMOVAL: Discontinued use
HISTORY INDICATE PROBLEM ___ Y X N EXPLAIN ___

DO MONITORING WELLS EXIST ON SITE? ___ Y X N (incidate on site map)
DEPTH TO GROUNDWATER: ___ Ft

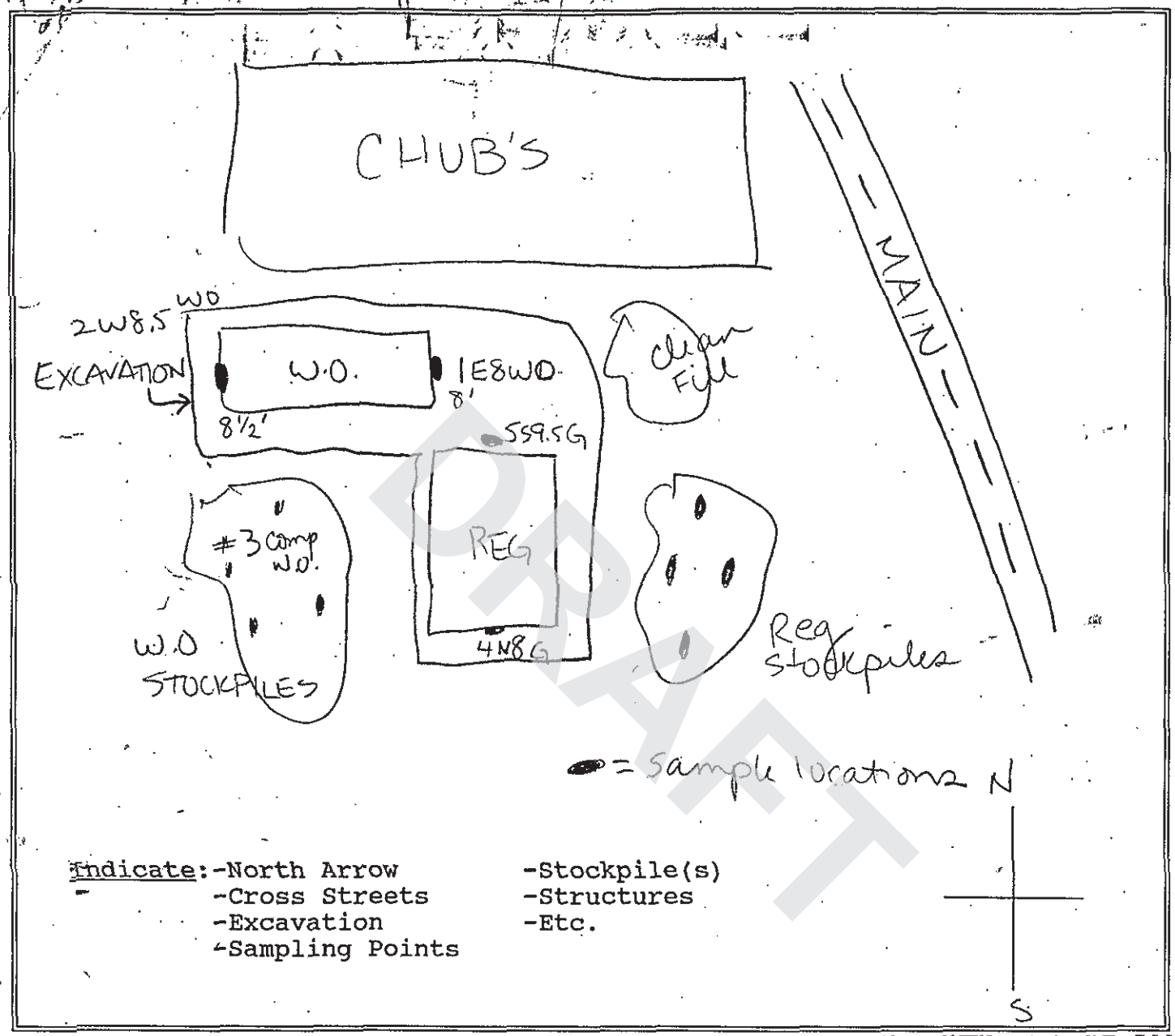
ON-SITE INFORMATION (PREPARE SITE MAP ON SECOND PAGE)

1. IS SITE SAFETY PLAN ON SITE: ✓ Y ___ N
2. CONDITION OF TANKS AND PIPING: W.O: Holes on top. Reg - OK Piping many holes
3. EVIDENCE OF LEAKAGE? X Y ___ N Explain Soil discolored (W.O tank)
4. WAS GROUNDWATER ENCOUNTERED IN PIT? ___ Y X N IF SO, DEPTH? ___
   FLOATING PRODUCT? ___ Y ___ N SHEEN? ___ Y ___ N
   WAS WATER SAMPLED? ___ Y ___ N PIT PUMPED? ___ Y ___ N
   VOLUME PUMPED (Approx) ___ gal
5. INDICATE ON SITE PLAN WHERE SOIL/GW SAMPLES TAKEN
6. ANALYSIS REQUIRED? ✓ 5030 ✓ 3550/3510 ___ 8020/8240 ✓ 5520
   ___ 601/624 ✓ TEL ✓ METALS ✓ 8010/8240 ✓ 8270
7. SAMPLES FROM STOCKPILE TAKEN? X Y ___ N If so, How Many 2 comps
   VOLUME OF STOCKPILED SOIL? (Approx) ~ 24 cu yds
8. CHAIN OF CUSTODY CHECKED? ✓ Y ___ N
9. SOIL/GW SAMPLING COMMENTS: Standard procedures
10. WAS PIT OVEREXCAVATED ___ Y X N Volume? 24 (12 ~~cu~~) cu yds
    (Indicate on site map)
11. TANK MANIFEST #? 92885656 RINSATE MANIFEST#? ___
    PIT WATER MANIFEST #: ___

INSPECTOR: Susan Blasius
TITLE: HMS IV DATE: 1/14/94
RECEIVED BY: X Chuck Kupis COMPANY: Same
DATE: 1/14/94 PHONE #: 522-8033

DRAFT

SITE MAP



Indicate:-North Arrow -Stockpile(s)
-Cross Streets -Structures
-Excavation -Etc.
-Sampling Points

ADDITIONAL COMMENTS: W.O Tank - 1 EL 0% O2 20% OK to pull
Reg Tank - 1 EL 11% O2 20% - inert + to safe levels. 1 EL 15% O2 4% - 20% - O.K.
Waste Oil - Several small holes on top and top 1/3 of end seam. Bottom of tank looks good.

Reg Tank - Corrosion and pitting but no holes.
Soil beneath W.O tank did display discoloration and slight solvent odor. Being cooler to all future jobs.
Soil under Reg tank looked good.

* Second tank discovered during excavation. You must complete paperwork and payment for second tank by Tues. 11/15.

* Please call to schedule sampling beneath dispenser.

Chuck Lyon

DRAFT

printed on recycled paper

SEMCO ENVIRONMENTAL CONTRACTORS

SAN MATEO - (800)831-2344 (415)572-8033
MODESTO - (800)585-9293 (209)524-9653

UST CLOSURE INSPECTION WORKSHEET

1180 Main St. Redwood City Chob's Auto Repair 93-3496
UST SITE ADDRESS BUSINESS NAME JOB #

ENV. HEALTH INSP. FIRE INSP. DATE

Theresa Bilmseo 1/14/94

	Tank ID #	Tank Volume	Date Tank Closed
1	12816	1000	1/14/94
2	12883	1000	1/14/94
3			
4			
5			
6			

UST CONDITION	TANK #	1	2				
	LEL OK'D	O	O				
	PRODUCT FREE	✓	✓				
	HOLES/PITS	Y	O				
	TANK CUT/CLEANED	H					
	RUST/SCALES	N	✓				
SOIL CONDITION	VAPOR	O	N				
	DISCOLORATION	O	N				
GROUND WATER	SHEEN	O	N				
	FLOATING PRODUCT	O	N				
ANALYTICALS REQUESTED	TPH GAS	✓	✓				
	TPH DIESEL	✓					
	TOTAL OIL AND GREASE	✓	-				
	BTX&E (8020)	✓	✓				
	TOTAL LEAD		✓				
	CI H/C (8010)	✓					
	8010 & 8020 or 8240	✓					
	8270						
	Cd, Cr, Pb, Zn, Ni	✓					

NOTES

W/O 12816 Had several 1/8" holes in surface top 2-3 1/4" @ 11:00 east end; steel UN wrapped Tank. No holes in bottom Sample #1-E-8'-W/O, Sample #2-W-8'-W/O Sample #3 comp W/O-

2% 6@ 12883 - 2% oxygen - 15 LEL - steel UNwrapped Tank - had pitting, no holes were observed

Sample #4-N-8'-G, Sample #5-S-8'-G Sample #6 comp Speck

Clayey Sandy Soil in both excavations

PROJECT MANAGER
Chuck Kepin

DEPTH OF EXCAVATION

DIMENSION OF EXCAVATION

TANK MANIFEST #
92856 56

LIQUID MANIFEST #

DEPTH TO GROUNDWATER

DRAFT

JOB SITE SURVEY - EVALUATION

1) UTILITIES
   a) Underground
      1: Is area marked for USA: YES:_____ NO: ✓
      2: Are utilities marked: YES:_____ NO: ✓

   b) Utilities overhead
      1: Are any present: YES:_____ NO: ✓
      2: Will ay affect work: YES:_____ NO: ✓
      3: If any- define:_____

2) TRAFFIC PATTERN
   a) Excavated soils impact: YES:_____ NO: ✓
      1: If yes, is alternate area available, if so, describe:
      Adequate space

   b) Imported Backfill impact: YES:_____ NO: ✓
      1: If yes describe alternate area available:_____

3) TRUCK ACCESS
   a) 10 wheel dump: Yes
   b) 18 wheel dump: Yes
   c) Transfer Dump: Yes

4) RAINY WEATHER CONDITION
   a) Are downspouts, gutters, etc.., in area of excavation
      YES:_____ NO: ✓
      If yes, describe method of diversion:_____

   b) Gutter, curbline intrusion: YES:_____ NO: ✓
      If yes, describe method of diversion:_____

   c) Surface runoff or sheetflow: YES:_____ NO: ✓
      If yes, describe method of diversion:_____

5) IF CONTAMINATION IS PRESENT, DETERMINE GROUNDWATER DEPTH:_____
   a) Any nearby creeks, canals or sloughs: YES:_____ NO:_____
      If yes, describe where in relation to work and approximate depth to H20: Westside of property

   b) Ground water monitoring wells on neighboring properties:
      YES:_____ NO: ✓
      If yes, what is the street address and facility name:_____

   c) Is there a private well on subject property: YES___ NO ✓
      If yes, give exact location of well:_____

6) SOIL CONSISTENCY
   a) Clayey: YES ✓ NO____
   b) Sand: YES____ NO____
   c) Silty sand: YES____ NO____
   d) Bay mud: YES ✓ NO____
   e) Rocky: YES____ NO____
   f) Describe any or other soil conditions:_____

DRAFT

10.0 Signatures & Acknowledgments:

I acknowledge having read and understand the preceding Health & Safety Plan:

James Atchison 1-14-94			
Signature	Date	Signature	Date
[signature] 1-14-94			
Signature	Date	Signature	Date
[signature] 1-14-94			
Signature	Date	Signature	Date
[signature]			
Signature	Date	Signature	Date
[signature] 1/14/94			
Signature	Date	Signature	Date
[signature] 1/14/94			
Signature	Date	Signature	Date
Signature	Date	Signature	Date

DRAFT

5

ASE
APPLIED SCIENCE AND ENGINEERING INC.

May 24, 1994

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
MAY 26 1994
RECEIVED

SUBJECT: Monitor Well Construction Report
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

Applied Science and Engineering, Inc. (ASE) respectfully submits the following report documenting construction of a monitor well with associated development and groundwater sampling at Chub's Auto Repair, 1180 Main Street in Redwood City, California (Figure 1). The investigation was conducted in accordance with the requirements of the State of California Leaking Underground Fuel Tank (LUFT) Manual, the Tri-Regional Recommendations of the San Francisco Bay Regional Water Quality Control Board (SFRWQCB), and the San Mateo County LUFT Enforcement Program (CLEP) Soil and Groundwater Remediation Guidelines.

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Introduction

Reportedly, the above-referenced site formerly contained two underground storage tanks (USTs) used for waste oil and gasoline (Figure 2). The USTs were removed from the ground on January 14, 1994. The gasoline UST did not have any holes, but the waste oil UST was noted to have several holes at the end seam at the 11:00 position. Verification soil samples collected for the gasoline UST were found to contain no detectable hydrocarbons (Table 1). One of the two soil samples collected for the waste oil UST was found to contain 810 ppm of Total Petroleum Hydrocarbons (TPH) as diesel (Table 1). In addition, the laboratory reported 17 ppb of dichloromethane by EPA Methods 5030/8010, but re-analysis by EPA Method 8240 showed no detectable hydrocarbons.

On February 9, 1994 the waste oil UST pit was over-excavated. A soil sample collected at the end of overexcavation was found to contain no detectable hydrocarbons (Table 1). Water present in the pit was sampled, with analyses showing only 530 ppb of Total Petroleum Hydrocarbons (TPH) as diesel, described by the laboratory as not typical of diesel. No TPH as gasoline,

benzene, toluene, ethylbenzene, xylenes (BTEX), oil and grease (O&G), or chlorinated hydrocarbons were detected in the water sample (Table 2). The pit was pumped dry and no water recharged. Not true * See inspector notes for more details. Basically, pump didn't work well, took sample then re-pumped pit and re-sampled. Contractor over-pumped pit. MJ 5/31/94

Regardless, the San Mateo County Department of Health Services (SMCDHS) requested construction and sampling of a monitor well. This report describes the construction and sampling of the monitor well that was requested.

Drilling and Soil Sampling

Prior to mobilization ASE secured a drilling permit from SMCDHS and notified Underground Service Alert (USA) of the planned drilling. A monitor well, MW-1, was constructed about 9 feet from the former UST in the assumed downgradient direction of the former UST, towards the San Francisco Bay (Figure 2). The gradient direction was also verified by a file review of the nearby RMC Lonestar site.

The approximately 8-inch diameter boring was drilled by HEW Drilling using hollow stem augers on May 4, 1994. The boring was advanced to a total depth of 20 feet, with soil samples collected every 5 feet in a 2-inch diameter modified California sampler outfitted with brass liners. The sampler used to collect soil samples was triple rinsed between uses in tap water containing soap, tap water, and a final rinse of distilled water. Sample tubes were cleaned prior to arrival at the site.

Visual and olfactory observations of the soils, including observations of petroleum hydrocarbons, were made and recorded on the boring log (see attached). No petroleum odors were noted emanating from any of the MW-1 soil samples. In general, the subsurface consisted of black silty clays to a depth of 14 feet underlain by black and grey fine gravel and sand. Groundwater was first encountered at approximately 14 feet below ground surface. Drilling was halted at a depth of 20 feet, about 5 feet below the initial detection of water.

One soil sample from the vadose zone at a depth of 10.5 to 11 feet was retained for subsequent laboratory analyses. This soil sample was preserved for subsequent laboratory analysis by covering the ends of the brass liner with teflon tape followed by plastic caps, labelling, and placing with blue-ice in a cooler. The label was pre-printed with an identifying number that corresponds to a page in a bound sampling booklet. On this page the location, date, and sampler's name were recorded.

Soils from drilling activities were stored on-site in a 55 gallon drum pending laboratory results.

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Monitor Well Construction

A monitor well, MW-1, was constructed in the boring by HEW Drilling, a licenced well driller in the State of California. A sketch of the well construction details is presented in Figure 3. The monitor well was constructed by inserting approximately 20 feet of two-inch diameter, flush threaded, schedule 40 PVC pipe inside the hollow stem auger. The lower 15 feet was comprised of 0.020 inch machine slotted screen with a threaded cap on the bottom, while the upper 5 feet was constructed of blank casing.

A filter pack of #3 sand was placed in the annulus between the well casing and the boring wall using the hollow stem auger as a tremie pipe. The annulus was filled with sand to about 4 feet below ground surface. Then, an approximately 1 foot thick bridge of bentonite pellets was placed in the annulus and hydrated with clean, distilled water. The bentonite was allowed to swell for about 20 minutes prior to placement of a well seal comprised of a cement grout containing approximately 3% bentonite. The grout was placed in the annulus from a depth of 3 feet to the ground surface.

The well was completed with a watertight, circular valve box, set at the grade of the pavement. Excess casing was cut off to bring the top down to an elevation just below existing ground surface. A locking water tight plug was inserted in the well and secured with a padlock.

Monitor Well Development and Sampling

On the May 5, 1994, the day following well construction, MW-1 was developed by bailing and a groundwater sample was collected. Field notes documenting well development are attached.

Prior to development, depth to water (DTW) was measured at 7.74 feet below TOC. A pressure change was noted upon unsealing the well. An initial volume of water was removed from the well using a clean teflon bailer and examined. The water was turbid, with no petroleum odor. No petroleum odor was noted during development. A total of 10.5 gallons were purged from the well, equivalent to greater than 5 casing volumes.

Purge water was discharged into 5-gallon buckets calibrated for volume measurement. Temperature, pH, and electrical conductivity were measured periodically during development (Table 3). Temperature was measured by placing water from the bailer into a 1-liter cylinder containing an alcohol thermometer. pH was measured with 0-11 range Hydrion pH paper. Electrical conductivity was measured using a calibrated Myron L Company

DRAFT

EP11/pH meter.

At the end of development the DTW was measured at 9.85 feet. The well was allowed to recover for four hours at which time DTW was measured at 9.76 feet. With approval from Ms. Michele Shoemaker of SMCDHS, a sample was then collected.

A new clean, polyethylene bailer was used to remove a volume of water from the well. The water in the bailer had no free product or petroleum odor. Three volatile analysis vials (VOAs) containing preservative were filled with groundwater from the bailer using an attachment that allowed the vials to be filled from the bottom so as to minimize exposure to air. The samples were labelled with the time, date, location, and sampler's name prior to storage in a cooler with blue ice.

All purge water was stored in a 55 gallon drum pending analytical results. The well was capped, locked, and covered.

Laboratory Analyses

Both the soil and groundwater samples were transported under chain of custody (attached) to Coast to Coast Analytical Services (CCAS), a state certified laboratory, for analyses.

The soil sample was analyzed for total petroleum hydrocarbons as diesel (TPH-D), benzene, toluene, ethylbenzene, and xylenes (BTEX); extracted by EPA Method 5030 and analyzed by EPA Methods 8020, and 8015 modified.

The water sample was analyzed for TPH as gas (TPH-G), TPH-D, and volatile organics including BTEX; extracted by EPA Method 5030 and analyzed by EPA Method 8240.

Laboratory reports are attached. Table 1 summarizes the laboratory results for soil, and Table 2 for the groundwater. The soil from MW-1 did not contain any detectable TPH or BTEX. The groundwater sample from MW-1 did not contain any TPH-G, TPH-D, BTEX, or volatile organics.

Quality Control

Laboratory quality control for both soil and water, consisting of method blanks and matrix spikes are attached.

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Summary and Conclusions

This report has been prepared to document construction, development, and sampling of a monitor well at Chub's Auto Repair at, 1180 Main Street, Redwood City, California (Figure 1).

A boring was advanced at a location within 10 feet of the former UST (Figure 2). The boring was located in the apparent downgradient direction from the former UST location. No petroleum odors were encountered in the soil from the boring.

A two-inch diameter, 20 feet deep monitor well was constructed in the boring (Figure 3). The monitor well was developed and a groundwater a sample collected on the day after construction. No free product or petroleum odor was noted in the groundwater.

Laboratory analytical results show no detectable TPH-D, or BTEX in the soil (Table 1), and no TPH-D, TPH-G, BTEX, or volatile organics in the groundwater (Table 2) from MW-1.

Recommendations

ASE recommends collection of a groundwater sample from the monitor well, MW-1, at the next regularly scheduled quarterly date, on or about August 5, 1994 to check the veracity of the initial analytical results that show no detectable hydrocarbons in the groundwater. ASE also recommends analysis only for TPH-D and BTEX due to the absence of volatile organics in the initial sample.

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

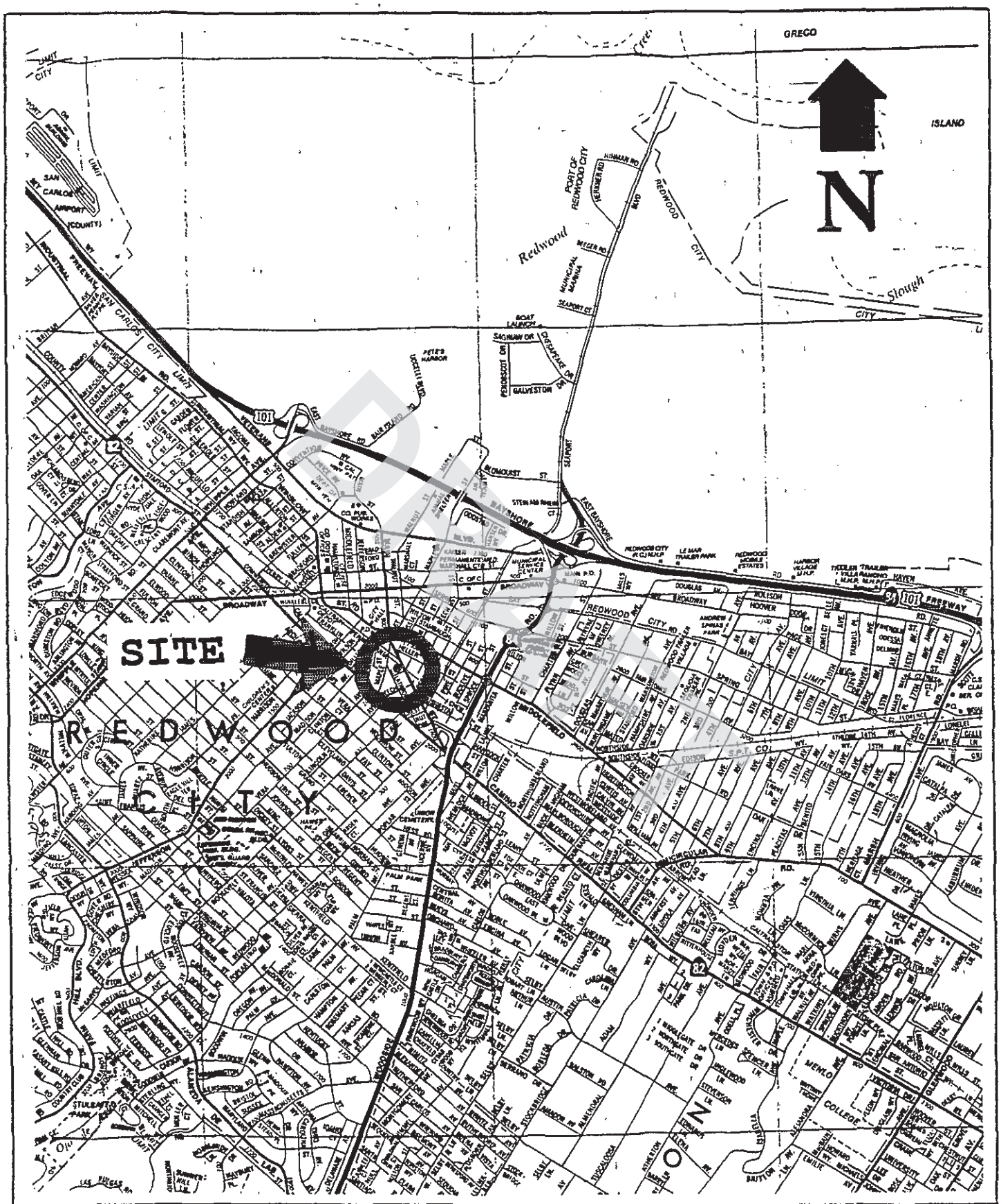
Frederick A. Yukic, MS, PE
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
FREDERICK A. YUKIC
No. 046369
EXP 5/24/94
CIVIL
STATE OF CALIFORNIA

Attachments

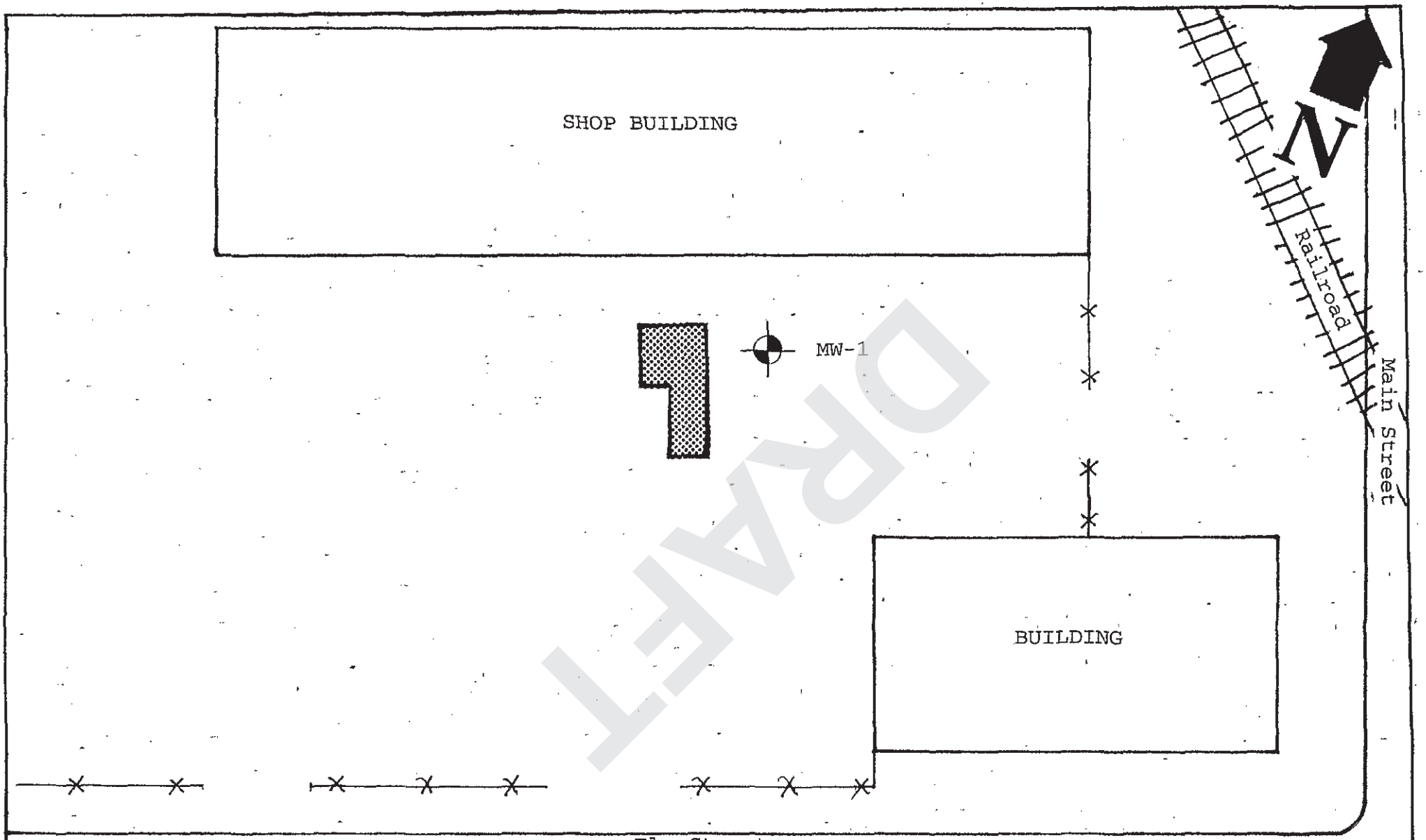
cc: Mr. Larry Chubick, Chub's Auto Repair

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Figure 1: Location Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

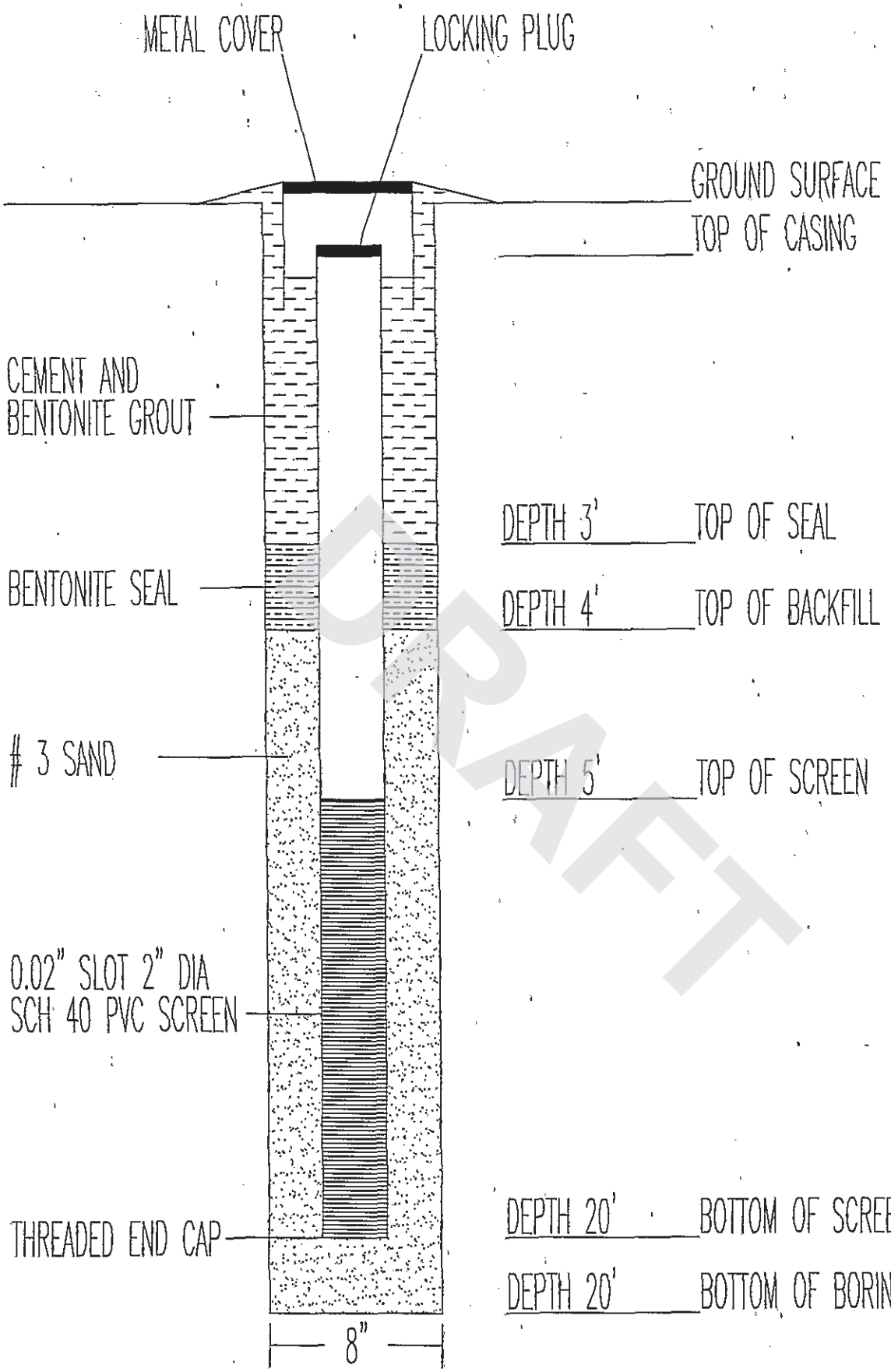


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1" = 20'

PROPOSED MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California



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DATE DRILLED: 5-4-94

Figure: 3. MW-1 CONSTRUCTION DETAILS
LOCATION: 1180 Main Street
Redwood City, CA

Table 1
Soil Analytical Results (ppm)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn
Gasoline UST Excavation														
North @ 8'	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	8	--	--
South @ 9.5	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	7	--	--
Waste Oil UST Excavation														
East @ 8'	1-14-94	ND	ND	ND	ND	ND	ND	ND	ND	0.6	60	7	52	90
West @ 8.5'	1-14-94	ND	810	ND	ND	ND	ND	ND	ND*	0.5	69	7	55	84
West @ 8'	2-09-94	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--
Stockpile Composites														
Gasoline	1-14-94	ND	--	ND	ND	ND	ND	ND	--	--	--	30	--	--
Waste Oil	1-14-94	4	1,100	ND	0.018	0.036	0.28	ND	ND	ND	81	35	79	94
Boring														
MW-1 @ 10'-10.5'	5-04-94	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed
* = 17 ppb of dichloromethane (5030/8010), ND ppb of methylene chloride (8240)

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Table 2
Water Analytical Results (ppb)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn
Excavation	2- 9-94	--	--	--	--	--	--	9,000	--	--	--	--	--	--
Excavation	2-17-94	ND	530	ND	ND	ND	ND	ND	ND	--	--	--	--	--
MW-1	5-05-94	ND	ND	ND	ND	ND	ND	--	ND	--	--	--	--	--

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed

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Table 3
Field Measurements of Groundwater
Chub's Auto Repair

Volume Purged (gallons)	Temperature (centigrade)	pH*	Electrical Conductivity (microsiemens/cm)
0	19.3	>6	2,200
3	19.3	>6	1,750
6	19	>6	1,700
9	19	>6	1,790
10.5	19	>6	1,820

* Redwood City tap water reads a pH of 6.0 with this pH paper on February 19, 1993.

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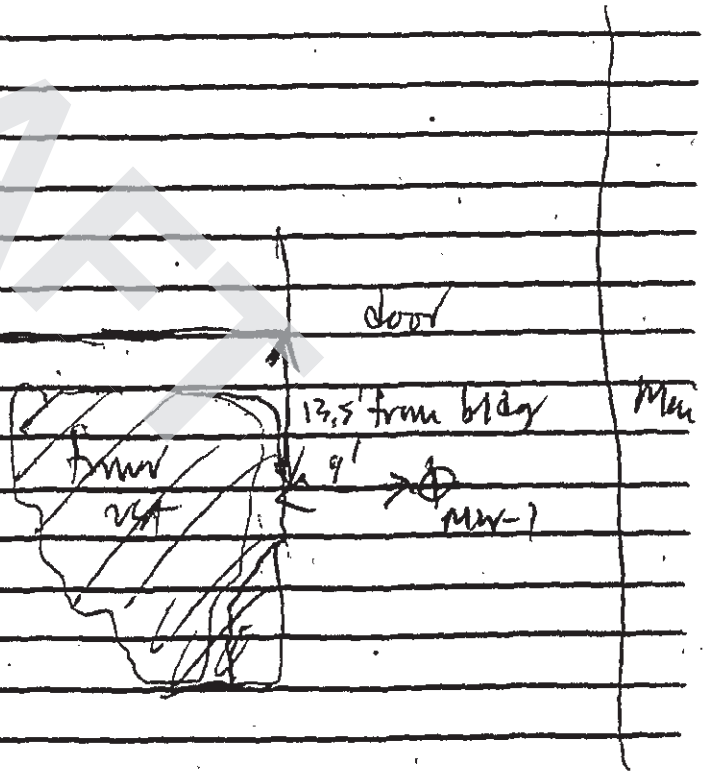
Date: 5.4.94 By: FW To: Sheet
Job Name: CHVB's AVTO Job No:
Main Activity: DPH monitor well

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Odometer In
Vehicle Pers. Odometer Out
Rent. Mileage

Time	Description
7:25	Arrive site - utilities cleared.
7:35	Jamco arrive
7:45	HEW arrive.
8:05	Jamco leave
	HEW move into position
9:05	finish drilling
	build well
9:30	Michell arrive site
	hydrate bentonite.
10:00	finish well
	clean up
10:30	leave site



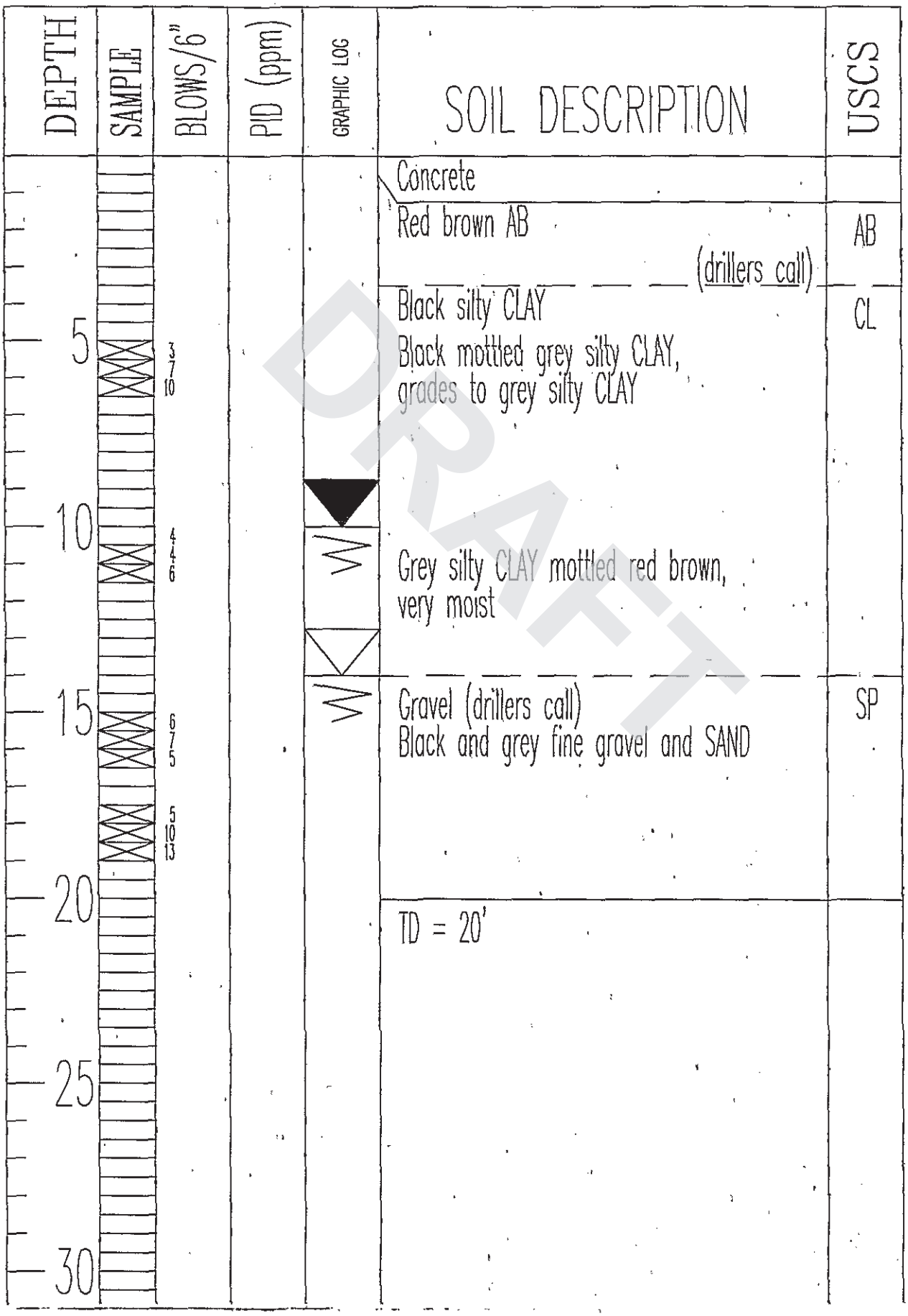
Marshall, Lightning

DRAFT

PROJECT: CHUB'S AUTO REPAIR LOCATION: 1180 Main St., RWC, CA

BORING NO: MW-1 DRILLING METHOD: HSA

DATE DRILLED: 5-4-94 DRILLER: HEW.



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APPLIED SCIENCE AND ENGINEERING INC.

DATA SHEET FOR SAMPLING WELL MW-1
& DEVELOPING

JOB NAME CHUB
SAMPLED BY DAVID OLKOWSKI

DATE 5/5/1994
SHEET 1 OF 1

USE POSITIVE VALUES
WELL DEPTH (WD) 20 ft
INITIAL DEPTH TO WATER (DTWI) 7.74 ft
(WD - DTWI) (X GAL/FT) = CASING VOLUME (CV)
(20 - 7.74) (0.17 GAL/FT) = 2.08 GALLONS/CV
(3CV) (GAL/CV) = 3 CASING VOLUMES
(5) (2.08) = 10.42 GALLONS NEED TO BE PURGED

DIA.	X
2"	0.17
4"	0.66
6"	1.5

TIME	DTW	GALS	MICR S	pH	TEMP C	NOTES
10:13						ARRIVE SITE
10:19						UNPLUG WELL, UNDER VAC/PRESSURE?
PIT WATER IS ALLEGED TO HAVE BEEN TIDAL.						
10:36	7.74 ft					
10:45		0	2200	7.6	19.3	TURBID, NO ODOR
10:57		3	1750	7.6	19.3°	
11:08		6	1700	7.6	19°	VERY SILTY
11:20		9	1790	7.6	19°	
11:29		10.5	1820	7.6	19°	
11:33	9.85					
11:44	9.83					
11:57	9.80					
12:10	COVER MW-1, PLACE WATER IN DRUM, LEAVE SITE					
15:28	[illegible]					RETURN TO SITE
15:33	9.76 ft					WATER LEVEL IN CREEK STILL [illegible] LOW.
15:43						FILL 3 VOA's
15:57	PLACE WATER IN DRUM; PLUG, LOCK (KEY #3204) & COVER MW-1					
16:00						LEAVE SITE

FINAL DEPTH TO WATER (DTWF) 9.85
0.2(DTWF) + 0.8(DTWI) = DTW FOR 80% RECOVERY (DTW80%R)
0.2(9.85) + 0.8(7.74) = 8.16 FT MAX. BEFORE SAMPLING

DWO\DATAS1D4
1.97
6.19

DRAFT

Chain of Custody

Page 1 of 2

COAST-TO-COAST ANALYTICAL SERVICES

141 Suburban Road	San Luis Obispo, CA 93401	(805) 543-2553	FAX (805) 543-2685
2059 Junction Ave.	San Jose, CA 95131	(408) 955-9077	FAX (408) 955-9078
6006 Egret Ct.	Benicia, CA 94510	(707) 747-2757	FAX (707) 747-2765
2400 Cumberland Dr.	Valparaiso, Indiana 46383	(219) 464-2389	FAX (219) 462-2953
4765 Calle Quetzal	Camarillo, CA 93012	(805) 389-1353	FAX (805) 389-1438
340 County Road No. 5	Westbrook, ME 04092	(207) 874-2400	FAX (207) 775-4029

• PLEASE PRINT IN PEN

Client	Applied Science and Engineering	Contact	Fred Yukic	Phone # (415) 363-2495	FAX # (415) 363-844
Address	PO BOX 1166	City	San Carlos	State CA	Zip 94070
Project Name/Number	Chubs			Project MGR	Fred Yukic
Bill (If different than above)		Address			
Sampler (Print and sign)	Fred Yukic FAYukic	Due Date	Circle for RUSH*	Copies To:	Auth. Init.

Sample Description	Date/Time Coll'd	*Matrix	# of Containers	Pres.	Filt. y/n	* Subject to Availability Analysis	Remarks	Lab ID #
99416	5-4-94 0:21	SL	1	N	N	TPH-diesel + BTEX	JK1490	-1

Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By
FAYukic	5/6/94 13:25			5/6/94 14:29	

FOR LAB USE ONLY

Shipping Method	Shipping #	Received By	Date/Time	Condition (See Remarks) Cold	Sealed	Intact
CAS courier			5/6/94 14:29			

REMARKS Temperature at receipt upon receipt: 35°F

* Matrix:
DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
IM - Impinger
FI - Filter
FP - Free Product
A/G - Air/Gas
SL - Sludge/Soil/Solid
OT - Other

Final

COAST - TO - COAST ANALYTICAL SERVICES

4765 Calle Quetzal • Camarillo, CA 93012 • (805) 389-1353 FAX (805) 389-1438
7726 Moller Rd. • Indianapolis, IN 46268 • (317) 875-5894 FAX (317) 872-6189
2059 Junction Ave. • San Jose, CA 95131 • (408) 955-9077 FAX (408) 955-9078
141 Suburban Road • San Luis Obispo, CA 93401 • (805) 547-3888 FAX (805) 543-2685
2400 Cumberland Dr. • Valparaiso, IN 46383 • (219) 464-2389 FAX (219) 462-2953
340 County Road No. 5 • Westbrook, ME 04092 • (207) 874-2400 FAX (207) 775-4029

Chain of Custody

• PLEASE PRINT IN PEN

Client: APPLIED SCIENCE & ENGINEERING	Contact: TRED YUKIC	Phone # (415) 363 2445	FAX # (415) 363 8449
Address: PO BOX 1166	City: SAN CARLOS	State: CA	Zip: 94070
Project Name/Number: CHUB		Project MGR: TRED YUKIC	
Bill (If different than above)	Address		
Sampler (Print and sign): DAVID OLKOWSKI	Due Date	Circle for RUSH*	Copies To: / Auth. Init.

Sample Description	Date/Time Coll'd	*Matrix	# of Containers	Pres.	Filt. y/n	*Subject to Availability Analysis	Remarks	Lab ID #
MW-1	5/5/94 5:43	GW	3	Y	N	8240 + TPH (CHLORINATED VOLATILE HYDROCARBONS)	JK1491	-1

Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By
David Olkowski	5/6/94 13:25		5/6/94 1:16pm	5/6/94 14:29	

FOR LAB USE ONLY

Shipping Method	Shipping #	Received By	Date/Time	Condition (See Remarks)		
				Cold	Sealed	Intact
CCAS courier		Duff Pure	5/6/94 14:29	✓		✓

REMARKS

Temperature of cooler upon receipt: 35°F

* Matrix:
DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
IM - Impinger
FI - Filter
FP - Free Product
A/G - Air/Gas
SL - Sludge/Soil/Solid
OT - Other

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.
San Jose, CA 95131
(408) 955-9077

CLIENT: Fred Yukic
Applied Science & Engineering
P.O. Box 1166
San Carlos, CA 94070

Lab Number : JK-1490-1
Project : Chubs

Analyzed : 05/10/94
Analyzed by: LD
Method : EPA 8020

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
9946 MW-1 @ 10.5 - 11'	Soil	Fred Yukic	05/04/94 0821	05/06/94

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
PURGEABLE AROMATICS (BTEX)				
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Percent Surrogate Recovery			75.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

DRAFT

05/12/94
GC#2\510B313
DT/mccggp(dw)
S-A-050694

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

CLIENT: Fred Yukic
Applied Science & Engineering
P.O. Box 1166
San Carlos, CA 94070

Lab Number : JK-1490-1
Project : Chubs

Analyzed : 05/12/94
Analyzed by: TN
Method : EPA 8015M

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
9946 MW-1 @ 10.5 - 11'	Soil	Fred Yukic	05/04/94 0821	05/06/94

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
TOTAL EXTRACTABLE PETROLEUM HYDROCARBON				1
Total Petroleum Hydrocarbons (Diesel)		5.	ND	
Total Petroleum Hydrocarbons (Motor Oil)		10.	ND	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 05/11/94 by AG

DRAFT

05/15/94
ECD2-511C022
DT/etet/ttn
DSL051194B

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.
San Jose, CA 95131
(408) 955-9077

CLIENT: Fred Yukic
Applied Science & Engineering
P.O. Box 1166
San Carlos, CA 94070

Lab Number : JK-1491-1
Project : Chubs

Analyzed : 05/17/94
Analyzed by: MM
Method : E624/8240

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW-1	Groundwater	David Olkowski	05/05/94 1543	05/06/94

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
VOLATILE ORGANIC COMPOUNDS				1
Acetone	(67641)	20.	ND	
Benzene	(71432)	1.	ND	
Bromodichloromethane	(75274)	1.	ND	
Bromoform	(75252)	1.	ND	
Bromomethane	(74839)	1.	ND	
2-Butanone (MEK)	(78933)	10.	ND	
Carbon Disulfide	(75150)	2.	ND	
Carbon Tetrachloride	(56235)	1.	ND	
Chlorobenzene	(108907)	1.	ND	
Chloroethane	(75003)	1.	ND	
2-Chloroethyl Vinyl Ether	(110758)	5.	ND	
Chloroform	(67663)	1.	ND	
Chloromethane	(74873)	1.	ND	
Dibromochloromethane	(124481)	1.	ND	
1,2-Dichlorobenzene	(95501)	1.	ND	
1,3-Dichlorobenzene	(541731)	1.	ND	
1,4-Dichlorobenzene	(106467)	1.	ND	
1,1-Dichloroethane	(75343)	1.	ND	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

05/20/94
FIN1/051716A
DT/etet/mtm
FIN1-051794W

DRAFT

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

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Lab Number : JK-1491-1
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REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW-1	Groundwater	David Olkowski	05/05/94 1543	05/06/94

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
1,2-Dichloroethane	(107062)	1.	ND	
1,1-Dichloroethene	(75354)	1.	ND	
cis-1,2-Dichloroethene	(156592)	1.	ND	
trans-1,2-Dichloroethene	(156605)	1.	ND	
1,2-Dichloropropane	(78875)	1.	ND	
cis-1,3-Dichloropropene	(100610105)	1.	ND	
trans-1,3-Dichloropropene	(10061026)	1.	ND	
Ethylbenzene	(100414)	1.	ND	
2-Hexanone	(591786)	5.	ND	
Methyl Isobutyl Ketone (MIBK)	(108101)	5.	ND	
Methylene Chloride	(75092)	5.	ND	
Styrene	(100425)	1.	ND	
1,1,2,2-Tetrachloroethane	(79345)	1.	ND	
Tetrachloroethene	(127184)	1.	ND	
Toluene	(108883)	1.	ND	
1,1,1-Trichloroethane	(71556)	1.	ND	
1,1,2-Trichloroethane	(79005)	1.	ND	
Trichloroethene	(79016)	1.	ND	
Trichlorofluoromethane	(75694)	1.	ND	
Trichlorotrifluoroethane	(76131)	5.	ND	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

05/20/94
FIN1/051716A
DT/etet/mtm
FIN1-051794W

DRAFT

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Lab Number : JK-1491-1
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Analyzed : 05/17/94
Analyzed by: MM
Method : E624/8240

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW-1	Groundwater	David Olkowski	05/05/94 1543	05/06/94

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
Vinyl Acetate	(108054)	5.	ND	
Vinyl Chloride	(75014)	1.	ND	
Xylenes (total)	(1330207)	1.	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	ND	
Total Petroleum Hydrocarbons (Diesel)		50.	ND	
D4-DCA (% Surrogate Recovery #1)			93.	
D8-TOL (% Surrogate Recovery #2)			99.	
BFB (% Surrogate Recovery #3)			85.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

DRAFT

05/20/94
FIN1/051716A
DT/etet/mtm
FIN1-051794W

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-050694

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/07/94
Analyzed by: CB
Method : EPA 8020/8015M

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
METHOD BLANK	Solid			

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			82.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

DRAFT

05/19/94
GC2-506B325
DT/etcb/ggp(dw)
JK1488-3

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-050694

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/09/94
Analyzed by: CB
Method : EPA 8020/8015M

QC MATRIX SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
MATRIX SPIKE	Solid			

CONSTITUENT	ORIGINAL RESULT	SPIKE AMOUNT	RESULT mg/Kg	%REC	NOTE
BTEX + TPH (Gasoline)					1
Benzene	ND	0.10	0.10	100.	
Toluene	ND	0.10	0.10	100.	
Ethylbenzene	ND	0.10	0.094	94.	
Xylenes	ND	0.30	0.29	97.	
Total Petroleum Hydrocarbons (Gasoline)	ND	2.5	1.9	76.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

DRAFT

05/19/94
GC2-509B311
DT/etcb/ggp(dw)
JK1488-3

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-050694

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/09/94
Analyzed by: CB
Method : EPA 8020/8015M

QC MATRIX SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
MATRIX SPIKE DUPLICATE	Solid			

CONSTITUENT	ORIGINAL RESULT	SPIKE AMOUNT	RESULT mg/Kg	%REC	%DIFF	NOTE
BTEX + TPH (Gasoline)						1
Benzene	ND	0.10	0.10	100.	0.	
Toluene	ND	0.10	0.095	95.	5.1	
Ethylbenzene	ND	0.10	0.090	90.	4.3	
Xylenes	ND	0.30	0.28	93.	3.5	
Total Petroleum Hydrocarbons (Gasoline)	ND	2.5	2.1	84.	10.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

DRAFT

05/19/94
GC2-509B313
DT/etcb/ggp(dw)
JK1488-3

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: DSL051194B

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/12/94
Analyzed by: TN
Method : EPA 8015M

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
METHOD BLANK	Solid			

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
TOTAL EXTRACTABLE PETROLEUM HYDROCARBON				1
Total Petroleum Hydrocarbon (Diesel)		5.	ND	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 05/11/94 by AG using EPA 3550

DRAFT

05/19/94
ECD2-511C021
DT/etet/ttn
JK1488-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.
San Jose, CA 95131
(408) 955-9077

QC Batch ID: DSL051194B

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/12/94
Analyzed by: TN
Method : EPA 8015M

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE	Solid			

CONSTITUENT	*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC	NOTE
TOTAL EXTRACTABLE PETROLEUM HYDROCARBON					1
Total Petroleum Hydrocarbon (Diesel)	5.	36.	25.	69.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 05/11/94 by AG using EPA 3550

DRAFT

05/19/94
ECD2-511C023
DT/etet/ttn
JK1488-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: DSL051194B

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/12/94
Analyzed by: TN
Method : EPA 8015M

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE DUPLICATE	Solid			

CONSTITUENT	*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC	%DIFF	NOTE
TOTAL EXTRACTABLE PETROLEUM HYDROCARBON						1
Total Petroleum Hydrocarbon (Diesel)	5.	36.	22.	61.	13.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 05/11/94 by AG using EPA 3550

DRAFT

05/19/94
ECD2-511C024
DT/etet/ttn
JK1488-1

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COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: FIN1-051794W

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/17/94
Analyzed by: MM
Method : E624/8240

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
METHOD BLANK	Aqueous			

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
VOLATILE ORGANIC COMPOUNDS				1
Acetone	(67641)	20.	ND	
Benzene	(71432)	1.	ND	
Bromodichloromethane	(75274)	1.	ND	
Bromoform	(75252)	1.	ND	
Bromomethane	(74839)	1.	ND	
2-Butanone (MEK)	(78933)	10.	ND	
Carbon Disulfide	(75150)	2.	ND	
Carbon Tetrachloride	(56235)	1.	ND	
Chlorobenzene	(108907)	1.	ND	
Chloroethane	(75003)	1.	ND	
2-Chloroethyl Vinyl Ether	(110758)	5.	ND	
Chloroform	(67663)	1.	ND	
Chloromethane	(74873)	1.	ND	
Dibromochloromethane	(124481)	1.	ND	
1,2-Dichlorobenzene	(95501)	1.	ND	
1,3-Dichlorobenzene	(541731)	1.	ND	
1,4-Dichlorobenzene	(106467)	1.	ND	
1,1-Dichloroethane	(75343)	1.	ND	
1,2-Dichloroethane	(107062)	1.	ND	
1,1-Dichloroethene	(75354)	1.	ND	
cis-1,2-Dichloroethene	(156592)	1.	ND	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

05/20/94
FIN1/051703A
DT/etet/mtm
JK1491-1

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COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.
San Jose, CA 95131
(408) 955-9077

QC Batch ID: FIN1-051794W

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/17/94
Analyzed by: MM
Method : E624/8240

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
METHOD BLANK	Aqueous			

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
trans-1,2-Dichloroethene	(156605)	1.	ND	
1,2-Dichloropropane	(78875)	1.	ND	
cis-1,3-Dichloropropene	(100610105)	1.	ND	
trans-1,3-Dichloropropene	(10061026)	1.	ND	
Ethylbenzene	(100414)	1.	ND	
2-Hexanone	(591786)	5.	ND	
Methyl Isobutyl Ketone (MIBK)	(108101)	5.	ND	
Methylene Chloride	(75092)	5.	ND	
Styrene	(100425)	1.	ND	
1,1,2,2-Tetrachloroethane	(79345)	1.	ND	
Tetrachloroethene	(127184)	1.	ND	
Toluene	(108883)	1.	ND	
1,1,1-Trichloroethane	(71556)	1.	ND	
1,1,2-Trichloroethane	(79005)	1.	ND	
Trichloroethene	(79016)	1.	ND	
Trichlorofluoromethane	(75694)	1.	ND	
Trichlorotrifluoroethane	(76131)	5.	ND	
Vinyl Acetate	(108054)	5.	ND	
Vinyl Chloride	(75014)	1.	ND	
Xylenes (total)	(1330207)	1.	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	ND	
Total Petroleum Hydrocarbons (Diesel)		50.	ND	
D4-DCA (% Surrogate Recovery #1)			84.	
D8-TOL (% Surrogate Recovery #2)			92.	
BFB (% Surrogate Recovery #3)			76.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
05/20/94
FIN1/051703A
DT/etet/mtm
JK1491-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: FIN1-051794W

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/17/94
Analyzed by: MM
Method : E624/8240

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED
QC SPIKE	Aqueous		

CONSTITUENT	*PQL µg/L	SPIKE AMOUNT	RESULT µg/L	%REC	NOTE
VOLATILE ORGANIC COMPOUNDS					1
Benzene	1.	50.	49.	98.	
Chlorobenzene	1.	50.	50.	100.	
1,1-Dichloroethene	1.	50.	42.	84.	
Toluene	1.	50.	52.	104.	
Trichloroethene	1.	50.	49.	98.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

DRAFT

05/20/94
FIN1/051722A
DT/etet/mtm
JK1491-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

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Organics Manager

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NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: FIN1-051794W

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/17/94
Analyzed by: MM
Method : E624/8240

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE DUPLICATE	Aqueous			

CONSTITUENT	*PQL µg/L	SPIKE AMOUNT	RESULT µg/L	%REC	%DIFF	NOTE
VOLATILE ORGANIC COMPOUNDS						1
Benzene	1.	50.	48.	96.	2.1	
Chlorobenzene	1.	50.	47.	94.	6.2	
1,1-Dichloroethene	1.	50.	42.	84.	0.	
Toluene	1.	50.	52.	104.	0.	
Trichloroethene	1.	50.	48.	96.	2.1	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

DRAFT

05/20/94
FIN1/051723A
DT/etet/mtm
JK1491-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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6

S E M C O
ENVIRONMENTAL CONTRACTORS & GENERAL ENGINEERING
1741 LESLIE STREET
SAN MATEO, CALIFORNIA 94402

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
JUN 10 1994
RECEIVED

June 8, 1994

Michele Shoemaker
San Mateo County
Environmental Health Deparment
590 Hamilton Street
Redwood City, California 94063

Re: Revised Tank Removal Report, Chubs Auto Repair

Dear Michele:

Please find enclosed, a revised copy of the tank removal report for the above mentioned address.

If you have any questions, please give me a call.

Respectfully,

Rhonda Reames-Kiper

Rhonda Reames-Kiper
SEMCO-SAN MATEO

cc: Larry Chubick
File

DRAFT

1.0 INTRODUCTION

In this report, we are presenting a detailed account of the tank removal activities at Chub's Auto Repair, located at 1180 Main Street, Redwood City, California. All work was performed by SEMCO, San Mateo and was done in compliance with the County of San Mateo and the Redwood City Fire Department. Tank preparation, excavation and removal occurred on January 14, 1994. Re-excavation activities occurred on February 9, 1994.

2.0 EXCAVATION AND TANK REMOVAL

On January 14, 1994, SEMCO excavated the site for the removal of one 1000 gallon Waste Oil tank. Upon arrival to the site and preparation for the removal, another tank was discovered, which was determined to be a 1000 gallon gasoline tank.

Both tanks were voided of their residual product, which was placed into barrels for disposal. It was later disposed of by Allied Petroleum on Manifest # 93267128. The tanks were then inerted by washing them with a hot water detergent wash, followed by solid carbon dioxide (dry Ice) until acceptable levels of oxygen and lower explosive limits were reached..

The tanks condition were noted as follows:

1) 1000 gallon waste oil was unwrapped steel with several 1/8" holes in surface and 2-3 1/4" holes at the East end. The piping had many holes.
2) 1000 gallon gasoline tank was unwrapped steel with pitting, but no holes were observed.

The inerted tanks were hauled by Rich Hamilton Trucking on Manifest # 92885656.

After the tanks were removed, it was noted that the soil beneath the waste oil tank was discolored, with a slight solvent odor. The soil in both excavations had a clayey/sandy consistency. The soil beneath the gas tank had no discoloration or odor.
At this time, soil samples were collected.

3.0 SOIL SAMPLING

Soil samples were retrieved out of the excavation by use of the backhoe bucket. Clean brass sample tubes were used by pushing them into the soil until a full sample was obtained. All samples were sealed with teflon tape, plastic end caps and sealed with masking tape, labeled and entered onto a chain of custody form. Samples taken to Superior Precision Analytical, a State certified laboratory.
Samples were collected from the waste oil excavation from the East end of the excavation at 8 feet and the West end at 8.5 feet. A four tube composite sample was collected from the excavated waste oil soil.

These samples were to be analyzed for TPH as Gasoline, Diesel, BTXE, Oil and Grease, 8010, 8240 and ICAP 5 Metals.

Samples were collected from the gasoline tank excavation from the North end at 8 feet and the South end at 9.5 feet. A four tube composite was also collected from the excavated soil. These samples were to be analyzed for TPH as Gas, BTXE and Total Lead.

Analytical results demonstrated that the gasoline excavation had no detectable traces of the analyzed constituents, except for 8ppm lead in the North sample, 7ppm lead in the South sample and 30 ppm Lead in the Excavated spoils. The analytical for the waste oil tank demonstrated Non detectable levels in the East end of the excavation. The West end however, had 810 ppm Diesel with non detectable levels in Gasoline, BTXE and Oil and Grease. The excavated soil had 4 ppm TPH as gas, 1100 ppm Diesel, No Benzene, 0.048 ppm Toluene, 0.036 ppm Ethyl Benzene, 0.28 ppm Xylenes and no Oil and Grease.

Based on the analytical, it was determined that additional excavation work would be necessary for the Waste Oil tank excavation.

5.0 RE-EXCAVATION ACTIVITIES

After assessing the analytical results, it was decided in conjunction with the various lead agencies to re-excavate the site down to a level in which there would be no detectable traces of contaminants.

A workplan was submitted to San Mateo County on February 2, 1994, to over excavate the West end (fill end) by approximately 10 cubic yards. Upon approval of the workplan, the job was scheduled for February 9, 1994 with San Mateo County Environmental Health inspector Michelle Shomarker.

SEMCO arrived on site and excavated the West end laterally approximately 5 feet and removed the soil to the 8 foot level. The water table was reached at the 9 foot level. The water in the excavation was pumped and allowed to recharge. (This water was placed in barrels to be disposed of at a later date) A soil sample was collected at the 8 foot level, and a water sample was collected. The soil sample was analyzed for TPH as gas and diesel, BTXE and TOG. A water sample was also collected with analysis request for TPH as gas and diesel, BTEX, TOG and 8010. However only one liter and three VOA's were collected on this date. Superior Precision Analytical informed SEMCO only one analysis could be run due to the inadequate amount. (please see enclosed correspondence from Superior).

DRAFT

Conversations on site was to request this sample not be analyzed, and allowing the pit water to be pumped and allowed to recharge. San Mateo County later requested this sample to be analyzed. SEMCO requested Superior to run TOG analysis only, due to the inadequate amount. Analytical results indicated levels of 9 ppm Oil and Grease. SEMCO at this time requested that the pit be allowed to be pumped and recharge. Permission was given for this task, so an appointment was scheduled for February 17, 1994 with San Mateo County Environmental Health Department.

A water storage tank (swing tank) was delivered to the site for the receiving of water from the excavation. The water was pumped and allowed to recharge. Three (3) amber liters and three (3) voas of water were collected and analyzed for TPH as gasoline, diesel, BTXE, TOG and 8240.

Analytical results demonstrated non detected levels in TPH as gas, BTXE, TOG and 8240. The analysis for TPH as Diesel had a level of 530 ppb, but was noted as not matching the typical diesel pattern.

The excavation was backfilled and compacted to prepare for resurfacing. The water from the original pumping of the excavation, was pumped from the barrels and was placed into the holding tank for disposal.

The water in the holding tank was then sampled on March 9, 1994 for TPH as gasoline, Diesel,BTXE, TOG and 8240, to determine how the disposal would be handled. The analysis demonstrated only 110 ppb diesel, while all other analysis were non detected.

Based on this information, the analytical was presented to South Bay Sewer Authority for pumping the water into the Sewer. On March 16, 1994, SBSA approved the discharge of the water into the sewer. (see attached permit) On March 17, 1994, the water was pumped from the tank into sewer.

The concrete was replaced on March 28, 1994

This report is for your files. If you have any questions, please give me a call.

Rhonda Reames-Kiper

Rhonda Reames-Kiper
SEMCO-SAN MATEO

SEMCO\CHUB'S\93-3496\APRIL 1994

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO

JUN - 2 1994

Received

MAY 31, 1994

Chuck Kiper
SEMCO
1741 Leslie St.
San Mateo, CA 94402

Dear Chuck,

This letter is in regards to our conversation about SEMCO's project 93-3496 (Chub's Auto). As reflected by Superior Precision Analytical's records, only one container (one liter amber glass bottle) was received for SEMCO's sample #1 Pit Water on Febuary 10, 1994.

Chuck, if you have any questions please give me a call at (415) 647-2081.

Best Regards,

5/31/94

Richard Phaler
Senior Chemist
Account Manager

DRAFT

CHAIN OF CUSTODY AND ANALYSIS REQUEST

LAB NO. 7107

Section I

Consultant Name: SEMCO
Office Location: 1741 Lasso Rd. San Mateo, CA 94402
Fax No.: (415) 572-3734
Project Manager:
Phone: (415) 572 3033

TURN AROUND TIME (Circle One)
Same Day | 72 Hrs
24 Hrs | 5 Day
48 Hrs

SUPERIOR ANALYTICAL, INC.
Martinez 415/229-1512 | San Francisco 415/647-2081

Send Coolers to : Modesto ☐ San Mateo ☒
Project No. / P.O. No.: Chubbs - Auto 93-3496
Sampler: Semco / Jim Nores
Regulatory Agency: San Mateo County

Section II — Analysis Request

Section III — Sample Information

	Sample Identification	Matrix (S=Soil A=Air W=Water)	TPH - G & D	TPH - Low Level D	TPH - G	BTXE	040 (Analyzed)	8010	8240	Metals	Others - Subject to subcontracting	Date	Time	Containers: Quantity	Containers: Pres.	Sampling Remarks
1	#1 Pit Water	W	X			X	X	X				6/9/94	1:40	1	HCl	hold until Notified
2	#2 West Sidewall 8'	S	X			X	X	X				6/9/94	1:54	1	"	
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																

Biorenediation ☐
Contamination ☒

JUN - 2 1994 Received

Relinquished by: Jason Nores	Date/Time: 6/9/94 3:15	Received by: Lisa Hughes
Organization: Semco		Organization: AERA
Relinquished by: Spanivisan	Date/Time: 6/10 11:09	Received by:
Organization: AERA		Organization:
Relinquished by:	Date/Time:	Received by: K. Carlyon

Please Initial: KC
Samples Stored in Ice: 4°C
Appropriate Containers: yes
Samples Preserved: yes
VOA's without Headspace: yes
Comments:

DRAFT

ASE
APPLIED SCIENCE AND ENGINEERING INC.

August 29, 1994

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
AUG 31 1994
RECEIVED

SUBJECT: Monitor Well Sampling Report
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

Applied Science and Engineering, Inc. (ASE) respectfully submits the second quarterly report documenting groundwater sampling at Chub's Auto Repair, 1180 Main Street in Redwood City, California (Figure 1). The sampling was conducted in accordance with the requirements of the State of California Leaking Underground Fuel Tank (LUFT) Manual, the Tri-Regional Recommendations of the San Francisco Bay Regional Water Quality Control Board (SFRWQCB), and the San Mateo County LUFT Enforcement Program (CLEP) Guidelines.

DRAFT

Introduction

Reportedly, the above-referenced site formerly contained two underground storage tanks (USTs) used for waste oil and gasoline (Figure 2). The USTs were removed from the ground on January 14, 1994. The gasoline UST did not have any holes, but the waste oil UST was noted to have several holes at the end seam at the 11 O'clock position. Verification soil samples collected for the gasoline UST were found to contain no detectable hydrocarbons (Table 1). One of the two soil samples collected for the waste oil UST was found to contain 810 ppm of Total Petroleum Hydrocarbons (TPH) as diesel (Table 1). In addition, the laboratory reported 17 ppb of dichloromethane by EPA Methods 5030/8010, but re-analysis by EPA Method 8240 showed no detectable hydrocarbons.

On February 9, 1994 the waste oil UST pit was over-excavated. A soil sample collected at the end of overexcavation was found to contain no detectable hydrocarbons. Water present in the pit was sampled, with analyses showing only 530 ppb of Total Petroleum Hydrocarbons (TPH) as diesel, described by the laboratory as not typical of diesel. No TPH as gasoline, benzene, toluene, ethylbenzene, xylenes (BTEX), oil and grease (O&G), or chlorinated hydrocarbons were detected in the water sample (Table 2).

Subsequently, the San Mateo County Department of Health Services (SMCDHS) requested construction and sampling of a monitor well. This report describes the second quarterly sampling of the monitor well.

Monitor Well Development and Sampling

On August 4, 1994, monitor well MW-1 was purged by bailing and a groundwater sample was collected. Field notes documenting well sampling are attached.

Prior to purging, depth to water (DTW) was measured at 10.32 feet below the top of the well casing (TOC). An initial volume of water was removed from the well using a new clean polyethylene bailer and examined. The water was clear, with no petroleum odor. No petroleum odor was noted during purging. A total of 5 gallons were purged from the well, equivalent to greater than 3 casing volumes. Purge water was discharged into 5-gallon buckets calibrated for volume measurement.

At the end of purging the DTW was measured at 10.25 feet, indicating instant recovery. With approval from Ms. Michele Shoemaker of SMCDHS, a sample was collected in her absence.

A new clean, polyethylene bailer was used to remove a volume of water from the well. The water in the bailer had no free product. Two volatile analysis vials (VOAs) containing preservative were filled with groundwater from the bailer using an attachment that allowed the vials to be filled from the bottom so as to minimize exposure to air. The samples were labelled with the time, date, location, and sampler's name prior to storage in a cooler with blue ice.

All purge water was stored in a 55 gallon drum pending analytical results. The well was capped, locked, and covered.

Laboratory Analyses

The groundwater samples were transported under chain of custody (attached) to PACE (formally Coast to Coast Analytical Services), a state certified laboratory, for analyses.

The groundwater sample was analyzed for total petroleum hydrocarbons as diesel (TPH-D), by EPA methods 3510/8015, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA method 8020.

Laboratory reports are attached. Table 2 summarizes the laboratory results for the groundwater. The groundwater sample from MW-1 did not contain any TPH-D or BTEX.

Quality Control

Laboratory quality control for water, consisting of method blanks and spikes, are attached.

Summary and Conclusions

This report has been prepared to document sampling of a monitor well at Chub's Auto Repair at, 1180 Main Street, Redwood City, California (Figure 1).

The monitor well was purged and a groundwater sample collected. No free product or petroleum odor was noted in the groundwater.

Laboratory analytical results show no detectable TPH-D or BTEX in the groundwater from MW-1 (Table 2).

Recommendations

ASE recommends collection of a groundwater sample from the monitor well, MW-1, at the next regularly scheduled quarterly date, on or about November 4, 1994 to check the veracity of the analytical results that show no detectable hydrocarbons in the groundwater for two quarters.

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
FREDERICK A. YUKIC
No. 046369
EXP. 12/31/94
CIVIL
STATE OF CALIFORNIA

Attachments

cc: Mr. Larry Chubick, Chub's Auto Repair

DRAFT

Table 1
Soil Analytical Results (ppm)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn
Gasoline UST Excavation														
North @ 8'	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	8	--	--
South @ 9.5	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	7	--	--
Waste Oil UST Excavation														
East @ 8'	1-14-94	ND	ND	ND	ND	ND	ND	ND	ND	0.6	60	7	52	90
West @ 8.5'	1-14-94	ND	810	ND	ND	ND	ND	ND	ND*	0.5	69	7	55	84
West @ 8'	2-09-94	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--
Stockpile Composites														
Gasoline	1-14-94	ND	--	ND	ND	ND	ND	ND	--	--	--	30	--	--
Waste Oil	1-14-94	4	1,100	ND	0.018	0.036	0.28	ND	ND	ND	81	35	79	94
Boring														
MW-1 @ 10'-10.5'	5-04-94	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed
* = 17 ppb of dichloromethane (5030/8010), ND ppb of methylene chloride (8240)

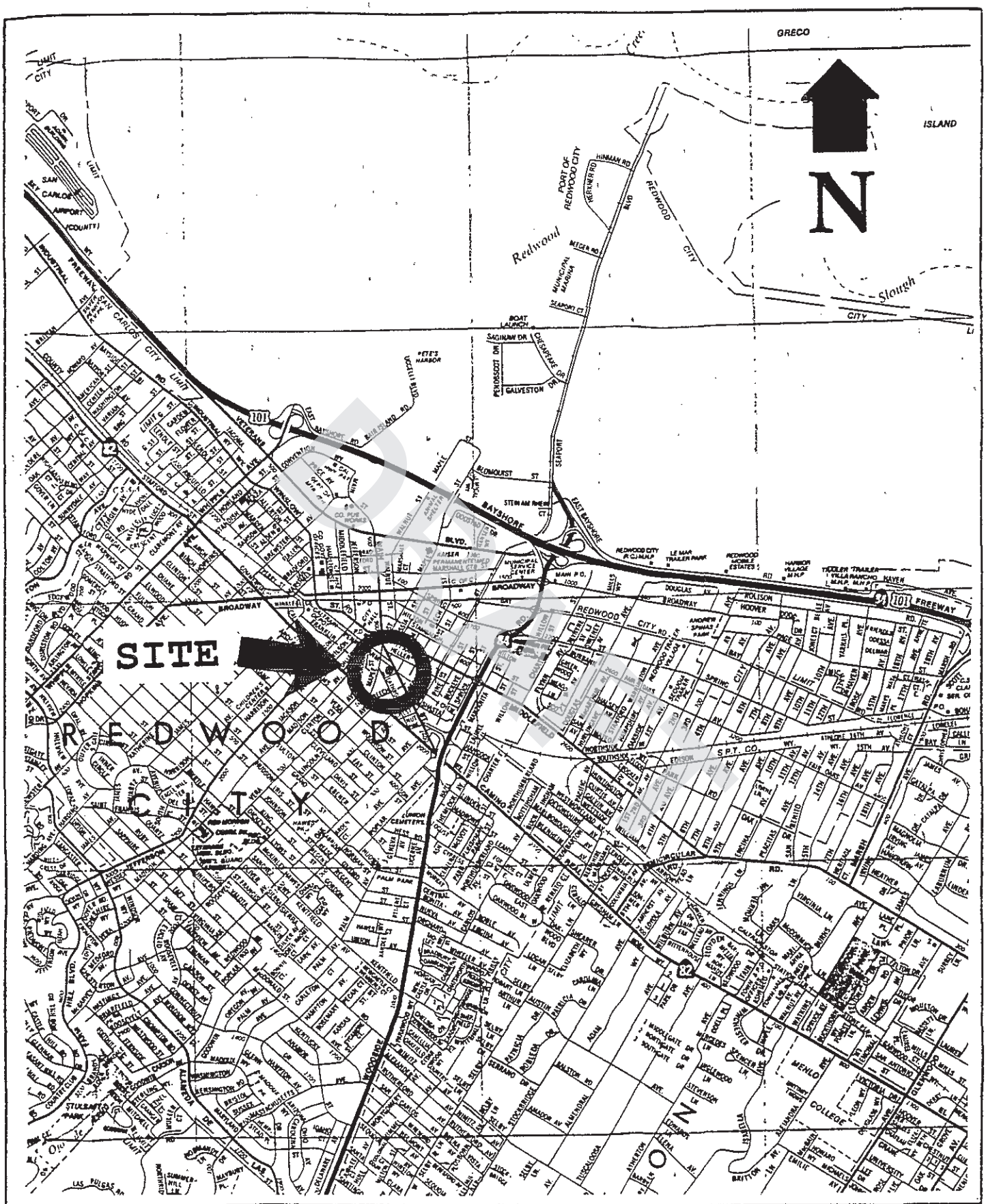
DRAFT

Table 2
Water Analytical Results (ppb)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn
Excavation	2- 9-94	--	--	--	--	--	--	9,000	--	--	--	--	--	--
Excavation	2-17-94	ND	530	ND	ND	ND	ND	ND	ND	--	--	--	--	--
MW-1	5-05-94	ND	ND	ND	ND	ND	ND	--	ND	--	--	--	--	--
MW-1	8-04-94	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--

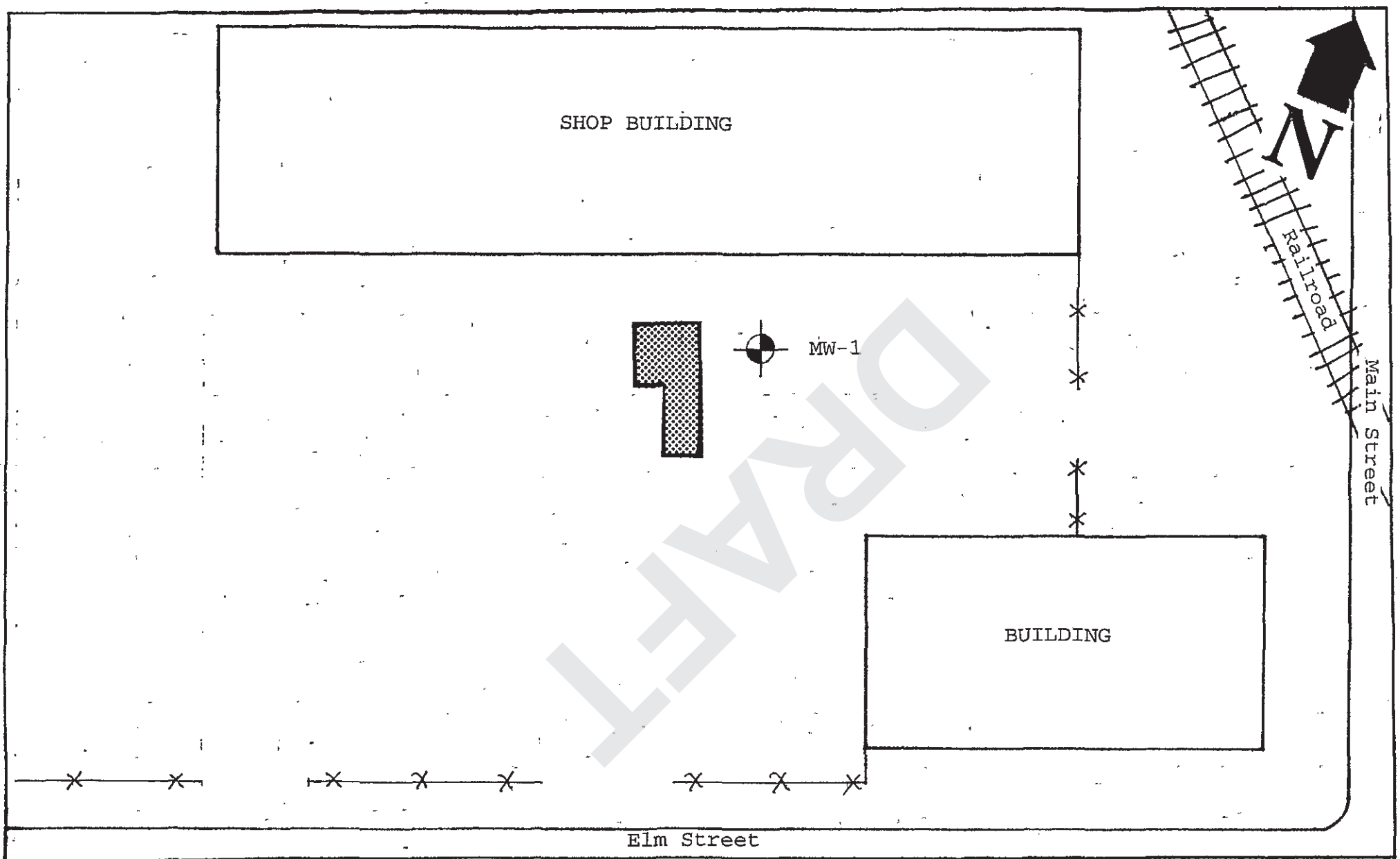
Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed

DRAFT



ASE
APPLIED SCIENCE AND ENGINEERING INC.

Figure 1: Location Map
Chub's Auto Repair
1180 Main Street
Redwood City, California



ASE
APPLIED SCIENCE AND ENGINEERING INC.

1" = 20'

MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

ASE
APPLIED SCIENCE AND ENGINEERING INC.

DATA SHEET FOR SAMPLING WELL MW-1

JOB NAME CHUB
SAMPLED BY DAVID OLKOWSKI

DATE 8/4/94
SHEET 1 OF 1

USE POSITIVE VALUES
WELL DEPTH (WD) 20 ft
INITIAL DEPTH TO WATER (DTWI) 10.32
(WD - DTWI)(X GAL/FT) = CASING VOLUME (CV)
(20 - 10.32)(0.17 GAL/FT) = 1.65 GALLONS/CV
(3CV)(GAL/CV) = 3 CASING VOLUMES
(3)(1.65) = 4.94 GALLONS NEED TO BE PURGED

DIA. ~~X~~
2" 0.17
4" 0.66
6" 1.5

TIME	DTW	GALS	MICR S	pH	TEMP C	NOTES
10:08						ARRIVE SITE
10:16	10.32 ft					
10:30		0				CLEAR, NO ODOR MICHELE PRESENT
10:44		5				TURBID
10:49	10.25					INSTANT RECOVERY
11:07						FILL 2 VOAs, 1 L
						PLUG, LOCK & COVER MW-1
11:23						PLACE WATER IN DRUM
11:26						WATER LEVEL IN CREEK IS LOW
11:27						LEAVE SITE

FINAL DEPTH TO WATER (DTWF)
0.2(DTWF) + 0.8(DTWI) = DTW FOR 80% RECOVERY (DTW80%R)
0.2( ) + 0.8( ) = FT MAX. BEFORE SAMPLING
DWO\DATAS1D4

DRAFT

COAST - TO - COAST ANALYTICAL SERVICES

4765 Calle Quetzal • Camarillo, CA 93012 • (805) 389-1353 FAX (805) 389-1438
7726 Moller Rd. • Indianapolis, IN 46268 • (317) 875-5894 FAX (317) 872-6189
2059 Junction Ave. • San Jose, CA 95131 • (408) 955-9077 FAX (408) 955-9078
141 Suburban Road • San Luis Obispo, CA 93401 • (805) 547-3888 FAX (805) 543-2685
2400 Cumberland Dr. • Valparaiso, IN 46383 • (219) 464-2389 FAX (219) 462-2953
340 County Road No. 5 • Westbrook, ME 04092 • (207) 874-2400 FAX (207) 775-4029

Chain of Custody

440805.507

• PLEASE PRINT IN PEN

Client APPLIED SCIENCE & ENGINEERING	Contact FRED YUKIC	Phone # (415) 363 2445	FAX # (415) 3638449
Address PO BOX 1166	City SAN CARLOS	State CA	Zip 94070
Project Name/Number CHUB		Project MGR FRED YUKIC	
Bill (if different than above)	Address		
Sampler (Print and sign) DAVID OLKOWSKI David Olkowski	Due Date	Circle for RUSH*	Copies To: Auth. Init.

Sample Description	Date/Time Coll'd	*Matrix	# of Containers	Pres.	Filt. y/n	* Subject to Availability Analysis	Remarks	Lab ID #
MW-1	8/4/94 11:07	GW	2	Y	N	BTEX 8020		
MW-1	8/4/94 11:07	GW	1	N	N	TPH-DIESEL 3510		

Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By
David Olkowski ①	8/4/94 15:22	Peterson ②	Peterson ③	8-4-94 16:02	
Shellie Hoyt ⑤	8/5/94 1002				

FOR LAB USE ONLY

Shipping Method	Shipping #	Received By	Date/Time	Condition (See Remarks) Cold	Sealed	Intact
World Courier		Shellie Hoyt ④	8-4-94 1602	Y	Y	Y

REMARKS
Samples sent to PACE - Novato

* Matrix:
DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
IM - Impinger
FI - Filter
FP - Free Product
A/G - Air/Gas
SL - Sludge/Soil/Solid
OT - Other _____

DRAFT

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

August 15, 1994

Mr. Fred Yukic
Applied Science & Engineering
P O Box 1166
San Carlos, CA 94070

RE: PACE Project No. 440805.507
Client Reference: CHUB

Dear Mr. Yukic:

Enclosed is the report of laboratory analyses for samples received August 05, 1994.

Footnotes are given at the end of the report.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Ronald M. Chew

Ronald M. Chew
Project Manager

Enclosures

DRAFT

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

An Equal Opportunity Employer

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Applied Science & Engineering
P O Box 1166
San Carlos, CA 94070

August 15, 1994
PACE Project Number: 440805507

Attn: Mr. Fred Yukic

Client Reference: CHUB

PACE Sample Number:			70 0367867	
Date Collected:			08/04/94	
Date Received:			08/05/94	
Client Sample ID:			MW-1	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE AROMATIC COMPOUNDS, EPA 8020				
Benzene	ug/L	0.5	ND	08/11/94
Toluene	ug/L	0.5	ND	08/11/94
Ethylbenzene	ug/L	0.5	ND	08/11/94
Xylenes, Total	ug/L	0.5	ND	08/11/94
EXTRACTABLE FUELS EPA 3510/8015				
Extractable Fuels, as Diesel	mg/L	0.05	ND	08/12/94
Date Extracted			08/10/94	

These data have been reviewed and are approved for release.

for Darrell C. Cain
Regional Director

DRAFT

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

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Mr. Fred Yukic
Page 2

FOOTNOTES
for page 1

August 15, 1994
PACE Project Number: 440805507

Client Reference: CHUB

MDL Method Detection Limit
ND Not detected at or above the MDL.

DRAFT

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

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Mr. Fred Yukic
Page 3

QUALITY CONTROL DATA

August 15, 1994
PACE Project Number: 440805507

Client Reference: CHUB

EXTRACTABLE FUELS EPA 3510/8015
Batch: 70 32868
Samples: 70 0367867

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Extractable Fuels, as Diesel	mg/L	0.05	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Extractable Fuels, as Diesel	mg/L	0.05	1.00	82%	85%	4%

DRAFT

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

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REPORT OF LABORATORY ANALYSIS

Mr. Fred Yukic
Page 4

QUALITY CONTROL DATA

August 15, 1994
PACE Project Number: 440805507

Client Reference: CHUB

PURGEABLE FUELS AND AROMATICS
Batch: 70 32851
Samples: 70 0367867

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M)			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

SPIKE AND SPIKE DUPLICATE:

Parameter	Units	MDL	700368081	Spike	Spike Recv	Spike Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	ND	1000	80%	84%	5%

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	1000	87%	90%	3%

DRAFT

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

An Equal Opportunity Employer

Mr. Fred Yukic
Page 5

FOOTNOTES
for pages 3 through 4

August 15, 1994
PACE Project Number: 440805507

Client Reference: CHUB

MDL	Method Detection Limit
ND	Not detected at or above the MDL.
RPD	Relative Percent Difference

DRAFT

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

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ASE
APPLIED SCIENCE AND ENGINEERING INC.

November 14, 1994

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
NOV 14 1994
RECEIVED

SUBJECT: Monitor Well Sampling Report
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

Applied Science and Engineering, Inc. (ASE) respectfully submits the third quarterly report documenting groundwater sampling at Chub's Auto Repair, 1180 Main Street in Redwood City, California (Figure 1). The sampling was conducted in accordance with the requirements of the State of California Leaking Underground Fuel Tank (LUFT) Manual, the Tri-Regional Recommendations of the San Francisco Bay Regional Water Quality Control Board (SFRWQCB), and the San Mateo County LUFT Enforcement Program (CLEP) Guidelines.

DRAFT

Introduction

Reportedly, the above-referenced site formerly contained two underground storage tanks (USTs) used for waste oil and gasoline (Figure 2). The USTs were removed from the ground on January 14, 1994. The gasoline UST did not have any holes, but the waste oil UST was noted to have several holes at the end seam at the 11 O'clock position. Verification soil samples collected for the gasoline UST were found to contain no detectable hydrocarbons (Table 1). One of the two soil samples collected for the waste oil UST was found to contain 810 ppm of Total Petroleum Hydrocarbons (TPH) as diesel (Table 1). In addition, the laboratory reported 17 ppb of dichloromethane by EPA Methods 5030/8010, but re-analysis by EPA Method 8240 showed no detectable hydrocarbons.

On February 9, 1994 the waste oil UST pit was over-excavated. A soil sample collected at the end of overexcavation was found to contain no detectable hydrocarbons. Water present in the pit was sampled, with analyses showing only 530 ppb of Total Petroleum Hydrocarbons (TPH) as diesel, described by the laboratory as not typical of diesel. No TPH as gasoline, benzene, toluene, ethylbenzene, xylenes (BTEX), oil and grease (O&G), or chlorinated hydrocarbons were detected in the water sample (Table 2).

Subsequently, the San Mateo County Department of Health Services (SMCDHS) requested construction and sampling of a monitor well. The monitor well was constructed at the site on May 4, 1994. This report describes the third quarterly sampling of the monitor well.

Monitor Well Development and Sampling

On November 3, 1994, monitor well MW-1 was purged by bailing and a groundwater sample was collected. Field notes documenting the well sampling are attached.

Prior to purging, depth to water (DTW) was measured at 10.35 feet below the top of the well casing (TOC). An initial volume of water was removed from the well using a clean teflon bailer and examined. The water was clear, with no petroleum odor. No petroleum odor was noted during purging. A total of 5 gallons were purged from the well, equivalent to greater than 3 casing volumes. Purge water was discharged into 5-gallon buckets calibrated for volume measurement.

At the end of purging the DTW was measured at 10.22 feet, indicating instant recovery. With approval from Ms. Michele Shoemaker of SMCDHS, a sample was collected in her absence.

A new clean, polyethylene bailer was used to remove a volume of water from the well. The water in the bailer had no free product. Three volatile analysis vials (VOAs) containing preservative were filled with groundwater from the bailer using an attachment that allowed the vials to be filled from the bottom so as to minimize exposure to air. Two 1 liter amber bottles with preservative were also filled with ground water. The samples were labelled with the time, date, location, and sampler's name prior to storage in a cooler with blue ice.

All purge water was stored in labeled buckets pending analytical results. The well was capped, locked, and covered.

Laboratory Analyses

The groundwater samples were transported under chain of custody (attached) to Priority Environmental Labs, a state certified laboratory, for analyses.

The groundwater sample was analyzed for total petroleum hydrocarbons as diesel (TPH-D) by EPA methods 3510/8015, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA method 8020.

Laboratory reports are attached. Table 2 summarizes the laboratory results for the groundwater. The groundwater sample from MW-1 did not contain any detectable TPH-D or BTEX.

DRAFT

Quality Control

Laboratory quality control for water, consisting of method blanks and spikes, are attached.

Summary and Conclusions

This report has been prepared to document sampling of a monitor well at Chub's Auto Repair at, 1180 Main Street, Redwood City, California (Figure 1).

The monitor well was purged and a groundwater sample collected. No free product or petroleum odor was noted in the groundwater.

Laboratory analytical results show no detectable TPH-D or BTEX in the groundwater from MW-1 (Table 2).

Recommendations

ASE recommends collection of a groundwater sample from the monitor well, MW-1, at the next regularly scheduled quarterly date, on or about February 3, 1994 to check the veracity of the analytical results that show no detectable hydrocarbons in the groundwater for three quarters.

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

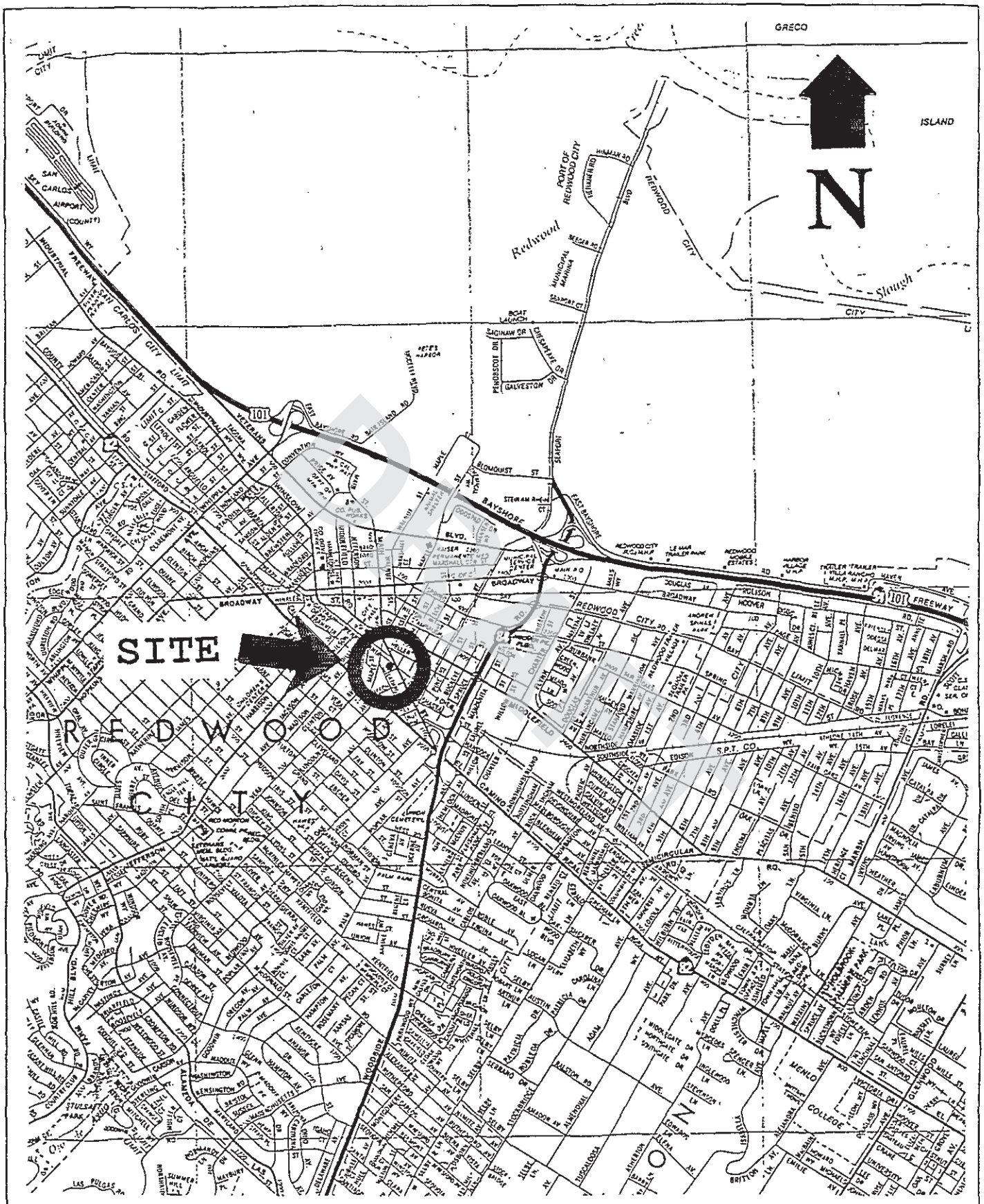
Frederick A. Yukic, MS, PE
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
FREDERICK A. YUKIC
No. 046369
EXP. 12/31/94
CIVIL
STATE OF CALIFORNIA

Attachments

cc: Mr. Larry Chubick, Chub's Auto Repair

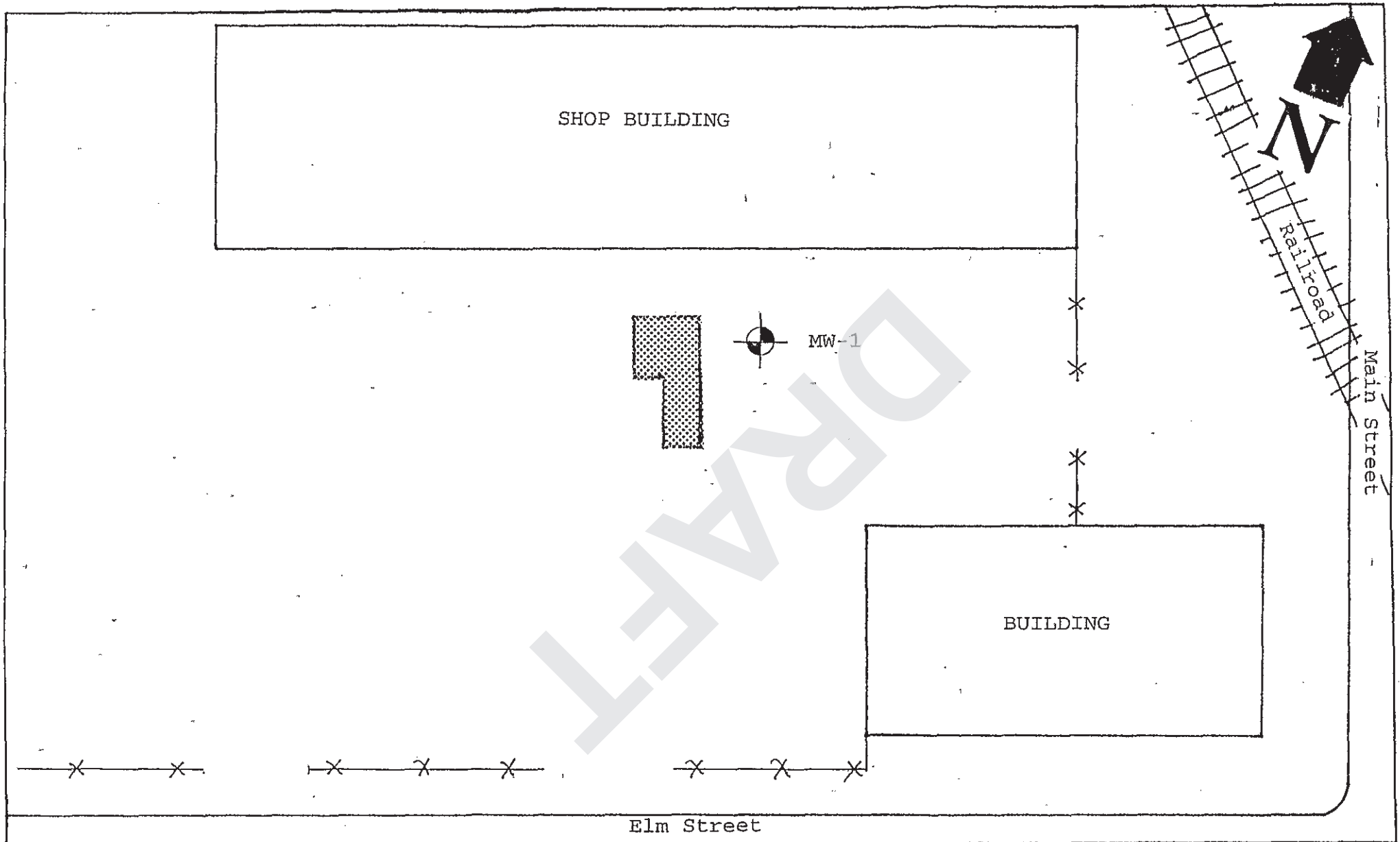
DRAFT



ASE

APPLIED SCIENCE AND ENGINEERING INC.

Figure 1: Location Map
Chub's Auto Repair
1180 Main Street
Redwood City, California



ASE
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1" = 20'

MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

Table 1
Soil Analytical Results (ppm)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn
Gasoline UST Excavation														
North @ 8'	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	8	--	--
South @ 9.5	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	7	--	--
Waste Oil UST Excavation														
East @ 8'	1-14-94	ND	ND	ND	ND	ND	ND	ND	ND	0.6	60	7	52	90
West @ 8.5'	1-14-94	ND	810	ND	ND	ND	ND	ND	ND*	0.5	69	7	55	84
West @ 8'	2-09-94	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--
Stockpile Composites														
Gasoline	1-14-94	ND	--	ND	ND	ND	ND	ND	--	--	--	30	--	--
Waste Oil	1-14-94	4	1,100	ND	0.018	0.036	0.28	ND	ND	ND	81	35	79	94
Boring														
MW-1 @ 10'-10.5'	5-04-94	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed
* = 17 ppb of dichloromethane (5030/8010), ND ppb of methylene chloride (8240)

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Table 2
Water Analytical Results (ppb)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn
Excavation	2- 9-94	--	--	--	--	--	--	9,000	--	--	--	--	--	--
Excavation	2-17-94	ND	530	ND	ND	ND	ND	ND	ND	--	--	--	--	--
MW-1	5-05-94	ND	ND	ND	ND	ND	ND	--	ND	--	--	--	--	--
MW-1	8-04-94	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--
MW-1	11-03-94	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed

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DATA SHEET FOR SAMPLING WELL MW-1

JOB NAME CHUB
SAMPLED BY DAVID OLKOWSKI

DATE 11/3/94
SHEET 1 OF 1

USE POSITIVE VALUES
WELL DEPTH (WD) 20 ft
INITIAL DEPTH TO WATER (DTWI) 10.35
(WD - DTWI)(X GAL/FT) = CASING VOLUME (CV)
(20 - 10.35)(0.17 GAL/FT) = 1.64 GALLONS/CV
(3CV)(GAL/CV) = 3 CASING VOLUMES
(3)(1.64) = 4.92 GALLONS NEED TO BE PURGED

DIA.	X
(2")	0.17
4"	0.66
6"	1.5

TIME	DTW	GALS	MICR S	pH	TEMP C	NOTES
10:19						ARRIVE SITE
10:27	10.35 ft					
10:38		0				CLEAR, NO ODOR
10:49		5				
10:50	10.22 ft					> 80% RECOVERY INSTANT RECOVERY
11:00						CREEK HAS ABOUT 1 FT OF WATER IN IT (DEFINITELY TIDAL)
11:25						FILL 3 VOAs, 2 1L
11:34						PLACE COVERED WATER BUCKETS INDOORS
11:38						PLUG LOCK & COVER MW-1
11:40						LEAVE SITE

FINAL DEPTH TO WATER (DTWF) _____
0.2(DTWF) + 0.8(DTWI) = DTW FOR 80% RECOVERY (DTW80%R)
0.2(_____) + 0.8(_____) = _____ FT MAX. BEFORE SAMPLING

DWO\DATAS1D4

DRAFT

PRIORITY ENVIRONMENTAL LABS

PEL # 9411013

INV # 25405

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 11/3/94 PAGE: 1 OF 1

PROJECT MGR.: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
: SAN CARLOS, CA 94070
PHONE: 415-363-2445 FAX: 415-363-8499
SIGNATURE: David Olkowski

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030.8015)	TPH-Gasoline(5030.8015) w/BTEX(EPA 602.8020)	TPH-Diesel (EPA 3510/3550.8015)	PURGEABLE AROMATICS BTEX (EPA 602.8020)	TOTAL OIL & GREASE (EPA 5520 C.D&F)	PESTICIDES/PCB (EPA 608.8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601.8010)									NUMBER OF CONTAINERS
MW-1	11/3/94	11:25	GW			X														2
MW-1	11/3/94	11:25	GW				X													2

DRAFT

PROJECT INFORMATION

PROJECT NAME: CHUB
PROJECT NUMBER:

SAMPLE RECEIPT

TOTAL # OF CONTAINERS: 4
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: ONE WEEK TURN AROUND

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
DAVID OLKOWSKI	THANH LAM		
SIGNATURE: David Olkowski	SIGNATURE:	SIGNATURE:	SIGNATURE:
Date: 11/3/94 Time: 13:55	Date: 11/3/94 Time: 13:56	Date: Time:	Date: Time:
COMPANY: ASE	COMPANY: PEL	COMPANY:	COMPANY:

PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

November 10, 1994 PEL # 9411013

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: One water sample for BTEX and Diesel analyses.

Project name: CHUB

Date sampled: Nov 03, 1994 Date submitted: Nov 03, 1994
Date extracted: Nov 03-05, 1994 Date analyzed: Nov 03-05, 1994

RESULTS:

DRAFT

SAMPLE I.D.	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
MW-1	N.D.	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	105.1%	81.6%	106.0%	101.3%	104.7%
Detection limit	50	0.5	0.5	0.5	0.5
Method of Analysis	3510 / 8015	602	602	602	602

David Duong
Laboratory Director

1764 Houret Court · Milpitas, CA. 95035 · Tel: 408-946-9636 · Fax: 408-946-9663

ASE
APPLIED SCIENCE AND ENGINEERING INC.

December 21, 1994

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
DEC 21 1994
RECEIVED

SUBJECT: Hydraulic Lift Sampling Results
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

Applied Science and Engineering, Inc. (ASE) respectfully submits the enclosed hydraulic lift sampling results for Chub's Auto Repair, 1180 Main Street in Redwood City, California (Figure 1). The sampling was conducted by ASE following San Mateo County LUFT Enforcement Program (CLEP) Guidelines. In addition to the sampling results, this report describes activities conducted by contractors at the site related to the hydraulic lift removal.

Introduction

A hydraulic lift was removed from the above-referenced site, an automobile repair shop, in early August 1994. Reportedly, the lift was installed approximately 10 years ago. The lift was removed because the cylinder was leaking by BCM Services and Engineering prior to August 16, 1994.

Soil Sampling

August 16, 1994

At the request of Mr. Larry Chubick, ASE visited the site on August 16, 1994 to collect soil samples from the stockpile and from the bottom of the hydraulic lift excavation (see attached field notes). When ASE arrived at the site an excavation was present inside the building which was approximately 8 feet long by 4 feet wide (Figure 2). The approximately six-inch thick concrete floor had been cut and/or jackhammered to facilitate excavation. The excavation was approximately 7 feet deep at its deepest. The sidewalls were inspected and found to be composed of fill soils to a depth of 2.5 feet, followed by a black silty clay to 7 feet, underlain by a gray, mottled black silty clay which appeared moist. No groundwater was present in the pit.

~~A soil sample was collected from the center of the south end~~

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A soil sample was collected from the center of the south end of the excavation (the reported location of the hoist cylinder) by hand augering to a depth of 8 feet, about 2 feet beneath the reported bottom of the hoist cylinder. At this depth the soil is a moist, grey, mottled black silty clay.

The auger contents were transferred into a clean, six-inch long, two-inch diameter brass liner. The ends of the liner were covered with teflon tape followed by plastic caps. A label with a pre-printed number was attached to the liner prior to placement in an ice chest containing blue ice. The label number corresponds to a page in a booklet on which was written the sampler, date, project, sample location, and sample description.

A second soil sample was collected from the stockpile generated by the excavation using the sample handling procedure described above. The sample was comprised of a brown to black silty clay. Only one sample was collected from the approximately 3 cubic yards of stockpile, in accordance with San Mateo County Department of Health Services (SMCDHS) guidelines for re-use of contaminated soils.

September 12, 1994

After receipt of the laboratory results for the initial soil samples showing the presence of Oil and Grease (O&G), the excavation was deepened by BCM. ASE was not present during excavation.

ASE returned to the site on September 12, 1994 to collect additional bottom samples. At this time the areal extent of the excavation was about the same, but the depth had increased to 8 feet. ASE collected two additional samples, at depth of 9.5 and 10 feet, while hand augering to a total depth of 10 feet. Both samples were tan grey mottled red-orange silty clay. The samples were collected, handled, and preserved as described above for previous samples. The stockpile volume was estimated to have increased to about 7 cubic yards as a result of the additional excavation.

September 26, 1994

After receipt of the laboratory results for the September 12, 1994 soil samples showing the presence of O&G in the 10 foot deep sample, ASE returned to the site on September 26, 1994 to collect additional soil samples. ASE collected three additional samples while hand augering to a total depth of 12 feet. All samples were red brown and grey silty clay. The samples were collected, handled, and preserved as described above for previous samples.

DRAFT

October 4, 1994

After receipt of the laboratory data for the September 26, 1994 soil sample showing O&G as 520 ppm in the sample from 12.5 feet, ASE returned to the site on October 4, 1994 to collect additional soil samples. However, ASE found water in the hand boring at a depth of 11 feet. Thus, no soil samples were collected because of the presence of groundwater.

October 28, 1994

On October 28, 1994 two additional soil samples were collected from the stockpile by ASE for use in characterizing the soil for offsite disposal. The samples were collected according to the procedures described above for previous samples. One sample was a black silty clay, while the other was a tan grey silty clay.

Additional Excavation

On December 12, 1994 the hydraulic lift excavation was deepened using a low overhead backhoe which fit inside the building. ASE observed the excavation which was performed by a contractor employed by Chub's Auto Repair. The maximum depth that could be reached by the backhoe was 12 feet.

Prior to digging the excavation walls were inspected visually. The south wall of the excavation was stained by fluid, a condition that had not been previously noted. The fluid appeared to have originated in the fill soils at 2 feet and had flowed down the southern sidewall to total depth of 8 feet. On explanation for the staining is that rainwater had infiltrated beneath the pavement outside the building, flowed through the shallow backfill into the building, and then into the excavation during rainfall. On the other walls a white powdery deposit was noted (perhaps precipitates of calcium).

As the excavation was deepened groundwater was observed entering the excavation below a depth of about 11 feet. After about one hour the water level rose to a depth of about 10.9 feet.

ASE used a hand auger to bore into the bottom of the middle of the excavation to a depth of approximately 15.5 feet where a silty sand was encountered. The boring was terminated at this depth based on data contained in the boring log for nearby well MW-1 (associated with a former UST) which showed the first water bearing zone at about 15 feet.

As allowed by the LUFT Guidelines, water was pumped from the excavation. A total of about 100 gallons of water was removed

DRAFT

from the excavation by skimming the surface with a 5-gallon bucket and pumping with a sump pump from the water surface. The 5-gallon bucket was noted to be oily when removed from the excavation. Water pumped was stored in 55-gallon drums pending analytical results. At the end of pumping the water level in the excavation had lowered to 11.3 feet deep.

A 4-inch diameter PVC pipe with a bottom cap attached by screws was placed into the boring to make a backfill well (MW-2). The purpose of this well was to allow the excavation to be backfilled immediately for safety reasons, and to provide for future groundwater extraction and/or monitoring, if necessary. The bottom 6 feet of the pipe was sawcut with 6 rows of vertical slots approximately 6 inches long to allow water to flow into the pipe (Figure 3). This resulted in slots between depths of 9.5 and 15.5 feet, above the reported depth to water of about 10 feet in nearby MW-1. A locking plug was inserted into the top of the pipe.

The excavation was backfilled with clean, washed pea gravel. The pea gravel was placed around the 4-inch diameter well to the ground surface.

Soils excavated were stockpiled onsite on asphalt in the fenced parking area and were covered with plastic. ASE estimated the final volume of stockpile at approximately 11 cubic yards (see attached field notes).

Groundwater Sampling

On December 12, 1994 two days following the additional excavation a groundwater sample was collected from the backfill well (MW-2). ASE did not collect the groundwater sample immediately after pumping because a previously scheduled appointment required the technician to leave the site. ASE waited two days to collect the sample because the additional excavation was conducted on a Saturday, and offices are closed on Sunday, so the following Monday was the first opportunity to sample.

No purging of the backfill well was undertaken at the time of sampling because the excavation had previously been pumped prior to backfilling (see above). A grab groundwater sample was collected by lowering a clean teflon bailer into the backfill well and removing a volume of water. The water was clear, with no free product. The contents of the bailer was emptied into a one-liter amber bottle containing preservative. The bottle was labelled and then placed in an ice chest containing blue ice for preservation during shipment to the analytical laboratory under chain of custody.

DRAFT

Laboratory Methods

The soil and groundwater samples were transported under chain of custody (attached) to state certified analytical laboratories, either Priority Environmental Labs (PEL) or PACE, Incorporated. Laboratory reports are attached along with quality control. Laboratory results are summarized in Table 1.

The soil and groundwater samples were analyzed for O&G by EPA method 418.1.

To facilitate disposal, two stockpile soil samples collected on October 28, 1994 were composited in the laboratory and analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020. The stockpile composite was also analyzed for soluble cadmium, chromium, lead, nickel, and zinc by EPA Methods 1310/7130/7190/7420/7520/7950. Finally, the stockpile composite was analyzed for reactivity, corrosivity, and ignitability by Title 22 of the California Code of Regulations.

Laboratory Results

Laboratory reports are attached and the results are summarized in Table 1.

The results show that O&G was present in soil beneath the former hydraulic lift cylinder at concentrations of 12,000 ppm at 8.5 feet below ground surface (bgs), 1,600 ppm at 9.5 feet, 1,700 ppm at 10 feet, and 520 ppm at 12.5 feet.

The groundwater sample from the backfill well (MW-2) was analyzed and found to contain 1.7 ppm of O&G.

The stockpile soil sample results show O&G at 4,100 ppm. The stockpile composite lab results show soluble cadmium at 0.53 ppm, soluble lead at 0.73 ppm, soluble zinc at 0.67 ppm. Soluble chromium, soluble nickel and BTEX were not detected in the stockpile composite sample. Finally, the stockpile composite was not reactive of ignitable, and the pH was measured at 7.6 ppm.

Stockpile Disposal

The approximately 11 cubic yards of stockpiled soils were transported to the BFI Vasco Road Landfill for disposal. A gate ticket showing a total weight of 12.32 tons is attached.

DRAFT

Summary and Conclusions

This report has been prepared to document sampling beneath a former hydraulic lift cylinder removed from the subsurface at Chub's Auto Repair at, 1180 Main Street, Redwood City, California (Figure 1).

Soil samples were collected from beneath the hydraulic lift by hand boring into the bottom of the excavation created by removal (Figure 2). Laboratory results showed O&G in soils beneath the former hydraulic lift to a depth of 12.5 feet. Groundwater was encountered at 12.5 feet, so no deeper soil samples were collected. The soil sample from between 12 to 12.5 feet deep, the final depth of the excavation, was found to contain O&G at 520 ppm.

Subsequently, the excavation was deepened to approximately 12 feet, the maximum depth attainable with a backhoe that could fit inside the building. Water entered the excavation, filling it to 10.9 feet below ground surface. In accordance with LUFT guidelines the excavation was pumped once, with about 100 gallons of groundwater removed into 55-gallon drums. As a result of pumping the water level declined to about 11.3 feet. A hand boring was advanced 3.5 feet below the bottom of the excavation, to a total depth of 15.5 feet where the first water bearing zone was encountered. A backfill well (MW-2) was constructed in the boring and excavation of 4-inch diameter PVC pipe with sawcut slots. Pea gravel backfill was placed around the well from the bottom of the excavation to ground surface.

Two days after excavation pumping, ASE returned to the site and collected a grab groundwater sample from the backfill well. Because the excavation had been previously pumped, the well was not purged. Lab results show that the groundwater sample contained 1.7 ppm of O&G, which is below the required practical quantitation reporting limit for leaking underground fuel tanks.

Laboratory analytical results also showed that the stockpiled soil excavated contained O&G at 4,100 ppm and soluble metals at apparently non-hazardous concentrations. In addition, lab results showed that the soil was not reactive, corrosive, or ignitable. The stockpile soil was transported to BFI Vasco Road Landfill for disposal.

DRAFT

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

Attachments

cc: Mr. Larry Chubick, Chub's Auto Repair



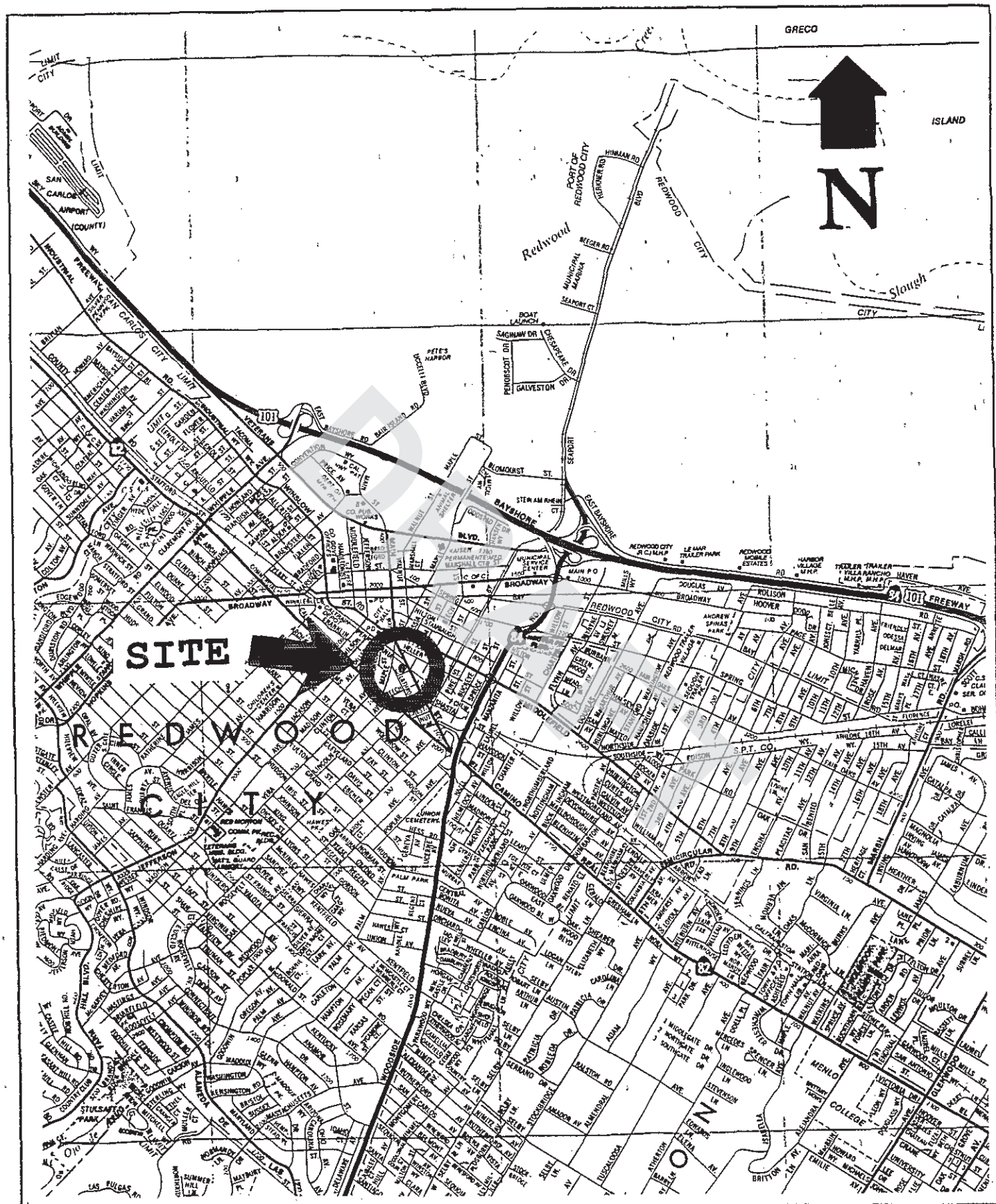
DRAFT

Table 1
Analytical Results (ppm)
Chub's Automotive
Hydraulic Lift Excavation

Location	Oil and Grease
Soil	
8' - 8.5'	12,000
9' - 9.5'	1,600
9.5'-10'	1,700
12' -12.5'	520
Stockpile	4,100
Water	
MW-2	1.7

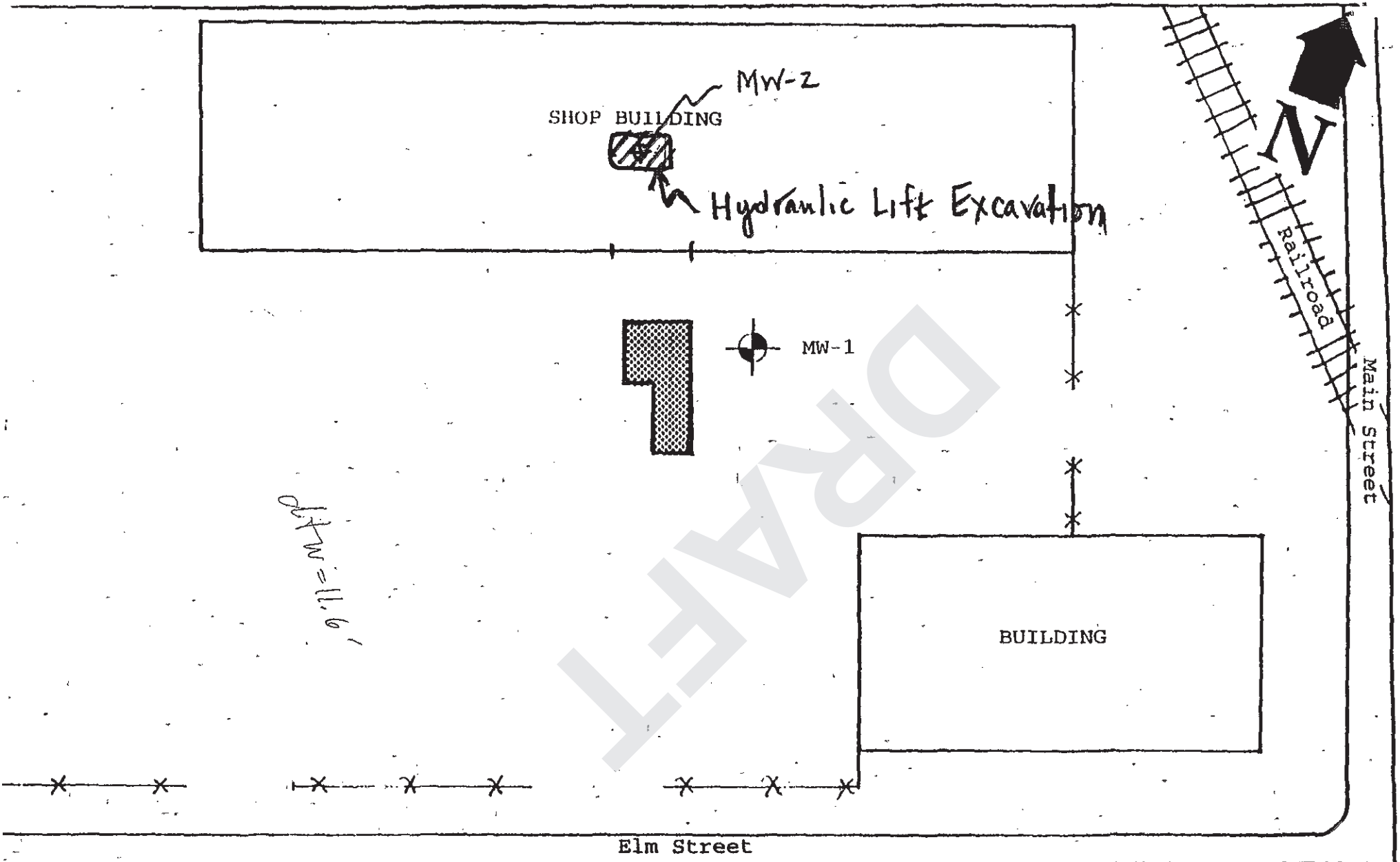
DRAFT

dtw =



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Figure 1: Location Map
Chub's Auto Repair
1180 Main Street
Redwood City, California



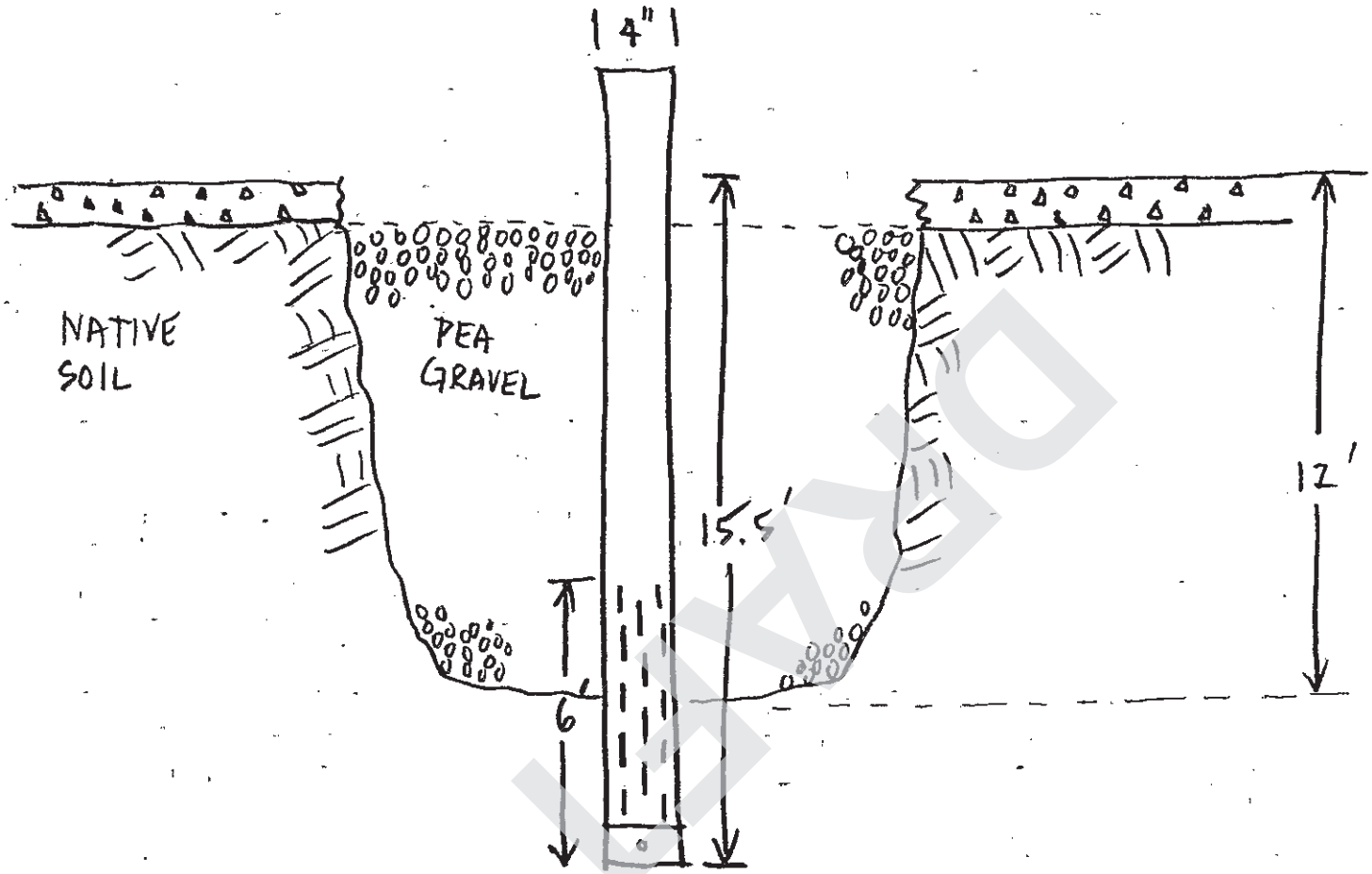
DRAFT

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1" = 20'

EXISTING MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California



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NOT TO SCALE

Figure 3. Backfill Well Schematic
Chub's Auto Repair
1180 Main Street
Redwood City, CA

Date: 8-16-94 By: F. Yukevi To: Sheet:

Job Name: CHVB's AVTO Job No:

Main Activity: SAMPLE SOIL IN HOIST EXCAVATION

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Odometer In

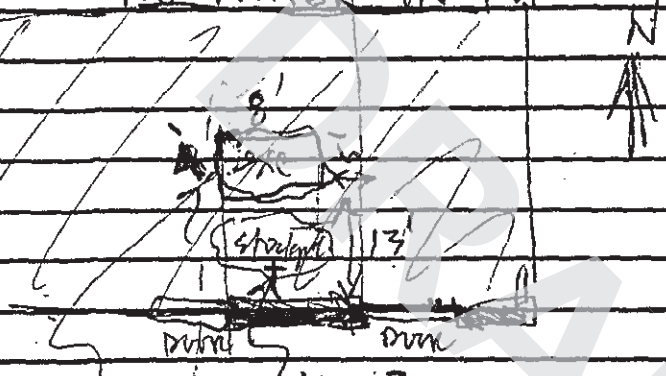
Vehicle Pers. Odometer Out

Rent. Mileage

Time	Description
16:00	Arrive site

Excavation inside bldg between 2 front doors
9" concrete, ~9" orange brick AB (depth = 1.5'), ~2' gravelly Sy C

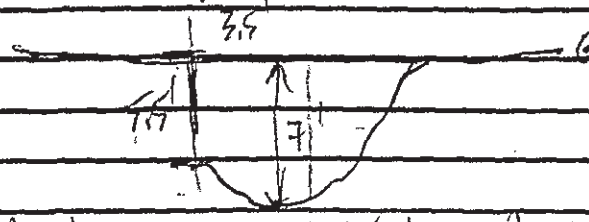
NO WATER IN PIT



10023

Use hand auger to probe and collect sample from bottom
explore brickwall - no evidence of leak
hoist excavation
beneath grnd W wall - bl Sy C, N wall - bl Sy C
E wall gray Gy Sy C
S wall bl Sy C
7' at deepest - excavation

Main St
0-2.5' FM
2.5-7 bl Sy C
>7 gray mottled bl Sy C moist



collect sample w/ hand auger @ 8', 2' from gray mottled bl Sy C, moist w/ ena

stockpile V ≃ 10' / (6') 2.5' long into ten

½ ≃ 30(2.5) = 75 ft³ ≃ 3 yd³

16:30 leave site collect stove pile sample from middle s

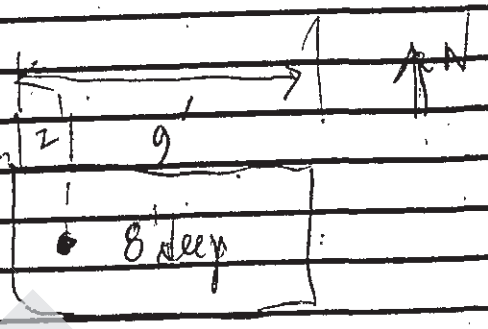
Date: 9-12-94 By: TW To: Sheet
Job Name: CHVB's Job No:
Main Activity: Hydr. Lift Excavation Sampling

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Vehicle Pers. Rent. Odometer In Odometer Out Mileage

Time	Description
9:00	Arrive Area



Primary by hand auger
Collect 1 Sample 9.0–9.5
9.5–10

Approx $V = \left[16 \times 8 \times \frac{3}{2}\right] \frac{1}{2} = .192 ft^3 = 7.1 yd^3$

10:00 Leave Area.

DRAFT

Date: 9.26-94 By: E. Yukevi To: _____ Sheet 1

Job Name: UMBS Job No: _____

Main Activity: Hydr. Lift Excavatm Sampling

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Odometer In ____

Vehicle Pers. _____ Odometer Out ____

Rent. _____ Mileage ____

Time	Description
13:30	Arrive ATE
	Collect three AM sampler
14:20	leave ATE.
10.4.94	
15:30	Arrive ATE
	~~collect soil sample~~
	water in hand auger hole
	DTW ≈ 11'
	TD ≈ 12'
	water seems only in tape — no sample
15:40	leave ATE

10.28.94

Excavatm

Collect 2 stockpile samples.

10098

10099

Down

Down

Date: 12.10.94 By: PM/ To: Sheet
Job Name: Chivers Job No:
Main Activity: Deepen EX

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Vehicle Pers. Odometer In
Rent. Odometer Out
Mileage

Time	Description
8:45	Arrive site
	remove pile from inside to outside
	Excavator — 5. wall leaks little fluid running down from ~21' other water white calcite deposit
9:00	PM. leave
9:25	PM return
	deepen hole deeper. Kubota KX 101
	start to 12' inlet of machine
9:55	water entering hole
10:05	DTW = 11.6'
10:25	DTW = 11.25
10:55	10.9
	Deepen hand to ~15.5 ⇒ encounter silty sand.
	pump ~ 100 gallons DTW = 11.5
	place 4" ø pipe w/ bottom cap — attached by screws
	6' of saw cut — vertical — 6 rows. ~6' long
	start filling hole w/ clean pea gravel
	~ ⅔ full
11:55	PM leave site

DRAFT

Date: 12-12-94 By: RPM Kri To: _____ Sheet _____

Job Name: Chmb Job No: _____

Main Activity: _____

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Odometer In _____

Vehicle Pers. _____ Odometer Out _____

Rent. _____ Mileage _____

Time	Description
11:30	Arrive site
	collect water sample from pit (M.W-2)
	NO f.p. - no oder.
	Hydrocarbon $\approx \frac{1}{2}(10)(20)3' \approx 300ft^3 \approx 11yd^3$
11:45	leave site

DRAFT

VASCO ROAD SANITARY LANDFILL No: 660939

A DIVISION OF BFI® BROWNING-FERRIS INDUSTRIES

4001 VASCO ROAD
LIVERMORE, CA 94550
(510) 447-0491

Ticket : A23130 12/13/94 02:10 pm
Customer: CASH
Account : 1009539 LMS #999
Truck : 14
SPECIAL
Manifest: 604555
P.O. No : CHUBS
Checker : RAYMOND
Gross Wt: 27.40 Manual
Tare: 15.08 Scale 2 Net: 12.32
Source: RICK

Volume	Contents	Rate	Charge
12.32	TN/SPECIAL 4	30.00	369.60
TOTAL			$ 369.60
Check Tendered			$ 369.60
Change			$ 0.00

THANK YOU FOR YOUR BUSINESS!!!

WARNING: Transporting any unauthorized hazardous waste to this facility for disposal is prohibited by law. Persons violating this prohibition are subject to civil and criminal prosecution.

All children must remain in vehicles.
Absolutely no salvaging allowed.

Niños deben de permanecer en los carros a todas horas.

No se permite llever cosas del dompe absolutamente.

Ck# 10138
they kept ck

DRIVER

DRIVER

DRAFT

COAST-TO-COAST ANALYTICAL SERVICES

4765 Calle Quetzal	Camarillo, CA 93012	(805) 389-1353	FAX (805) 389-1438
7726 Moller Rd.	Indianapolis, IN 46268	(317) 875-5894	FAX (317) 872-6189
2059 Junction Ave.	San Jose, CA 95131	(408) 955-9077	FAX (408) 955-9078
141 Suburban Road	San Luis Obispo, CA 93401	(805) 547-3888	FAX (805) 543-2685
2400 Cumberland Dr.	Valparaiso, IN 46383	(219) 464-2389	FAX (219) 462-2953
340 County Road No. 5	Westbrook, ME 04092	(207) 874-2400	FAX (207) 775-4029

Chain of Custody

440817.507 Page 1 of 1

• PLEASE PRINT IN PEN

Client	Applied Science & Engineering	Contact	Fred Yukic	Phone # (415) 363-2445	FAX # (415) 363-8449
Address	PO Box 1166	City	San Carlos	State CA	Zip 94070
Project Name/Number	~~Exxon~~ Clubs			Project MGR	Fred Yukic
Bill (If different than above)		Address			
Sampler (Print and sign)	Fred Yukic FAYukic	Due Date	7 day FIRM	Circle for RUSH*	Copies To: / Auth. Init.

* Subject to Availability

Sample Description	Date/Time Coll'd	*Matrix	# of Containers	Pres.	Filt. y/n	Analysis	Remarks	Lab ID #
1002Z	8-16-94 16:15	SL	1	—	—	418.1		374669
1002Y	8-16-94 16:30	SL	1	—	—	418.1		374670

Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By
FAYukic	8/17/94 12:05	David Oliveira		8/17/94 400	Ken McIntosh
David Oliveira	8/17/94 13:07	Ron Trevella			

FOR LAB USE ONLY

Shipping Method	Shipping #	Received By	Date/Time	Condition (See Remarks) Cold	Sealed	Intact

REMARKS

* Matrix:
DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
IM - Impinger
FI - Filter
FP - Free Product
A/G - Air/Gas
SL - Sludge/Soil/Solid
OT - Other

DRAFT

PRIORITY ENVIRONMENTAL L

9409039
25220X

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

PAGE 1 OF 1

PROJECT MGR.: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
San Carlos CA 94616
PHONE: 415-363-2445 FAX: 415-363-8449
SIGNATURE: FAYukic

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)			NUMBER OF CONTAINERS
10055	9/12/94	9:25	SOIL							X				1
10056	9/12/94	9:35	SOIL							X				1

TPH

Per M. David
9/19/94 9:49 AM

PROJECT INFORMATION
PROJECT NAME: CHVB
PROJECT NUMBER:

SAMPLES RECEIPT
TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 3 day turnaround

RELINQUISHED BY: 1	RECEIVED BY:		RECEIVED BY: 2
SIGNATURE: FAYukic	SIGNATURE: David Oldow		SIGNATURE:
Date: 9.12.94 Time: 17:00	Date: Time:	Date: 9/13/94 Time:	Date: 9/19/94 Time: 15:40
COMPANY: ASE	COMPANY: ASE	COMPANY: ASE	COMPANY: PEL

DRAFT

PRIORITY ENVIRONMENTAL LABS

PEL # 9409039

INV # 25220

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 9/14/94 PAGE: 1 OF 1

PROJECT MGR.: FRED YVKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
San Carlos CA 94616
PHONE: 415-363-2495 FAX: 415-363-8449
SIGNATURE: FAYvkic

ANALYSIS REPORT

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)								NUMBER OF CONTAINERS
10055	9/12/94	9:25	SOIL							X									1
10056	9/12/94	9:35	SOIL	—	—	—	—	—	—	—	—	HOLD	—	—	—	—	—	—	1

DRAFT

PROJECT INFORMATION
PROJECT NAME: CHVB
PROJECT NUMBER:

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 3 day turnaround

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
SIGNATURE: FAYvkic	SIGNATURE: David Olkowski	SIGNATURE: David Olkowski	SIGNATURE: Jason Lam
Date: 9-12-94 Time: 17:00	Date: " Time: "	Date: 9/13/94 Time: 15:37	Date: 9/13/94 Time: 15:40
COMPANY: ASE	COMPANY: ASE	COMPANY: ASE	COMPANY: PEL

PRIORITY ENVIRONMENTAL LABS

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 09/26/94 PAGE: 1 OF 1

PROJECT MGR.: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
SAN CARLOS CA 94070
PHONE: 415-363-2445 FAX: 415-363-8499
SIGNATURE: [signature]

ANALYSIS REPORT

PEL # 9409099
INV # 25280

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030.8015)	TPH-Gasoline(5030.8015) w/BTEX(EPA 602.8020)	TPH-Diesel (EPA 3510/3550.8015)	PURGEABLE AROMATICS BTEX (EPA 602.8020)	TOTAL OIL & GREASE (EPA 5520 C.D&F)	PESTICIDES/PCB (EPA 608.8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601.8010)			NUMBER OF CONTAINERS
10074	9-26-94	14:10	SOIL									HOLD		1
10075	9-26-94	14:15	SOIL									HOLD		1
10076	9-26-94	14:20	SOIL							X				1

DRAFT

PROJECT INFORMATION
PROJECT NAME: CHVB
PROJECT NUMBER:

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 3
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 3 DAY TURNAROUND

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
FAYYUKIC	DAVID OLKOWSKI	DAVID OLKOWSKI	THINH LAM
SIGNATURE: [signature]	SIGNATURE: [signature]	SIGNATURE: [signature]	SIGNATURE: [signature]
Date: 9-26-94 Time: 15:00	Date: 9/26/94 Time: 15:00	Date: 9/26/ Time: 15:50	Date: 9/26/94 Time: 3:50PM
COMPANY: ASE	COMPANY: ASE	COMPANY: ASE	COMPANY: PEL

PRIORITY ENVIRONMENTAL LABS

PEL # 9410087

INV # 25389

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: __/__/__ PAGE: ___ OF ___

PROJECT MGR.: FRED YUKI
COMPANY: ASE
ADDRESS: PO BOX 1166 SAN CARLOS, CA 9407
PHONE: 415-363-2495 FAX: 415-363-8997
SIGNATURE: FAYuki

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030.8015)	TPH-Gasoline(5030.8015) w/BTEX(EPA 602.8020)	TPH-Diesel (EPA 3510/3550.8015)	PURGEABLE AROMATICS BTEX (EPA 602.8020)	TOTAL OIL & GREASE (EPA 5520 C.D&F)	PESTICIDES/PCB (EPA 608.8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601.8010)		BTEX	STLC CAM 5	RCI						NUMBER OF CONTAINERS
10098	10.28.94	10:15	SOIL	}	Composite				Non				X	X	X							1
10099	10.28.94	10:15	SOIL	}																		1

DRAFT

PROJECT INFORMATION
PROJECT NAME: CHUB
PROJECT NUMBER:

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 3-DAY

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
FRED YUKI	DAVID OLKOWSKI		THANH CAM
SIGNATURE: FAYuki	SIGNATURE: David Olkowski	SIGNATURE:	SIGNATURE:
Date: 10.28.94 Time: 12:53	Date: 10/28/94 Time: 12:53	Date: Time:	Date: 10/28/94 Time: 2:15 PM
COMPANY: ASE	COMPANY: ASE	COMPANY:	COMPANY: PEL

PRIORITY ENVIRONMENTAL LABS

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 12/12/94 PAGE: 1 OF 1

PROJECT MGR.: FRED YUKC
COMPANY: ASE
ADDRESS: PO BOX 1160 SAN CARLOS, CA
PHONE: 415-363-2445 FAX: 415-363-8999
SIGNATURE: FA Yukc

ANALYSIS REPORT

PEL # 9412041
INV # 25515

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)	Turn 8415	NUMBER OF CONTAINERS
MW-2	12/12/94	11:40	GW							X			2

DRAFT

PROJECT INFORMATION
PROJECT NAME: CHVB
PROJECT NUMBER:

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 1 Week turnaround

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
FA YUKC			
SIGNATURE: FA Yukc	SIGNATURE:	SIGNATURE:	SIGNATURE:
Date: 12/12/94 Time: 14:00	Date: 12/12/94 Time: 2:30 PM	Date: Time:	Date: Time:
COMPANY: ASE	COMPANY: PEL	COMPANY:	COMPANY:

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

August 22, 1994

Mr. Fred Yukic
Applied Science & Engineering
P O Box 1166
San Carlos, CA 94070

RE: PACE Project No. 440817.507
Client Reference: CHUBS

Dear Mr. Yukic:

Enclosed is the report of laboratory analyses for samples received August 17, 1994.

Footnotes are given at the end of the report.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Ronald M. Chew

Ronald M. Chew
Project Manager

Enclosures

DRAFT

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

An Equal Opportunity Employer

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Applied Science & Engineering
P O Box 1166
San Carlos, CA 94070

August 22, 1994
PACE Project Number: 440817507

Attn: Mr. Fred Yukic

Client Reference: CHUBS

PACE Sample Number:			70 0374669	
Date Collected:			08/16/94	
Date Received:			08/17/94	
			10022	Excavation 28'
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
TOTAL PETRO HYDROCARBONS EPA 9071/418.1				
Total Petroleum Hydrocarbons, by IR	mg/kg wet	1200	12000	08/18/94
Date Extracted			08/18/94	

DRAFT

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pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

August 22, 1994
PACE Project Number: 440817507

Client Reference: CHUBS

PACE Sample Number:			70 0374677	
Date Collected:			08/16/94	
Date Received:			08/17/94	
Client Sample ID:			10023 Stockpile	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
TOTAL PETRO HYDROCARBONS EPA 9071/418.1				
Total Petroleum Hydrocarbons, by IR	mg/kg wet	500	4100	08/18/94
Date Extracted			08/18/94	

These data have been reviewed and are approved for release.

Darrell C. Cain
Regional Director

DRAFT

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Novato, CA 94949
TEL: 415-883-6100
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Mr. Fred Yukic
Page 3

FOOTNOTES
for pages 1 through 2

August 22, 1994
PACE Project Number: 440817507

Client Reference: CHUBS

MDL Method Detection Limit

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REPORT OF LABORATORY ANALYSIS

Mr. Fred Yukic
Page 4

QUALITY CONTROL DATA

August 22, 1994
PACE Project Number: 440817507

Client Reference: CHUBS

TOTAL PETRO HYDROCARBONS EPA 9071/418.1
Batch: 70 33074
Samples: 70 0374669, 70 0374677

what extraction used???

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Total Petroleum Hydrocarbons, by IR	mg/kg wet	50	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Total Petroleum Hydrocarbons, by IR	mg/kg wet	50	533	87%	96%	10%

DRAFT

EPA # 5520 - silica gel extraction

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Mr. Fred Yukic
Page 5

FOOTNOTES
for page 4

August 22, 1994
PACE Project Number: 440817507

Client Reference: CHUBS

MDL	Method Detection Limit
ND	Not detected at or above the MDL.
RPD	Relative Percent Difference

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PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

September 15, 1994 PEL # 9409039

APPLIED SCIENCE ENGINEERING, INC.

Attn: Fred Yukic
Re: One soil sample for total Recoverable Hydrocarbons analysis.

Project name: CHVB

Date sampled: Sep 12, 1994 Date submitted: Sep 13, 1994
Date extracted: Sep 14-15, 1994 Date analyzed: Sep 14-15, 1994

RESULTS:

SAMPLE I.D.	Total Recoverable Hydrocarbons (mg/Kg)
1055	1600
Excavation @ 9'-9.5'	
Blank	N.D.
Detection limit	100
Method of Analysis	418.1

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

September 21, 1994 PEL # 9409039

APPLIED SCIENCE ENGINEERING, INC.

Attn: Fred Yukic
Re: One soil sample for total Recoverable Hydrocarbons analysis.

Project name: CHVB

Date sampled: Sep 12, 1994 Date submitted: Sep 13, 1994
Date extracted: Sep 20, 1994 Date analyzed: Sep 20, 1994

RESULTS:

SAMPLE I.D.	Total Recoverable Hydrocarbons (mg/Kg)
10056	1700
Excavation @ 9.5-10	
Blank	N.D.
Detection limit	100
Method of Analysis	418.1

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

September 28, 1994 PEL # 9409099

APPLIED SCIENCE ENGINEERING, INC.

Attn: Fred Yukic
Re: One soil sample for total Recoverable Hydrocarbons analysis.

Project name: CHVB

Date sampled: Sept 26, 1994 Date submitted: Sept 26, 1994
Date extracted: Sept 26-28, 1994 Date analyzed: Sept 26-28, 1994

RESULTS:

SAMPLE I.D.	Total Revocerable Hydrocarbons (mg/Kg)
10076	520
Blank	N.D.
Detection limit	10
Method of Analysis	418.1

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

October 31, 1994 PEL # 9410087

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: One composited soil sample for STLC Cadmium, STLC Chromium, STLC Lead, STLC Nickel, and STLC Zinc analyses.

Project name: CHUB

Date sampled: Oct 28, 1994 Date submitted: Oct 28, 1994
Date extracted: Oct 28-31, 1994 Date analyzed: Oct 28-31, 1994

RESULTS:

SAMPLE I.D.	STLC Cadmium (mg/L)	STLC Chromium (mg/L)	STLC Lead (mg/L)	STLC Nickel (mg/L)	STLC Zinc (mg/L)
10098 & 10099 Stockpile Composite	0.53	N.D.	0.73	N.D.	0.67
Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Detection limit	0.10	0.10	0.10	0.50	0.50
Method of Analysis	1310 / 7130	1310 / 7190	1310 / 7420	1310 / 7520	1310 / 7950

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

October 31, 1994 PEL # 9410087

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: One composited soil sample for BTEX analysis.

Project name: CHUB

Date sampled: Oct 28, 1994 Date submitted: Oct 28, 1994
Date extracted: Oct 28-29, 1994 Date analyzed: Oct 28-29, 1994

RESULTS:

SAMPLE I.D.	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylenes (ug/Kg)
10098 & 10099 Stockpile Composite	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	87.1%	92.9%	103.8%	80.7%
Detection limit	5.0	5.0	5.0	5.0
Method of Analysis	8020	8020	8020	8020

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

October 31, 1994 PEL # 9410087

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: One composited soil sample for RCI analysis.

Project name: CHUB

Date sampled: Oct 28, 1994 Date submitted: Oct 28, 1994
Date extracted: Oct 28-31,1994 Date analyzed: Oct 28-31, 1994

RESULTS:

SAMPLE I.D.	REACTIVITY	CORROSIVITY	IGNITABILITY
10098 & 10099	NO	pH 7.6	NO
Blank	NO	pH 7.0	NO
Method of Analysis	Title 22, CCR 66261.23	Title 22, CCR 66261.22	Title 22, CCR 66261.21

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

December 14, 1994 PEL # 9412041

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: One water sample for total Recoverable Hydrocarbons analysis.

Project name: CHVB

Date sampled: Dec 12, 1994
Date extracted: Dec 12-14, 1994
Date submitted: Dec 12, 1994
Date analyzed: Dec 12-14, 1994

RESULTS:

SAMPLE I.D.	Total Recoverable Hydrocarbons (mg/L)
MW 2	1.7
Blank	N.D.
Detection limit	0.5
Method of Analysis	418.1

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

10

ASE
APPLIED SCIENCE AND ENGINEERING INC.

February 16, 1995

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
FEB 17 1995
RECEIVED

SUBJECT: Monitor Well Sampling Report
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

Applied Science and Engineering, Inc. (ASE) respectfully submits the fourth quarterly report documenting groundwater sampling at Chub's Auto Repair, 1180 Main Street in Redwood City, California (Figure 1). The sampling was conducted in accordance with the requirements of the State of California Leaking Underground Fuel Tank (LUFT) Manual, the Tri-Regional Recommendations of the San Francisco Bay Regional Water Quality Control Board (SFRWQCB), and the San Mateo County LUFT Enforcement Program (CLEP) Guidelines.

DRAFT

Introduction

~~Reportedly~~, the above-referenced site formerly contained two underground storage tanks (USTs) used for waste oil and gasoline (Figure 2). The USTs were removed from the ground on January 14, 1994. The gasoline UST did not have any holes, but the waste oil UST was noted to have several holes at the end seam at the 11 O'clock position. Verification soil samples collected for the gasoline UST were found to contain no detectable hydrocarbons (Table 1). One of the two soil samples collected for the waste oil UST was found to contain 810 ppm of Total Petroleum Hydrocarbons (TPH) as diesel (Table 1). In addition, the laboratory reported 17 ppb of dichloromethane by EPA Methods 5030/8010, but re-analysis by EPA Method 8240 showed no detectable hydrocarbons.

On February 9, 1994 the waste oil UST pit was over-excavated. A soil sample collected at the end of overexcavation was found to contain no detectable hydrocarbons. Water present in the pit was eventually sampled, with analyses showing only 530 ppb of Total Petroleum Hydrocarbons (TPH) as diesel, described by the laboratory as not typical of diesel. No TPH as gasoline, benzene, toluene, ethylbenzene, xylenes (BTEX), oil and grease (O&G), or chlorinated hydrocarbons were detected in the water sample (Table 2).

Subsequently, the San Mateo County Department of Health Services (SMCDHS) requested construction and sampling of a monitor well. The monitor well was constructed at the site on May 4, 1994 in the assumed downgradient direction from the former UST, towards the San Francisco Bay. This report describes the fourth quarterly sampling of the monitor well.

Observations

On February 2, 1995, one day prior to sampling, water levels were measured in MW-1 and tidal water levels in Redwood Creek were observed. No tidal influence on MW-1 water levels observed on February 2. However, on February 3, water levels were noted to be 0.15 feet lower (see attached field notes).

Monitor Well Development and Sampling

On February 3, 1995, monitor well MW-1 was purged by bailing and a groundwater sample was collected. Field notes documenting the well sampling are attached.

Prior to purging, depth to water (DTW) was measured at 8.56 feet below the top of the well casing (TOC). An initial volume of water was removed from the well using a new clean polyethylene bailer and examined. The water was clear, with no petroleum odor. No petroleum odor was noted during purging. A total of 6 gallons were purged from the well, equivalent to greater than 3 casing volumes. Purge water was discharged into 5-gallon buckets calibrated for volume measurement.

At the end of purging the DTW was measured at 8.57 feet, indicating instant recovery. A sample was then collected in presence of Ms. Michele Shoemaker of SMCDHS.

The same polyethylene bailer was used to remove a volume of water from the well. The water in the bailer had no free product. Three volatile analysis vials (VOAs) containing preservative were filled with groundwater from the bailer using an attachment that allowed the vials to be filled from the bottom so as to minimize exposure to air. Two 1 liter amber bottles with preservative were also filled with ground water. The samples were labelled with the time, date, location, and sampler's name prior to storage in a cooler with blue ice.

All purge water was stored in labeled buckets pending analytical results. The well was capped, locked, and covered.

DRAFT

Laboratory Analyses

The groundwater samples were transported under chain of custody (attached) to Priority Environmental Labs, a state certified laboratory, for analyses.

The groundwater sample was analyzed for total petroleum hydrocarbons as diesel (TPH-D) by EPA methods 3510/8015, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA method 8020.

Laboratory reports are attached. Table 2 summarizes the laboratory results for the groundwater. The groundwater sample from MW-1 did not contain any detectable TPH-D or BTEX.

Quality Control

Laboratory quality control for water, consisting of method blanks and spikes, are attached.

Summary and Conclusions

This report has been prepared to document sampling of a monitor well at Chub's Auto Repair at, 1180 Main Street, Redwood City, California (Figure 1). The monitor well was purged and a groundwater sample collected. No free product or petroleum odor was noted in the groundwater. Laboratory results show no detectable TPH-D or BTEX in the groundwater from MW-1 (Table 2).

Recommendations

Laboratory results for groundwater samples collected from MW-1 for the past four quarters show no detectable TPH-D or BTEX. Based on these results there does not appear to be significant contamination of the site groundwater. Thus, ASE recommends site closure.

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

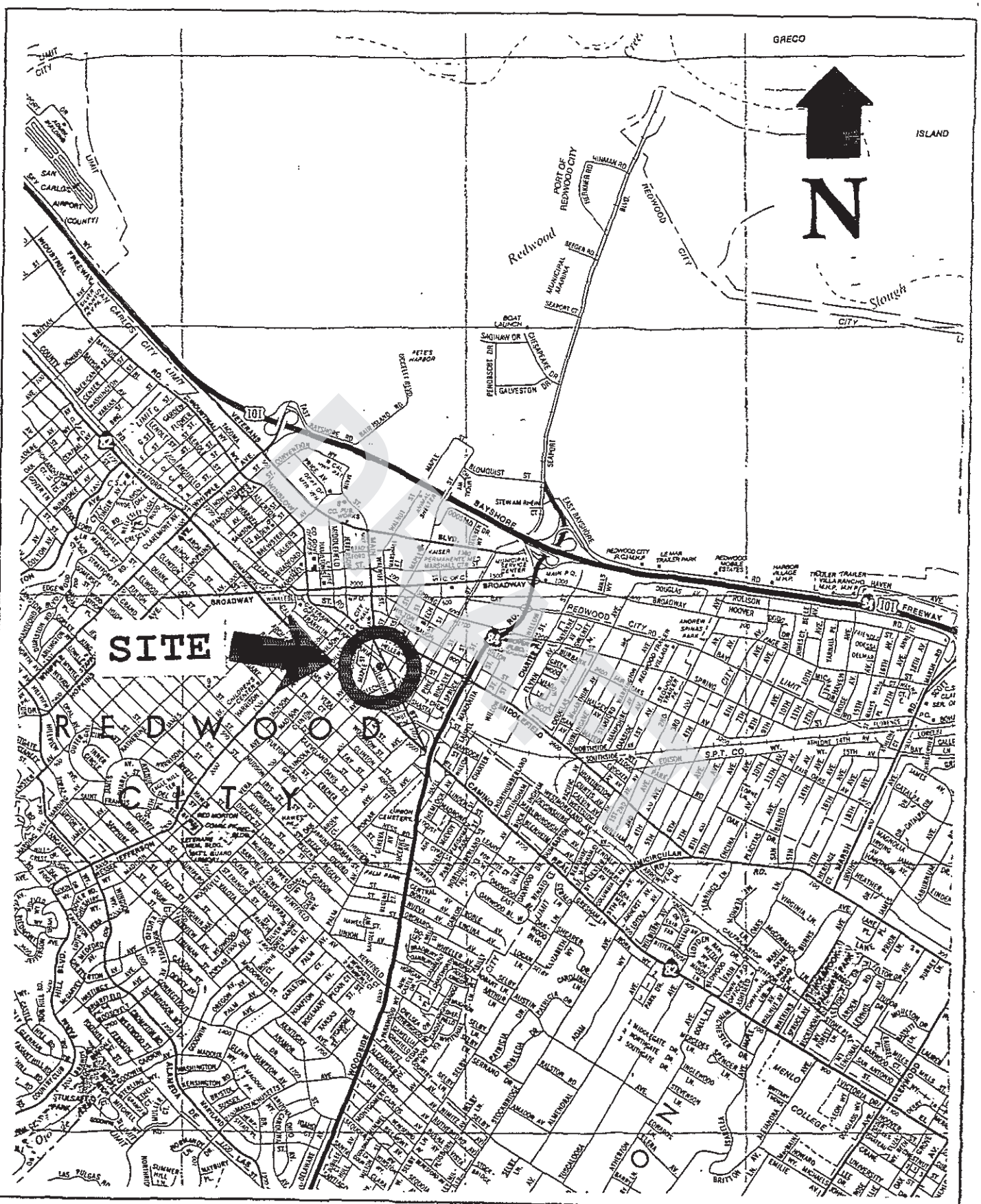
Frederick A. Yukic, MS, PE
Principal Engineer

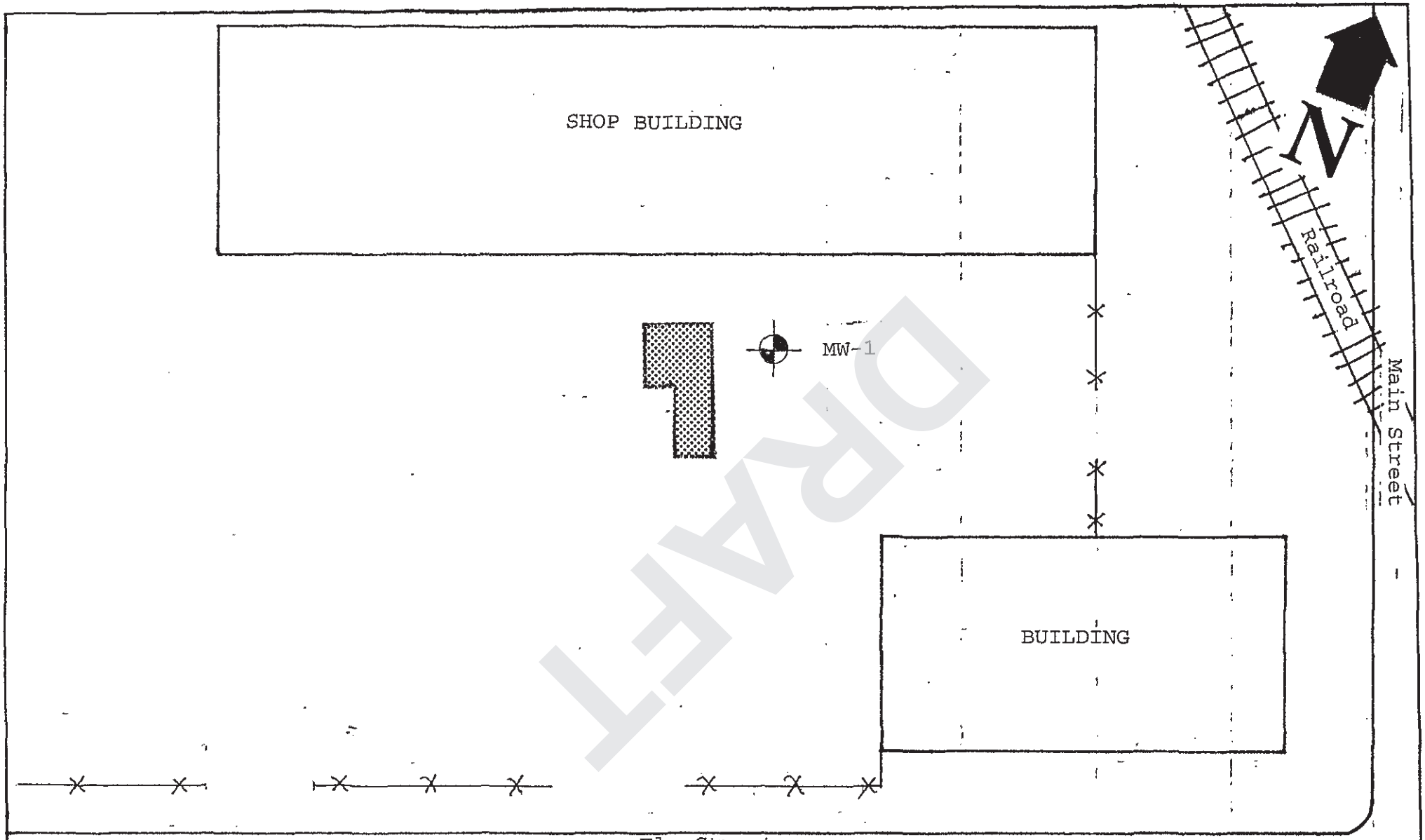
REGISTERED PROFESSIONAL ENGINEER
FREDERICK A. YUKIC
No. 046369
EXP. 12-31-98
CIVIL
STATE OF CALIFORNIA

Attachments

cc: Mr. Larry Chubick, Chub's Auto Repair

DRAFT


SITE
REDWOOD CITY
N
GRECO
ISLAND
Redwood
Slough
CITY
BROADWAY
BAYSHORE
EAST BAYSHORE
SEAPORT
BLOMQUIST ST
STEWART RHEIN
MAIN
BOAT LAUNCH
SAGINAW DR
GALVESTON DR
PENOBSCOT DR
CHESAPEAKE DR
POST OF REDWOOD CITY
MUNICIPAL MARINA
SEAPORT CT
BERGEN RD
HINMAN RD
REDWOOD CITY
FARALLON
PETES HARBOR
VETERANS
MIDDLEFIELD RD
WOODSIDE RD
101
101 FREEWAY
SAN CARLOS AIRPORT (COUNTY)
SAN CARLOS
CITY LIMIT
DOUGLAS AV
HOOVER
ROLISON
REDWOOD CITY RC MHP
LE MAR TRAILER PARK
REDWOOD MOBILE ESTATES
HARBOR VILLAGE MHP
TROLLER TRAILER HAVEN
VILLA RANCHO MHP
MAIN P.O.
CITY HALL
COURT HOUSE
SAN MATEO COUNTY
S.P.T. CO
EDISON
CHARTER
NORTHUMBERLAND
CAMINO
MADISON
JEFFERSON
HAMILTON
WINKLER
MAPLE
ALAMEDA DE LAS PULGAS
LAS PULGAS
MENLO AVE
COLLEGE
ATHERTON
ALAMEDA
CRANE
UNIVERSITY
BRITTON
EMILIE
MICHAELS
HOWARD
LEE
OAK
ELM
FAIR OAKS
WOODSIDE
SELBY
STOCKBRIDGE
AUSTIN
PATRICIA
SERRANO
RALSTON
ALMENDRAL
CAROLINA
CHESTER
CLARENDON
CLAREMONT
CLINTON
CLIFTON
CLOVERDALE
COLUMBIA
CONCORD
CORTEZ
CRESTVIEW
CYPRESS
DARTMOUTH
DEVONSHIRE
DOVER
EDGEWOOD
EDISON
ELDORADO
ELMWOOD
EMERSON
ESSEX
FAIRFIELD
FAIRMONT
FAIRVIEW
FARRELL
FLORENCE
FLORIDA
FOREST
FRANKLIN
GARFIELD
GARNET
GLENWOOD
GRANT
GREENDALE
HAMPTON
HARVARD
HAWES
HEATHER
HERMOSA
HIGHLAND
HILLCREST
HOLLY
HOMER
HOWARD
HUDSON
HUNTER
IMPERIAL
INDIANA
INGLEWOOD
IRVING
JAMES
JANICE
JEFFERSON
JUANITA
KENSINGTON
KENTFIELD
KENTUCKY
KINGSLEY
LAFAYETTE
LAKE
LANCASTER
LARKSPUR
LAUREL
LEXINGTON
LINCOLN
LINDA
LOCUST
LOMITA
LORELEI
MADISON
MAGNOLIA
MANHATTAN
MARGUERITE
MARSH
MAYFLOWER
MCCORMICK
MEADOW
MELLO
MENDOCINO
MERIDIAN
MIDDLEFIELD
MILLS
MONTE
MONTEREY
MONTGOMERY
MORNINGSIDE
MORRIS
MOUNTAIN VIEW
NEVADA
NORFOLK
NORTHGATE
NORTHRIDGE
OAKLAND
OLIVE
OLIVER
ORANGE
ORCHARD
OREGON
PACIFIC
PALM
PARK
PARKSIDE
PARKWOOD
PENINSULA
PERSHING
PIEDMONT
PINE
PLEASANT
PLYMOUTH
POPLAR
PRINCETON
PROSPECT
RAMONA
REDWOOD
ROBLE
ROSEMARY
SAN ANTONIO
SAN BENITO
SAN CARLOS
SAN JUAN
SAN MATEO
SAN PABLO
SANCHEZ
SANTA CRUZ
SEQUOIA
SHERMAN
SHOREVIEW
SIERRA
SIMPSON
SOUTHGATE
SPRING
STAMBAUGH
STANFORD
STAR
STAVENDALE
STEVENSON
SUMMIT
SUNSET
TAMARACK
TAMARACK
TAMARACK



ASE
APPLIED SCIENCE AND ENGINEERING INC.

1" = 20'

MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

Table 1
Soil Analytical Results (ppm)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn
Gasoline UST Excavation														
North @ 8'	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	8	--	--
South @ 9.5	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	7	--	--
Waste Oil UST Excavation														
East @ 8'	1-14-94	ND	ND	ND	ND	ND	ND	ND	ND	0.6	60	7	52	90
West @ 8.5'	1-14-94	ND	810	ND	ND	ND	ND	ND	ND*	0.5	69	7	55	84
West @ 8'	2-09-94	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--
Stockpile Composites														
Gasoline	1-14-94	ND	--	ND	ND	ND	ND	ND	--	--	--	30	--	--
Waste Oil	1-14-94	4	1,100	ND	0.018	0.036	0.28	ND	ND	ND	81	35	79	94

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed
* = 17 ppb of dichloromethane (5030/8010), ND ppb of methylene chloride (8240)

DRAFT

Table 2
Water Analytical Results (ppb)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn	
Excavation	2- 9-94	--	--	--	--	--	--	9,000	--	--	--	--	--	--	
Excavation	2-17-94	ND	530	ND	ND	ND	ND	ND	ND	--	--	--	--	--	
MW-1	5-05-94	ND	ND	ND	ND	ND	ND	--	ND	--	--	--	--	--	PTW 7.74
MW-1	8-04-94	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	10.32
MW-1	11-03-94	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	10.37
MW-1	2-02-95	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	8.42

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed

DRAFT

ASE APPLIED SCIENCE AND ENGINEERING INC.

Date: 2/2/95 By: DAVID OLKOWSKI / FY To: _____ Sheet: _____

Job Name: CHUB Job No: _____

Main Activity: OBSERVE TIDAL ACTION

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Odometer In _____

Vehicle Pers. _____ Odometer Out _____

Rent. _____ Mileage _____

Time	Description
10:34	DTW = 8.41 ft MW-1
	CREEK LEVEL (TIDE) IS LOW.
	CREEK FLOW IS HIGH.
	MW-1 WAS UNDER PRESSURE.
12:05	DTW = 8.42 ft MW-1 CREEK LEVEL IS LOW.
14:10	TIDE IS HIGH. ~2 ft DEEP? ~0.5 ft ABOVE MOSS? (CREEK)
14:16	DTW = 8.42 ft MW-1
15:57	DTW = 8.44' MW-1
	water in creek below moss ~ 1.5' @ bathtop (downstream)
	Water flowing in creek

DRAFT

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APPLIED SCIENCE AND ENGINEERING INC.

DATA SHEET FOR SAMPLING WELL MW-1

JOB NAME CHUB
SAMPLED BY DAVID OLKOWSKI

DATE 2/3/1995
SHEET 1 OF 1

USE POSITIVE VALUES
WELL DEPTH (WD) 20 ft
INITIAL DEPTH TO WATER (DTWI) 8.56
(WD - DTWI) (0.17 GAL/FT) = CASING VOLUME (CV)
(20 - 8.56) (~~11.44~~ GAL/FT) = 1.94 GALLONS/CV
(3CV) (GAL/CV) = 3 CASING VOLUMES
(3) (1.94) = 5.83 GALLONS NEED TO BE PURGED

DIA.	X
2"	0.17
4"	0.66
6"	1.5

TIME	DTW	GALS	MICR S	pH	TEMP C	NOTES
10:16						
10:25	8.56ft					
10:37		0				NCLEAR, NO ODOR
10:49		6				TURBID, NO ODOR
10:51	8.57ft					INSTANT RECOVERY MICHELE PRESENT
11:11						FILL 3 VOAs, 2 1L
11:26						PLUG, LOCK & COVER MW-1
						PLACE WATER IN COVERED BUCKETS
11:31						LEAVE SITE

FINAL DEPTH TO WATER (DTWF) _____
0.2(DTWF) + 0.8(DTWI) = DTW FOR 80% RECOVERY (DTW80%R)
0.2(_____) + 0.8(_____) = _____ FT MAX. BEFORE SAMPLING

DWO\DATAS1D4

DRAFT

PRIORITY ENVIR

PEL # 9502015

INV # 25642

ABS

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 2/3/95 PAGE: 1 OF 1

PROJECT MGR.: FRED YUKIC
COMPANY: APPLIED SCIENCE AND E.
ADDRESS: P.O. BOX 1166
: SAN CARLOS, CA 94070
PHONE: 415-363-2495 FAX: 415-363-8449
SIGNATURE:

ANALYSIS REPORT

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)	NUMBER OF CONTAINERS
MW-1	2/3/1995	11:11	GW			X	X					5

DRAFT

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJECT NAME:	CHUB	TOTAL # OF CONTAINERS	5
PROJECT NUMBER:		RECD. GOOD COND./COLD	

INSTRUCTIONS & COMMENTS: ONE WEEK TURN AROUND

	RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
	DAVID OLKOWSKI	DAVID DUONG		
SIGNATURE:				
Date:	2/3/1995	2/3/95		
Time:	15:07	15:07		
COMPANY:	ASE	PEL		

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

February 10, 1995 PEL # 9502015

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: One water sample for BTEX and Diesel analyses.

Project name: CHUB

Date sampled: Feb 03, 1995 Date submitted: Feb 03, 1995
Date extracted: Feb 03-06, 1995 Date analyzed: Feb 03-06, 1995

RESULTS:

SAMPLE I.D.	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
MW-1	N.D.	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	101.0%	92.3%	105.7%	108.4%	90.9%
Detection limit	50	0.5	0.5	0.5	0.5
Method of Analysis	3510 / 8015	602	602	602	602

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

ASE
APPLIED SCIENCE AND ENGINEERING INC.

March 30, 1995

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
MAR 31 1995
RECEIVED

SUBJECT: Monitor Well Sampling Report For MW-2
Hydraulic Lift Excavation
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

Applied Science and Engineering, Inc. (ASE) respectfully submits this sampling report for monitor well MW-2 associated with a former hydraulic lift at Chub's Auto Repair, 1180 Main Street in Redwood City, California (Figure 1). The sampling was conducted by ASE following San Mateo County LUFT Enforcement Program (CLEP) Guidelines.

DRAFT

Introduction

A hydraulic lift was removed from the above-referenced site, an automobile repair shop, in early August 1994. Reportedly, the lift was approximately 10 years old. The lift was removed because the cylinder was leaking by BCM Services and Engineering prior to August 16, 1994.

Soil samples were collected from beneath the hydraulic lift by hand boring into the bottom of the excavation created by removal (Figure 2). Laboratory results showed O&G in soils beneath the former hydraulic lift (Table 1). The excavation was deepened to approximately 12 feet, the maximum depth attainable with a backhoe that could fit inside the building. Water entered the excavation, filling it to 10.9 feet below ground surface. In accordance with LUFT guidelines the excavation was pumped once, with about 100 gallons of groundwater removed. A hand boring was advanced 3.5 feet below the bottom of the excavation, to a total depth of 15.5 feet where the first water bearing zone was encountered. A well (MW-2) was constructed in the excavation boring of 4-inch diameter PVC pipe with sawcut slots surrounded by pea gravel. A grab groundwater sample from the backfill well after excavation pumping was found to contain 1.7 ppm of O&G, which is below the required practical quantitation reporting limit of 5 mg/l required by the Tri-regional Recommendations for leaking underground fuel tanks.

This report describes the second sampling of MW-2.

did what type of soils???

Monitor Well Purging and Sampling

On March 13, 1995, monitor well MW-2 was purged by bailing and a groundwater sample was collected. Field notes documenting the well sampling are attached.

Prior to purging, depth to water (DTW) was measured at 7.65 feet below the top of the well casing (TOC). A new clean polyethylene bailer was used for purging and sampling. No petroleum odors were noted during purging. Spots of sheen were noted during purging. A total of 16 gallons were purged from the well, equivalent to greater than 3 casing volumes. Purge water was discharged into 5-gallon buckets calibrated for volume measurement.

At the end of purging the DTW was measured at 7.80 feet. MW-2 was allowed to recover for 25 minutes, until DTW equaled 7.70 feet, about 80% recovery. Ms. Michele Shoemaker of SMCDHS gave permission to collect a sample in her absence.

The polyethylene bailer was used to remove a volume of water from the well. The water in the bailer had no free product. Two 1 liter amber bottles with preservative were filled with ground water. The samples were labelled with the time, date, location, and sampler's name prior to storage in a cooler with blue ice.

All purge water was stored in a labeled drum pending analytical results. The well was capped, locked, and covered.

Laboratory Analyses

The groundwater samples were transported under chain of custody (attached) to Priority Environmental Labs, a state certified laboratory, for analyses.

The groundwater sample was analyzed for oil and grease (O&G) by EPA method 418.1.

Laboratory reports are attached. Table 2 summarizes the laboratory results for the groundwater. The groundwater sample from MW-2 shows 1.5 mg/L of O&G.

Quality Control

Laboratory quality control for water, consisting of method blanks and spikes, are attached.

DRAFT

Summary and Conclusions

This report has been prepared to document sampling of the monitor located at the former hydraulic lift cylinder removed from the subsurface at Chub's Auto Repair at, 1180 Main Street, Redwood City, California (Figure 1). The monitor well was purged and a groundwater sample collected. No free product or petroleum odor was noted in the groundwater. Spots of sheen were noted in the groundwater.

Laboratory reports are attached. Table 2 summarizes the laboratory results for the groundwater. The groundwater sample from MW-2 shows 1.5 mg/L of O&G (Table 1). This is about the same as for the previous sample.

Recommendations

Based on two quarters of laboratory results for groundwater from MW-2 which show less than 5 mg/L of O&G, the practical quantitation reporting limit listed in the Tri-Regional Recommendations for O&G, ASE recommends site closure.

DRAFT

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
FREDERICK A. YUKIC
No. 046369
EXP. 12/31/98
CIVIL
STATE OF CALIFORNIA

Attachments

cc: Mr. Larry Chubick, Chub's Auto Repair

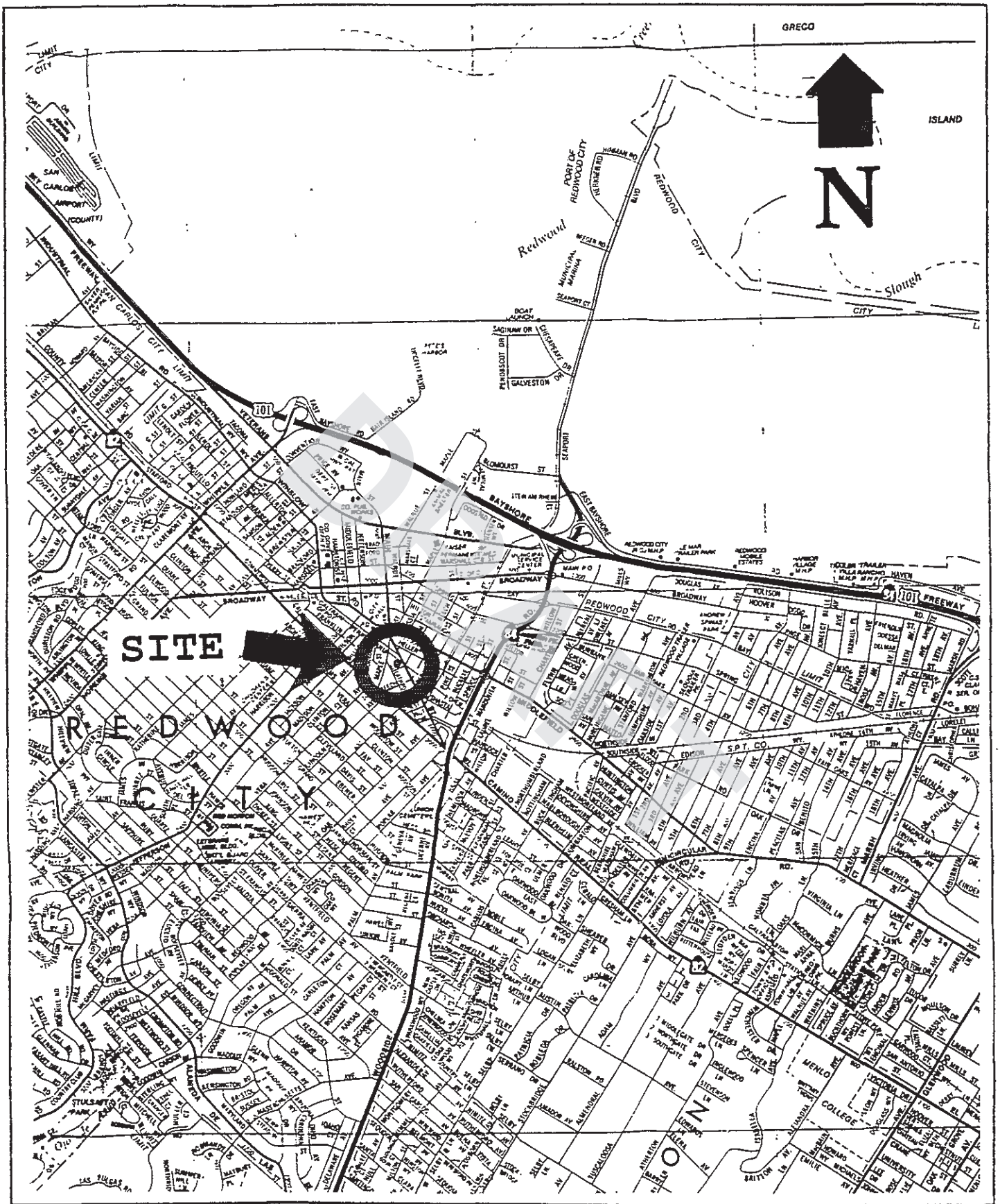
ASE
APPLIED SCIENCE AND ENGINEERING INC.

Table 1
Analytical Results (mg/L)
Chub's Automotive
Hydraulic Lift Excavation

Location	Date	Oil and Grease
Soil		
8' - 8.5'		12,000
9' - 9.5'		1,600
9.5'-10'		1,700
12' -12.5'		520
Stockpile		4,100
Water		
MW-2	12/12/94	1.7 ppm
MW-2	3/13/95	1.5 ppm

by 418.1, which doesn't exclude natural oils.

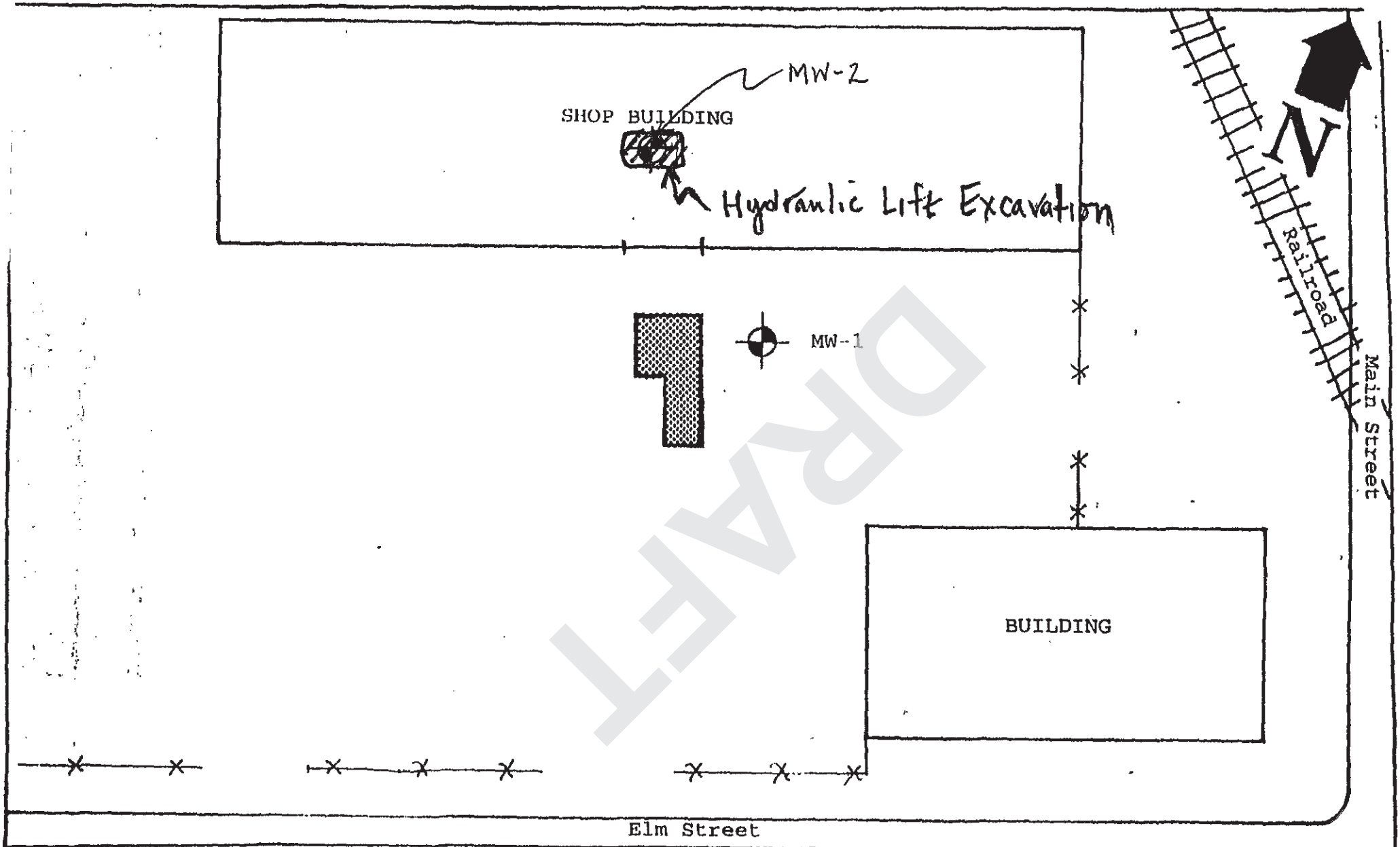
DRAFT



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APPLIED SCIENCE AND ENGINEERING INC.

Figure 1: Location Map
Chub's Auto Repair
1180 Main Street
Redwood City, California



DRAFT

ASE
APPLIED SCIENCE AND ENGINEERING INC.

1" = 20'

EXISTING MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

ASE
APPLIED SCIENCE AND ENGINEERING INC.

DATA SHEET FOR SAMPLING WELL MW-2

JOB NAME CHUB
SAMPLED BY DAVID OLKOWSKI

DATE 3/13/95
SHEET 1 OF 1

USE POSITIVE VALUES
WELL DEPTH (WD) 15.5 ft
INITIAL DEPTH TO WATER (DTWI) 7.65 ft
(WD - DTWI)(X GAL/FT) = CASING VOLUME (CV)
(15.5 - 7.65)(0.66 GAL/FT) = 5.18 GALLONS/CV
(3CV)(GAL/CV) = 3 CASING VOLUMES
(3)(5.18) = 15.54 GALLONS NEED TO BE PURGED

DIA.	X
2"	0.17
4"	0.66
6"	1.5

TIME	DTW	GALS	MICR S	pH	TEMP C	NOTES
10:42						ARRIVE SITE
10:59	7.65 ft.					
11:12		0				CLEAR
11:29		9				SPOTS OF SHEEN
11:44		16				TURBID, NO ODOR
11:46	7.80 ft.					
11:54	7.74 ft.					
12:12	7.7[illegible] ft.					
12:22						FILL 2 1L
12:28						PLUG, LOCK & COVER MW-2 (CHUB'S LOCK, CHUB HAS KEY)
[illegible]						
12:33						PLACE WATER IN DRUM
12:35						LEAVE SITE

FINAL DEPTH TO WATER (DTWF) 7.80
0.2(DTWF) + 0.8(DTWI) = DTW FOR 80% RECOVERY (DTW80%R)
0.2(7.80) + 0.8(7.65) = 7.68 ft FT MAX. BEFORE SAMPLING
DWO\DATAS1D4

6.12
1.56

DRAFT

PRIORITY ENVIRONM

PEL # 9503029

INV # 25753

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636

DATE: 3/13/95 PAGE: 1 OF 1

PROJECT MGR.: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
: SAN CARLOS, CA 94070
PHONE: 415-363-2445 FAX: 415-363-8449
SIGNATURE:

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030.8015)	TPH-Gasoline(5030.8015) +/BTEX(EPA 602.8020)	TPH-Diesel (EPA 3510/3550.8015)	PURGEABLE AROMATICS BTEX (EPA 602.8020)	TOTAL OIL & GREASE (EPA 5520 C.D&F)	PESTICIDES/PCB (EPA 608.8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601.8010)									NUMBER OF CONTAINERS
MW-2	3/13/95	12:22	GW							X										2

DRAFT

PROJECT INFORMATION
PROJECT NAME:: CHUB
PROJECT NUMBER:

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS:
ONE WEEK TURN AROUND

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
DAVID OLKOWSKI			
SIGNATURE: David Olkowski	SIGNATURE: SHAWN LAM	SIGNATURE:	SIGNATURE:
Date: 3/13/95 Time: 14:42	Date: 3/13/95 Time: 14:43	Date: Time:	Date: Time:
COMPANY: ASE	COMPANY: PEL	COMPANY:	COMPANY:

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

March 20, 1995 PEL # 9503029

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic

Re: One water sample for total Recoverable Hydrocarbons analyses.

Project name: CHUB

Date sampled: Mar 13, 1995
Date extracted: Mar 13-14, 1995
Date submitted: Mar 13, 1995
Date analyzed: Mar 13-14, 1995

RESULTS:

SAMPLE I.D.	Total Recoverable Hydrocarbons (mg/L)
MW-2	1.5
Blank	N.D.
Detection limit	0.5
Method of Analysis	418.1

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

1180 Main St., RWC

April 12, 1995

PEL # 9504024

APPLIED SCIENCE ENGINEERING, INC.

Attn: Fred Yukic

Re: Four soil samples for total Recoverable Hydrocarbons analysis.

Project name: CHUB

Date sampled: Apr 10, 1995
Date extracted: Apr 10-11, 1995

Date submitted: Apr 10, 1995
Date analyzed: Apr 10-11, 1995

RESULTS:

→ Soil sample results from 3 moist removals.

SAMPLE	Total Recoverable Hydrocarbons (mg/Kg)
10172 #4 @ 9.5'-10'	N.D.
10173 #3 @ 9.5-10'	76
10174 #2 @ 9.5-10'	490
10175 Stockpile	770
Blank	N.D.
Detection limit	10
Method of Analysis	418.1

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRO

PEL # 9504024

INV # 25847

BS

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946

DATE: 4/10/95 PAGE: 1 OF 1

PROJECT MGR.: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166 SAN CARLOS, CA 94070
PHONE: 415-363-2444 FAX: 415-363-9449
SIGNATURE: FA Yukic

SAMPLE ID.	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)	NUMBER OF CONTAINERS
10172	4/10/95	9:10	SOIL							X		1
10173	"	11:15	"							X		1
10174	"	11:55	"							X		1
10175	"	12:00	"							X		1

ANALYSIS REPORT

DRAFT

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT NAME: CHUB	TOTAL # OF CONTAINERS	4
PROJECT NUMBER:	RECD. GOOD COND./COLD	

INSTRUCTIONS & COMMENTS: 3-DAY TURNAROUND

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
F.A. Yukic			
SIGNATURE: FA Yukic	SIGNATURE: [illegible]	SIGNATURE:	SIGNATURE:
Date: 4/10/95 Time: 1400	Date: 4/10/95 Time: 2:45	Date: Time:	Date: Time:
COMPANY: ASE	COMPANY: PEL	COMPANY:	COMPANY:

Date: 4.10.95 By: F. Yuhas To: Sheet 1/2

Job Name: Chub - Lyon. Trfrs Job No:

Main Activity: Sample excavatn

Equipment Rental	Company	Hours	Rate

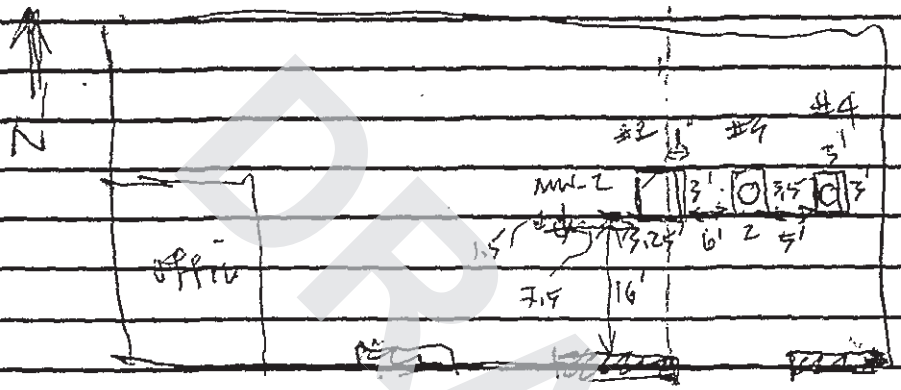
[Attach receipts for all outside expenses]

Odometer In

Vehicle Pers. Odometer Out

Rent. Mileage

Time	Description
8:45	Arrive site



Concrete surcut @ #2 - rough @ #3 & #4

#2 cored w/

#3 hole 1.5' ø at surface necks down to 1' ø
4.5' deep.

#4 hole 1.5' ø ⊥ 5.5' deep

Cylinders on ground surface - look OK - hit w/ hammer hard

#2 - wrapped in 0.010 mil Slipknot pipe wrap

#3 - wrapped

#4 - oldest; wrapped but frayed, some oil on outside

All three have pipes - #2 & #3 are ~2" pipe
#4 - information ~1.5' pipe.

Reported by - no leaks
bumped prior to pm;
all ~ 8' long

DRAFT

Date: 4-10-95 BY: F. Yuki To: Sheet 2

Job Name: Chevron-Hyde. Drlg Job No:

Main Activity:

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

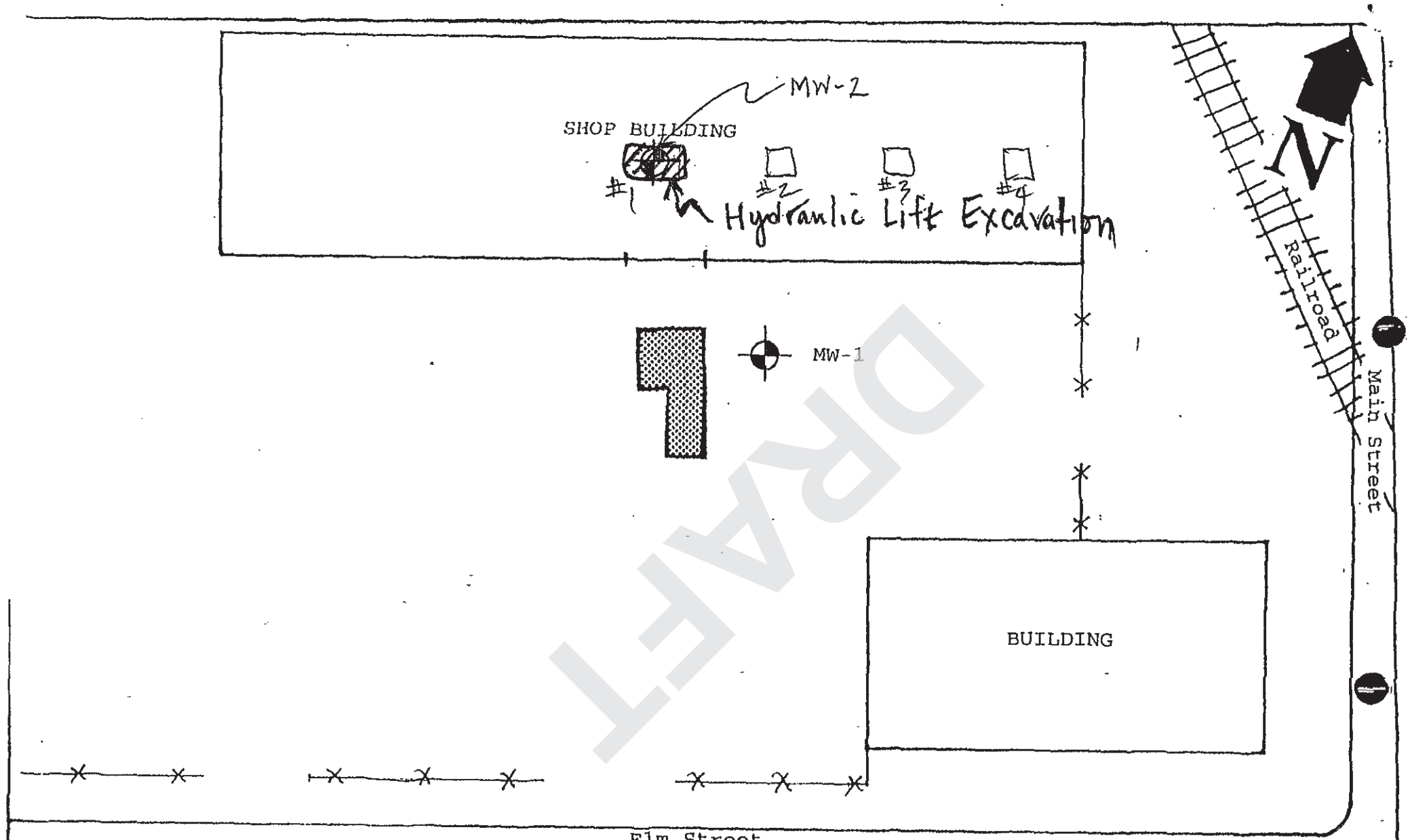
Odometer In

Vehicle Pers. Odometer Out

Rent. Mileage

Time	Description
	~~Hand~~ bring ⊙ #4 – Hydro to 8' – camera – 8' bottom add water ~ 1.5 gals sample 9.5-10
9:15	leave site to get more eqpt.
10:10	return site – use large auger until bottom bore ⊙ #3 – add ~ 1.5 gallons water ~8' bottom – sample 9.5-10
11:15	start bore ⊙ #2 – add ~ 5 gallons water ~8' bottom sample 9.5-10
	sample stockpile ~20 yds
12:10	Leave site

DRAFT



DRAFT

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~~1" = 20'~~ NOT TO SCALE

Existing MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

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12

April 25, 1995

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SUBJECT: Horizontal Hydraulic Gradient
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

This letter is in response to your request for determination of the horizontal hydraulic gradient at the above-referenced site (Figure 1). The gradient was estimated using the two existing monitor wells at the site and a temporary piezometer that was constructed in a hole from which a hydraulic lift was removed.

Temporary Piezometer Construction

Reportedly, three hydraulic lifts were removed from the site on April 8, 1995. On April 10, 1995 an ASE representative visited the site for collection of soil samples from beneath the lifts as part of their closure (see attached field notes). The hole from lift #4 was approximately 1.5 feet in diameter and 5.5 feet deep. ASE drilled to a depth of 9.5 feet using a 2-inch diameter hand auger before collecting a sample from between 9.5 and 10 feet for laboratory analysis. ASE left the site after collecting samples from each of the other two hydraulic lift holes.

On April 20, 1995 an ASE representative returned to the site to deepen the hole at lift #4 for construction of the temporary piezometer TPZ-1 (Figure 2). ASE hand augered to a depth of about 16 feet where a brown, clayey sand was encountered which contained groundwater (see attached field notes). This depth was roughly equivalent to the depth of MW-2 and the first water-bearing zone in MW-1.

The temporary piezometer was constructed by inserting about 15 feet of 1-inch diameter, schedule 40 PVC into the boring. The bottom 10 feet was machine slotted screen with a bottom plug, while the upper five feet was blank casing. A cap was placed on top of the casing prior to leaving the site.

DRAFT

Horizontal Hydraulic Gradient

On the following day, April 21, 1995, ASE conducted an engineering survey of the top of casing (TOC) of the two monitor wells and one temporary piezometer (see attached field notes). In addition, water levels were collected from the two monitor wells and one temporary piezometer (see attached field notes). Using this data the water surface elevations were calculated (Table 1). As can be seen from the data, the variation in WSE of 0.01 feet is smaller than the accuracy of the measurements, so there is no perceptible gradient at the site.

Conclusions and Recommendations

Based on the measurements collected on April 21, 1995 there is no perceptible gradient at the site. As such, the location of MW-1, which is within 10 feet of the former UST, is adequate to detect any groundwater contamination dispersing/diffusing from beneath the former UST. Since no hydrocarbons were detected in MW-1 groundwater for four quarters, and recalling that a sample collected from the excavation after three pumping episodes was found to contain no detectable hydrocarbons, ASE recommends site closure.

DRAFT

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
FREDERICK A. YUKIC
No. 046369
EXP. 12/31/98
CIVIL
STATE OF CALIFORNIA

Attachments

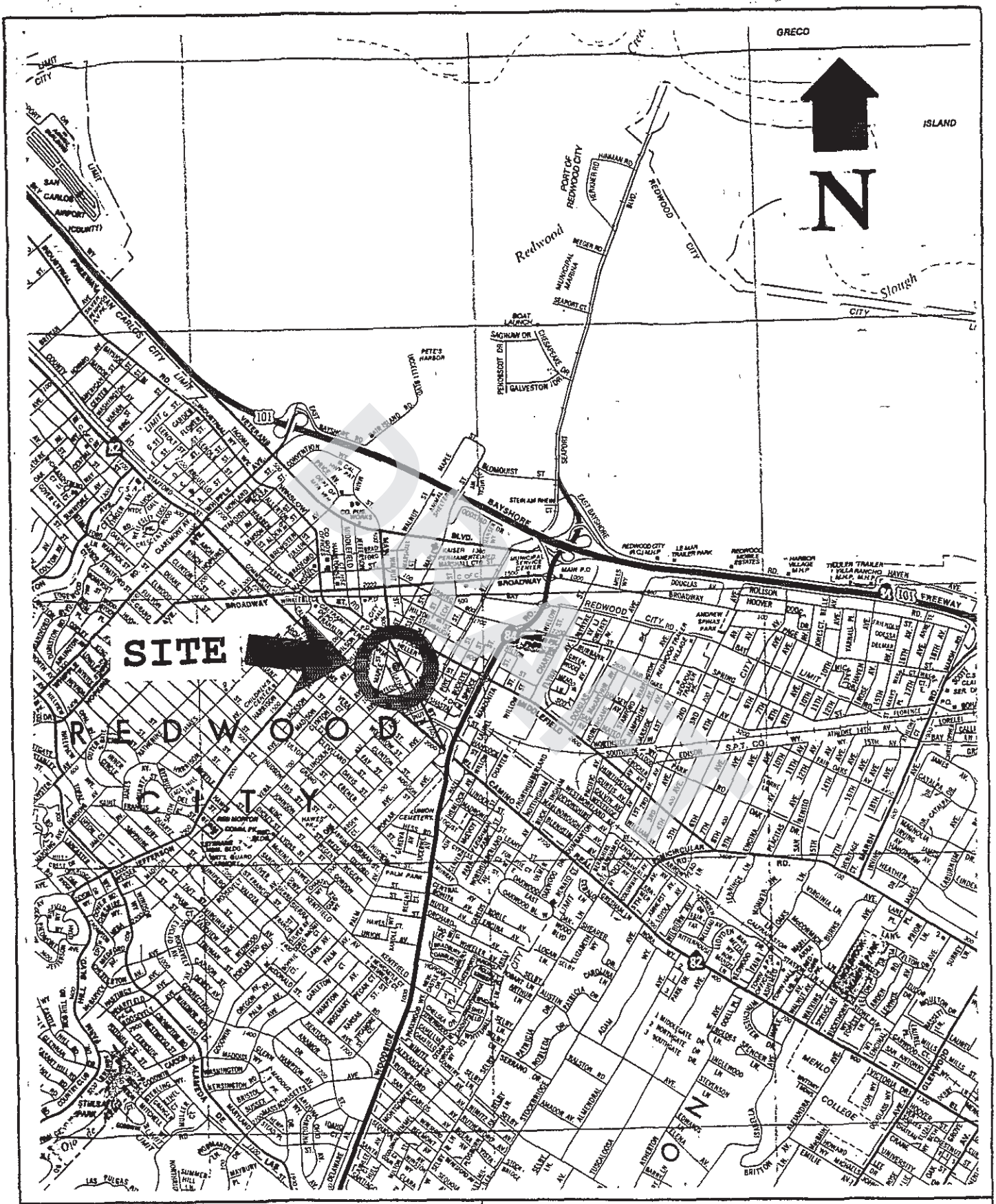
cc: Mr. Larry Chubick, Chub's Auto Repair

ASE
APPLIED SCIENCE AND ENGINEERING INC.

Table 1
Water Level Measurements
Chub's Auto Repair
1180 Main Street
Redwood City, California

Well	Top of Casing (TOC)	Depth to Water (DTW)	Water Surface Elevation (WSE)
April 21, 1995			
MW-1	11.31	9.35	1.96
MW-2	11.54	9.59	1.95
TPZ-1	11.09	9.13	1.96

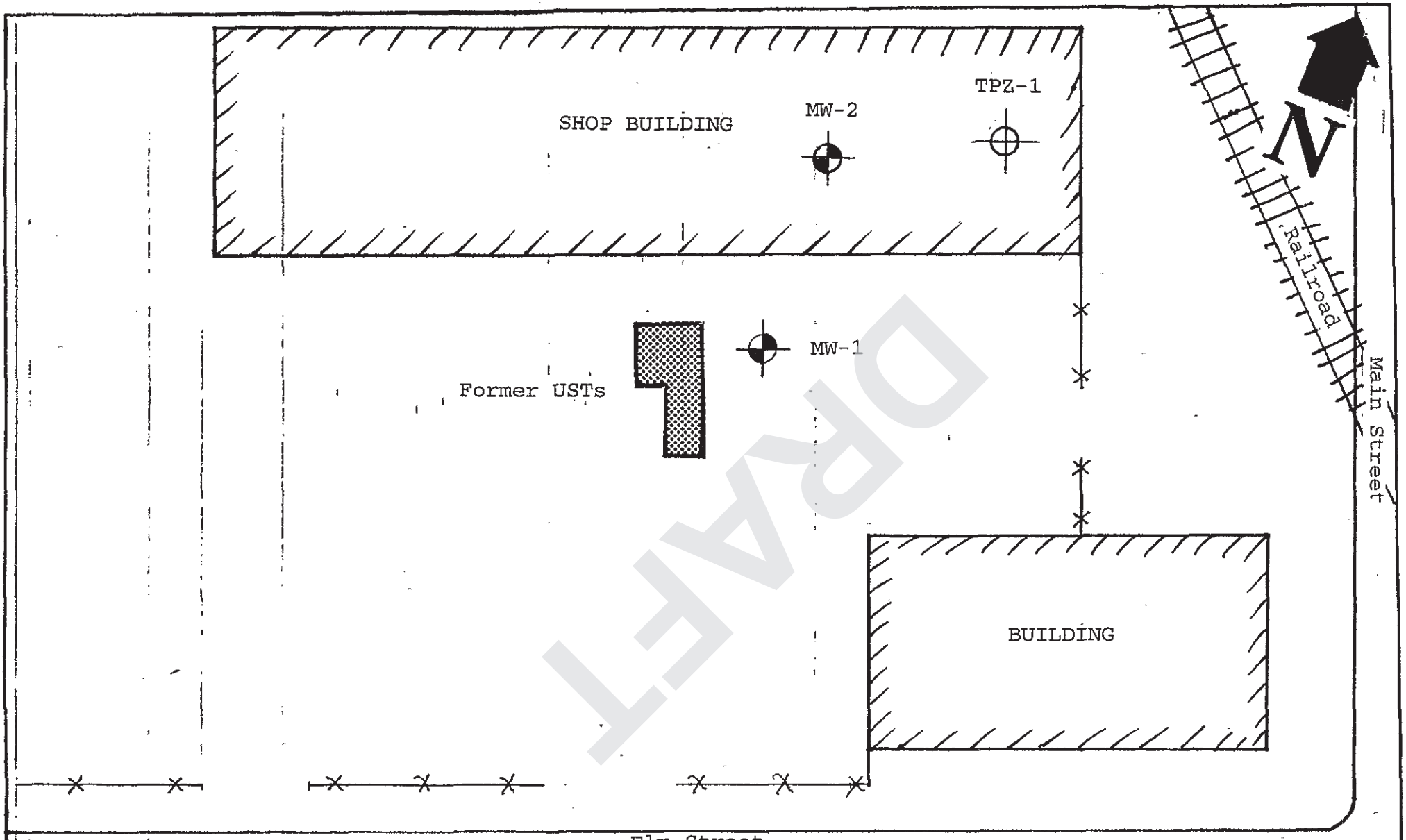
DRAFT



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Figure 1: Location Map
Chub's Auto Repair
1180 Main Street
Redwood City, California



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1" = 20'

MONITOR WELL

Temporary Piezometer

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

Date: 4.10.95 By: F. Yuki Z To: Sheet 1/2

Job Name: Chevron - Hyper. Tests Job No:

Main Activity: Sample Excavation

Equipment Rental	Company	Hours	Rate

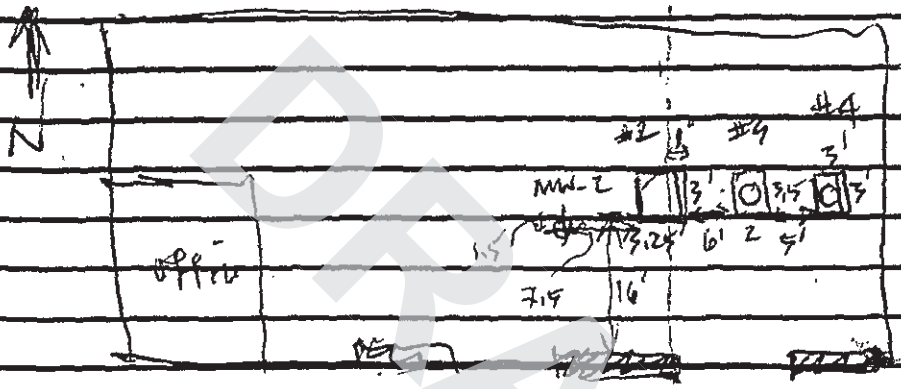
[Attach receipts for all outside expenses]

Odometer In

Vehicle Pers. Odometer Out

Rent. Mileage

Time	Description
8:15	Arrive site



Concrete surcut @ #2 - rough @ #3 & #4

#2 caved in,

#3 hole 1.5' ø at surface necked down to 1' ø 4.5' deep.

#4 hole 1.5' ø ⊥ 5.5' deep

Cylinders on ground surface - look OK - hit w/ hammer hard

#2 - wrapped in 0.010 mil Slipknot pipe wrap

#3 - wrapped

#4 - oldest, wrapped, but frayed, some oil on outside

all three have pipes - #2 & #3 are ~2" pipe

#4 - hydraulic ~1.5" pipe.

Reported by - no leaks

dumped prior to pull,

all 2 gal' buckets

DRAFT

Date: 4-10-95 By: Ri Yuki To: Sheet 2/2

Job Name: Chevron Hydr. Lifts Job No:

Main Activity:

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Odometer In

Vehicle Pers. Odometer Out

Rent. Mileage

Time	Description
	Hand boring @ #4 – sample to 8' – casing ~ 8' bottom sample 9.5–10' add water ~ 1.5 gals
9:15	leave site to get more eqpt.
10:10	return site – use large auger until bottom bore @ #3 – add ~ 1.5 gallons water ~ 8' bottom – sample 9.5–10
11:15	start bore @ #2 – add ~ 5 gallons water ~ 8' bottom sample 9.5–10
	sample stockpile < 20 yds
12:10	Leave site

DRAFT

Date: 9.20.95 By: ~~Chuck~~ FMJ To: Sheet

Job Name: Chino hydrometer Job No:

Main Activity: install temporary piezometer

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Odometer In

Vehicle Pers. Odometer Out

Rent. Mileage

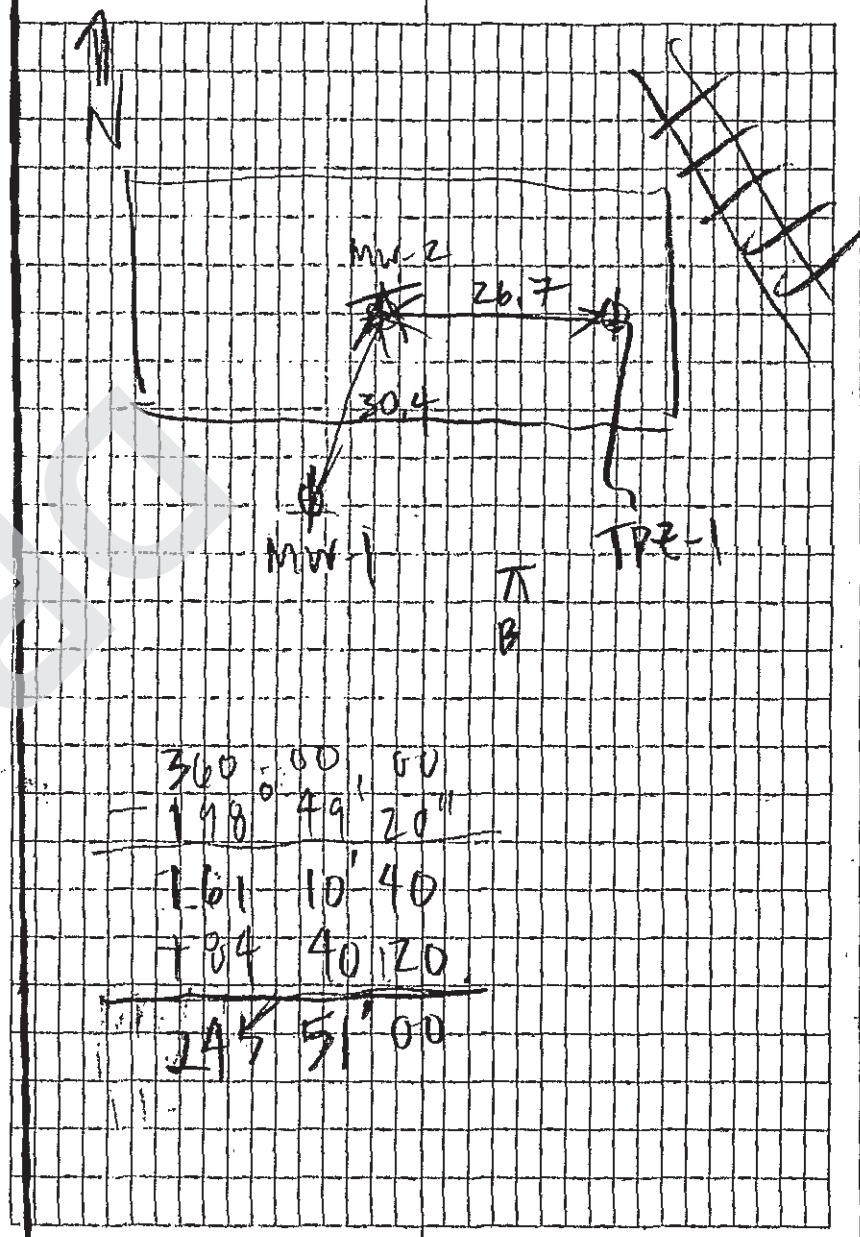
Time	Description
15:15	Arrive site
	~~Hand auger~~ begin #4 - moist sandy/silty clay/
	wet - 1' tan mottled orange Silty Clay/
	hand auger to 18' - hit brown. Clayey SAND
	insert ~15' of 1" ϕ PVC - bottom 10' screen w/ bottom plug
	place cap on top
	cover hole w/ plywood
16:45	leave site

DRAFT

CHUB
MAIN ST.
REDWOOD CITY, CA

4.21.95
LEVEL: Fred Yuken
ROD: Dave Olkowicki
INSTRUMENT: Sokkia

Sta	BS	HI	FS	Elev	Comm.
MW-1	5.93			11.31	198°40' + 920
					198°49'20"
					DTW=9.38
MW-2		17.24			
					DTW=9.59
TPZ-1			6.15	11.09	84°40'20"
					DTW=9.13
~~Recheck~~ MW-1 B	5.62				
TPZ-1			5.84		



ASE
APPLIED SCIENCE AND ENGINEERING INC.

13

May 19, 1995

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
MAY 22 1995
RECEIVED

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SUBJECT: MW-2 Groundwater Extraction and Sampling Report
Hydraulic Lift Excavation
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

Applied Science and Engineering, Inc. (ASE) respectfully submits this groundwater extraction and sampling report for monitor well MW-2 associated with a former hydraulic lift at Chub's Auto Repair, 1180 Main Street in Redwood City, California (Figure 1).

Introduction

A hydraulic lift was removed from the above-referenced site, an automobile repair shop, in early August 1994. Reportedly, the lift was approximately 10 years old. The lift was removed because the cylinder was leaking by BCM Services and Engineering prior to August 16, 1994.

Soil samples were collected from beneath the hydraulic lift contained oil and grease (O&G) at progressively lower concentrations (Table 1). The excavation was deepened to approximately 12 feet, the maximum depth attainable with a backhoe that could fit inside the building. Water entered the excavation, filling it to 10.9 feet below ground surface. The excavation was pumped once, with about 100 gallons of groundwater removed. Then, a hand boring was advanced 3.5 feet below the bottom of the excavation, to a total depth of 15.5 feet, into the first water bearing zone. A monitor well (MW-2) was constructed in the excavation boring of 4-inch diameter PVC pipe with sawcut slots surrounded by pea gravel (Figure 2). A grab groundwater sample from the well contained 1.7 ppm of O&G (Table 1).

Subsequently, the monitor well was sampled on March 13, 1995 after purging 3 casing volumes and allowing the water level to recover. Laboratory results for the sample collected showed 1.5 ppm of O&G (Table 1).

This report describes groundwater extraction of MW-2 followed by sampling of the monitor well for the third time.

DRAFT

Groundwater Extraction

On Saturday May 13, 1995, groundwater was extracted from monitor well MW-2 using a submersible pump. Field notes documenting the groundwater extraction are attached. The pump was placed about one foot above the well bottom.

Prior to purging, depth to water (DTW) was measured at 9.58 feet below the top of the well casing (TOC). In the course of pumping, the pump was stopped three times due to entrained air, and was restarted three times after allowing the well to recover. A flowmeter used to measure total volume showed that approximately 779 gallons were pumped. At the beginning of pumping the flow rate was estimated at 12 gallons per minute (gpm). Pumped water was disposed into the sanitary sewer under temporary permit from SBSA.

Upon removal of thee submersible pump it was observed to be coated with a white foam that felt oily. The foam did not have the appearance of a petroleum product in that it was white. A polyethylene bailer was used to purge an additional 2.5 gallons and inspect the foam.

Monitor Well Purging and Sampling

On May 15, 1995 ASE returned to the site to sample monitor well MW-2. Field notes documenting the well sampling are attached.

Prior to purging, DTW was measured at 9.13 feet below TOC. A new clean polyethylene bailer was used for purging and sampling. No petroleum odors were noted during purging. Purge water was discharged into 5-gallon buckets calibrated for volume measurement. A total of 13 gallons were purged from the well, equivalent to greater than 3 casing volumes. White globules and a sheen without color was noted on the water in the bucket during purging.

At the end of purging the DTW was measured at 9.26 feet. MW-2 was allowed to recover for about one-half hour, until DTW reached 9.15 feet, equal to 80% recovery. Ms. Michele Shoemaker of SMCDHS gave permission to collect a sample in her absence.

The polyethylene bailer used for purging was then used for collection of a sample. Two 1 liter amber bottles with preservative were filled with groundwater. The samples were labelled with the time, date, location, and sampler's name prior to storage in a cooler with blue ice.

All purge water was disposed to the sanitary sewer under temporary permit from SBSA. The well was capped, locked, and covered.

DRAFT

MW-2 Laboratory Analyses

The groundwater samples were transported under chain of custody (attached) to Priority Environmental Labs, a state certified laboratory, for analyses for oil and grease (O&G) by EPA method 418.1. Laboratory reports are attached which include quality control. Table 1 summarizes the laboratory results. The MW-2 groundwater sample was found to contain 1.6 mg/L of O&G.

Re-inspection of MW-1 Laboratory Analyses

In response to a request from Ms. Michele Shoemaker for additional sampling of nearby monitor well MW-1 associated with a former UST (Figure 2), ASE asked Priority Environmental Labs to re-inspect the results for samples collected from MW-1. The chromatograms for groundwater samples collected on November 3, 1994 and February 3, 1995 were re-examined for the presence of motor oil by the laboratory, with none detected. Modified laboratory reports for these samples are attached.

Summary and Conclusions

This report has been prepared to document groundwater extraction and sampling at MW-2, located in the excavation of a former hydraulic lift at Chub's Auto Repair at, 1180 Main Street, Redwood City, California (Figure 1).

On Saturday 13 March 1995 a total of 779 gallons were pumped from MW-2 using a submersible pump with discharge to the sanitary sewer under permit. The pump was stopped and restarted three times due to entrained air. A white foam with an oily feel was noted on the submersible pump when it was removed from the well. The foam did not have the appearance of a petroleum product in that it was white.

On 15 March 1995, Two days following pumping the monitor well was purged and a groundwater sample collected using standard procedures (3 casing volumes, 80% recovery). No free product or petroleum odors were noted in the groundwater. White globules and a sheen were noted on the water by the sampler.

Laboratory reports for the groundwater sample collected on March 15, 1995 are attached. The groundwater sample from MW-2 was found to contain 1.6 mg/L of O&G (Table 1), about the same as for the two previous samples. The concentration suggests that the white foam/globules are not a petroleum product, but rather are a food or plant oil that is not detected by EPA Method 418.1. Regardless, the concentrations of O&G that have been detected in MW-2 are below the practical quantitation reporting limit of 5 mg/L required by the Tri-Regional Recommendations for O&G.

DRAFT

For comparison, a study conducted by ABAG of urban run-off into the San Francisco Bay showed mean concentrations of 3 mg/L during dry periods and 8 mg/L during wet periods. In addition, a study conducted in Fresno, California by the USGS measured O&G in urban run-off at an average concentration of 3 mg/L for a residential catchment and 11 mg/L for an industrial catchment. Thus, the concentration of O&G detected in MW-2 is lower than the average concentration measured in urban run-off flowing into San Francisco Bay.

Finally, analytical results for MW-1, a nearby monitor well, were re-inspected for the presence of motor oil with none detected. The lack of motor oil in MW-1 suggests that O&G in groundwater is localized to an area around MW-2.

Recommendations

Based on three quarters of laboratory results for groundwater from MW-2 which show less than 5 mg/L of O&G, the practical quantitation reporting limit required by the Tri-Regional Recommendations for O&G, ASE recommends site closure.

DRAFT

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
FREDERICK A. YUKIC
No. 046369
EXP. 12/31/98
CIVIL
STATE OF CALIFORNIA

Attachments

cc: Mr. Larry Chubick, Chub's Auto Repair

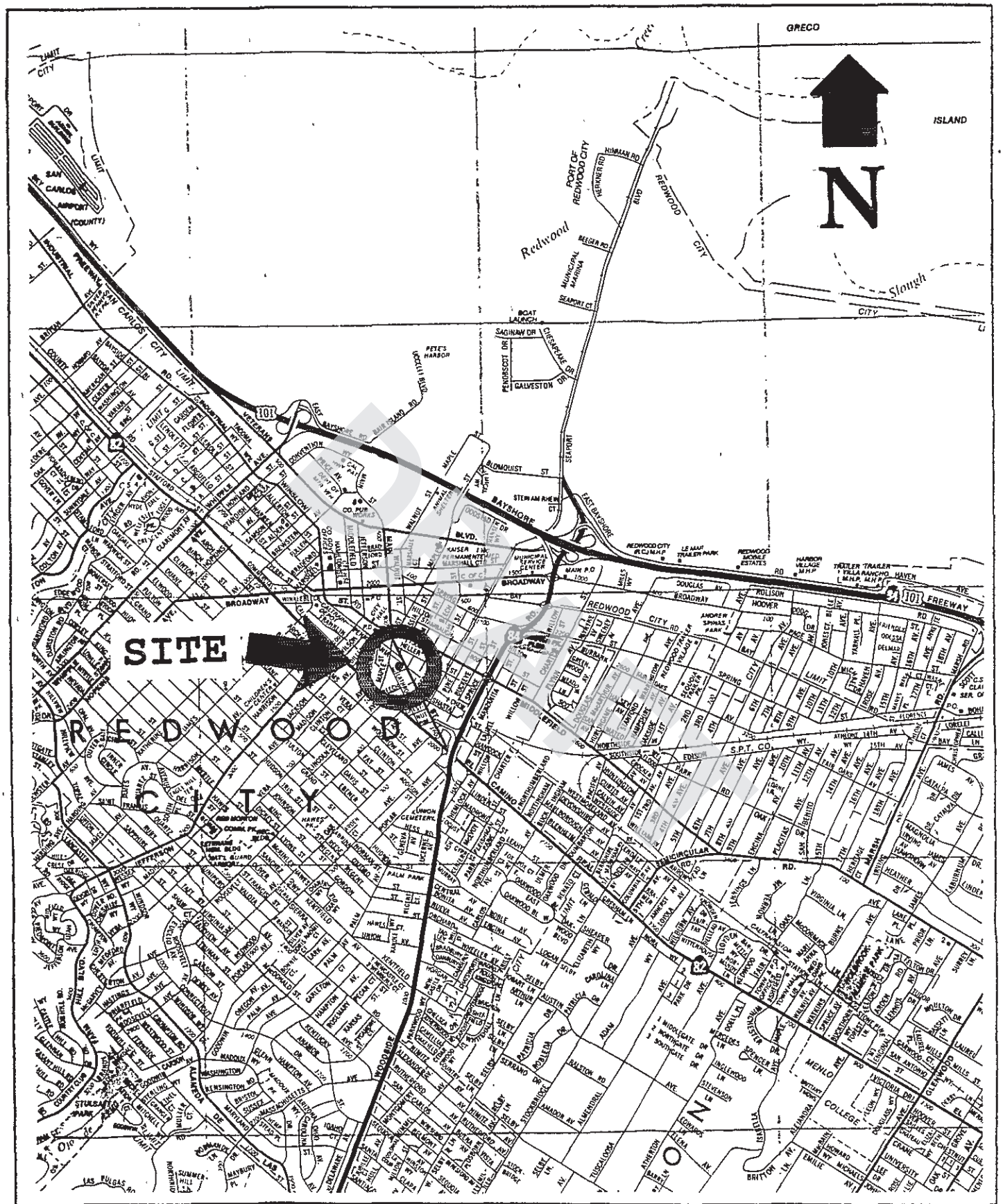
mw2-2d2.rpt

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APPLIED SCIENCE AND ENGINEERING INC.

Table 1
Analytical Results (mg/L)
Chub's Automotive
Hydraulic Lift Excavation

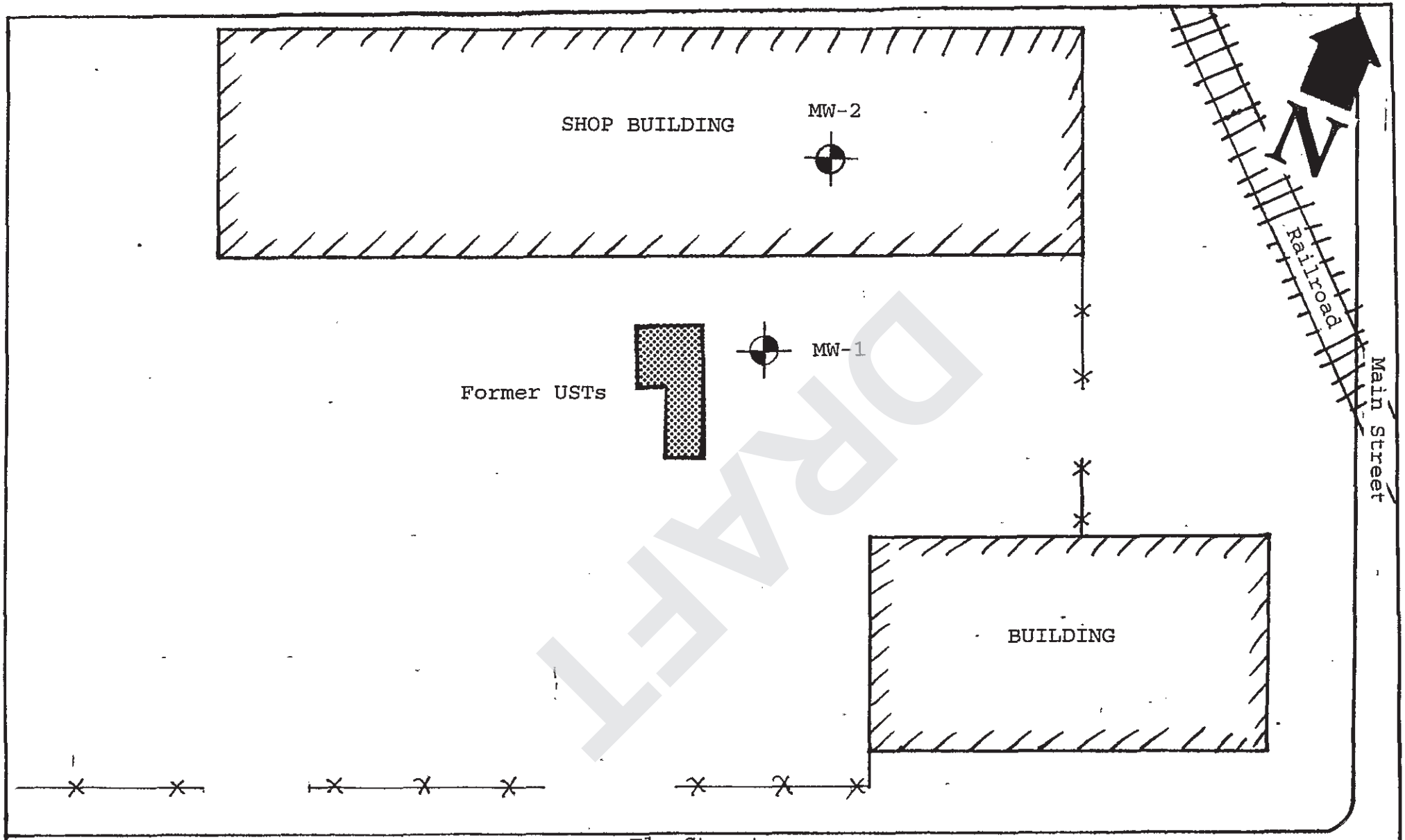
Location	Date	Oil and Grease
Soil		
8' - 8.5'		12,000
9' - 9.5'		1,600
9.5'-10'		1,700
12' -12.5'		520
Stockpile		4,100
Water		
MW-2	12/12/94	1.7
MW-2	3/13/95	1.5
MW-2	5/15/95	1.6

DRAFT



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APPLIED SCIENCE AND ENGINEERING INC.

Figure 1: Location Map
Chub's Auto Repair
1180 Main Street
Redwood City, California



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APPLIED SCIENCE AND ENGINEERING INC.

1" = 20'

MONITOR WELL

Temporary Piezometer

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

Date: 5-12-95 By: F. Yukic To: Sheet 1

Job Name: Chuk Job No:

Main Activity: Pump MW-2

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Odometer In

Vehicle Pers. Odometer Out

Rent. Mileage

Time	Description
17:00	Arrive site
	MW-2 DTW = 9.80
	Submersible unit go by screen holding casing
17:30	Leave site
8:15	arrive site
8:36	DTW = 9.58
	V = 502 l.
8:45	Start pump
	Q = 12 gal / 1 min
	DTW ~ 10.5
8:50	Pump level off
11:55	return site
	V = 5772
	pump off.
	drum in - Chuk sump 3 hours off,
	Suction unit - pump at bottom ~ 15'
12:00	Turn off.
	DTW = 11.45
	V = 5900
12:23	DTW ~ 10.40
	level ~ 25 gals emptying on level

15 - 9.5 = 5.5

x 0.8

4.40

9.4 + 4.4 = 13.90

DRAFT

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APPLIED SCIENCE AND ENGINEERING INC.

DATA SHEET FOR SAMPLING WELL MW-2

JOB NAME CHUB
SAMPLED BY DAVID OLKOWSKI

DATE 5/15/1995
SHEET 1 OF 1

USE POSITIVE VALUES
WELL DEPTH (WD) 15.5
INITIAL DEPTH TO WATER (DTWI) 9.13 ft
(WD - DTWI)(X GAL/FT) = CASING VOLUME (CV)
(15.5 - 9.13)(0.66 GAL/FT) = 4.20 GALLONS/CV
(3CV)(GAL/CV) = 3 CASING VOLUMES
(3)(4.20) = 12.61 GALLONS NEED TO BE PURGED

DIA.	X
2"	0.17
4"	0.66
6"	1.5

TIME	DTW	GALS	MICR S	pH	TEMP C	NOTES
11:03						ARRIVE SITE
11:13	9.13 ft					
11:27		0				CLEAR
11:51		13				WHITE GLOBULES; SHEEN WITH NO COLOR
11:53	9.26 ft					
12:03	9.23 ft					
12:12	9.19 ft					PLACE WATER IN SEWER
12:30	~9.15 ft					~80% RECOVERY
12:40						FILL 2 1L
12:48						PLUG, LOCK & COVER MW-2
12:53						LEAVE SITE

FINAL DEPTH TO WATER (DTWF) 9.26
0.2(DTWF) + 0.8(DTWI) = DTW FOR 80% RECOVERY (DTW80%R)
0.2(9.26) + 0.8(9.13) = 9.15 FT MAX. BEFORE SAMPLING

DWO\DATAS1D4

1.85

7.30

DRAFT

P E L
PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

May 17, 1995 PEL # 9505047

APPLIED SCIENCE ENGINEERING, INC.

Attn: Fred Yukic

Re: One water sample for total Recoverable Hydrocarbons analysis.

Project name: CHUB

Date sampled: May 15, 1995
Date extracted: May 15-16, 1995
Date submitted: May 15, 1995
Date analyzed: May 15-16, 1995

RESULTS:

SAMPLE I.D.	Total Recoverable Hydrocarbons -- (mg/L)
MW-2	1.6
Blank	N.D.
Detection limit	0.5
Method of Analysis	418.1

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRONMENTAL LABS

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 5/15/95 PAGE: 1 OF 1

PROJECT MGR.: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
: SAN CARLOS, CA 94070
PHONE: 415-363-2445 FAX: 415-363-8449
SIGNATURE:

ANALYSIS REPORT

PEL # 9505047
INV # 25952

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)		NUMBER OF CONTAINERS
MW-2	5/15/95	12:40	GW							X			2

DRAFT

PROJECT INFORMATION

PROJECT NAME:: CHUB
PROJECT NUMBER: _____

SAMPLE RECEIPT

TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: THREE DAY TURN AROUND ~~ONE WEEK TURN AROUND~~

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
DAVID OLKOWSKI			
SIGNATURE: Daniel Olkowski	SIGNATURE: THANK YOU	SIGNATURE:	SIGNATURE:
Date: 5/15/95 Time: 15:50	Date: 5/15/95 Time: 15:51	Date: Time:	Date: Time:
COMPANY: ASE	COMPANY: PEL	COMPANY:	COMPANY:

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

November 10, 1994 PEL # 9411013

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: One water sample for BTEX and TEPH analyses.

Project name: CHUB

Date sampled: Nov 03, 1994 Date submitted: Nov 03, 1994
Date extracted: Nov 03-05, 1994 Date analyzed: Nov 03-05, 1994

RESULTS:

SAMPLE I.D.	Kerosene (ug/L)	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)	Motor Oil (mg/L)
MW-1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	---	105.1%	81.6%	106.0%	101.3%	104.7%	---
Detection limit	50	50	0.5	0.5	0.5	0.5	0.5
Method of Analysis	3510 / 8015	3510 / 8015	602	602	602	602	3510 / 8015

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

February 10, 1995 PEL # 9502015

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: One water sample for BTEX and TEPH analyses.

Project name: CHUB

Date sampled: Feb 03, 1995 Date submitted: Feb 03, 1995
Date extracted: Feb 03-06, 1995 Date analyzed: Feb 03-06, 1995

RESULTS:

SAMPLE I.D.	Kerosene (ug/L)	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)	Motor Oil (mg/L)
MW-1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	---	101.0%	92.3%	105.7%	108.4%	90.9%	---
Detection limit	50	50	0.5	0.5	0.5	0.5	0.5
Method of Analysis	3510 / 8015	3510 / 8015	602	602	602	602	3510 / 8015

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

ASE
APPLIED SCIENCE AND ENGINEERING INC.

14

June 2, 1995

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
JUN 5 1995
RECEIVED

SUBJECT: MW-1 Groundwater Sampling Report
Hydraulic Lift Excavation
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

Applied Science and Engineering, Inc. (ASE) respectfully submits this groundwater sampling report for monitor well MW-1 as part of a groundwater investigation associated with a former hydraulic lift at Chub's Auto Repair, 1180 Main Street in Redwood City, California (Figure 1). At the request of Michele Shoemaker of SMCDHS a sample was collected from MW-1 and analyzed for oil and grease (O&G) be EPA Method 418.1 as described in detail below. Attached to this report are copies of field notes, chain of custody forms, and laboratory reports for your records.

DRAFT

History

A hydraulic lift was removed from the above-referenced site, an automobile repair shop, in early August 1994. Reportedly, the lift was approximately 10 years old. The lift was removed because the cylinder was leaking by BCM Services and Engineering prior to August 16, 1994.

Soil samples were collected from beneath the hydraulic lift contained oil and grease (O&G) at progressively lower concentrations (Table 1). The excavation was deepened to the maximum depth attainable with a backhoe that could fit inside the building, approximately 12 feet, where the concentration of O&G was measured at 520 ppm. Water entered the excavation, filling it to 10.9 feet below ground surface. The excavation was pumped once, with about 100 gallons of groundwater removed. Then, a hand boring was advanced 3.5 feet below the bottom of the excavation, to a total depth of 15.5 feet, into the first water bearing zone. A monitor well (MW-2) was constructed in the excavation boring. A grab groundwater sample from the well contained 1.7 ppm of O&G (Table 1).

Subsequently, MW-2 was sampled on March 13, 1995. Laboratory results for the sample collected showed 1.5 ppm of O&G (Table 1). On May 13, 1995 approximately 779 gallons were extracted from MW-2 with discharge to the sanitary sewer under permit. A groundwater sample collected on May 15, 1995 was found to contain 1.6 ppm of O&G.

Previous to removal of the hydraulic lift, a monitor well (MW-1) had been constructed at the location of two former USTs for gasoline and waste oil (Figure 2). MW-1 is located about 30 feet south of MW-1. MW-1 was sampled for four quarters for Total Petroleum Hydrocarbons (TPH) as diesel, with results showing no detectable hydrocarbons. Recently, the lab data for the last two samples from MW-1 were re-inspected by the laboratory for the presence of motor oil, with none detected.

In April 1995 additional hydraulic lifts were removed from the site. A temporary piezometer was constructed in one of these lifts and an engineering survey was conducted at the site. Water level measurements taken on April 21, 1995 showed that the horizontal hydraulic gradient between the monitor wells at the site is imperceptible.

Monitor Well Purging and Sampling

On June 1, 1995 ASE returned to the site to sample monitor well MW-1. Field notes documenting the well sampling are attached.

Prior to purging, the depth to water (DTW) was measured at 9.67 feet below the top of the well casing (TOC). A new clean polyethylene bailer was used for purging. No petroleum odors or visual presence of petroleum were noted during purging. Purge water was discharged into 5-gallon buckets calibrated for volume measurement. A total of 6 gallons were purged from the well, equivalent to greater than 3 casing volumes.

At the end of purging the DTW was measured at 9.68 feet, indicating instant recovery. Ms. Michele Shoemaker of SMCDHS gave permission to collect a sample in her absence.

A new clean polyethylene bailer was used for collection of a sample. Two 1 liter amber bottles with preservative were filled with groundwater. The samples were labelled with the time, date, location, and sampler's name prior to storage in a cooler with blue ice.

All purge water was placed in labeled buckets pending analytical results. The well was capped, locked, and covered.

DRAFT

MW-1 Laboratory Analyses

The groundwater sample was transported under chain of custody (attached) to Priority Environmental Labs, a state certified laboratory, for analyses for oil and grease (O&G) by EPA method 418.1. Laboratory reports are attached which include quality control. Table 1 summarizes the laboratory results. The MW-1 groundwater sample did not contain any detectable O&G.

Summary

This report has been prepared to document groundwater sampling on June 1, 1995 of MW-1 at Chub's Auto Repair, 1180 Main Street, Redwood City, California. Laboratory results for the groundwater sample collected from MW-1 show no detectable O&G.

Conclusions and Recommendations

ASE recommends site closure based on the following observations and conclusions:

1. O&G has been detected in MW-2 at concentrations below the published practical quantitation reporting limit required by the Tri-Regional Recommendations of 5 mg/L.

2. Studies of urban run-off into San Francisco Bay found a mean O&G concentration of 3 mg/L in water, higher than the concentration of O&G detected in MW-2 which is located in close proximity to Redwood Creek.

3. There is no published State of California drinking water standard for O&G.

4. There is no perceptible gradient between MW-1 and MW-2, suggesting little potential for lateral migration of the viscous O&G. The O&G should biodegrade with time.

5. Analytical results for MW-1, located about 30 feet from the former hydraulic lift, show no detectable O&G, suggesting that O&G in groundwater is limited to a localized area around MW-2.

6. The benefit realized by a reduction in O&G concentrations in groundwater over such a limited area from present levels (1.5 mg/L) to less than the detection limit (0.5 mg/L) can not be justified considering the economic cost that would be required.

DRAFT

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

Attachments

cc: Mr. Larry Chubick, Chub's Auto Repair

REGISTERED PROFESSIONAL ENGINEER
FREDERICK A. YUKIC
No. 046369
EXP. 12-31-98
CIVIL
STATE OF CALIFORNIA

mw1-5d1.rpt

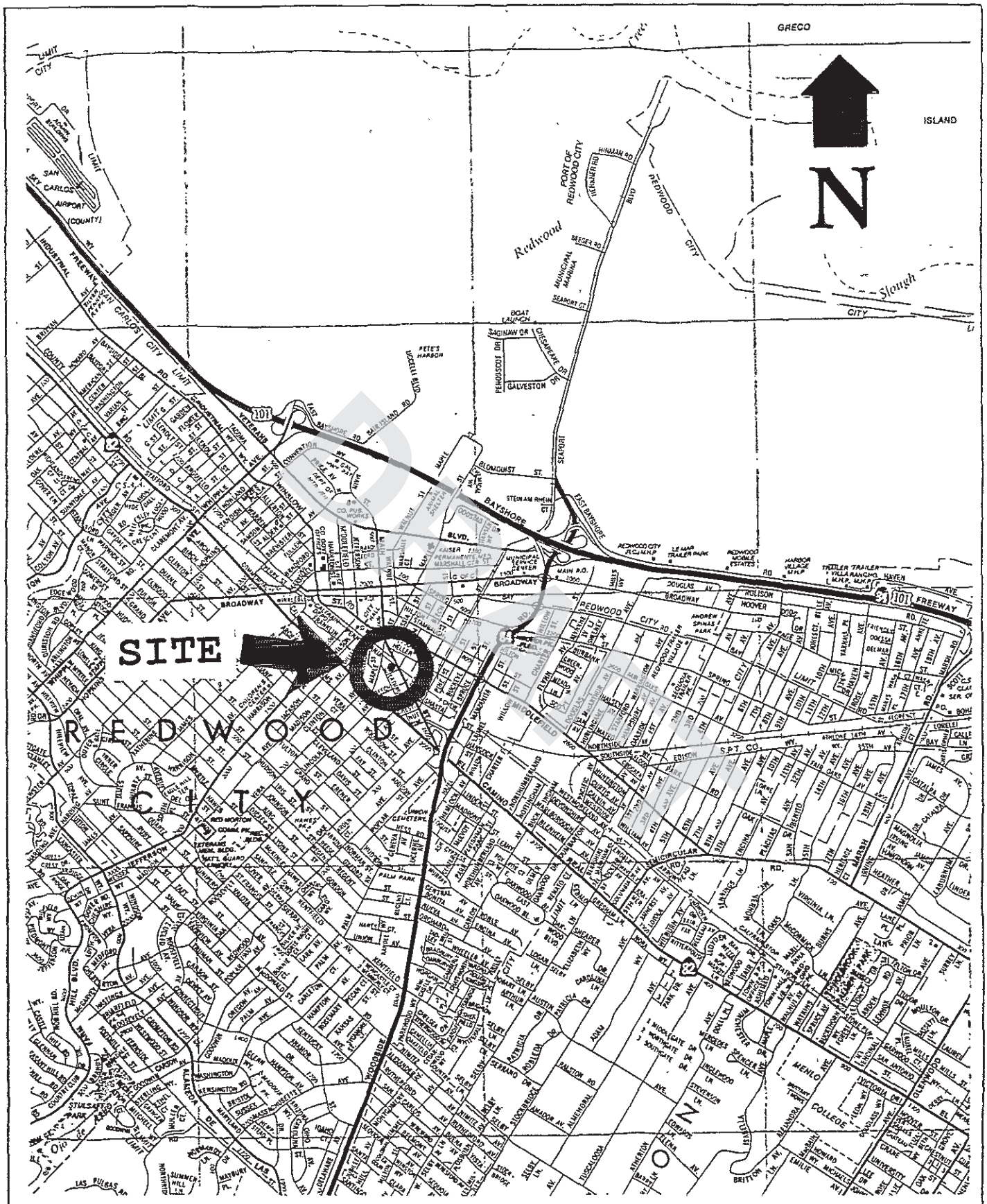
DRAFT

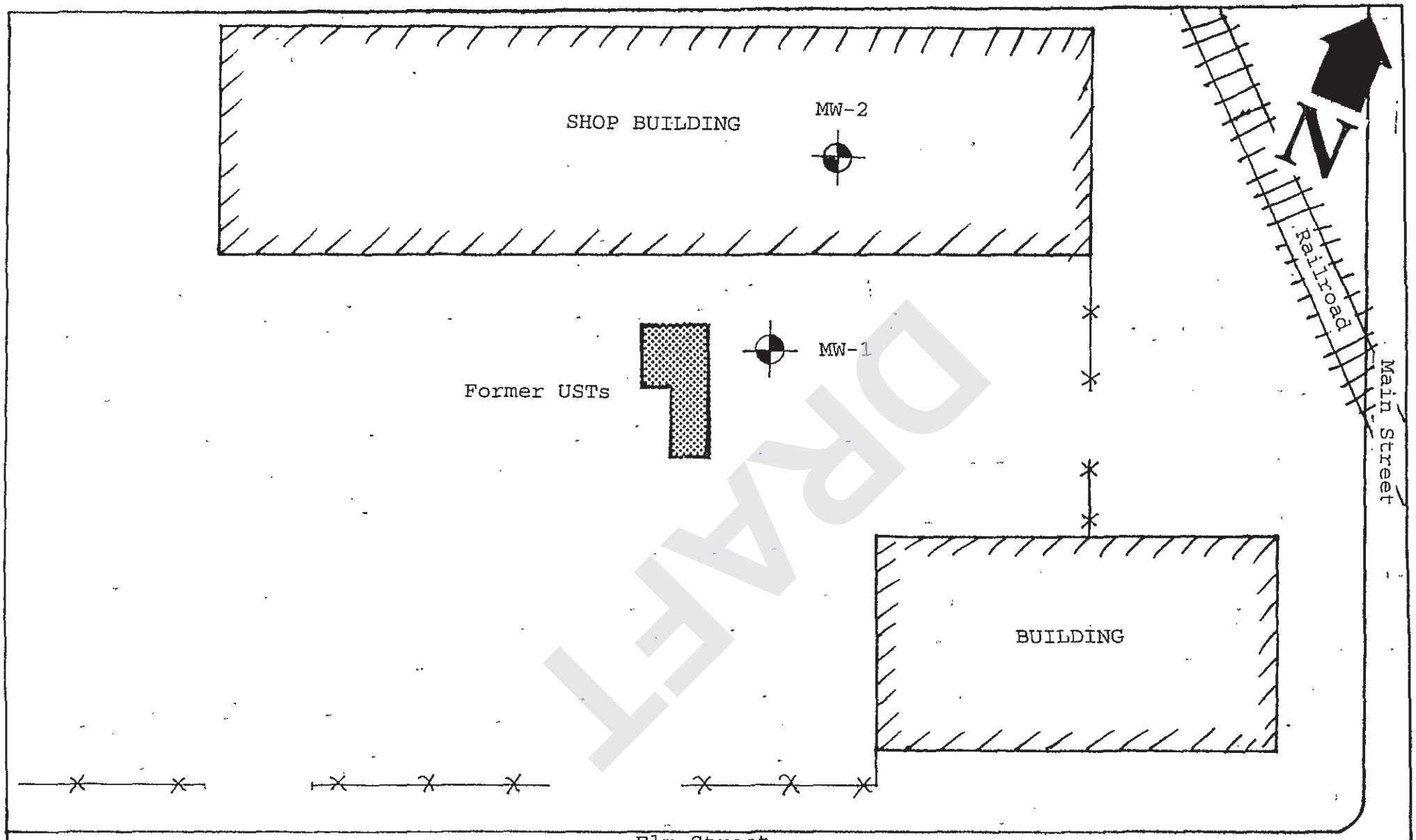
ASE
APPLIED SCIENCE AND ENGINEERING INC.

Table 1
Analytical Results (mg/L)
Chub's Automotive
Hydraulic Lift Excavation

Location	Date	Oil and Grease
Soil		
8' - 8.5'		12,000
9' - 9.5'		1,600
9.5'-10'		1,700
12' -12.5'		520
Stockpile		4,100
Water		
MW-2	12/12/94	1.7
MW-2	3/13/95	1.5
MW-2	5/15/95	1.6
MW-1	**6/ 1/95**	**ND**

DRAFT


GRECO
ISLAND
N
SITE
REDWOOD CITY
BAYSHORE
BROADWAY
101 FREEWAY
EAST BAYSHORE
SEAPORT
PORT OF REDWOOD CITY
REDWOOD BLVD
Redwood Slough
SAN CARLOS AIRPORT (COUNTY)
INDUSTRIAL WAY
SAN CARLOS CITY LIMIT
VETERANS
MAIN
BLOOMQUIST ST.
STEINHAM RHEIN CT
SAGINAW OR CHESAPEAKE DR
PENOBSCOT DR
GALVESTON DR
PETE'S HARBOR
BOAT LAUNCH
MUNICIPAL MARINA
SEAPORT CT
BEEGER RD
HINMAN RD
REDWOOD CITY ACLIMS
LE MAR TRAILER PARK
REDWOOD MOBILE ESTATES
HARBOR VILLAGE MHP
TRAILER TRAILER VILLA RANCHO HAVEN M.H.P.
MAIN P.O.
CITY HALL
COUNTY OFFICES
MUNICIPAL SERVICE CENTER
DOUGLAS AV
HOOVER
PULISON
ANDREW SPINAS PARK
REDWOOD CITY ELEMENTARY SCHOOL DISTRICT
REDWOOD CITY
CITY RD
SPRING
LIMIT
MAPLE
FAIR OAKS
ALAMEDA DE LAS PULGAS
EDISON
S.P.T. CO.
CIRCULAR RD
MENLO
COLLEGE
VICTORIA CIR
LAS PULGAS
MAYBURY
SUMMER HILL
MONUMENT
HILLSIDE
WOODSIDE
ATHERTON
BRITTON
EMILIE
MARSH
JAMES
CATALPA DR
MAGNOLIA
IRVING
HEATHER
LAURENTIAN
LORELEI
CALLE
BAY
ALAMEDA
ALMENDRAL
PATRICIA
DALTON RD
SEAWARD DR
STOCKBRIDGE
INGLEWOOD
STEVENSON
MIDDLEGATE
WORTHGATE
SOUTHGATE
MEADOWLARK
WILLOW
MIDDLEFIELD
CHARTER
CAMINO
NORTHUMBERLAND
WESTMORELAND
WILLIAMSBURG
WILLIAMSBURG
WILLIAMSBURG



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APPLIED SCIENCE AND ENGINEERING INC.

1" = 20'

MONITOR WELL

Temporary Piezometer

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

ASE
APPLIED SCIENCE AND ENGINEERING INC.

DATA SHEET FOR SAMPLING WELL MW-1

JOB NAME CHOB
SAMPLED BY DAVID OLKOWSKI

DATE 6/1/1995
SHEET 1 OF 1

USE POSITIVE VALUES
WELL DEPTH (WD) 20 ft
INITIAL DEPTH TO WATER (DTWI) 9.67 ft
(WD - DTWI) (X GAL/FT) = CASING VOLUME (CV)
20 ~~9.67~~ - 9.67) (0.17 GAL/FT) = 1.76 GALLONS/CV
(3CV) (GAL/CV) = 3 CASING VOLUMES
(3) (1.76) = 5.27 GALLONS NEED TO BE PURGED

DIA. X
(2" 0.17)
4" 0.66
6" 1.5

TIME	DTW	GALS	MICR S	pH	TEMP C	NOTES
9:52						ARRIVE SITE
10:00	9.67ft					
10:18		0				CLEAR
10:31		6				TURBID
10:33	9.68ft					INSTANT RECOVERY
10:50						FILL 2 1L
						PLUG, LOCK & COVER MW-1
11:06						PLACE WATER IN LABELED BUCKETS
11:07						CREEK IS LOW
11:08						LEAVE SITE

FINAL DEPTH TO WATER (DTWF)
0.2(DTWF) + 0.8(DTWI) = DTW FOR 80% RECOVERY (DTW80%R)
0.2( ) + 0.8( ) = FT MAX. BEFORE SAMPLING
DWO\DATAS1D4

DRAFT

PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

June 02, 1995 PEL # 9506006

APPLIED SCIENCE ENGINEERING, INC.

Attn: Fred Yukic

Re: One RUSH water sample for total Recoverable Hydrocarbons analysis.

Project name: CHUB

Date sampled: June 01,1995 Date submitted:June 01, 1995
Date extracted:June 01-02, 1995 Date analyzed:June 01-02, 1995

RESULTS:

SAMPLE I.D.	Total Recoverable Hydrocarbons (mg/L)
MW-1	N.D.
Blank	N.D.
Detection limit	0.5
Method of Analysis	418.1

David Duong
Laboratory Director

DRAFT

PRIORITY ENVIRONMENTAL LABS

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 6/1/95 PAGE: 1 OF 1

PROJECT MGR: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
: SAN CARLOS, CA 94070
PHONE: 415-363-2445 FAX: 415-363-8449
SIGNATURE:

PEL # 9506006
INV # 26014

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)									NUMBER OF CONTAINERS
MW-1	6/1/95	10:50	GW							X										2

DRAFT

PROJECT INFORMATION
PROJECT NAME: CHUB
PROJECT NUMBER:

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 24 hour turn around

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
DAVID OLKOWSKI			
SIGNATURE: David Olkowski	SIGNATURE: THOMAS LAU	SIGNATURE:	SIGNATURE:
Date: 6/1/95 Time: 15:02	Date: 6/1/95 Time: 12:02	Date: Time:	Date: Time:
COMPANY: ASE	COMPANY: PEL	COMPANY:	COMPANY:

JUN-02-95 FRI 01:48 PM PRIORITY LABS
408+946+9663
P.03

SAN MATEO COUNTY REMEDIAL OVERSIGHT PROGRAM

Facility ID		Record ID#	001210
Facility Name	_____	Local Site ID#	330120
Account ID		RWB Site ID#	----------
Site Name	CHUB'S AUTO REPAIR	Substance	12036
Site Contact	LARRY CHUBICK	Petroleum	YY
Address	1180 MAIN ST	Reported	01/14/93
	RWC, 94063	Confirmed	02/09/94
Phone #	415-368-2224	Program Element	2500
Case Type	G	Contract Status	9
Fund Source	F	Federal Exempt	N
Emp Code	4000	Case List	----

Emerg Resp	---------				
Current Status	----				
LUFT Cons	H,C,W,				
Task	Status	Started	Ended		
Rp Search	-	01/14/94	01/14/94		
Preliminary Assessment	-	--/--/--	--/--/--		
Remedial Investigation	-	--/--/--	--/--/--		
Remedial Action	-	--/--/--	--/--/--		
Post Remedial Action Monitoring	-	--/--/--	--/--/--		
Enforcement Action Taken?	Y	Enf Type 1	03/08/94		
Case Closed	Y		06/21/95		
Remedial Actions Taken	ED	-- GT	--	--	--
Interim Remediation?	N	Interim Date	--/--/--		
Update	Last Technical	Correspondence	02/07/95		
Review Status		Priority	2A		

Agencies Involved

Local Oversight Program	41000	Local Agency	41000
Lead Agency	L	Pilot Program?	N

Discovery/Abatement

Emergency?	N	State OES Report filed?	N
Dicovery Date		How discovered	
Leak Started		Stop Date	
Leak Source		Leak Cause	
Excavation Started	01/14/94	How stopped? Primary	
		Secondary	
		Tertiary	

Geographical Location

X-Coordinate	0	Latitude	0
Y-Coordinate	0	Longitude	0

Released Substance Descriptions

# Monitoring Wells	2	Free Product	
Depth to Groundwater		Dissolved Constituent	

Contaminant Concentrations

	Maximum		Current
TPH-Soil	810	Benzene-Soil	ND
TPH-Groundwater	530	Benzene-Groundwater	

Comments

Responsible Parties

1. LARRY CHUBICK
   CHUB'S AUTO REPAIR
   1180 MAIN STREET
   REDWOOD CITY, 94063
   415-368-2224

DRAFT

DIVISION OF WATER QUALITY
UST CLEANUP PROGRAM
SITE SPECIFIC QUARTERLY REPORT

07/06/94

CONTRACTOR NO: 41000 SOURCE OF FUNDS: F SUBSTANCE: 12036

SITE NO: 330120 FEDERAL EXEMPT: N PETROLEUM: Y

SITE NAME: CHUB'S AUTO REPAIR DATE REPORTED: 01/14/93

ADDRESS: 1180 MAIN STREET DATE CONFIRMED: 02/09/94

CITY/ZIP REDWOOD CITY 94063 CATEGORY: R

SITE STATUS

CASE TYPE: CONTRACT STATUS: 5 EMERGENCY RESPONSE:

RP SEARCH: DATE UNDERWAY: 01/14/94 DATE COMPLETED: 01/14/94

PRELIMINARY ASSESSMENT DATE UNDERWAY: DATE COMPLETED:

REMEDIAL INVESTIGATION DATE UNDERWAY: DATE COMPLETED:

REMEDIAL ACTION: DATE UNDERWAY: DATE COMPLETED:

POST REMEDIAL ACTION MONITORING DATE UNDERWAY: DATE COMPLETED:

ENFORCEMENT ACTION TAKEN Y TYPE: 1 DATE TAKEN: 03/08/94

LUFT FIELD MANUAL CONSIDERATION H,C,W,G

CASE CLOSED: DATE CLOSED:

DATE EXCAVATION STARTED: 01/14/94 REMEDIAL ACTIONS TAKEN: ED, GT

RESPONSIBLE PARTY

MULTIPLE RP? N (If yes refer to file for other contacts)

COMPANY NAME: CHUB'S AUTO REPAIR PHONE: (415) 368-2224

CONTACT: LARRY CHUBICK

ADDRESS: 1180 MAIN STREET

CITY/STATE: REDWOOD CITY CA 94063

COMMENTS:

WATER RESOURCES CONTROL BOARD
DIVISION OF WATER QUALITY
UST CLEANUP PROGRAM

DRAFT

STATE WATER RESOURCES CONTROL BOARD
DIVISION OF CLEAN WATER PROGRAMS
UST LOCAL OVERSIGHT PROGRAM

Notice of Reimbursement

Site Code: 330120
Site Name: CHUB'S AUTO REPAIR
Address: 1180 MAIN STREET
City/State/Zip: REDWOOD CITY, CALIF. 94063

Date First Reported: 01/14/93
Substance: 12036
Petroleum?: Y

The following information has been provided to:

Multiple Responsible Party: N (If yes please refer to additional NOR's)

Company Name: CHUB'S AUTO REPAIR
Contact Name: LARRY CHUBICK
Address: 1180 MAIN STREET
City/State/Zip: REDWOOD CITY, CA 94063

Whereas the Federal Petroleum Leaking Underground Storage Tank Trust Fund provides funding to pay the local and state agency administrative and oversight costs associated with the cleanup of releases from underground storage tanks; and Whereas the Legislature has authorized funds to pay the local and state agency administrative and oversight costs associated with the cleanup of releases from underground storage tanks; and Whereas the direct and indirect costs of overseeing removal or remedial action at the above site are funded, in whole or in part, from the Federal Trust Fund; and Whereas the above individual(s) or entity(ies) have been identified as the party or parties responsible for investigation and cleanup of the above site; YOU ARE HEREBY NOTIFIED that pursuant to Title 42 of the United States Code, Section 6991b(h)(6) and Sections 25297.1 and 25360 of the Health and Safety Code, the above Responsible Party or Parties shall reimburse the State Water Resources Control Board not more than 150 percent of the total amount of site specific oversight costs actually incurred while overseeing the cleanup of the above underground storage tank site, and the above Responsible Party or Parties shall make full payment of such costs within 30 days of receipt of a detailed invoice from the State Water Resources Control Board.

Contract Project Director:

Brian J. Zamora, REHS, M.P.H.
Director of Envir. Health

(415) 363-4305
Telephone Number

3/9/94
Date

STANDARD FORM USTO3 (1/91)

NEWNOR.MAN

DRAFT

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

June 21, 1995

Mr. Larry Chubbick
1180 Main Street
Redwood City, CA 94063

Dear Mr. Chubbick:

UNDERGROUND STORAGE TANK (UST), CASE CLOSURE FOR A 1,000 GALLON WASTE OIL UST AND A 1,000 GALLON GASOLINE UST AT CHUB'S AUTO REPAIR, 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

CASE NO. 330120

This letter confirms the completion of site investigation and remedial action for the underground storage tanks formerly located at the above described location.

Based upon the available information and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground storage tank release is required.

This notice is issued pursuant to a regulation contained in the Title 23, Californian Code of Regulations, Division 3, Chapter 16, Section 2721(e).

Please telephone Michele Shoemaker at (415) 599-1679 if you have any questions regarding this matter.

Sincerely,

Brian J. Zamora, MPH, REHS
Director, Environmental Health

cc: RWQCB
SWRCB

DRAFT

SAN MATEO COUNTY BOARD OF SUPERVISORS
RUBEN BARRALES • MARY GRIFFIN • TOM HUENING • TED LEMPERT • MICHAEL D. NEVIN

HEALTH SERVICES AGENCY DIRECTOR
MARGARET TAYLOR

ENVIRONMENTAL HEALTH SERVICES DIVISION DIRECTOR
BRIAN ZAMORA, MPH, REHS

590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX [415] 363-7882

SAN MATEO COUNTY CASE CLOSURE SUMMARY
LEAKING UNDERGROUND FUEL STORAGE TANKS PROGRAM

I. *AGENCY INFORMATION*

590 Hamilton Street, Redwood City, CA 94063
County Project Manager: Michele Shoemaker
Title: Hazardous Material Specialist
Telephone Number: (415) 599-1679

II. CASE INFORMATION

Site Name: Chub's Auto Repair
Site Address: 1180 Main Street, Redwood City, CA

LUSTIS Case #:	Local Case #: 330120	
LOP Case #:	URF Filing Date:	SWEEPS#:

Responsible Party Information

Name	Address	Phone #
Larry Chubbick	1180 Main Street, Redwood City, CA	94063

Tank Information

Tank #	Size in Gallon	Contents	Closed in place/Removed	Date
1	1,000	gasoline	removed	1/14/94
2	1,000	waste oil	removed	1/14/94
3				
4				

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: hole in waste oil tank
Site Characterization Complete? yes
Date Approved by Oversight Agency 05/23/95:
Number of Monitoring wells Installed: two
Proper screened interval? yes
Highest GW depth BGS: 10.37 Lowest Depth: 7.74
Flow Direction: flat gradient, regional is toward the northeast
Most sensitive GW use: None
Are Drinking Water affected? No Aquifer Name:
Is Surface Water Affected? No Nearest/Affected SW Name:
Off-Site Beneficial use Impacts(Location):
Report(s) on File? YES Where is it filed? 590 Hamilton St., Redwood City, CA 94063

DRAFT

Treatment and Disposal of Affected Material

Material	Amount (Include units)	Treatment or disposal	Date
Tank	2 x1,000 gal	disposed under manifest	1/14/94
Piping		removed	1/94
Free Product		pumped prior to removal	1/94
Soil	10 cu. yds.	disposed	1/94
Groundwater	800 gallons	pumped under permit to sewer	3/95

Maximum Documented Contaminant Concentrations - Before and After cleanup

	SOIL (PPM)		GROUNDWATER (PPB)	
CONTAMINANT	Before	After	Before	After
TPH - G	4	<50	<50	<50
TPH - D	810	<5	530 (non-typ)	<50
Benzene	<0.005	<0.005	<0.5	<0.5
Toulene	<0.005	<0.005	<0.5	<0.5
Ethyl-benzene	<0.005	<0.005	<0.5	<0.5
Xylene	<0.005	<0.005	<0.5	<0.5
Oil&Grease	<50	<10	9000	1600
Heavy metals	see below			
Other	tot Pb = 8 ppm 8240 = nd	<10 motor oil	8240=nd	<50 kerosene, <5000 motor oil

Comments: Cd =0.6, Cr=69, Pb=7, Ni=55, Zn=90

DRAFT

IV. **CLOSURE**

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? yes	
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? yes	
Does corrective action protect public health for current land use? yes	
Site Management Requirements: none	
Should corrective action be reviewed if land use changes? none	
Monitoring Wells Decommissioned?	Number Decommissioned: Number Retained:
List Enforcement Actions Taken:	
List Enforcement Action Rescinded:	

V. **RWQCB Notification**

Date Submitted to RB:	RB Response:
RB Staff:	Title:

Comments:

DRAFT

Director, Environmental Health _____ Date _____

SAN MATEO COUNTY REMEDIAL OVERSIGHT PROGRAM
CASE CLOSURE
M E M O R A N D U M

TO: SAN MATEO COUNTY REMEDIAL OVERSIGHT PROGRAM

FROM: Michele Shoemaker **DATE:** June 13, 1995

SUBJECT: Case Closure for San Mateo County Site #330120, Chub's Auto Repair, 1180 Main Street, Redwood City, California.

BACKGROUND

On January 14, 1994, a 1,000 gallon waste oil underground storage tank (UST) were removed from the subject site. During the process of excavating, a second 1,000 gallon tank was discovered. It was determined to have held gasoline. Both tanks were single walled steel tanks. The waste oil tank had holes, a solvent odor was noted in the air, and the soil beneath the tank was stained. The gasoline tank did not have any holes, odors, or staining. The two tanks were in separate excavations. One soil sample was taken from each end of the tank in both excavations.

INVESTIGATION

Four soil samples were taken from the two UST excavations. Analytical results indicated:

	TPH-g	TPH-d	O&G	B	T	E	X
E-8' wot	<1	<10	<50	<0.005	<0.005	<0.005	<0.005
W-8.5' wot	<1	810	<50	<0.005	<0.005	<0.005	<0.005
N-8' gas	<1	- -	- -	<0.005	<0.005	<0.005	<0.005
S-9.5' gas	<1	- -	- -	<0.005	<0.005	<0.005	<0.005

On 2/3/94 overexcavation of the waste oil tank pit occurred to approximately 10' below ground surface (bgs). A soil sample was obtained at approximately 8' bgs on the west wall. Analytical results were as follows: <1 ppm TPH-g, <10 ppm TPH-d, <50 ppm oil & grease, non detect for 8010 compounds, <0.005 ppm for BTEX constituents. Groundwater was encountered at approximately 9.5' bgs; the pit was partially pumped due to pump failure and a water sample was obtained. Due to contractor error, the pit water sample was only analyzed for oil and grease. The result was 9,000 ppb oil and grease.

The pump was fixed and the pit was pumped at least two more times prior to the sampling the re-charge. The groundwater was sampled again on 02/17/94. Analytical results were: <50 ppb TPH-g, <0.5 ppb BTEX, 530 ppb TPH-d, <5000 ppb oil & grease, and non-detect for 8010 compounds. The diesel was noted by the lab as non-typical diesel.

On 05/04/94 groundwater monitoring well MW-1 was installed within ten (10) feet of the former tanks at the subject site (groundwater gradient was deterimined at the site using two groundwater

monitoirng wells and a temporary piezometer. Based on the data, there is no perceptible gradient). A soil sample was obtained from 10.5-11' below ground surface (bgs). No odors were noted on the boring log. The depth to water was 14' bgs. The soil sample was analyzed for TPH-mo, TPH-d, and BTEX compounds. All analytes were below detection limits: 0.005 ppm for BTEX, 5 ppm TPH-d, and 10 ppm TPH-mo.

The groundwater monitoring well has been monitored four consecutive quarters; no contaminants have been detected. Analytical results are attached.

In early August, 1994 a hydraulic lift was removed from the subject site. The pit was excavated to groundwater at 12' bgs. Soil samples were collected from the excavation and analyzed for oil and grease by 418.1 (see table below). A grab water sample was obtained from the pit. A saw-cut PVC pipe was installed in the excavation and backfilled with pea gravel. The consultant named the PVC pipe as MW-2. Soil and groundwater results from the hoist removal are seen below:

Hydraulic Hoist Analytical Results

Soil sample depth	oil & grease
8-8.5'	12,000 ppm
9-9.5'	1,600 ppm
9.5-10'	1,700 ppm
12-12.5'	520 ppm
pit water 12/12/94	1700 ppb
MW-2 water 3/13/95	1500 ppb
MW-2 water 5/15/95	1600 ppb

DRAFT

An estimated 2.5 cubic yards of soil contaminated with approximately one (1) gallon of hydraulic oil remains in place at the site.

Approximately 800 gallons were purged from MW-2 and the well was re-sampled for oil and grease. The analytical results are shown above. The samples were analyzed by EPA Method 418.1. On 02/03/95, MW-1 was analyzed for kerosene, diesel, and motor oil with detection limits of 50, 50, and 0.5 ppb. No kerosene, diesel, or motor oil was detected in the groundwater.

On May 29, 1995 MW-1 was sampled for oil and grease. None was detected at detection of 0.5 ppm. The low levels of oil and grease in MW-2 do not pose a threat to human health or the environment. There is not a perceptible gradient between MW-1 and MW-2. Since there is no oil and grease in MW-1, this indicates there is little potential for lateral migration of the oil and grease found in MW-2. Further, the economic cost of remediating such low levels of oil and grease does not warrant additional investigation. According to the consultant, "a study conducted by ABAG of urban run-off into the San Francisco Bay showed mean concentrations of 3 mg/L (oil and grease) during dry periods and 8 mg/L during wet periods. In addition, a study conducted in Fresno, California by the USGS measured oil and grease in urban run-off at an average concentration of 3 mg/L for a residential catchment and 11 mg/L for an industrial

catchment. Thus, the concentration of O&G in MW-2 is lower than the average concentration measured in urban run-off flowing into San Francisco Bay" and therefore the site should be closed.

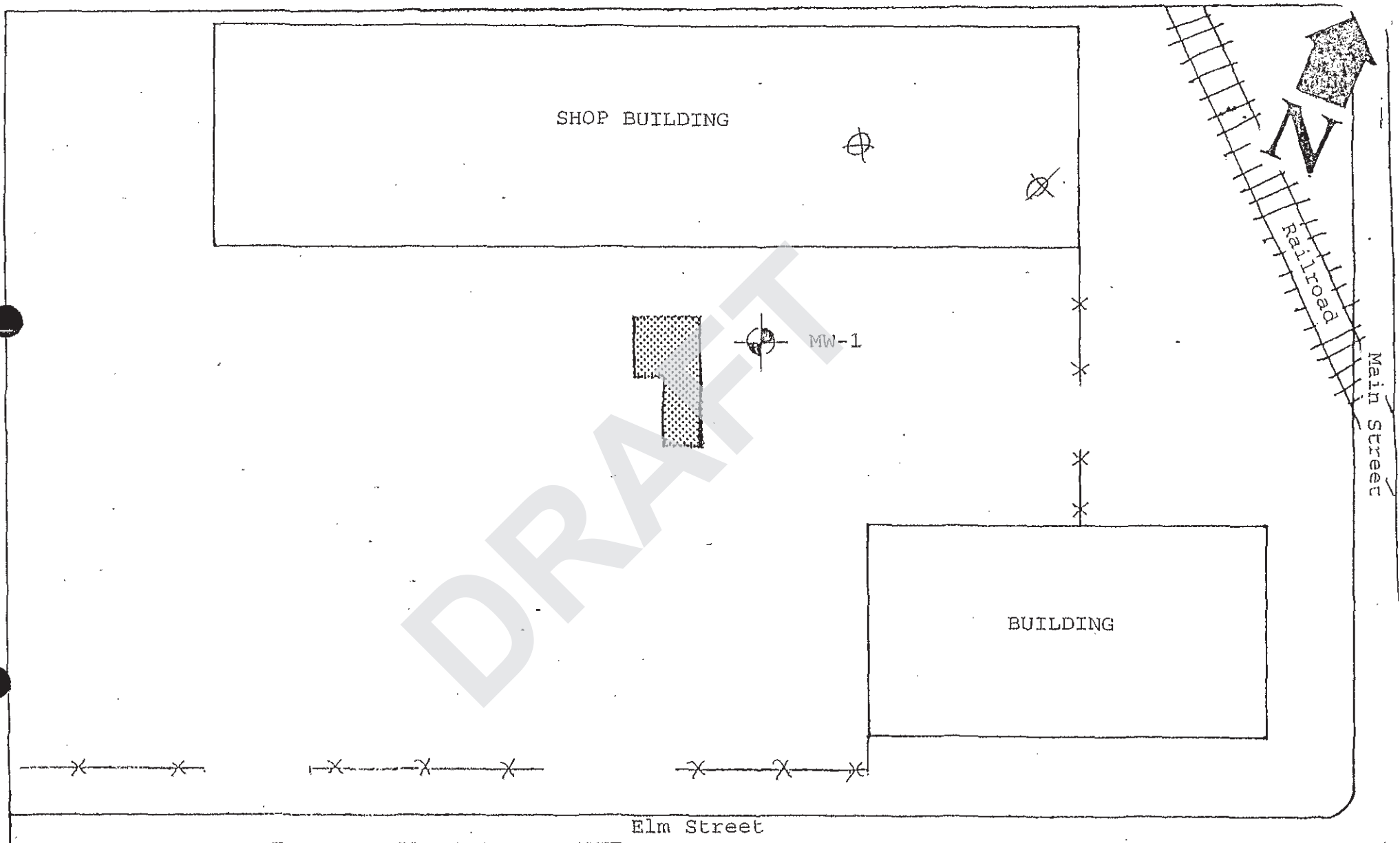
GEOLOGY

Black silty clays are present to approximately 14' bgs. Black and gray fine gravel and sand underlie the silty clays to at least 20' bgs, the total depth explored.

RECOMMENDATIONS:

Based on the investigation, monitoring results, and other information which is currently and actually known to this agency, we have determined that all appropriate response actions have been completed, all acceptable or remedial practice were implemented, and no further investigation, remedial/removal action, or monitoring is required at the site with regard to a release of hazardous waste or substance from the underground storage tank located at the site. We have determined that a significant release of gasoline fuel has not occurred and the shallow waters have not been significantly impacted. San Mateo County Remedial Oversight Program staff have determined that the water quality objectives of the San Francisco Bay Regional Water Quality Control Board have been satisfied.

DRAFT



ASE
APPLIED SCIENCE AND ENGINEERING INC.

1" = 20'

MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

Table 2
Water Analytical Results (ppb)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn	
Excavation	2- 9-94	--	--	--	--	--	--	9,000	--	--	--	--	--	--	
Excavation	2-17-94	ND	530	ND	ND	ND	ND	ND	ND	--	--	--	--	--	
MW-1	5-05-94	ND	ND	ND	ND	ND	ND	--	ND	--	--	--	--	--	DTW 7.74
MW-1	8-04-94	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	10.32
MW-1	11-03-94	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	10.37
MW-1	2-02-95	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	8.42

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed

DRAFT

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APPLIED SCIENCE AND ENGINEERING INC.

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
JUN 14 1995
RECEIVED

June 13, 1995

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SUBJECT: Estimated Volume of Contaminated Soil and Hydraulic Oil Hydraulic Lift Excavation (MW-2)
Chub's Auto Repair
1180 Main Street
Redwood City, California

DRAFT

Dear Ms. Shoemaker,

At your request Applied Science and Engineering, Inc. (ASE) respectfully submits this estimate of the volume of contaminated soil and hydraulic oil that is present in the subsurface in the vicinity of a former hydraulic lift at Chub's Auto Repair, 1180 Main Street in Redwood City, California.

Introduction

A hydraulic lift was removed from the above-referenced site, an automobile repair shop, in early August 1994. Reportedly, the lift was installed approximately 10 years ago. The lift was removed because the cylinder was leaking by BCM Services and Engineering prior to August 16, 1994. An excavation 4 feet wide by 8 feet long was created.

Soil samples were collected from beneath the hydraulic lift by hand boring into the bottom of the excavation created by removal (Figure 2). Laboratory results showed O&G in soils beneath the former hydraulic lift to a depth of 12.5 feet. Groundwater was encountered at 12.5 feet, so no deeper soil samples were collected. The soil sample from between 12 to 12.5 feet deep, the final depth of the excavation, was found to contain O&G at 520 ppm. Subsequently, the excavation was deepened to approximately 12 feet, the maximum depth attainable with a backhoe that could fit inside the building.

Subsequent sampling of a monitor well constructed in the excavation revealed only small concentrations of O&G in groundwater beneath the former hydraulic lift (MW-2) and no detectable O&G in a nearby monitor well (MW-1). In anticipation of closing the site you asked for an estimate of the quantities of contaminated soil and hydraulic oil remaining in the ground. This report provides those estimates.

ASE
APPLIED SCIENCE AND ENGINEERING INC.

Estimated Volume of Contaminated Soil and Hydraulic Oil

The volume of contaminated soil remaining in the subsurface was estimated by assuming that hydraulic oil leaked from the bottom of the cavity which contained the hydraulic cylinder and backfill sand. This cavity was approximately 2 feet in diameter and 8 feet deep. Thus, the hydraulic oil is assumed to have leaked from the circular bottom of the cylinder at a depth of 8 feet. Due the lack of perceptible horizontal hydraulic gradient at the site, the radial distribution of the leak was probably symmetrical.

The hydraulic oil is also assumed to have impacted soils between the bottom of the cylinder and the reported depth of first water; between 8 and 12 feet deep. In addition, For the purposes of the volume estimate, the infiltration profile was assumed to be a 45 degree angle extending from the bottom of the cylinder. Based on this assumption the profile extends laterally a distance equal to the vertical distance, 4 feet. This assumption is probably valid for the relatively uniform soil profile present at the site. The volume of soil described by this surface is then reduced by considering that contaminated soils were excavated to a depth of 12 feet over a 4 foot by 8 foot area.

Using the above model of the leak geometry, it is estimated that about 2.5 cubic yards of soil has been impacted by the leak. This soil is beneath the site structure, making it inaccessible.

Assuming an average concentration of O&G in soil of 520 mg/kg yields an estimated volume of hydraulic oil in the ground of about 1 gallon.

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

Attachments

cc: Mr. Larry Chubick, Chub's Auto Repair

hydsoil1.ltr

DRAFT

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

June 14, 1995

ATTN: Mr. Larry Chubick
Chub's Auto Repair
1180 Main Street
Redwood City, CA 94063

SMCo# 330120

SUBJECT: SUBSURFACE INVESTIGATION AT CHUB'S AUTO REPAIR, 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

This office has recently reviewed the case file for closure regarding the investigation associated with the former leaking underground storage tanks at the subject site. This office has forwarded a closure recommendation to the Regional Water Quality Control Board (RWQCB) for concurrence. The RWQCB has approved the closure. This letter is not a case closure letter; however, this office will issue a final case closure letter once the existing groundwater monitoring wells at the subject site have been properly abandoned and all drums containing soil and groundwater have been removed. A draft copy is enclosed. Please have your consultant submit a subsurface drilling application and schedule well abandonment with this office. Please provide seventy-two (72) hour notice to this office of the well abandonment. Should you have any questions, I may be reached at (415) 599-1679. Thank you.

Sincerely,

Michele Shoemaker
Hazardous Materials Specialist
County Remedial Oversight Program

Enclosure

cc: Fred Yukic, ASE, P.O. Box 1166, San Carlos, CA 94070

DRAFT

SAN MATEO COUNTY BOARD OF SUPERVISORS
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MARGARET TAYLOR

ENVIRONMENTAL HEALTH SERVICES DIVISION DIRECTOR
BRIAN ZAMORA, MPH, REHS

590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX [415] 363-7882

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

June 14, 1995

Mr. Larry Chubick
Chub's Auto Repair
1180 Main Street
Redwood City, CA 94063

Dear Mr. Chubick:

UNDERGROUND STORAGE TANK (UST) CASE CLOSURE
1000 GALLON GASOLINE UST, 1000 GALLON WASTE OIL UST
AT 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

CASE NO. 330120

This letter confirms the completion of site investigation and remedial action for the underground storage tanks formerly located at the above described location.

Based upon the available information and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground storage tank release is required.

This notice is issued pursuant to a regulation contained in the Title 23, Californian Code of Regulations, Division 3, Chapter 16, Section 2721(e).

Please telephone Michele Shoemaker at (415) 599-1679 if you have any question regarding this matter.

Sincerely,

Brian J. Zamora, MPH, REHS
Director, Environmental Health

cc: RWQCB
SWRCB

DRAFT

SAN MATEO COUNTY BOARD OF SUPERVISORS
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HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

FACSIMILE COVER SHEET

TO: DIANE MIMS

COMPANY NAME : RWQCB

FAX#: 510-286-1380

CONTACT#: 0915

FROM: Michele Shoemaker

AT: Environmental Health

FAX#: (415) 599-1071

CONTACT #: 1679

NUMBER OF PAGES (including cover page): 9

COMMENTS:

RE: RUSH CLOSURE REQUEST. Diane! The RP is trying to sell the site and would love to get an ok for closure ASAP. Thanks! - Michele 415-599-1679.

I'll call you in a couple days.

DRAFT

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590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX (415) 363-7882

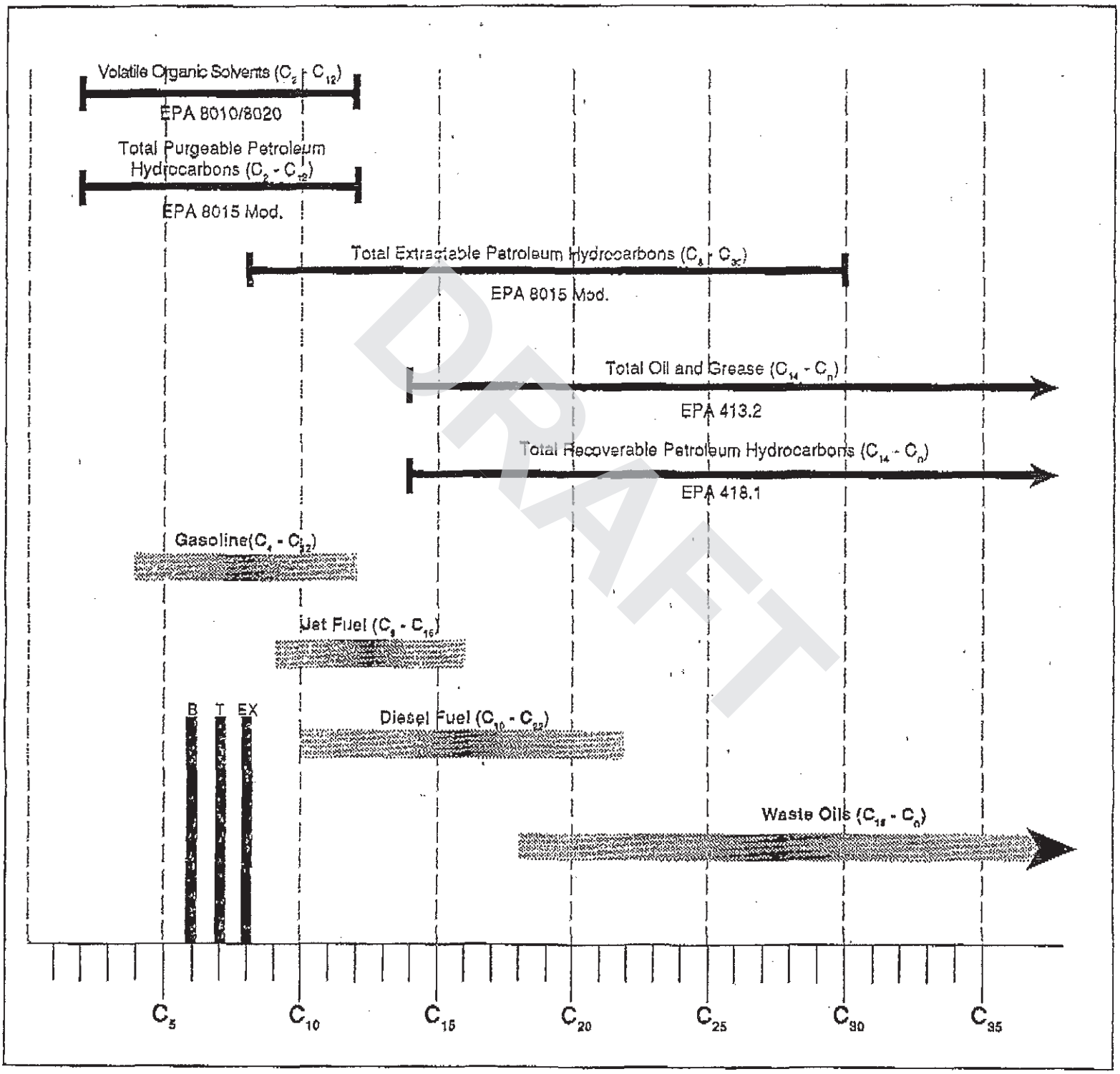
5/16/95

Fred Yukic called. He doesn't want to sample for OTG. Thinks diesel would have picked up OTG. See the attached chart.

DRAFT

SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

HYDROCARBON RANGES FOR LUFT ANALYSIS



DRAFT

Four Laboratories Serving Northern California:

680 Chesapeake Drive • Redwood City, California 94063 • (415) 364-9600
1900 Bates Avenue, Suite L • Concord, California 94520 • (510) 686-9600
819 Striker Avenue, Suite 8 • Sacramento, California 95834 • (916) 921-9600
Mobile Laboratory

© Sequoia Analytical, June 1992

APPLIED SCIENCE AND ENGINEERING
P.O. BOX 1166, SAN CARLOS, CA 94070
(415) 363-2445 Voice
(415) 363-8449 FAX

FAX TRANSMISSION SHEET

To: Ms. Michele Shoemaker

Company: SMCDHS

FAX No: (415) 363-7882

Subject: TPH-d vs OilG (TRPH)
8015m vs. EPA 418.1

From: Fred Yuki

Date: 5.16.95

Number of Pages (including this page): 2

Note:

Note overlap of lab analyses.
Please call if questions.

Fy.

DRAFT

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

May 9, 1995

ATTN: Mr. Larry Chubick
Chub's Auto Repair
1180 Main Street
Redwood City, CA 94063

SMCo# 330120

SUBJECT: SUBSURFACE INVESTIGATION AT CHUB'S AUTO REPAIR, 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

Congratulations on the issuance of the Letter of Commitment you recently received from the State Water Resources Control Board. As you are aware, the monies promised by the program is contingent upon continued compliance with site investigation and cleanup requirements. In order to remain in compliance, the following is expected to begin within ninety (90) days from issuance of the Letter of Commitment:

- Sample groundwater monitoring well MW-1 for oil and grease.

This site is being considered for closure. After the results of the MW-1 sampling for oil and grease are received, this office will review the case for closure. If you have questions, I may be reached at (415) 599-1679. Thank you.

Sincerely,

Michele Shoemaker
Hazardous Materials Specialist
County Remedial Oversight Program

cc: Donna Turcotte, UST Cleanup Fund, P.O. Box 944212, Sacramento, CA 94244-2120
Fred Yukic, ASE, P.O. Box 1166, San Carlos, CA 94070

DRAFT

SAN MATEO COUNTY BOARD OF SUPERVISORS
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HEALTH SERVICES AGENCY DIRECTOR
MARGARET TAYLOR

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590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX [415] 363-7882

STATE WATER RESOURCES CONTROL BOARD
DIVISION OF CLEAN WATER PROGRAMS
2014 T STREET, SUITE 130
P.O. BOX 944212
SACRAMENTO, CALIFORNIA 94244-2120
(916)227-4360
(916)227-4530 (FAX)

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
MAY 03 1995 APR 27 1995
RECEIVED

Chub's Auto Repair
543 Sunset Way
Redwood City, CA 94062

UNDERGROUND STORAGE TANK CLEANUP FUND, CLAIM NO. 009200, FOR SITE ADDRESS: 1180 Main St., Redwood City 94063

The State Water Resources Control Board (State Board) takes pleasure in issuing the attached Letter of Commitment in an amount not to exceed $20,000. This Letter of Commitment is based upon our review of the corrective action costs incurred to date and your application received on October 20, 1994 and may be modified by the State Board in writing by an amended Letter of Commitment.

Read the terms and conditions listed in the Letter of Commitment. The State Board will take steps to withdraw this Letter of Commitment after 90 calendar days from the date of this transmittal letter unless you proceed with due diligence with your cleanup effort. *This means that you must take positive, concrete steps to ensure that corrective action is proceeding with all due speed. For example, if you have not started your cleanup effort, you must obtain three bids and sign a contract with one of these bidders within 90 calendar days. If your cleanup effort has already started and was delayed, you must resume the expenditure of funds to ensure that your cleanup is proceeding in an expeditious manner. You are reminded that you must comply with all regulatory agency time schedules and requirements.*

This package includes the following:

- *A "Reimbursement Request Instructions" package. Retain this package for future reimbursement requests. These instructions must be followed when seeking reimbursement for corrective action costs incurred after January 1, 1988. Included in the instruction package are: - Samples of completed Reimbursement Request forms and Spreadsheets.*
  - Recommended Minimum Invoice Cost Breakdown
- *A "Bid Summary-Sheet to list information on bids received.*
- *A "Certification of Non-Recovery From Other Sources" which must be returned before any reimbursements can be made.*
- *"Reimbursement Request" forms which you must use to request reimbursement of costs incurred.*
- *"Spreadsheet" forms which you must use in conjunction with your Reimbursement Request.*
- *"Claimant Data Record" (Std. Form 204) which must be completed and returned with your first Reimbursement Request.*

YOU MUST SUBMIT A REIMBURSEMENT REQUEST PACKAGE BY July 24, 1995, OR SEND A WRITTEN UPDATE EXPLAINING:

1. ***Status of cleanup to date.***
2. ***Reason(s) why a reimbursement request has not been submitted.***
3. ***Costs incurred to date for corrective action.***
4. ***Projected date for submitting a reimbursement request.***

We constantly review the status of all active claims. If you do not submit a reimbursement request or a written update by the date above, or fail to proceed with due diligence with the cleanup, we will take steps to withdraw your Letter of Commitment.

If you have any questions regarding the Letter of Commitment or the Reimbursement Request package, please contact Donna L. Turcotte at (916) 227-4532.

Sincerely,

Doug Wilson for

Dave Deaner, Manager
UST Cleanup Fund Program

Enclosures

cc: *Mr. Steve Morse*
California Regional Water Quality
Control Board, San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, CA 94612

Mr. Dean Peterson
San Mateo County EHD
590 Hamilton St., 4th Fl
Redwood City, CA 94063

DRAFT

LETTER OF COMMITMENT FOR REIMBURSEMENT OF COSTS

CLAIM NO: 009200

AMENDMENT NO: 0

CLAIMANT: Chub's Auto Repair

BALANCE FORWARD: $0

CO-PAYEE: None

JOINT CLAIMAINT: None

THIS AMOUNT: $20,000

NEW BALANCE: $20,000

CLAIMANT ADDRESS: 543 Sunset Way
Redwood City, CA 94062

TAX ID/SSA NO: 94-2787556

Subject to availability of funds, the State Water Resources Control Board (SWRCB) agrees to reimburse Chub's Auto Repair (Claimant) for eligible corrective action costs at 1180 Main St., Redwood City 94063 (Site). The commitment reflected by this Letter is subject to all of the following terms and conditions:

1. Reimbursement shall not exceed $20,000 unless this amount is subsequently modified in writing by an amended Letter of Commitment.

2. The obligation to pay any sum under this Letter of Commitment is contingent upon availability of funds. In the event that sufficient funds are not available for reasons beyond the reasonable control of the SWRCB, the SWRCB shall not be obligated to make any disbursements hereunder. If any disbursements otherwise due under this Letter of Commitment are deferred because of unavailability of funds, such disbursements will promptly be made when sufficient funds do become available. Nothing herein shall be construed to provide the Claimant with a right of priority for disbursement over any other claimant who has a similar Letter of Commitment.

3. All costs for which reimbursement is sought must be eligible for reimbursement and the Claimant must be the person entitled to reimbursement thereof.

4. Claimant must at all times be in compliance with all applicable state laws, rules and regulations and with all terms, conditions, and commitments contained in the Claimant's Application and any supporting documents or in any payment requests submitted by the Claimant.

5. No disbursement under this Letter of Commitment will be made except upon receipt of acceptable Standard Form Payment Requests duly executed by or on behalf of the Claimant. All Payment Requests must be executed by the Claimant or a duly authorized representative who has been approved by the Division of Clean Water Programs.

6. Any and all disbursements payable under this Letter of Commitment may be withheld if the Claimant is not in compliance with the provisions of Paragraph 5 above.

7. Neither this Letter of Commitment nor any right thereunder is assignable by the Claimant without the written consent of the SWRCB. In the event of any such assignment, the rights of the assignee shall be subject to all terms and conditions set forth in this Letter of Commitment and the SWRCB's consent.

8. This Letter of Commitment may be withdrawn at any time by the SWRCB if completion of corrective action is not performed with reasonable diligence.

IN WITNESS WHEREOF, this Letter of Commitment has been issued by the SWRCB this 6th day of April, 1995.

STATE WATER RESOURCES CONTROL BOARD

BY _____
Manager, Underground Storage Tank Cleanup Fund Program

BY _____
Chief, Division Administrative Services

STATE USE:
CALSTARS CODING:
0550-569.02 - 30530

$_____

R:3/24/94

DRAFT

DETAILED REVIEW CHECKLIST

USTCF025.DET. (Rev. 1/95) 1180 Main St, Rwc

Claim No.: 9200 Claimant Name: Chubb's Auto Repair

COMPLIANCE DOCUMENTATION

DATE	ACTION/RESPONSE

DRAFT

Continued on Reverse ☐

CONFIRMATION OF CORRECTIVE ACTION COMPLIANCE

☑ Claimant in Corrective Action Compliance

☐ Claimant NOT in Corrective Action Compliance at the Time of this Review - 90 Day Letter Required

☐ Claimant NOT in Corrective Action Compliance - Recommend Rejection

LEAD AGENCY SIGNATURE — DATE 4/5/95

CLAIMS REVIEWER SIGNATURE — DATE 4/5/95

DETAILED REVIEW CHECKLIST
PAGE 3 CONTINUED

CLAIM NO: 9200 CO. CODE: 330120

CLAIMANT: Chub's Auto Repair

SITE ADDRESS: 1180 Main St., Redwood City

DATE	ACTION/RESPONSE
2/2/94	Semco WP for Over-Excavation. Proposes overexcavation of fill end of WO tank 10cy.
3/8/94	Co. LUFT ltr.
3/30/94	ASE WP for MW Construction, Development and Sampling. Proposes construction and sampling of 1 MW.
4/26/94	SEMCO Tank Removal Report. 1/14/94 removal of WO tank, 1000 gal gasoline tank discovered. WO tank had holes, soil discolored w/solvent odor. Pit overexcavated and backfilled.
5/24/94	ASE MW Construction Report. 1 MW constructed and sampled. No FP or odor noted in GW. Recommends qtrly sampling.
6/8/94	Semco Revised Tank Removal Report.
8/29/94	ASE MW Sampling Report. Recommends qtrly sampling.
11/14/94	ASE MW Sampling Report. Recommends 2/95 sampling.
12/21/94	ASE Hydraulic Lift Sampling Results. 8/94 removal of hydraulic lift, excavated through floor, pit 8' x 4' x 7'. 2 samples taken, 7cy soil stockpiled. MW2 installed and sampled, overexcavated and then filled.
1/12/95	ASE Response to Comments - Former Hydraulic Lift.
2/21/95	Co. notes in file: need gradient at site and resolution to oil and grease issue before site closure.
2/16/95	ASE MW Sampling Report. GW samples ND four qtrs. Recommend site closure.

DRAFT

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

April 14, 1995

ATTN: Mr. Larry Chubick
Chub's Auto Repair
1180 Main Street
Redwood City, CA 94063

SMCo# 330120

SUBJECT: SUBSURFACE INVESTIGATION AT CHUB'S AUTO REPAIR, 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

I have recently reviewed the March 30, 1995 Applied Science and Engineering Monitor Well Sampling Report for MW-2 at the subject site. The report recommends closure of the site. There are two issues at the site that need to be resolved before closure can be granted.

First, the report requests case closure based on the level of less than 5,000 parts per billion (ppb) of oil and grease, per the Tri-Regional Recommendations. I have spoken with the Regional Water Quality Control Board regarding oil and grease in water. The detection limit of oil and grease in water is 1,000 ppb and it is the Board's decision that sites with oil and grease levels above 1,000 ppb will not be closed. Currently, the level of oil and grease in the water exceeds 1,000 ppb.

The second issue is the direction of groundwater gradient. Before a case can be closed, the direction of the groundwater gradient at the subject site must be determined. Typically, it is common to install three groundwater monitoring wells in a triangular configuration to determine gradient. In conversations with your consultant, I have stated that if no other groundwater monitoring wells are available, historical data may be used to establish the gradient. To date, no data has been provided to this office regarding the gradient. Please submit the direction of the groundwater flow at the subject site.

Should you have any questions, you may reach me at (415) 599-1679.

Sincerely,

Michele Shoemaker
Hazardous Materials Specialist
County Remedial Oversight Program

cc: Fred Yukic, ASE, P.O. Box 1166, San Carlos, CA 94070

DRAFT

SAN MATEO COUNTY BOARD OF SUPERVISORS
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ENVIRONMENTAL HEALTH SERVICES DIVISION DIRECTOR
BRIAN ZAMORA, MPH, REHS

590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX (415) 363-7882

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

February 21, 1995

ATTN: Mr. Larry Chubick
Chub's Auto Repair
1180 Main Street
Redwood City, CA 94063

SMCo# 330120

SUBJECT: SUBSURFACE INVESTIGATION AT CHUB'S AUTO REPAIR, 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

Thank you for the February 16, 1995 Applied Science and Engineering Monitor Well Sampling Report for the subject site. The report completes this office's request to monitor the groundwater for four consecutive quarters. The report requests case closure at the site. There are two issues at the site that prevent closure review at this time. First, the site specific groundwater gradient needs to be calculated using the on-site well, MW-1. Second, the removal of a hydraulic hoist indicated oil and grease impact to the soil at the subject site. I discussed the oil and grease issue with the Regional Water Quality Control Board to determine if additional investigation was required. Based on the levels of oil and grease in the soil, I was informed that an investigation was required. Before the site can be closed, the investigation will be required. I have stated in previous letters that the existing well MW-1 may be able to be used for this investigation. After the gradient has been determined, it should be evident whether or not MW-1 will be able to be used for the hydraulic hoist investigation.

Should you have any questions, you may reach me at (415) 599-1679.

Sincerely,

Michele Shoemaker

Michele Shoemaker
Hazardous Materials Specialist
County Remedial Oversight Program

cc: Fred Yukic, ASE, P.O. Box 1166, San Carlos, CA 94070

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PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX (415) 363-7882

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

FACSIMILE COVER SHEET

TO: Fred Yukic

COMPANY NAME : ASE

FAX#: 363. 8449

CONTACT#:

FROM: Michele Shoemaker

AT: Environmental Health

FAX#: (415) 599-1071

CONTACT #: 11 1679

NUMBER OF PAGES (including cover page): 4

COMMENTS:

Data on well construction as pertains to 1180 Main St, PWC PVC pipe in hoist excavation.

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ENVIRONMENTAL HEALTH SERVICES DIVISION DIRECTOR
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590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX (415) 363-7882

Solvent cementing of thermoplastic pipe should not be used in the construction of ground-water monitoring wells. In solvent cementing, a solvent primer is generally used to clean the two pieces of casing to be joined and a solvent cement is then spread over the cleaned surface areas. The two sections are assembled while the cement is wet. This allows the active solvent agent(s) to penetrate and soften the two casing surfaces that are joined. As the cement cures, the two pieces of casing are fused together; a residue of chemicals from the solvent cement remains at the joint. The cements used in solvent welding, which are themselves organic chemicals, have been show to adversely affect the integrity of ground-water samples. (See Aller et al., 1989 for a summary of relevant research.)

2.5 Well Intake Design

The RP should design and construct the intakes of monitoring wells to (1) accurately sample the aquifer zone the well is intended to sample; (2) minimize the passage of formation materials (turbidity) into the well; and (3) ensure sufficient structural integrity to prevent the collapse of the intake structure.

2.5.1 Well Screen

The goal of a properly completed monitoring well is to provide low turbidity water that is representative of ground-water quality in the vicinity of the well. Monitoring wells completed in rock often do not require screens, though wells completed in unconsolidated sediments do require screens.

Screen Length

The selection of screen length usually depends on the objective of the well. Piezometers, for example, are generally completed using short screens (2 feet or less), as are wells where only a discrete flow path, such as thin gravel interbedded with clays, is monitored. To avoid dilution, well screens should be kept to the minimum length appropriate for intercepting a contaminant plume, especially in a high-yielding aquifer. The screen length should generally not exceed 10 feet. If construction of a water table well is the objective, either for defining flow gradient or detecting the presence of floating non-aqueous phase liquid (NAPL), then a longer screen spanning the water table is acceptable, to account for NAPL's or seasonal water table fluctuations. The RP should not use screen lengths that create a conduit for contaminant transport across hydraulically separated geologic units.

Screen Slot Size

Well screen slot size should be selected to retain at least 90% of the filter pack material (discussed below) in artificially filter packed wells, or a minimum of 50% of the formation material in naturally packed wells, unless the RP can demonstrate that turbidity-free water (<5 nephelometric turbidity units) can be obtained using a larger slot size. Although this is a higher percentage than is usually required in a production well, the low withdrawal rates and the infrequent use of a monitoring well necessitate the higher

DRAFT

percentage exclusion. Cal EPA emphasizes that filtering a sample subsequent to its collection is not the solution for dealing with turbidity in an improperly designed well. Furthermore, well screens should be factory-slotted. Manually slotting casing as a substitute for screens should not be accepted under any conditions.

2.5.2 Filter Packs/Pack Material

The annular space between the borehole wall and the screen or slotted casing should be filled in a manner that minimizes the passage of formation materials into the well. The driller should generally install an artificial filter pack around each well intake. As discussed above, wells in rock often do not require screens, and thus do not require filter packs. However, they are the exception; most wells will require filter packs and a screened length of casing. Aller et al. (1989) provide a comprehensive discussion of the purpose and selection of filter pack materials.

An artificial filter pack is appropriate in most geologic settings. In particular, an artificial filter pack should be used when: 1) the natural formation is poorly sorted; 2) a long screened interval is required and/or the intake spans highly stratified geologic materials of widely varying grain sizes; 3) the natural formation is a uniform fine sand, silt, or clay, 4) the natural formation is thin-bedded, 5) the natural formation is poorly cemented sandstone, 6) the natural formation is highly fractured or characterized by relatively large solution channels; 6) the natural formation is shales or coals that will act as a constant source of turbidity to ground-water samples; and 7) the diameter of the borehole is significantly greater than the diameter of the screen (Aller et al., 1989). Using natural formation material as filter pack is recommended only when the natural formation materials are well sorted and relatively coarse-grained.

Filter pack material should be chemically inert. The best filter packs are made from industrial grade quartz (Barcelona, 1985a). Any other type of sand should be analyzed for cation exchange capacity and volatile organic compounds (VOCs) to determine whether it will interact with analytes of concern in the ground water. Commercially available pea gravel may be acceptable for use in gravel aquifers; however, because the filter pack should be chemically inert, the pea gravel itself should not be chemically active or coated with a chemically active metal oxide. Filters constructed from fabric should not be allowed, as they tend to plug and may be chemically reactive.

Aller et al. (1989) provide the following summary of methods for selecting the size of filter pack materials:

> "Although design techniques vary, all use the filter pack ratio to establish size differential between the formation materials and filter pack materials. Generally this ratio refers to either the average (50 percent retained) grain size of the formation material or the 70 percent retained size of the formation material. For example, Walker (1974) and Barcelona et al. (1985a [1985b in this document])

FROM

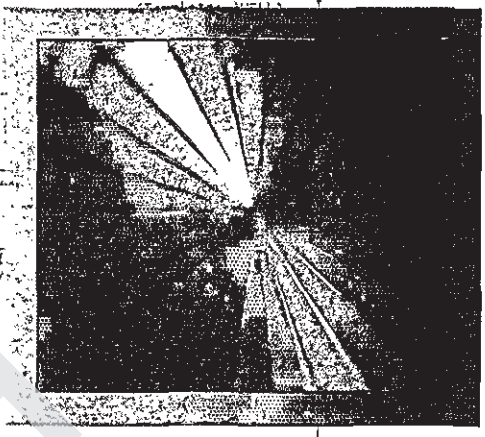
Monitoring Well Design and Construction for Hydrogeologic Characterization

Guidance Manual for Ground Water Investigations

WELL CONSTRUCTION DETAILS	PROJECT and JOB NUMBER		SHEET NO. 1 OF 1	HOLE NO. P - 2
	SITE and LOCATION Zone 1		HOLE SIZE 8.25"/3"	BEGUN
DRILLER	COORDINATES	LOGGED BY:	TD OF WELL 67.0'	COMPLETED
TOP of CASING ELEV. / GROUND ELEV. 1018.60 1017.00	GROUND WATER DEPTH/ELEVATION ∇ 11.50/1005.50 on 7-23	CHECKED BY:	TD of HOLE 84.40	UPDATE

Well Construction Details	Elevation in Feet	Depth in Feet	Well Graphics	Graphics	Descrip
OBSERVATION WELL	1017.0				
	1015.2	5			0.0 - 3.0 ft: FIL...
					3.0 - 56.0 ft: AL... Sand with grav...
	1009.0				
	961.0				56.0 - 62.7 ft: DECOMPOSED ROCK(?); reddish brown.
	954.3				62.7 - 84.4 ft: GRANODIORITE; brownish gray changing to light gray (black and white speckled), medium to coarse grained.
					62.7 - 65.8 ft: Moderately weathered.
					65.8 - 70.1 ft: Slightly weathered.
					70.1 - 84.4 ft: Fresh rock.
	932.6				TOTAL DEPTH = 84.4 FT.





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See key for graphic symbols.	SITE and LOCATION Zone 1	HOLE NO. P - 2

State of California
Environmental Protection Agency

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

February 7, 1995

ATTN: Mr. Larry Chubick
Chub's Auto Repair
1180 Main Street
Redwood City, CA 94063

SMCo# 330120

SUBJECT: SUBSURFACE INVESTIGATION AT CHUB'S AUTO REPAIR, 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

This letter is in response to Mr. Fred Yukic's January 12, 1995 letter to this office. Mr. Yukic poses two questions which I will answer: 1.) Why is there a need to investigate groundwater? 2.) Why isn't the "piping" considered a well?

1.) I have contacted the Regional Water Quality Control Board regarding this site. Because of the oil and grease detected in the soil, an investigation is required. Mr. Yukic refers to the Practical Quantitation Reporting Limit of 5 ppm listed in the Tri-Regional Recommendations. According to the RWQCB, detection of oil and grease above 1,000 ppb requires an investigation. The level of oil and grease detected in the groundwater sample obtained from the site was 1,700 ppb.

2.) The PVC piping installed at the site certainly meets the definition enclosed by Mr. Yukic from the Department of Water Resources California Well Standards, but the definition does not include a complete description of how a well is constructed. Please see the attached figure 2, typical monitoring well. The piping allows for qualitative water samples to be obtained, but not for water samples representative of the aquifer to be obtained.

The piping at the site may be used for groundwater extraction purposes. As was stated previously, the existing well at the site may be able to be used to investigate the groundwater. Please refer to my letter to you dated December 23, 1994. Thank you. Should you have any questions, you may reach me at (415) 599-1679.

Sincerely,

Michele Shoemaker
Hazardous Materials Specialist
County Remedial Oversight Program

enclosure
cc: Fred Yukic, ASE, P.O. Box 1166, San Carlos, CA 94070 (with enclosure)

DRAFT

SAN MATEO COUNTY BOARD OF SUPERVISORS
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HEALTH SERVICES AGENCY DIRECTOR
MARGARET TAYLOR

ENVIRONMENTAL HEALTH SERVICES DIVISION DIRECTOR
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590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX [415] 363-7882

ASE
APPLIED SCIENCE AND ENGINEERING INC.

January 12, 1995

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
JAN 13 1995
RECEIVED

SUBJECT: Response to Comments - Former Hydraulic Lift
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

This letter is in response to a 23 December 1994 letter from you to Mr. Larry Chubick concerning a subsurface investigation at Chub's Auto Repair, 1180 Main Street in Redwood City, California. There are currently two separate investigations at the site; a former UST excavation and a former hydraulic lift excavation. This letter responds only to issues concerning the former hydraulic lift and the associated monitor well (MW-2).

DRAFT

Background

A hydraulic lift was removed from the above-referenced site, an automobile repair shop, in early August 1994. Soil samples collected from beneath the hydraulic lift by hand boring into the bottom of the excavation showed O&G in soils beneath the former hydraulic lift to a depth of 12.5 feet. A soil sample from between 12 to 12.5 feet deep, the final depth of the excavation, was found to contain O&G at 520 ppm.

Subsequently, the excavation was deepened to approximately 12 feet, the maximum depth attainable. Water entered this excavation, filling it to 10.9 feet below ground surface. In accordance with the Tri-Regional Recommendations (see attached Case B) and the SMCDHS CLEP Guidelines by incorporation, the excavation was pumped once, allowed to recharge, and then was sampled. Lab results show that the groundwater sample contained 1.7 ppm of O&G, which is below the required practical quantitation reporting limit for leaking underground fuel tanks of 5.0 ppm (see attached).

A hand boring was advanced 3.5 feet below the bottom of the excavation, to a total depth of 15.5 feet where the first water bearing zone was encountered. A monitor well (MW-2) was constructed in the boring and excavation of 4-inch diameter PVC pipe with saw cut slots. Pea gravel backfill was placed around the well from the bottom of the excavation to ground surface.

Issue #1 - Why is there a need to investigate groundwater?

You letter states that "... it appears that the hydraulic oil from the lift has impacted soil and groundwater at the site." As evidenced by the soil sample from 12.5 feet it does appear that soil beneath the former hydraulic lift has been impacted. However, based on the groundwater sample collected from the pit which contained O&G at a concentration below the required Practical Quantitation Reporting Limit of 5 ppm listed in the Tri-Regional Recommendations, it does not appear that groundwater has been significantly impacted. As such, continued monitoring does not appear to be required by the regulations.

Issue #2 - Why isn't the "piping" a monitor well?

According to the definition contained in the California Water Code (see attached DWR Monitor Well standard) MW-2 is a monitor well. Our review of the Monitor Well Standards does not show any deficiencies in the construction of MW-2. In addition, MW-2 is located in the excavation backfill, where any potential impacts to groundwater can be monitored. There are numerous other sites in the County where wells were constructed in the backfill and were accepted by your office. Therefore, ASE believes that MW-2 is a satisfactorily constructed monitor well.

Please state your reasons and authority in refusing to recognize MW-2 as a monitor well. Construction of another monitor well in lieu of MW-2 would not provide any additional benefit, and would be an economic hardship on the client, a small businessperson.

Please call me at (415) 363-2445 if you have any questions or require additional information. Please respond in writing to the issues raised above.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

Attachments

cc: Mr. Larry Chubick, Chub's Auto Repair

DRAFT

EXPLANATION FOR TABLE #2: MINIMUM VERIFICATION ANALYSIS

1. OTHER METHODOLOGIES are continually being developed, and as methods are accepted by EPA or DHS, they also can be used.

2. For DRINKING WATER SOURCES, EPA recommends that the 500 series for volatile organics be used in preference to the 600 series because the detection limits are lower and the QA/QC is better.

3. APPROPRIATE STANDARDS for the material stored in the tank are to be used for all analyses on Table #2. For instance, seasonally, there may be five different jet fuel mixtures to be considered.

4. TO AVOID FALSE POSITIVE detection of benzene, benzene-free solvents are to be used.

5. TOTAL PETROLEUM HYDROCARBONS (TPH) as gasoline (G) and diesel (D) ranges (volatile and extractible, respectively) are to be analyzed and characterized by GCFID with a fused capillary column and prepared by EPA method 5030 (purge and trap) for volatile hydrocarbons, or extracted by sonication using 3550 methodology for extractible hydrocarbons. Fused capillary columns are preferred to packed columns; a packed column may be used as a "first cut" with "dirty" samples or once the hydrocarbons have been characterized and proper QA/QC is followed.

6. TETRAETHYLLEAD (TEL) analysis may be required if total lead is detected unless the determination is made that the total lead concentration is geogenic (naturally occurring).

7. CHLORINATED HYDROCARBONS (CL HC) and BENZENE, TOLUENE, XYLENE AND ETHYLBENZENE (BTX&E) are analyzed in soil by EPA methods 8010 and 8020, respectively, (or 8240) and for water 601 and 602, respectively, (or 624).

8. OIL AND GREASE (O & G) may be used when heavy, straight chain hydrocarbons may be present. Infrared analysis by method 418.1 may also be acceptable for O & G if proper standards are used. "Standard Methods" 17th Edition, 1989, has changed the 503 series to 5520.

9. PRACTICAL QUANTITATION REPORTING LIMITS are influenced by matrix problems and laboratory QA/QC procedures. Following are the Practical Quantitation Reporting Limits:

	SOIL PPM	WATER PPB
TPH G	1.0	50.0
TPH D	1.0	50.0
BTX&E	0.005	0.5
O & G	50.0	5,000.0

DRAFT

STANDARDS

Part I. General

Section 1. Definitions*.

A. Monitoring Well. The term "monitoring well" is defined in Section 13712 of the California Water Code as:

> ". . . any artificial excavation by any method for the purpose of monitoring fluctuations in ground water levels, quality of underground waters, or the concentration of contaminants in underground water."

B. Exploration Hole (or Boring). For the purpose of these standards, an exploration hole or boring is an uncased excavation whose purpose is the immediate determination of hydrologic conditions at a site.

C. Enforcing Agency. An agency designated by duly authorized local, regional, or state government to administer laws or ordinances pertaining to the construction, maintenance, and destruction of monitoring wells.

Section 2. Application to Well Type.

These standards apply to all types of monitoring wells, except as prescribed in Sections 3 and 4, that follow. Before a change in use of a well is made, standards for the new use shall be complied with.

Section 3. Exemptions for Unusual Conditions.

Under certain circumstances the enforcing agency may waive compliance with these standards and prescribe alternate requirements. These standards may be waived only where they are impractical or ineffective because of unusual conditions, or would result in an unsatisfactory well condition or function. In waiving these standards the enforcing agency shall, if at all possible, require that measures be implemented to provide the same or greater level of water quality protection than would otherwise be provided by these standards.

---

*Technical terms are also defined in Appendix A.

DRAFT

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

December 23, 1994

ATTN: Mr. Larry Chubick
Chub's Auto Repair
1180 Main Street
Redwood City, CA 94063

SMCo# 330120

SUBJECT: SUBSURFACE INVESTIGATION AT CHUB'S AUTO REPAIR, 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

Thank you for the Applied Science and Engineering Inc. (ASE) Hydraulic Lift Sampling Results report dated December 21, 1994 for the subject site. Based on the results presented in the report, it appears that the hydraulic oil from the lift has impacted soil and groundwater at the site.

A PVC pipe was installed in the excavation area. This office does not consider the piping a groundwater monitoring well, which is required to be installed to investigate the groundwater conditions at the site, but do feel that if necessary, groundwater can be extracted from it. Groundwater extraction is a commonly used remediation method. It is my understanding that you have been waiting to concrete the excavated area based on this office's decision on the piping; please be advised that you may cement the piping in place.

As I mentioned above, a groundwater monitoring well will need to be installed at the site to investigate the groundwater at the site in relation to the hydraulic hoist. I have mentioned in previous letters that the direction of the groundwater flow needs to be determined. It would be prudent to determine the gradient at the site before installing another well as the existing well might be able to be used for the hydraulic hoist investigation. Two conditions would enable the existing well to be used: 1.) the hydraulic hoist area is upgradient from the existing well or 2.) the gradient at the site is flat.

Should you have any questions, you may reach me at (415) 599-1679.

Sincerely,

Michele Shoemaker

Michele Shoemaker
Hazardous Materials Specialist
County Remedial Oversight Program

cc: Fred Yukic, ASE, P.O. Box 1166, San Carlos, CA 94070

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590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX [415] 363-7882

see #9

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
DEC 21 1994
RECEIVED

12.22.94

Dear Michele,

I will be on vacation next week except for Wednesday when I will be in the office part of the day. If you reach a decision on Clark's hydraulic lift (keep or close) you can reach Clark @

home - 366-8977

work 368-2224

He is closing his shop next week so it would be an ideal time to pour concrete. He can pull the canopy out and cover area if site is closed.

Best wishes Fred Yuki

DRAFT

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

November 16, 1994

ATTN: Mr. Larry Chubick
Chub's Auto Repair
1180 Main Street
Redwood City, CA 94063

SMCo SITE: 330120

SUBJECT: SUBSURFACE INVESTIGATION AT CHUB'S AUTO REPAIR, 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

Thank you for the Applied Science and Engineering Inc. (ASE) Monitor Well Sampling Report dated November 14, 1994. One more quarter of groundwater monitoring is required at the subject site in relation to the removal of underground storage tanks.

It is my understanding that a hydraulic hoist was removed from inside the building at the subject site on October 5, 1994 and that oil and grease was found at depths up to twelve feet below ground surface. This office has no further information about the hoist removal. Please update this office as to the status of the hoist removal.

After the fourth quarter of groundwater monitoring has occurred and the gradient has been determined using the on-site well, this office will review the case for closure regarding the removal of the underground storage tanks.

Please notify this office seventy-two hours prior to any site activities. Should you have any questions, you may reach me at (415) 599-1679.

Sincerely,

Michele Shoemaker
Hazardous Materials Specialist
County Remedial Oversight Program

cc: Fred Yukic, ASE, P.O. Box 1166, San Carlos, CA 94070

DRAFT

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590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX [415] 363-7882

ASE
APPLIED SCIENCE AND ENGINEERING INC.

rec'd 10/7/94

APPLIED SCIENCE AND ENGINEERING
P.O. BOX 1166, SAN CARLOS, CA 94070
(415) 363-2445 Voice
(415) 363-8449 FAX

FAX TRANSMISSION SHEET

To: Michele Shoemaker

Company: SMC DHS

FAX No: [redacted] 363-7882

Subject: Chub's Auto
Hydraulic Lift

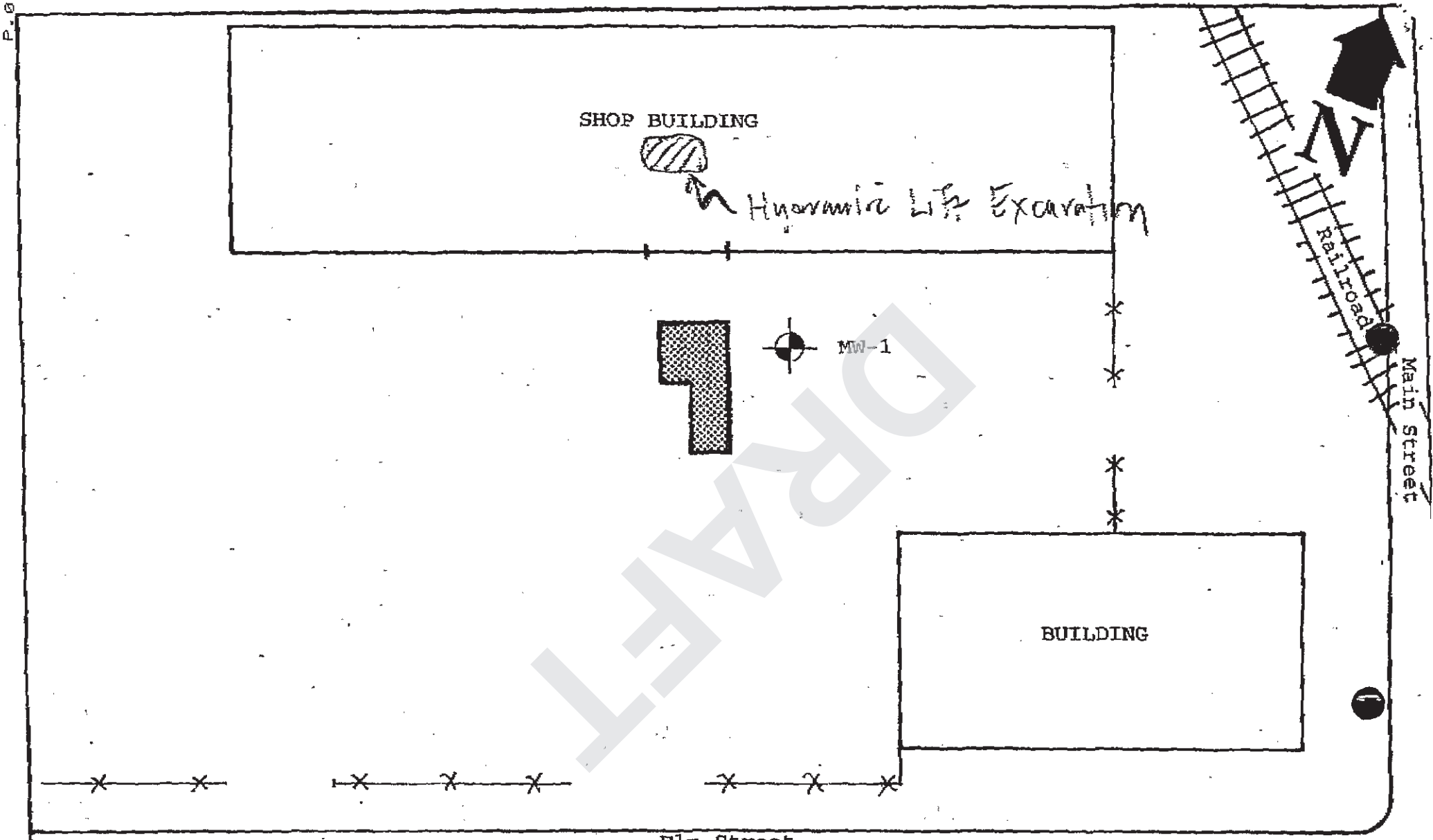
From: Fred Yuker

Date: 10-7-94

Number of Pages (including this page): 3

Note:
Data collected to date

DRAFT



ASE
APPLIED SCIENCE AND ENGINEERING INC.

1" = 20'

MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, Californi

Table 1
Soil Analytical Results (ppm)
Chub's Automotive
Hydraulic Lift Excavation

Location	O&G
8' - 8.5'	12,000
9' - 9.5'	1,600
9.5'-10'	1,700
12' -12.5'	520

O&G = Oil & Grease

DRAFT

10.4.94
@ 15:30

Water in hole @ ~11'

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

September 1, 1994

ATTN: Mr. Larry Chubick
Chub's Auto Repair
1180 Main Street
Redwood City, CA 94063

SMCo SITE: 330120

SUBJECT: SUBSURFACE INVESTIGATION AT 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

Thank you for the Applied Science and Engineering Inc. (ASE) Monitoring Sampling Report dated August 29, 1994. Two additional quarters of groundwater monitoring are required at the subject site.

The groundwater gradient at the subject site must be determined using the on-site well. Please have your consultant contact the property owners of nearby leaking underground storage tank sites that have groundwater monitoring wells that can be used for gradient verification purposes. Please notify this office seventy-two hours prior to any site activities.

Should you have any questions, you may reach me at (415) 599-1679. Thank you.

Sincerely,

Michele Shoemaker
Hazardous Materials Specialist
County Remedial Oversight Program

cc: Fred Yukic, ASE, P.O. Box 1166, San Carlos, CA 94070

DRAFT

SAN MATEO COUNTY BOARD OF SUPERVISORS
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HEALTH SERVICES AGENCY DIRECTOR
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ENVIRONMENTAL HEALTH SERVICES DIVISION DIRECTOR
BRIAN ZAMORA, MPH, REHS

590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX [415] 363-7882

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

May 31, 1994

ATTN: Mr. Larry Chubick
Chub's Auto Repair
1180 Main Street
Redwood City, CA 94063

SMCo SITE: 330120

SUBJECT: SUBSURFACE INVESTIGATION AT 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

Thank you for the Applied Science and Engineering Inc. (ASE) Monitoring Well Construction Report dated May 24, 1994. The report states that the water in the tank pit from the underground storage tank excavation was pumped dry and did not recharge. For clarification purposes, the pit was pumped at least three times, with full recharge each time. The contractor that submitted the tank removal report has been instructed to clarify this information in a revised tank removal report. I have discussed the situation with Mr. Yukic of ASE and it is this office's understanding that future groundwater monitoring reports will reflect the actual events that occurred.

Your consultant has requested that on the basis of the analytical results to date, the well only be sampled for TPH-diesel and BTEX compounds. This office concurs with this request. As you are aware, the monitoring well will need to be monitored three more times (August and November of 1994 and February of 1995) to be considered for case closure. If the well shows no contamination for four consecutive quarters, this office will process a request for case closure. This office requires seventy-two hour notification before sampling events. Should you have any questions, you may reach me at (415) 599-1679. Thank you.

Sincerely,

Michele Shoemaker
Hazardous Materials Specialist
County Remedial Oversight Program

cc: Fred Yukic, ASE, P.O. Box 1166, San Carlos, CA 94070

DRAFT

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PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX (415) 363-7882

HEALTH SERVICES AGENCY
ENVIRONMENTAL HEALTH SERVICES DIVISION

May 4, 1994

ATTN: Rhonda Reames-Kiper
S E M C O
1741 Leslie Street
San Mateo, CA 94402

SMCo SITE#: 330120

RE: SUBSURFACE INVESTIGATION AT CHUB'S AUTO REPAIR, 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

I received and reviewed the SEMCO Tank Removal Report for the subject site. The report has several statements that contradict what this office believes occurred at the site. These statements and my concerns are listed below.

- Page 2 states, "The water sample was to be analyzed for the same constituents (TPH-gasoline, TPH-diesel, oil and grease, BTEX), but not enough water was collected, so oil and grease was the only analysis run".

I witnessed three 40 milliliter VOAs and three amber liter bottles filled. This is sufficient sample to run the above analyses.

- Page 2 states, "Initially, San Mateo County Environmental Health Department had stated that this water sample, due to the inadequate amount, and obvious floating product, would not need to be analyzed. But it was later decided by San Mateo County to run the analysis."

This office did not state that a because of a lack of sample and obvious floating product, the water would not need to be analyzed. As mentioned above, sufficient sample amounts were witnessed by this office to run the required analyses. Additionally, after the pit was pumped, floating product was not visible.

- Page 3 states, "Another water sample still needed to be collected, so an appointment was scheduled for February 17, 1994".

This office was expecting analytical results for the groundwater sample taken on February 9, 1994. On February 14, 1994 I was on another County Remedial Oversite Program site in the city of San Mateo when Mr. Chuck Kiper of your office requested that another water sample be taken since when the pit was originally pumped, the pump was malfunctioning.

DRAFT

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MARGARET TAYLOR

ENVIRONMENTAL HEALTH SERVICES DIVISION DIRECTOR
BRIAN ZAMORA, MPH, REHS

590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX [415] 363-7882

I agreed that the pit could be pumped one more time. I called your office on February 16, 1994 to make an appointment and you stated that the pit was being pumped as we spoke. An appointment was scheduled for February 17, 1994. When I arrived on site on February 17, 1994, the pit was being pumped for the second time in two days. San Mateo County policy is to pump the pit one time and sample within twenty-four hours. SEMCO was informed that this overpumping of the pit was in violation of County policy but that a sample should be taken.

Once again, three amber liter bottles and three 40 milliliter VOAs were filled. After a discussion with Dean Peterson of this office, a decision was made to analyze both pit water samples (2/9/94 and 2/17/94).

On February 22, 1994 I called Mr. Kiper of your office and told him that both samples should be run for all analyses. He stated that he would make sure that they were.

The Tank Removal Report submitted to this office directly contradicts the events that actually occurred. Please submit a revised report to this office by **May 17, 1994.** If you should have any questions, please contact me at (415) 599-1679.

Sincerely,

Michele Shoemaker

Michele Shoemaker
Hazardous Materials Specialist
County Remedial Oversight Program

cc: Larry Chubick, Chub's Auto Repair, 1180 Main Street, Redwood City, CA 94063

DRAFT

file

HEALTH
ENVIRONM

Post-It™ brand fax transmittal memo 7671	# of pages ▸ 1
To Fred Y.	From Michele
Co. ASE	Co.
Dept.	Phone # 599-1679
Fax # 363-8449	Fax # 4/8/94

April 4, 1994

ATTN: Mr. Larry Chubick
Chub's Auto Repair
1180 Main Street
Redwood City, CA 94063

SUBJECT: SUBSURFACE INVESTIGATION AT 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

Thank you for the Applied Science and Engineering Inc. Workplan dated March 30, 1994 for the subject site. The workplan proposes installing one groundwater monitoring well. The direction of groundwater flow must be determined at the subject site. Typically, three monitoring wells are measured and a gradient is calculated. Existing monitoring wells at 25 Maple Street and 1501 El Camino Real, Redwood City, California may be used to determine gradient. Have your consultant contact the well owners to gain access to the wells.

In addition, groundwater ~~and soil~~ samples taken during the monitoring well installation and groundwater samples taken after well development at the subject site must be analyzed for: TPH-gasoline, TPH-diesel, BTEX, oil and grease, and EPA 8240.

Once the above items are addressed, subsurface drilling permits will be issued and the work may proceede.

Should you have any questions, you may reach me at (415) 599-1679. Thank you.

Sincerely,

Michele Shoemaker
Hazardous Materials Specialist
County Remedial Oversight Program

cc: Fred Yukic, ASE, P.O. Box 1166, San Carlos, CA 94070

DRAFT

SAN MATEO COUNTY BOARD OF SUPERVISORS
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HEALTH SERVICES AGENCY DIRECTOR
MARGARET TAYLOR

ENVIRONMENTAL HEALTH SERVICES DIVISION DIRECTOR
BRIAN ZAMORA, MPH, REHS

590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX [415] 363-7882

UNITED STATES POSTAL SERVICE

Official Business

PENALTY FOR PRIVATE USE TO AVOID PAYMENT OF POSTAGE, $300

U.S. MAIL

Print your name, address and ZIP Code here

COUNTY REMEDIAL OVERSIGHT PROGRAM ATTN: SHOEMAKER
COUNTY OF SAN MATEO
ENVIRONMENTAL HEALTH SERVICES DIVISION
COUNTY OFFICE BUILDING
590 HAMILTON STREET
REDWOOD CITY, CA 94063

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☑ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
SMCO SITE # 330120

ATTN: MR. LARRY CHUBICK
CHUB'S AUTO REPAIR
1180 MAIN STREET
REDWOOD CITY, CA 94063

4a. Article Number
P 851 629 052

4b. Service Type
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery 3/11/94

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

Thank you for using Return Receipt Service.

PS Form 3811, December 1991 ☆ U.S.G.P.O.: 1992-307-530 DOMESTIC RETURN RECEIPT

P 851 629 052

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to	ATTN: MR. LARRY CHUBICK
Street and No.	CHUB'S AUTO REPAIR
P.O., State and ZIP Code	1180 MAIN ST. REDWOOD CITY CA 94063
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date	SMCO SITE #330120 03/10/94

PS Form 3800, JUNE 1991

DRAFT

File

Department of Health Services
ENVIRONMENTAL HEALTH SERVICES DIVISION

COUNTY OF SAN MATEO
590 HAMILTON STREET • REDWOOD CITY • CALIFORNIA 94063

BOARD OF SUPERVISORS
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MARY GRIFFIN
TOM HUENING
TED LEMPERT
MICHAEL D. NEVIN

MARGARET TAYLOR
DIRECTOR OF HEALTH SERVICES

(415) 363-4305
FAX # (415) 363-7882

March 8, 1994

CERTIFIED MAIL
P 851 629 052

Attn: Mr. Larry Chubick
Chub's Auto Repair
1180 Main Street
Redwood, CA 94063

SMCo SITE: #330120

DRAFT

SUBJECT: CHUB'S AUTO REPAIR, 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

Our files identify your company as a discharger, or potential discharger, of waste to waters and/or soil of the State as the result of petroleum product leaks from underground tanks at facilities it owns, operates, or for which it is liable. This letter is intended to clarify your responsibilities for reporting, investigating, and conducting cleanup of such discharges.

The San Francisco Bay Regional Water Quality Control Board (RWQCB) is responsible for oversight of soil and ground water pollution cases which threaten or impact waters of the State. However, due to the large number of fuel leak cases reported, the RWQCB Staff is not able to respond to each incident. Therefore, the San Mateo County Leaking Underground Fuel Tank (LUFT) Enforcement Program (CLEP) is working with the RWQCB and is taking the lead role for case-handling. Regardless of the level of oversight from agencies, you are responsible for the timely reporting, investigation, and cleanup of soil and ground water pollution such that the beneficial uses of waters of the State are protected, and in compliance with appropriate policies.

As described in enclosure (1), you are responsible to reimburse the State of California for up to 150 percent of the site specific oversight costs incurred by the County while overseeing the cleanup of your site.

Investigations and Cleanup Responsibilities:

The subject underground tank leak case has been reported as your responsibility. The following steps are the minimum required for addressing your site:

1. Determine the lateral and vertical extent of soil and ground water pollution.

2. Assess the local and regional hydrogeology as appropriate to evaluate actual or potential impacts of contamination to beneficial uses of surface and/or ground water.

3. Evaluate and implement appropriate remedial action alternatives.

4. *Remove all floating or free product. Dissolved constituents and contaminated soil* should be remediated consistent with State Water Resources Control Board Resolution No. 68-16.

DRAFT

Reporting Responsibilities

1. Submittal of individual technical reports, for the site, detailing all investigative and remedial actions associated with the site. These reports shall be submitted on a quarterly basis, unless more frequent reports are requested by this office or the RWQCB. These reports shall be submitted until such time as the case is closed by CLEP and the RWQCB.

2. A summary report shall be submitted on a quarterly basis and include the following information, at a minimum:

   a. Site name, address, city and county site number.

   b. A brief background history of the investigation and remedial actions.

   c. A chronological listing of actions that were taken regarding investigation and remediation during the previous quarter.

   d. A listing, with scheduled dates, of actions planned for the next quarter.

   e. Status on the characterization of soil pollution, free product, and dissolved constituents.

   f. Status on remediation of soil pollution, free product, and dissolved constituents. This shall include a report of the gallons of product recovered, and a calculation for the amount of product recovered from dissolved phase removal and/or vapor extraction.

The first quarterly summary report shall be submitted thirty (30) calendar days from the date of this letter, and quarterly thereafter.

All proposals and reports which contain engineering or geological information, interpretations, or other opinions as specified by The Business and Professions Code, must be signed AND STAMPED by an appropriately registered professional. In general, all reports on investigation and remediation require this type of signature.

All proposals and reports submitted to us must be accompanied by a cover letter signed by an officer or legally authorized representative of your company which states at a minimum:

> "I declare under penalty of perjury, that the information and/or recommendations contained in the attached proposal or report is true and correct."

You are required to submit the above reports pursuant to Section 13267(b) of the California Water Code. Failure to comply may subject you to the imposition of administrative civil liabilities by the Regional Board of up to one thousand dollars ($1,000) per day of non-compliance.

Two (2) additional enclosures include:

- A partial resource list of consultants that may assist you in meeting the above requirements.

and

- A brief informational packet discussing possible state monies available to you.

Thank you for your cooperation in this matter. Please contact me within 15 days at (415) 599-1679 to further discuss your case and answer any questions.

Sincerely,

Michele Shoemaker

Michele Shoemaker
Hazardous Materials Specialist
County Remedial Oversight Program

MS/gmm

Enclosures (4) Notice of Reimbursement

DRAFT

S E M C O

Environmental Contractors
General Engineering
Modesto/San Mateo

REQUEST FOR INSPECTION:

TO: Michelle Shoemaker

SITE LOCATION: 1180 Main St. Redwood City

PERSON CONTACTED: Michelle Shoemaker

PHONE NUMBER: 599-1679

DATE CONTACTED: 2/8/94 @ 12:05

DATE/TIME APPT IS SCHEDULED FOR: Wed 2/9/94 @ 1:00

IF THERE ARE ANY CHANGES THAT OCCUR PLEASE CALL Rhonda **AT** (415) 572-8033 **, AT YOUR EARLIEST CONVENIENCE.**

WE WILL CONTACT YOU OF ANY CHANGES - IMMEDIATELY.
THANK YOU FOR YOUR COOPERATION WITH OUR PROJECT.

SAN MATEO OFFICE: (415) 572-8033 OR 800-831-2344

MODESTO OFFICE: (209) 524-9653 OR 800-585-9293

DRAFT

New Accounts / Change of Information Form

INSPECTORS NAME: PETE

DATE: 7-6-04

PROGRAM ELEMENTS

* Indicate program elements below

☐ ADD *1._____ 3._____

2._____ 4._____

☒ DELETE *1. 2225 3._____

2._____ 4._____

NEW ACCOUNTS

☐ RECORD ID #

☐ DATA SHEET

☐ NEW FOLDER/LABEL

☐ OTHER:

TANKS (ONLY)

☐ DELETE ENTIRE TANK PROGRAM (ALL TANKS)

☐ DELETE SPECIFIC TANK (PARTIAL)
*Indicate tank(s) to be deleted

1. 3.

2. 4.

☐ RCRA LOG (2202-2203)

☐ CHANGE OF OWNERS

NEW OWNERS NAME:_____

NEW OWNERS ADDRESS: _____

☐ NAME CHANGE (FACILITY)

NEW FACILITY NAME: _____

☐ ADDRESS CHANGE (FACILITY)

NEW FACILITY ADDRESS: _____

OTHER: DELETE FILE

RETURN TO INSPECTOR: Yes / (No)

DRAFT

Date run : 7/8/2004 10:47:12AM
Run by :

San Mateo County, Environmental Health
Facility Information as of 7/8/2004

Report #: 9302
Page #: 1

Record Selection Criteria: Facility ID FA0022926

permit expiration date

Make changes/corrections in RED ink or pencil.
INFORMATION CHANGE (date) : _____
OWNERSHIP CHANGE (date) : _____

OWNER FILE INFORMATION

Owner ID: OW0023003
Permit & Owner Name: **MARCELLI, NICK**
Owner DBA: FIVE STAR DEVELOPMENT
Owner Address: 1275 HAWES ST
REDWOOD CITY, CA 94061
Home Phone: 650-364-9835
Work/Business Phone: Not Specified

Mailing Address: 4100 STAGE ROAD
SAN GREGORIO, CA 94074
Care of: NICK MARCELLI

New Owner ID : _____

FACILITY FILE INFORMATION

Facility ID: FA0022926
Facility Name: FIVE STAR DEVELOPMENT
Location: 134 MAPLE ST
REDWOOD CITY, CA 94063
Phone: 650-364-9835

Mailing Address: 4100 STAGE ROAD
SAN GREGORIO, CA 94074
Care of: NICK MARCELLI

ACCOUNTS RECEIVABLE FILE INFORMATION

Account ID: AR0023522
Invoice c/o Name: NICK MARCELLI
Permit and Invoice Mail to: **4100 STAGE ROAD**
SAN GREGORIO CA 94074
Anniversary Date: 12/1/1996
Permit Expiration: No Permit Issued

New Account ID: _____
Mail Invoices to: Owner / Facility / Account
(Circle One)

Program/Element and Description	Record ID	Employee ID and Name	Status	UST(s) Linked	Transfer to New Owner?		(Circle One) Active/Inactve Delete		
2300 - UNDERGROUND TANK - GENERAL	PR0025820	EE0003310 - PETE SMITH	Inactive	0	Y	N	A	I	D
2225 - GENERATES <27 GAL/YEAR	PR0028691	EE0003365 - LINDSAY GIPE	Inactive	0	Y	N	A	I	D
6000 - CUPA OVERSIGHT/STATE SURCHARGE	PR0033320	EE0003365 - LINDSAY GIPE	Inactive	0	Y	N	A	I	D
6097 - 1997 RETROACTIVE STATE CUPA SURCHA	PR0037328	EE0003310 - PETE SMITH	Inactive	0	Y	N	A	I	D
3090 - STORMWATER ANNUAL INSPECTION FEE	PR0040953	EE0003365 - LINDSAY GIPE	Inactive	0	Y	N	A	I	D

DRAFT

DRAFT

KO 11/14/96

NEW
1/2 DAO 1

F PREMISE FACILITY

Facility ID 022926 Cross-Ref 000016971
Facility Owner ID 023003 Name MARCELLI, NICK
Property Owner ID _____ Name _____

Facility Name FIVE STAR DEVELOPMENT # of Emps. _____
Trust Lands?(Y/N) N

Street Number	Direction	Street Name	Type	Unit
134		MAPLE	ST	

2nd Address _____
Cross Street MAPLE
City REDWOOD CITY State CA Zip 94063-
Phone 415-364-9835 Ext _____

Census _____ District ___ Location 33 City code RC

Mail Ad 1275 HAWES ST
2nd Ad _____
Care Of NICK MARCELLI Accts Rec Address Update? Y
City REDWOOD CITY Addr M
State CA Zip 94061-
AP# _____ SIC Code _____
F=Find E=Enter U=Update D=Delete L=Look-up Page 1 12:16:25p

F PROGRAM GENERAL HEALTH PROGRAM

Facility ID 022926 Record ID 028691
Facility Name FIVE STAR DEVELOPMENT State Site ID _____
Transaction Code N Local_Site_ID _____

Emergency Notification -
Contact 1 Name NICK MARCELLI
Title OWNER
Day Phone 415-364-9835 Ext ____
Night Phone ___-___-_____ Ext ____
Contact 2 Name _____
Title _____
Day Phone ___-___-_____ Ext ____
Night Phone ___-___-_____ Ext ____
Manager Name _____

Description -
Designated employee 3400 BOE# _____
Program element number 2225 Number of Units _____
Current Status 01 EPA ID # _____
Mail Correspondence To 01 Inspection Code __

Number of TANKS linked to this PROGRAM record 000
F=Find E=Enter U=Update D=Delete S=Switch Page 1 12:16:29p

NOV 18 1996

DRAFT

SAN MATEO COUNTY

DEPARTMENT OF HEALTH SERVICES - ENVIRONMENTAL HEALTH
455 County Center, Redwood City, CA 94063
(650) 363-4305

OFFICIAL INSPECTION REPORT / FIELD OBSERVATIONS

Site Name: S-STOR DEVELOPMENT

Site Address: 134 MAPLE ST.

Page 1 of 1
Date: 6-8-04
Program: VSRG
Site Computer #
APN:

FACILITY CLOSED WITHOUT NOTIFYING SMCEH

DRAFT

Inspector: [signature]

Received By:

Hazardous Waste Generator Inspection Report

San Mateo County Division of Environmental Health
590 Hamilton Street, 4th Floor, Redwood City, CA 94063
Telephone: (415) 363-4305

Record ID#: _____ P/E: 22_____ Inspected By: BLOWIN Date: 10/1/97

Business Contact: NICK MARSELLI Work Phone: _____

Facility Name: FIVE STAR DEVELOPMENT EPA ID#: _____

Facility Street Address: 134 MAPLE City: RWC Zip: _____

Mailing Address: _____ City: _____ State: _____ Zip: _____

Business Description: _____

Business Owner Name: _____ Owner Phone: _____

Owner Address: _____

Driver's License #: _____ Expiration Date: _____ Reinspection Date: _____

DRAFT

ITEM	SECTION #	RECORDKEEPING	IN COMPLIANCE
1	22-66262.12(a)	Generator has EPA Identification Number	(N/A) (Yes) (No)
2	22-66263.42(e)	Manifests or waste pickup receipts on file at facility	(N/A) (Yes) (No)
3	22-66262.40(c)	Test results/waste analyses on file	(N/A) (Yes) (No)
4	22-66262.40(b)	Biennial Report on file	(N/A) (Yes) (No)
5	22-66265.16	Personnel training documented	(N/A) (Yes) (No)
		MANIFEST	
6	22-66262.20	Applicable sections completed	(N/A) (Yes) (No)
7	22-66262.23(a)(4)	Manifest copies submitted to Cal/EPA within 30 days	(N/A) (Yes) (No)
8	22-66262.12(c)	Hazardous waste hauled by a registered transporter	(N/A) (Yes) (No)
9	22-66262.12(c)	Hazardous waste shipped to a permitted facility	(N/A) (Yes) (No)
10	22-66262.42(a)	Signed TSDF manifest copies received	(N/A) (Yes) (No)
11	22-66262.40(b)	Exception Report on file	(N/A) (Yes) (No)
12	22-67430.1	Extremely hazardous waste disposed of with permit	(N/A) (Yes) (No)
13	22-66268.7(a)(6)	Land Disposal Restriction notification on file	(N/A) (Yes) (No)

ITEM	SECTION #	WASTE DETERMINATION	IN COMPLIANCE
14	22-66262.11	Hazardous waste determination made for all waste	(N/A) (Yes) (No)
		EMERGENCY PREPAREDNESS/CONTINGENCY PLAN	
15	22-66265.31	Facility operated to minimize possibility of fire, explosion, or unplanned release of hazardous waste to air, soil or surface water which could threaten human health or the environment	(N/A) (Yes) (No)
16	22-66265.32	Facility has adequate emergency response equipment; internal communication, fire extinguisher(s) and spill control	(N/A) (Yes) (No)
17	22-66265.33/.34	Emergency equipment is adequately maintained and accessible	(N/A) (Yes) (No)
18	22-66265.35	Aisle space is adequately maintained for emergency response	(N/A) (Yes) (No)
19	22-66265.51/.53	Facility has a copy of a written hazardous waste contingency plan or Hazardous Material Business Plan on-site	(N/A) (Yes) (No)
		HAZARDOUS WASTE STORAGE	
20	HSC 25189.5 HSC 25201	Generator does not accept, treat or dispose of hazardous waste on-site without a permit	(N/A) (Yes) (No)
21	22-66262.34(a)	Generator does not store more than 100 kg (27 gal) on-site for longer than 90 days without a permit	(N/A) (Yes) (No)
22	22-66262.34(e)(1)	Generator uses "Satellite Accumulation" exemption for storage	(N/A) (Yes) (No)
23	22-66262.34(f)(3)	Each container is labeled with: "Hazardous Waste", waste composition, hazardous properties and generator information	(N/A) (Yes) (No)
24	22-66262.34(f)(1)	Accumulation start date clearly marked and visible on each container	(N/A) (Yes) (No)
		CONTAINER MANAGEMENT	
25	22-66265.171	Hazardous waste containers in good condition	(N/A) (Yes) (No)
26	22-66265.172	Hazardous waste compatible with holding containers	(N/A) (Yes) (No)
27	22-66265.173	Hazardous waste containers closed when not in use	(N/A) (Yes) (No)
28	22-66265.174	Hazardous waste storage area inspected weekly	(N/A) (Yes) (No)

DRAFT

ITEM	SECTION #	CONTAINER MANAGEMENT (Con't)	IN COMPLIANCE
29	22-66265.177(a)	No mixing of incompatible wastes	(N/A) (Yes) (No)
30	22-66265.177(c)	Storage of waste is in a secure area which minimizes the possibility of spills, mixing of incompatible and escape of materials from the area	(N/A) (Yes) (No)
31	22-66261.7	Empty containers are managed properly	(N/A) (Yes) (No)
		TANK MANAGEMENT	
32	22-66265.190-199	Waste stored in tank(s) in compliance with Article 10	(N/A) (Yes) (No)

WASTE GENERATED: **QUANTITY/MONTH**

WASTE OIL — ~2 DRUM/MONTH
THINNER — RECYCLED/SETTLED FOR REUSE
SLUDGE — SMALL AMOUNT

COMMENTS:

1. KEEP LOG WHICH VERIFIES WASTE OIL DISPOSAL
2. DOCUMENT SPILL + FIRE RESPONSE TRAINING
3. DECREASE CHEMICAL STACKING WHERE POSSIBLE
4. INSURE SPILL RESPONSE MATERIALS ARE ALWAYS AVAILABLE.
5. LABEL WASTE OIL CONTAINER.

Kelly Marcelli — Kelly Marcelli — 10-1-97
NAME — SIGNATURE — DATE

DRAFT

San Mateo Countywide
Stormwater Pollution Prevention Program
10 Twin Dolphin Dr., Suite C-200, Redwood City, CA 94065

Municipality: RWC
Date: 10/1/97
Inspector: BARNWELL
E.H. Record ID #:

Standard Stormwater Facility Inspection Report Form

Inspection conducted by: San Mateo County, Environmental Health Division, 590 Hamilton St., Redwood City, CA 94063

Reason for Inspection: ☐ First Inspection ☑ Routine Inspection ☐ Complaint ☐ Other | Facility location: Incorporated ☑ Unincorporated ☐

NAME OF FACILITY: FIVE STAR DEVELOPMENT | SITE ADDRESS: 134 MAPLE

CONTACT NAME	PHONE	BUSINESS TYPE/ACTIVITY	SIC

Is the facility covered under any other programs or permits?

☐ None ☐ Sanitary sewer
☐ Air quality ☐ Hazmat business plan ☐ Underground storage tanks ☐ Aboveground storage tanks
☐ Fire department(hazmat storage) ☐ Hazmat waste generator ☐ Retail food facility ☐ Other

Is the facility covered under a storm water permit? ☐ Does not need Coverage ☐ No, but may need to be (Refer to Regional Board)
☐ Individual ☐ General: Does the facility have a SWPPP? ☐ yes ☐ no

N/A = Not Applicable; POTENTIAL for Pollutant Exposure without BMPs: 1 = low potential, 2 = medium potential, 3 = high potential
ACTUAL Type of Discharge: BMP: 0 = BMPs are effective, 1 = BMPs are fairly/almost effective, 2 = BMPs are not effective, 3 = No BMPs are implemented
PEX = Pollutant Exposure, NSW = Non-Stormwater Discharge

AREAS OF ACTIVITY	N/A	POTENTIAL	ACTUAL BMP	ACTUAL PEX	ACTUAL NSW	REMARKS: Describe recommendations, requirements, and time to implement. Check box if remark is a *requirement.*
A. Outdoor Process/Manufacturing Areas	/					☐
B. Outdoor Material Storage Areas	/					☐
C. Outdoor Waste Storage/Disposal Areas	/					☐
D. Outdoor Vehicle and Heavy Equipment Storage, Maintenance Areas	/					☐
E. Outdoor Parking Areas and Access Roads	/					☐
F. Outdoor Wash Areas	/					☐
G. Rooftop Equipment	/					☐
H. Outdoor Drainage from Indoor Areas	/					☐
I. Other (describe):						☐

Outreach material distributed: STOPPP Brochure ☑ Industrial Brochure ☐ BMP Information ☐

The existing operational practices of the facility ☑ Do / ☐ Do Not reduce pollutant discharge to the storm drain system to the maximum extent practicable.

ADDITIONAL COMMENTS/REMARKS

☐ Facility map available ☐ See attached for more comments

PRIORITY FOR RE-INSPECTION: ☐ First ☐ Second ☐ Third

ENFORCEMENT: ☐ None ☐ Verbal Notice ☐ Warning Notice ☐ Informal Violation ☐ Formal Violation ☐ Legal Action

Received by - Facility Representative Signature: _____

Print Name & Title of Facility Representative: _____

DRAFT

DRAFT



FIVE STAR DEVELOPMENT

CA LICENSE #C10B284300

NICK MARCELLI

1275 HAWES ST

~~9 CERRITO PLACE~~

REDWOOD CITY, CA 94061

PHONE (415) 364-9835
PAGER (415) 406-0191
MOBIL (415) 265-8274

Hazardous Waste Generator Inspection Report

San Mateo County Division of Environmental Health
590 Hamilton Street, 4th Floor, Redwood City, CA 94063
Telephone: (415) 363-4305

Record ID#: _____ P/E: 22____ Inspected By: BROWN Date: 11/13/96

Business Contact: Nick MARCELLI Work Phone: 364-9835

Facility Name: 2134 MAPLE EPA ID#: _____

Facility Street Address: FIVE STAR DEVEL. City: RWC Zip: _____

Mailing Address: 1275 HAWES City: RWC State: _____ Zip: _____

Street: _____ City: _____ Zip: _____

Business Description: CONSTRUCTION

Business Owner Name: _____ Owner Phone: _____

Owner Address: _____

Driver's License #: _____ Expiration Date: _____ Reinspection Date: _____

DRAFT

ITEM	SECTION #	RECORDKEEPING	IN COMPLIANCE
1	22-66262.12(a)	Generator has EPA Identification Number	(N/A) (Yes) (No)
2	22-66263.42(e)	Manifests or waste pickup receipts on file at facility	(N/A) (Yes) (No)
3	22-66262.40(c)	Test results/waste analyses on file	(N/A) (Yes) (No)
4	22-66262.40(b)	Biennial Report on file	(N/A) (Yes) (No)
5	22-66265.16	Personnel training documented	(N/A) (Yes) (No)
		MANIFEST	
6	22-66262.20	Applicable sections completed	(N/A) (Yes) (No)
7	22-66262.23(a)(4)	Manifest copies submitted to Cal/EPA within 30 days	(N/A) (Yes) (No)
8	22-66262.12(c)	Hazardous waste hauled by a registered transporter	(N/A) (Yes) (No)
9	22-66262.12(c)	Hazardous waste shipped to a permitted facility	(N/A) (Yes) (No)
10	22-66262.42(a)	Signed TSDF manifest copies received	(N/A) (Yes) (No)
11	22-66262.40(b)	Exception Report on file	(N/A) (Yes) (No)
12	22-67430.1	Extremely hazardous waste disposed of with permit	(N/A) (Yes) (No
13	22-66268.7(a)(6)	Land Disposal Restriction notification on file	(N/A) (Yes) (No)

Rev Aug. 1994

* HASN'T HAD PICK UP YET

ITEM	SECTION #	WASTE DETERMINATION	IN COMPLIANCE
14	22-66262.11	Hazardous waste determination made for all waste	(N/A) (Yes) (No)
		EMERGENCY PREPAREDNESS/CONTINGENCY PLAN	
15	22-66265.31	Facility operated to minimize possibility of fire; explosion, or unplanned release of hazardous waste to air, soil or surface water which could threaten human health or the environment	(N/A) (Yes) (No)
16	22-66265.32	Facility has adequate emergency response equipment; internal communication, fire extinguisher(s) and spill control	(N/A) (Yes) (No)
17	22-66265.33/.34	Emergency equipment is adequately maintained and accessible	(N/A) (Yes) (No)
18	22-66265.35	Aisle space is adequately maintained for emergency response	(N/A) (Yes) (No)
19	22-66265.51/.53	Facility has a copy of a written hazardous waste contingency plan or Hazardous Material Business Plan on-site	(N/A) (Yes) (No)
		HAZARDOUS WASTE STORAGE	
20	HSC 25189.5 HSC 25201	Generator does not accept, treat or dispose of hazardous waste on-site without a permit	(N/A) (Yes) (No)
21	22-66262.34(a)	Generator does not store more than 100 kg (27 gal) on-site for longer than 90 days without a permit	(N/A) (Yes) (No)
22	22-66262.34(e)(1)	Generator uses "Satellite Accumulation" exemption for storage	(N/A) (Yes) (No)
23	22-66262.34(f)(3)	Each container is labeled with: "Hazardous Waste", waste composition, hazardous properties and generator information	(N/A) (Yes) (No)
24	22-66262.34(f)(1)	Accumulation start date clearly marked and visible on each container	(N/A) (Yes) (No)
		CONTAINER MANAGEMENT	
25	22-66265.171	Hazardous waste containers in good condition	(N/A) (Yes) (No)
26	22-66265.172	Hazardous waste compatible with holding containers	(N/A) (Yes) (No)
27	22-66265.173	Hazardous waste containers closed when not in use	(N/A) (Yes) (No)
28	22-66265.174	Hazardous waste storage area inspected weekly	(N/A) (Yes) (No)

DRAFT

ITEM	SECTION #	CONTAINER MANAGEMENT (Con't)	IN COMPLIANCE
29	22-66265.177(a)	No mixing of incompatible wastes	(N/A) (Yes) (No)
30	22-66265.177(c)	Storage of waste is in a secure area which minimizes the possibility of spills, mixing of incompatible and escape of materials from the area	(N/A) (Yes) (No)
31	22-66261.7	Empty containers are managed properly	(N/A) (Yes) (No)
		TANK MANAGEMENT	
32	22-66265.190-199	Waste stored in tank(s) in compliance with Article 10	(N/A) (Yes) (No)

WASTE GENERATED: **QUANTITY/MONTH**

WASTE THINNER / SLUDGE ?

OIL ?

COMMENTS:

(1) WASTE PAINT, WHETHER OIL OR WATER BASED PAINT, MUST BE COLLECTED FOR PROPER RECYCLING

(2) RECOMMEND REDUCED STORAGE (DECREASED STACKING) OF ANY CHEMICALS

(3) KEEP A LOG OF WASTE OIL DISPOSAL FOR COMPANY TRUCKS

(4) LABEL SETTLING THINNER APPROPRIATELY, COLLECT & LABEL SLUDGE AS HAZARDS WASTE

NAME SIGNATURE DATE

DRAFT

PERMIT EXPIRES 9/8/94

ENVIRONMENTAL HEALTH PERMIT

San Mateo County Department of Health Services
590 Hamilton Street, Redwood City, CA 94063

Permit to REMOVE UNDERGROUND HAZARDOUS MATERIAL
2TKS

~~CONDITIONAL: CALL INSPECTOR TO SCHEDULE REMOVAL~~
AND PAY REGISTRATION FEES $234.00 AND $56.00 ST SURCHARGE
TOTAL $340.00

At 134 MAPLE ST RWC

No.	HM-063-94
Date	6/8/94
Fee paid	$780.00
APN	5330211
Ordinance No.	02865

ISSUED BY T.BELASCO

This permit has been granted to:

OWNER
NICK MARCELLI
9 CERRITO PLACE
REDWOOD CITY, CA 94063

Contractor:

INTERSTATE
MIKE PARIANI
128 S MAPLE ST
SO SAN FRANCISCO, CA 94080

PREPARED BY KCHAVEZ

For the Director of
Environmental Health

THIS PERMIT IS NONTRANSFERABLE AND MUST BE ON JOB SITE
Permit shall be void if construction is not started
within 90 days of date of this permit.

CC: FIRE — BUILDING DEPT RWC

DRAFT

recycled paper

Kathy,
Please delete
and return
to me. Thanks
Teresa

SEP 07 1994

Kathy
Please issue
removal permit.
Thanks
Teresa

JUN 14 1994

DRAFT

Fee 780.00
Date Paid _____
Receipt # _____

San Mateo County Division of Environmental Health
590 Hamilton St., Redwood City, CA 94063

NOTE: Proof of Financial Responsibility must be provided at time of application submittal.

SAN MATEO COUNTY ENVIRONMENTAL HEALTH

2 tks
330211

APPLICATION FOR PERMIT TO CLOSE UNDERGROUND HAZARDOUS MATERIAL STORAGE TANK

VALID FOR 90 DAYS AFTER APPROVED

MAY 26 1994

RECEIVED

1. Facility Information

16991

Name of Facility	Type of Business	
MARCELLI LIGHTING		
Street Address	**City**	**Zip Code**
134 Maple Street	Redwood City	94063
Contact Person	**Title**	**Telephone**
Nick Marcelli	Owner	364-9835
Owner Name (Corporation, Agency, or Individual)		**Telephone**
Nick Marcelli		364-9835
Street Address	**City**	**Zip Code**
9 Cerrito Place	Redwood City	94063
Generator EPA ID #		

2. Contractor Removing Tank

Company Name and State License #	Contact Person	Telephone
Interstate	Mike Parjani	952-7333
Street Address	**City**	**Zip Code**
128 S. Maple ST.	S. San Francisco	94080

3. Soil/Water Analysis Laboratory and Sampler

Company Name (LAB), State Certified #	Contact Person	Telephone
Applied Science Engineering Inc.	Fred Yokie	363-2445
Street Address	**City**	**Zip Code**
P.O. Box 1166	San Carlos	94070
Company Name (SAMPLER)	**Contact Person**	**Telephone**
Applied Science Engineering Inc.	Fred Yokie	363-2445
Street Address	**City**	**Zip Code**
P.O. Box 1166	San Carlos	94070

4. Hazardous Waste Hauler (Tank and/or Rinsate)

Company Name	Contact Person	Telephone
H & H Ship Service	S. Parson	543-9835
Street Address	**City**	**Zip Code**
220 China Basin ST.	San Francisco	94107

DRAFT

1. Will tank(s) be cleaned on site? (yes or no) NO .

If "yes", the effluent is classified as a hazardous waste and must be transported by a registered hazardous waste hauler to a licensed treatment, storage, or disposal (TSD) Facility. Transporter EPA ID # _____

Please explain cleaning procedure (refer to item 8 on page 4). _____

If "no", the tank is classified as a hazardous waste and must be transported by a registered hazardous waste hauler to a licensed treatment, storage, and disposal (TSD) Facility. Transporter EPA ID # _____

Destination of Tank(s)		
H+H Ship Service 220 China Basin ST. S.F 94107		
Company Name, EPA ID # ~~200 China~~ H+H Ship Service CAD004771168	Contact Person J. Parsons	Telephone 543-4535
Street Address 200 China Basin	City S.F.	Zip Code 94107

6. Tank Identification & Construction

Tank #	Year Tank Installed	Volume of Tank (Gallons)	☒ Cathodic Protection?
Unknown 1	1979	500 Gallons	

☒ Single-wall or ☐ Double-wall?
Primary Containment — ☒ Steel ☐ Fiberglass ☐ Concrete ☐ Other? _____

7. Chemical Composition of Materials Currently or Previously Stored in Tank.

☒ Unleaded ☐ Super Unleaded ☐ Regular ☐ Premium ☐ Diesel ☐ Waste Oil
☐ Other? _____

8. Reason for Removal

☐ Tank leak ☐ System Upgrade ☑ Discontinued use ☐ Other? _____

9. Certification by Applicant

I hereby certify that I have read and will follow the "Procedure for the Removal of Underground Storage Tanks" printed on the attached page.

10. Name of Applicant (Owner or Owner's Representative)

Signature [signature] Date 5-26-94

11. Approved Permit # _____ **Returned for Correction** _____

Inspector [signature] Date 6/1/94

DRAFT

1. Will tank(s) be cleaned on site? (yes or no) NO .

If "yes", the effluent is classified as a hazardous waste and must be transported by a registered hazardous waste hauler to a licensed treatment, storage, or disposal (TSD) Facility. Transporter EPA ID # _____

Please explain cleaning procedure (refer to item 8 on page 4). _____

If "no", the tank is classified as a hazardous waste and must be transported by a registered hazardous waste hauler to a licensed treatment, storage, and disposal (TSD) Facility. Transporter EPA ID # _____

Destination of Tank(s)		94107
H H ship SERVICE 220 CHINA BASIN ST. SF		
Company Name, EPA ID #	Contact Person	Telephone
H+H shipSERVICE CAD047716	S PARSON	543-4835
Street Address	City	Zip Code
220 CHINA BASIN	SAN FRANCISCO	94107

6. Tank Identification & Construction

Tank #	Year Tank Installed	Volume of Tank (Gallons)	
1	79	1000	☒ Cathodic Protection?

☒ Single-wall or ☐ Double-wall?

Primary Containment — ☒ Steel ☐ Fiberglass ☐ Concrete ☐ Other? _____

7. Chemical Composition of Materials Currently or Previously Stored in Tank.

☒ Unleaded ☐ Super Unleaded ☐ Regular ☐ Premium ☒ Diesel ☐ Waste Oil

☐ Other? _____

8. Reason for Removal

☐ Tank leak ☐ System Upgrade ☒ Discontinued use ☐ Other? _____

9. Certification by Applicant

I hereby certify that I have read and will follow the "Procedure for the Removal of Underground Storage Tanks" printed on the attached page.

10. Name of Applicant (Owner or Owner's Representative)

Signature _____ Date 4-26-94

11. Approved Permit # _____ **Returned for Correction** _____

Inspector Luisa Blasco Date 6/1/94

DRAFT

PROCEDURE FOR THE REMOVAL OF UNDERGROUND STORAGE TANKS

1. Complete the "Application for Permit to Close Underground Hazardous Materials Storage Tank" (pages 1&2). Please complete one application per tank.

2. Contact the Local Fire and Building Agency for their policy regarding closure of underground storage tanks.

3. Submit the completed application, designated fee, written workmen's compensation insurance verification and plot plan drawing to the San Mateo County Environmental Health Services Division. The drawing should consist of an aerial view of the facility at which the tank(s) are located and should include the following information:

    a. Scale
    b. North arrow
    c. Property line
    d. Location of structures near the tank(s)
    e. Location of relevant existing equipment, including the tank(s) to be removed, associated piping, and fuel dispensers.
    f. Area roadways

    Also, submit State Water resources Control Board Part A form for the facility, and Part B form for each tank closed. These forms are available from the Environmental Health Services Division.

4. In order to determine the extent of any contamination, soil and/or water samples must be taken from the excavation pit after the tank(s) are removed. Soil samples must also be taken every twenty (20) feet along piping runs at the interface of backfill material and native soil. Soil samples will be required to be taken from the excavation spoils pile (approximately one discrete sample per 20 cubic yards). The samples must be collected by a qualified, independent third party. All samples shall be protected against contamination and/or degradation during their collection, transport, and analysis. A written analysis report, including chain of custody documentation, and sample location map with measurements including depth, must be submitted to the Environmental Health Services Division within twenty (20) working days following removal of the tank(s). This report is subject to review and must be approved in order to be recognized as valid.

5. A groundwater investigation will be required if any of the following conditions exist or if a representative of the Environmental Health Services Division deems one necessary to assure that the public health and safety is protected:

    a. Soil contamination concentrations exceeding 100 ppm total petroleum hydrocarbons (TPH) or total oil and grease (TOG) within two feet of native soil beneath the tank.

    b. Detectable concentrations of petroleum hydrocarbon are found in soil at or below the seasonable high groundwater level.

    c. Detectable levels of any petroleum hydrocarbon in soil below the tank and the soil contains layers of sand, gravel and/or other high permeability material.

    d. Ground water in excavation pit has detectable levels of any petroleum hydrocarbon. (Pit may be pumped and allowed to recharge).

    e. Site has history of leaks or tanks are in poor condition upon removal.

DRAFT

6. It must be demonstrated to a representative of the Environmental Health Services Division that residual product and any associated waste (i.e.sludge) have been removed from the interior of the tank(s) prior to purging. Documentation of proper disposal of residual product and associated waste using an Uniform Hazardous Waste Manifest (UHWM) must be submitted to the Environmental Health Services Division within twenty (20) working days following removal of the tank(s).

7. It must be demonstrated to a representative of the Environmental Health Services Division that tank(s) have been adequately pruged and that no explosive hazard exists at the time of tank(s) removal i.e. 10% of lower Explosive Limit (% LEL) or 5% oxygen.

8. Underground tank(s) and associated piping removed from excavations must be shipped under UHWM to a permitted treatment, storage and disposal (TSD) facility or Class I landfill Underground tanks may be cleaned using a high-pressure washer to reduce the % LEL. This process does not render these tank(s) non-hazardous and these tank(s) must be hauled under a hazardous waste manifest. Only tank(s) cleaned by a State Department of Health Services (DOHS) permitted tank cleaner may be disposed of as non-hazardous waste. Copies of all UHWM must be submitted to the Environmental Health Services Division within twenty (20) working days following removal of the tank(s).

9. Any piping associated with the tank(s) which is to remain underground must be flushed of all residual product and capped or sealed to the satisfaction of the Environemental Health Services Division.

10. Transported tanks must have all opening sealed, except for opening atop the tank fitted for ventilation with "T" or other device which will preclude rain entering a stored tank.

11. The Environmental Health Services Division must be notified a minimum of seven days(7) prior to commencement of work to schedule an inspection. Please note that the inspection must be confirmed with the district inspector. A representative of this office must be present at the time of removal.

12. An additional hourly fee will be charged for inspection time exceeding three hours.

13. Site safety plan must be available for review at job site.

THE ABOVE ARE GENERAL PROCEDURES-MODIFICATIONS MAY BE NECESSARY IN CERTAIN CASES. IF YOU HAVE ANY QUESTIONS, OR OTHERWISE NEED ASSISTANCE, PLEASE CALL THE SAN MATEO COUNTY ENVIRONMENTAL HEALTH SERVICES DIVISION AT (415) 363-4305.

I hereby certify that I have read and will follow the "Procedures for the Removal of Underground Storage Tanks"

M A Mueller 5-26-94

Signature Date

DRAFT

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM A

COMPLETE THIS FORM FOR EACH FACILITY/SITE

MARK ONLY ONE ITEM: [X] 1 NEW PERMIT [ ] 2 INTERIM PERMIT [ ] 3 RENEWAL PERMIT [ ] 4 AMENDED PERMIT [ ] 5 CHANGE OF INFORMATION [ ] 6 TEMPORARY SITE CLOSURE [X] 7 PERMANENTLY CLOSED SITE

I. FACILITY/SITE INFORMATION & ADDRESS - (MUST BE COMPLETED)

DBA OR FACILITY NAME	NAME OF OPERATOR	
MARCELLI LIGHTING	NICK MARCELLI	
ADDRESS: 194 MAPLE ST.	NEAREST CROSS STREET: ELCAMINO	PARCEL # (OPTIONAL):
CITY NAME: REDWOOD city	STATE: CA ZIP CODE: 94063	SITE PHONE # WITH AREA CODE: NONE

✓ BOX TO INDICATE: [ ] CORPORATION [X] INDIVIDUAL [ ] PARTNERSHIP [ ] LOCAL-AGENCY DISTRICTS [ ] COUNTY-AGENCY [ ] STATE-AGENCY [ ] FEDERAL-AGENCY

TYPE OF BUSINESS	✓ IF INDIAN RESERVATION OR TRUST LANDS	# OF TANKS AT SITE	E. P. A. I. D.# (optional)
[ ] 1 GAS STATION [ ] 2 DISTRIBUTOR [ ] 3 FARM [ ] 4 PROCESSOR [X] 5 OTHER	[ ]	2	

EMERGENCY CONTACT PERSON (PRIMARY)		EMERGENCY CONTACT PERSON (SECONDARY) - optional	
DAYS: NAME (LAST, FIRST): MARCELLI, NICK	PHONE # WITH AREA CODE: 364-9835	DAYS: NAME (LAST, FIRST):	PHONE # WITH AREA CODE:
NIGHTS: NAME (LAST, FIRST):	PHONE # WITH AREA CODE:	NIGHTS: NAME (LAST, FIRST):	PHONE # WITH AREA CODE:

II. PROPERTY OWNER INFORMATION - (MUST BE COMPLETED)

NAME	CARE OF ADDRESS INFORMATION		
Nick MARCELLI	SAME		
MAILING OR STREET ADDRESS: 9 CERRITO PL	✓ box to indicate: [ ] INDIVIDUAL [ ] LOCAL-AGENCY [ ] STATE-AGENCY [ ] CORPORATION [ ] PARTNERSHIP [ ] COUNTY-AGENCY [ ] FEDERAL-AGENCY		
CITY NAME: REDWOOD city	STATE: CA	ZIP CODE: 94061	PHONE # WITH AREA CODE: 364-9835

III. TANK OWNER INFORMATION - (MUST BE COMPLETED)

NAME OF OWNER	CARE OF ADDRESS INFORMATION		
SAME AS above			
MAILING OR STREET ADDRESS	✓ box to indicate: [ ] INDIVIDUAL [ ] LOCAL-AGENCY [ ] STATE-AGENCY [ ] CORPORATION [ ] PARTNERSHIP [ ] COUNTY-AGENCY [ ] FEDERAL-AGENCY		
CITY NAME	STATE	ZIP CODE	PHONE # WITH AREA CODE

IV. BOARD OF EQUALIZATION UST STORAGE FEE ACCOUNT NUMBER - Call (916) 739-2582 if questions arise.

TY (TK) HQ 44-

V. LEGAL NOTIFICATION AND BILLING ADDRESS

Legal notification and billing will be sent to the tank owner unless box I or II is checked.

CHECK ONE BOX INDICATING WHICH ABOVE ADDRESS SHOULD BE USED FOR LEGAL NOTIFICATIONS AND BILLING: I. [ ] II. [ ] III. [ ]

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	APPLICANT'S TITLE	DATE MONTH/DAY/YEAR
Nick MARCELLI	owner	5-26-94

LOCAL AGENCY USE ONLY

COUNTY #	JURISDICTION #	FACILITY #
41	000	330211

LOCATION CODE - *OPTIONAL*	CENSUS TRACT # - *OPTIONAL*	SUPVISOR - DISTRICT CODE - *OPTIONAL*
33		604 J. Blasco

THIS FORM MUST BE ACCOMPANIED BY AT LEAST (1) OR MORE PERMIT APPLICATION - FORM B, UNLESS THIS IS A CHANGE OF SITE INFORMATION ONLY.

FORM A (9-90) FOR0003A-R2

DRAFT

INSTRUCTIONS FOR COMPLETING FORM "A"

GENERAL INSTRUCTIONS:

1. One FORM "A" shall be completed for all NEW PERMITS, PERMIT CHANGES or any FACILITY/SITE INFORMATION CHANGES.
2. SUBMIT ONLY ONE (1) FORM "A" for a Facility/Site, regardless of the number of tanks located at the site.
3. This form should be completed by either the PERMIT APPLICANT or the LOCAL AGENCY UNDERGROUND TANK INSPECTOR.
4. Please type or print clearly all requested information.
5. Use a hard point writing instrument, you are making 3 copies.

TOP OF FORM: "MARK ONLY ONE ITEM"

1. Mark an (X) in the box next to the item that best describes the reason the form is being completed.

I. FACILITY/SITE INFORMATION & ADDRESS (MUST BE COMPLETED)

1. Record name and address (physical location) of the underground tank(s).
   NOTE: Address MUST have a valid physical location including city, state, and zip code.
   P.O. BOX NUMBER ARE NOT ACCEPTABLE.
   Include nearest cross street and name of the operator.
2. Phone number must have an area code. If the night number is the same, write "SAME" in proper location.
3. Check the appropriate box for TYPE OF BUSINESS OWNERSHIP (ex. CORPORATION, INDIVIDUAL, etc.)
4. Check the appropriate box for TYPE OF BUSINESS.
5. If Facility/Site is located on land within an indian reservation or other indian trust lands, check the box marked "YES".
6. Indicate the NUMBER of TANKS at this SITE.
7. Record the E.P.A. ID # or write "NONE" in the space provided.

II. PROPERTY OWNER INFORMATION & ADDRESS (MUST BE COMPLETED)

1. Complete all items in this section, unless all items are the same as SECTION I; if the same, write "SAME AS SITE" across this section. Be sure to check PROPERTY OWNERSHIP TYPE box.

III. TANK OWNER INFORMATION & ADDRESS (MUST BE COMPLETED)

1. Complete all items in this section, unless all items are the same as SECTION I; If the same, write "SAME AS SITE" across this section. Be sure to check TANK OWNERSHIP TYPE box.

IV BOARD OF EQUALIZATION UST STORAGE FEE ACCOUNT NUMBER (MUST BE COMPLETED)

Enter your Board of Equalization (BOE) UST storage fee account number which is required before your permit application can be processed. Registration with the BOE will ensure that you will receive a quarterly storage fee return requesting the $0.0025 (6 mills) per gallon fee due on the number of gallons placed in your USTs. The BOE will code persons exempt from paying the storage fee so returns will not be sent. If you do not have an account number with the BOE or if you have any questions regarding the fee or exemptions, please call the BOE at 916-739-2582 or write to the BOE at the following address: Board of Equalization, Environmental Fees Unit, P.O. Box 942879, Sacramento, CA 94279-0001.

V. LOCAL NOTIFICATION AND BILLING ADDRESS

1. Check ONE BOX for the address that will be used for BOTH LOCAL AND BILLING NOTIFICATIONS.

APPLICANT MUST SIGN AND DATE THE FORM AS INDICATED.

INSTRUCTION FOR THE LOCAL AGENCIES

The county and jurisdiction numbers are predetermined and can be obtained by calling the State Board (916)739-2421. The facility number may be assigned by the local agency; however, this number must be numerical and cannot contain an alphabet. If the local agency prefers the State Board to assign the facility number, please leave it blank.

IT IS THE RESPONSIBILITY OF THE LOCAL AGENCY THAT INSPECTS THE FACILITY TO VERIFY THE ACCURACY OF THE INFORMATION. THIS APPLICATION CANNOT BE PROCESSED IF THE BOE ACCOUNT NUMBER IS NOT FILLED IN. THE LOCAL AGENCY IS RESPONSIBLE FOR THE COMPLETION OF THE "LOCAL AGENCY USE ONLY" INFORMATION BOX AND FOR FORWARDING ONE FORM "A" AND ASSOCIATED FORM "B"(s) TO THE FOLLOWING ADDRESS.

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
C/O S.W.R.C.B.P.S.
DATA PROCESSING CENTER
P.O. BOX 527
PARAMOUNT, CA 90723

DRAFT

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM A

COMPLETE THIS FORM FOR EACH FACILITY/SITE

MARK ONLY ONE ITEM: [X] 1 NEW PERMIT [ ] 2 INTERIM PERMIT [ ] 3 RENEWAL PERMIT [ ] 4 AMENDED PERMIT [ ] 5 CHANGE OF INFORMATION [ ] 6 TEMPORARY SITE CLOSURE [X] 7 PERMANENTLY CLOSED SITE

I. FACILITY/SITE INFORMATION & ADDRESS - (MUST BE COMPLETED)

DBA OR FACILITY NAME	NAME OF OPERATOR	
MARCELLI LIGHTING	NICK MARCELLI	
ADDRESS: 1294 MAPLE ST	NEAREST CROSS STREET: EL CAMINO	PARCEL # (OPTIONAL)
CITY NAME: REDWOOD city	STATE: CA / ZIP CODE: 94063	SITE PHONE # WITH AREA CODE: none

✓ BOX TO INDICATE: [ ] CORPORATION [X] INDIVIDUAL [ ] PARTNERSHIP [ ] LOCAL-AGENCY DISTRICTS [ ] COUNTY-AGENCY [ ] STATE-AGENCY [ ] FEDERAL-AGENCY

TYPE OF BUSINESS			IF INDIAN RESERVATION OR TRUST LANDS	# OF TANKS AT SITE	E. P. A. I. D.# (optional)
[ ] 1 GAS STATION	[ ] 2 DISTRIBUTOR	[ ] 5 OTHER	[ ]	2	
[ ] 3 FARM	[ ] 4 PROCESSOR				

EMERGENCY CONTACT PERSON (PRIMARY)

DAYS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE
MARCELLI NICK	364-4835
NIGHTS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE

EMERGENCY CONTACT PERSON (SECONDARY) - optional

DAYS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE
NIGHTS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE

II. PROPERTY OWNER INFORMATION - (MUST BE COMPLETED)

NAME	CARE OF ADDRESS INFORMATION		
Nick MARCELLI	SAME		
MAILING OR STREET ADDRESS: 1294 MAPLE PL	✓ box to indicate [ ] INDIVIDUAL [ ] LOCAL-AGENCY [ ] STATE-AGENCY		
	[ ] CORPORATION [ ] PARTNERSHIP [ ] COUNTY-AGENCY [ ] FEDERAL-AGENCY		
CITY NAME: REDWOOD city	STATE: CA	ZIP CODE: 94061	PHONE # WITH AREA CODE: 364-4835

III. TANK OWNER INFORMATION - (MUST BE COMPLETED)

NAME OF OWNER	CARE OF ADDRESS INFORMATION		
SAME AS above			
MAILING OR STREET ADDRESS	✓ box to indicate [ ] INDIVIDUAL [ ] LOCAL-AGENCY [ ] STATE-AGENCY		
	[ ] CORPORATION [ ] PARTNERSHIP [ ] COUNTY-AGENCY [ ] FEDERAL-AGENCY		
CITY NAME	STATE	ZIP CODE	PHONE # WITH AREA CODE

IV. BOARD OF EQUALIZATION UST STORAGE FEE ACCOUNT NUMBER - Call (916) 739-2582 if questions arise.

TY (TK) HQ 44 - [ ][ ][ ][ ][ ][ ]

V. LEGAL NOTIFICATION AND BILLING ADDRESS

Legal notification and billing will be sent to the tank owner unless box I or II is checked.

CHECK ONE BOX INDICATING WHICH ABOVE ADDRESS SHOULD BE USED FOR LEGAL NOTIFICATIONS AND BILLING: I. [ ] II. [ ] III. [ ]

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	APPLICANT'S TITLE	DATE MONTH/DAY/YEAR
Nick MARCELLI	owner	5-26-94

LOCAL AGENCY USE ONLY

COUNTY #	JURISDICTION #	FACILITY #
41	000	330211

LOCATION CODE - *OPTIONAL*	CENSUS TRACT # - *OPTIONAL*	SUPVISOR - DISTRICT CODE - *OPTIONAL*
55		6051 J Bauer

THIS FORM MUST BE ACCOMPANIED BY AT LEAST (1) OR MORE PERMIT APPLICATION - FORM B, UNLESS THIS IS A CHANGE OF SITE INFORMATION ONLY.

FORM A (9-90) FOR0033A-R2

DRAFT

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM B

COMPLETE A SEPARATE FORM FOR EACH TANK SYSTEM.

MARK ONLY ONE ITEM: ☐ 1 NEW PERMIT ☐ 2 INTERIM PERMIT ☐ 3 RENEWAL PERMIT ☐ 4 AMENDED PERMIT ☐ 5 CHANGE OF INFORMATION ☐ 6 TEMPORARY TANK CLOSURE ☐ 7 PERMANENTLY CLOSED ON SITE ☒ 8 TANK REMOVED

DBA OR FACILITY NAME WHERE TANK IS INSTALLED: MARCELLI LIGHTING / 34 Knuppe Rd RC

I. TANK DESCRIPTION

COMPLETE ALL ITEMS -- SPECIFY IF UNKNOWN

A. OWNER'S TANK I. D. # UNKNOWN	B. MANUFACTURED BY:
C. DATE INSTALLED (MO/DAY/YEAR) 79	D. TANK CAPACITY IN GALLONS: 10000

II. TANK CONTENTS

IF A-1 IS MARKED, COMPLETE ITEM C.

A. ☒ 1 MOTOR VEHICLE FUEL ☐ 2 PETROLEUM ☐ 3 CHEMICAL PRODUCT ☐ 4 OIL ☐ 80 EMPTY ☐ 95 UNKNOWN

B. ☒ 1 PRODUCT ☐ 2 WASTE

C. ☐ 1a REGULAR UNLEADED ☐ 1b PREMIUM UNLEADED ☐ 2 LEADED ☒ 3 DIESEL ☐ 4 GASAHOL ☐ 5 JET FUEL ☐ 6 AVIATION GAS ☐ 7 METHANOL ☐ 99 OTHER (DESCRIBE IN ITEM D. BELOW)

D. IF (A.1) IS NOT MARKED, ENTER NAME OF SUBSTANCE STORED C. A. S. # :

III. TANK CONSTRUCTION

MARK ONE ITEM ONLY IN BOXES A, B, AND C, AND ALL THAT APPLIES IN BOX D AND E

A. TYPE OF SYSTEM: ☐ 1 DOUBLE WALL ☐ 2 SINGLE WALL ☐ 3 SINGLE WALL WITH EXTERIOR LINER ☐ 4 SECONDARY CONTAINMENT (VAULTED TANK) ☐ 95 UNKNOWN ☐ 99 OTHER

B. TANK MATERIAL (Primary Tank): ☐ 1 BARE STEEL ☐ 2 STAINLESS STEEL ☐ 3 FIBERGLASS ☐ 4 STEEL CLAD W/ FIBERGLASS REINFORCED PLASTIC ☐ 5 CONCRETE ☐ 6 POLYVINYL CHLORIDE ☐ 7 ALUMINUM ☐ 8 100% METHANOL COMPATIBLE W/FRP ☐ 9 BRONZE ☐ 10 GALVANIZED STEEL ☒ 95 UNKNOWN ☐ 99 OTHER

C. INTERIOR LINING: ☐ 1 RUBBER LINED ☐ 2 ALKYD LINING ☐ 3 EPOXY LINING ☐ 4 PHENOLIC LINING ☐ 5 GLASS LINING ☐ 6 UNLINED ☒ 95 UNKNOWN ☐ 99 OTHER

IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? YES ___ NO ___

D. CORROSION PROTECTION: ☐ 1 POLYETHYLENE WRAP ☐ 2 COATING ☐ 3 VINYL WRAP ☐ 4 FIBERGLASS REINFORCED PLASTIC ☒ 5 CATHODIC PROTECTION ☐ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

E. SPILL AND OVERFILL: SPILL CONTAINMENT INSTALLED (YEAR) NONE OVERFILL PREVENTION EQUIPMENT INSTALLED (YEAR) NONE

IV. PIPING INFORMATION

CIRCLE A IF ABOVE GROUND OR U IF UNDERGROUND, BOTH IF APPLICABLE

A. SYSTEM TYPE: A U (SUCTION) A U 2 PRESSURE A U 3 GRAVITY A U 99 OTHER

B. CONSTRUCTION: A (U) 1 SINGLE WALL A U 2 DOUBLE WALL A U 3 LINED TRENCH A U 95 UNKNOWN A U 99 OTHER

C. MATERIAL AND CORROSION PROTECTION: A (U) 1 BARE STEEL A U 2 STAINLESS STEEL A U 3 POLYVINYL CHLORIDE (PVC) A U 4 FIBERGLASS PIPE A U 5 ALUMINUM A U 6 CONCRETE A (U) 7 STEEL W/ COATING A U 8 100% METHANOL COMPATIBLE W/FRP A U 9 GALVANIZED STEEL A (U) 10 CATHODIC PROTECTION A U 95 UNKNOWN A U 99 OTHER

D. LEAK DETECTION: ☐ 1 AUTOMATIC LINE LEAK DETECTOR ☐ 2 LINE TIGHTNESS TESTING ☐ 3 INTERSTITIAL MONITORING ☐ 99 OTHER NONE

V. TANK LEAK DETECTION

☐ 1 VISUAL CHECK ☐ 2 INVENTORY RECONCILIATION ☐ 3 VADOZE MONITORING ☐ 4 AUTOMATIC TANK GAUGING ☐ 5 GROUND WATER MONITORING ☐ 6 TANK TESTING ☐ 7 INTERSTITIAL MONITORING ☒ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

VI. TANK CLOSURE INFORMATION

1. ESTIMATED DATE LAST USED (MO/DAY/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING	3. WAS TANK FILLED WITH INERT MATERIAL?
94	NONE GALLONS	YES ☐ NO ☒

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE
Nick MARCELLI	5-26-94

LOCAL AGENCY USE ONLY

THE STATE I.D. NUMBER IS COMPOSED OF THE FOUR NUMBERS BELOW

STATE I.D.#	COUNTY #	JURISDICTION #	FACILITY #	TANK #
	41	0100	330211	1

PERMIT NUMBER	PERMIT APPROVED BY/DATE	PERMIT EXPIRATION DATE

THIS FORM MUST BE ACCOMPANIED BY A PERMIT APPLICATION - FORM A, UNLESS A CURRENT FORM A HAS BEEN FILED.
FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

DRAFT

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM B

COMPLETE A SEPARATE FORM FOR EACH TANK SYSTEM.

MARK ONLY ONE ITEM: ☐ 1 NEW PERMIT ☐ 2 INTERIM PERMIT ☐ 3 RENEWAL PERMIT ☐ 4 AMENDED PERMIT ☐ 5 CHANGE OF INFORMATION ☐ 6 TEMPORARY TANK CLOSURE ☐ 7 PERMANENTLY CLOSED ON SITE ☒ 8 TANK REMOVED

DBA OR FACILITY NAME WHERE TANK IS INSTALLED: MARCELLI LIGHTING / 4 Knight ST DC

I. TANK DESCRIPTION

COMPLETE ALL ITEMS -- SPECIFY IF UNKNOWN

A. OWNER'S TANK I. D. # UNKNOWN	B. MANUFACTURED BY:
C. DATE INSTALLED (MO/DAY/YEAR) 79	D. TANK CAPACITY IN GALLONS: 1000

II. TANK CONTENTS

IF A-1 IS MARKED, COMPLETE ITEM C.

A. ☒ 1 MOTOR VEHICLE FUEL ☐ 2 PETROLEUM ☐ 3 CHEMICAL PRODUCT ☐ 4 OIL ☐ 80 EMPTY ☐ 95 UNKNOWN

B. ☒ 1 PRODUCT ☐ 2 WASTE

C. ☐ 1a REGULAR UNLEADED ☐ 1b PREMIUM UNLEADED ☐ 2 LEADED ☒ 3 DIESEL ☐ 4 GASAHOL ☐ 5 JET FUEL ☐ 6 AVIATION GAS ☐ 7 METHANOL ☐ 99 OTHER (DESCRIBE IN ITEM D. BELOW)

D. IF (A.1) IS NOT MARKED, ENTER NAME OF SUBSTANCE STORED C. A. S. # :

III. TANK CONSTRUCTION

MARK ONE ITEM ONLY IN BOXES A, B, AND C, AND ALL THAT APPLIES IN BOX D AND E

A. TYPE OF SYSTEM: ☐ 1 DOUBLE WALL ☐ 2 SINGLE WALL ☐ 3 SINGLE WALL WITH EXTERIOR LINER ☐ 4 SECONDARY CONTAINMENT (VAULTED TANK) ☐ 95 UNKNOWN ☐ 99 OTHER

B. TANK MATERIAL (Primary Tank): ☐ 1 BARE STEEL ☐ 2 STAINLESS STEEL ☐ 3 FIBERGLASS ☐ 4 STEEL CLAD W/ FIBERGLASS REINFORCED PLASTIC ☐ 5 CONCRETE ☐ 6 POLYVINYL CHLORIDE ☐ 7 ALUMINUM ☐ 8 100% METHANOL COMPATIBLE W/FRP ☐ 9 BRONZE ☐ 10 GALVANIZED STEEL ☒ 95 UNKNOWN ☐ 99 OTHER

C. INTERIOR LINING: ☐ 1 RUBBER LINED ☐ 2 ALKYD LINING ☐ 3 EPOXY LINING ☐ 4 PHENOLIC LINING ☐ 5 GLASS LINING ☐ 6 UNLINED ☒ 95 UNKNOWN ☐ 99 OTHER

IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? YES ___ NO ___

D. CORROSION PROTECTION: ☐ 1 POLYETHYLENE WRAP ☐ 2 COATING ☐ 3 VINYL WRAP ☐ 4 FIBERGLASS REINFORCED PLASTIC ☒ 5 CATHODIC PROTECTION ☐ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

E. SPILL AND OVERFILL: SPILL CONTAINMENT INSTALLED (YEAR) NONE OVERFILL PREVENTION EQUIPMENT INSTALLED (YEAR) NONE

IV. PIPING INFORMATION

CIRCLE A IF ABOVE GROUND OR U IF UNDERGROUND, BOTH IF APPLICABLE

A. SYSTEM TYPE: (A) (U) SUCTION; A U 2 PRESSURE; A U 3 GRAVITY; A U 99 OTHER

B. CONSTRUCTION: A (U) 1 SINGLE WALL; A U 2 DOUBLE WALL; A U 3 LINED TRENCH; A U 95 UNKNOWN; A U 99 OTHER

C. MATERIAL AND CORROSION PROTECTION: A (U) 1 BARE STEEL; A U 2 STAINLESS STEEL; A U 3 POLYVINYL CHLORIDE (PVC); A U 4 FIBERGLASS PIPE; A U 5 ALUMINUM; A U 6 CONCRETE; A (U) 7 STEEL W/ COATING; A U 8 100% METHANOL COMPATIBLE W/FRP; A U 9 GALVANIZED STEEL; A (U) 10 CATHODIC PROTECTION; A U 95 UNKNOWN; A U 99 OTHER

D. LEAK DETECTION: ☐ 1 AUTOMATIC LINE LEAK DETECTOR ☐ 2 LINE TIGHTNESS TESTING ☐ 3 INTERSTITIAL MONITORING ☐ 99 OTHER NONE

V. TANK LEAK DETECTION

☐ 1 VISUAL CHECK ☐ 2 INVENTORY RECONCILIATION ☐ 3 VADOZE MONITORING ☐ 4 AUTOMATIC TANK GAUGING ☐ 5 GROUND WATER MONITORING ☐ 6 TANK TESTING ☐ 7 INTERSTITIAL MONITORING ☒ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

VI. TANK CLOSURE INFORMATION

1. ESTIMATED DATE LAST USED (MO/DAY/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING	3. WAS TANK FILLED WITH INERT MATERIAL?
7/91	NONE GALLONS	YES ☐ NO ☒

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE
Nick MARCELLI	5-26-94

LOCAL AGENCY USE ONLY

THE STATE I.D. NUMBER IS COMPOSED OF THE FOUR NUMBERS BELOW

STATE I.D.#	COUNTY #	JURISDICTION #	FACILITY #	TANK #
	44	000	33021	1

PERMIT NUMBER	PERMIT APPROVED BY/DATE	PERMIT EXPIRATION DATE

THIS FORM MUST BE ACCOMPANIED BY A PERMIT APPLICATION - FORM A, UNLESS A CURRENT FORM A HAS BEEN FILED.
FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

DRAFT

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM B

COMPLETE A SEPARATE FORM FOR EACH TANK SYSTEM.

MARK ONLY ONE ITEM: ☐ 1 NEW PERMIT ☐ 2 INTERIM PERMIT ☐ 3 RENEWAL PERMIT ☐ 4 AMENDED PERMIT ☐ 5 CHANGE OF INFORMATION ☐ 6 TEMPORARY TANK CLOSURE ☐ 7 PERMANENTLY CLOSED ON SITE ☒ 8 TANK REMOVED

DBA OR FACILITY NAME WHERE TANK IS INSTALLED: 134 Maple ST. R.C. 94063

I. TANK DESCRIPTION

COMPLETE ALL ITEMS -- SPECIFY IF UNKNOWN

A. OWNER'S TANK I. D. # Oh Knowa	B. MANUFACTURED BY:
C. DATE INSTALLED (MO/DAY/YEAR) 1979	D. TANK CAPACITY IN GALLONS: 500 Gallons

II. TANK CONTENTS

IF A-1 IS MARKED, COMPLETE ITEM C.

A. ☒ 1 MOTOR VEHICLE FUEL ☐ 2 PETROLEUM ☐ 3 CHEMICAL PRODUCT ☐ 4 OIL ☐ 80 EMPTY ☐ 95 UNKNOWN

B. ☒ 1 PRODUCT ☐ 2 WASTE

C. ☒ 1a REGULAR UNLEADED ☐ 1b PREMIUM UNLEADED ☐ 2 LEADED ☐ 3 DIESEL ☐ 4 GASAHOL ☐ 5 JET FUEL ☐ 6 AVIATION GAS ☐ 7 METHANOL ☐ 99 OTHER (DESCRIBE IN ITEM D. BELOW)

D. IF (A.1) IS NOT MARKED, ENTER NAME OF SUBSTANCE STORED C. A. S. # :

III. TANK CONSTRUCTION

MARK ONE ITEM ONLY IN BOXES A, B, AND C, AND ALL THAT APPLIES IN BOX D AND E

A. TYPE OF SYSTEM: ☐ 1 DOUBLE WALL ☒ 2 SINGLE WALL ☐ 3 SINGLE WALL WITH EXTERIOR LINER ☐ 4 SECONDARY CONTAINMENT (VAULTED TANK) ☐ 95 UNKNOWN ☐ 99 OTHER

B. TANK MATERIAL (Primary Tank): ☐ 1 BARE STEEL ☐ 2 STAINLESS STEEL ☐ 3 FIBERGLASS ☐ 4 STEEL CLAD W/ FIBERGLASS REINFORCED PLASTIC ☐ 5 CONCRETE ☐ 6 POLYVINYL CHLORIDE ☐ 7 ALUMINUM ☐ 8 100% METHANOL COMPATIBLE W/FRP ☐ 9 BRONZE ☐ 10 GALVANIZED STEEL ☒ 95 UNKNOWN ☐ 99 OTHER

C. INTERIOR LINING: ☐ 1 RUBBER LINED ☐ 2 ALKYD LINING ☐ 3 EPOXY LINING ☐ 4 PHENOLIC LINING ☐ 5 GLASS LINING ☐ 6 UNLINED ☒ 95 UNKNOWN ☐ 99 OTHER

IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? YES ___ NO ___

D. CORROSION PROTECTION: ☐ 1 POLYETHYLENE WRAP ☐ 2 COATING ☐ 3 VINYL WRAP ☐ 4 FIBERGLASS REINFORCED PLASTIC ☒ 5 CATHODIC PROTECTION ☐ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

E. SPILL AND OVERFILL: SPILL CONTAINMENT INSTALLED (YEAR) None OVERFILL PREVENTION EQUIPMENT INSTALLED (YEAR) None

IV. PIPING INFORMATION

CIRCLE A IF ABOVE GROUND OR U IF UNDERGROUND, BOTH IF APPLICABLE

A. SYSTEM TYPE: (A) (U) 1 SUCTION; A U 2 PRESSURE; A U 3 GRAVITY; A U 99 OTHER

B. CONSTRUCTION: A (U) 1 SINGLE WALL; A U 2 DOUBLE WALL; A U 3 LINED TRENCH; A U 95 UNKNOWN; A U 99 OTHER

C. MATERIAL AND CORROSION PROTECTION: A U 1 BARE STEEL; A U 2 STAINLESS STEEL; A U 3 POLYVINYL CHLORIDE (PVC); A U 4 FIBERGLASS PIPE; A U 5 ALUMINUM; A U 6 CONCRETE; A (U) 7 STEEL W/ COATING; A U 8 100% METHANOL COMPATIBLE W/FRP; A (U) 9 GALVANIZED STEEL; A (U) 10 CATHODIC PROTECTION; A U 95 UNKNOWN; A U 99 OTHER

D. LEAK DETECTION: ☐ 1 AUTOMATIC LINE LEAK DETECTOR ☐ 2 LINE TIGHTNESS TESTING ☐ 3 INTERSTITIAL MONITORING ☐ 99 OTHER None

V. TANK LEAK DETECTION

☐ 1 VISUAL CHECK ☐ 2 INVENTORY RECONCILIATION ☐ 3 VADOZE MONITORING ☐ 4 AUTOMATIC TANK GAUGING ☐ 5 GROUND WATER MONITORING ☐ 6 TANK TESTING ☐ 7 INTERSTITIAL MONITORING ☒ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

VI. TANK CLOSURE INFORMATION

1. ESTIMATED DATE LAST USED (MO/DAY/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING	3. WAS TANK FILLED WITH INERT MATERIAL?
1989 1990	None GALLONS	YES ☐ NO ☒

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE
Nick Marcello	5-26-94

LOCAL AGENCY USE ONLY

THE STATE I.D. NUMBER IS COMPOSED OF THE FOUR NUMBERS BELOW

STATE I.D.#	COUNTY #	JURISDICTION #	FACILITY #	TANK #
	41	000	330211	2

PERMIT NUMBER	PERMIT APPROVED BY/DATE	PERMIT EXPIRATION DATE

THIS FORM MUST BE ACCOMPANIED BY A PERMIT APPLICATION - FORM A, UNLESS A CURRENT FORM A HAS BEEN FILED.
FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

DRAFT

INSTRUCTIONS FOR COMPLETING FORM "B"

GENERAL INSTRUCTIONS:

1. One FORM "B" shall be completed for each tank for all NEW PERMITS, PERMIT CHANGES, REMOVALS and/or any other TANK INFORMATION CHANGE.
2. This form should be completed by either the PERMIT APPLICANT or the LOCAL AGENCY UNDERGROUND TANK INSPECTOR.
3. Please type or print clearly all requested information.
4. Use a hard point writing instrument, you are making 3 copies.

TOP OF FORM: "MARK ONLY ONE ITEM"

1. Mark an (X) in the box next to the item that best describes the reason the form is being completed.
2. Indicate the DBA or Facility name where the tank is installed.

I. TANK DESCRIPTION - COMPLETE ALL ITEMS - IF UNKNOWN - SO SPECIFY

A. Indicate owners tank ID # - If there is a tank number that is used by the owner to identify the tank (ex. AB70789).
B. Indicate the name of the company that manufactured the tank (ex. ACME TANK MFG.).
C. Indicate the year the tank was installed (ex. 1987).
D. Indicate the tank capacity in gallons (ex. 25,000 or 10,000 etc.).

II. TANK CONTENTS

A. 1. If MOTOR VEHICLE FUEL, check box 1 and complete items B & C.
2. If not MOTOR VEHICLE FUEL, check the appropriate box in section A and complete items B & D.
B. Check the appropriate box.
C. Check the type of MOTOR VEHICLE FUEL (if box 1 is checked in A).
D. Print the chemical name of the hazardous substance stored in the tank and the C.A.S.#. (Chemical Abstract Service number), if box 1 is NOT checked in A.

III. TANK CONSTRUCTION - MARK ONE ITEM ONLY IN BOX A, B, C & D

1. Check only one item in TYPE OF SYSTEM, TANK MATERIAL, INTERIOR LINING and CORROSION PROTECTION.
2. If OTHER, print in the space provided.

IV. PIPING INFORMATION

1. Circle A if above ground; circle U if underground; and circle both if applicable.
2. If UNKNOWN, circle; or if OTHER, print in space provided.
3. Indicate the LEAK DETECTION system(s) used to comply with the monitoring requirement for the piping.

V. TANK LEAK DETECTION

1. Indicate the LEAK DETECTION system(s) used to comply with the monitoring requirements for the tank.

VI. INFORMATION ON TANK PERMANENTLY CLOSED IN PLACE

1. ESTIMATED DATE LAST USED - MONTH/YEAR (January, 1988 or 01/88).
2. ESTIMATED QUANITY of HAZARDOUS SUBSTANCE remaining in the tank (in Gallons).
3. WAS TANK FILLED WITH INERT MATERIAL? Check 'Yes' or 'NO'.

APPLICANT MUST SIGN AND DATE THE FORM AS INDICATED.

INSTRUCTION FOR THE LOCAL AGENCIES

The state underground storage tank identification number is composed of the two digit county number, the three digit jurisdiction number, the six digit facility number and the six digit tank number. The county and jurisdiction numbers are predetermined and can be obtained by calling the State Board (916)739-2421. The facility number must be the same as shown in form "A". The tank number may be assigned by the local agency; however, this number must be numerical and cannot contain an alphabet. If the local agency prefers the State Board to assign the tank number, please leave it blank.

IT IS THE RESPONSIBILITY OF THE LOCAL AGENCY THAT INSPECTS THE FACILITY TO VERIFY THE ACCURACY OF THE INFORMATION. THE LOCAL AGENCY IS RESPONSIBLE FOR THE COMPLETION OF THE "LOCAL AGENCY USE ONLY" INFORMATION BOX AND FOR FORWARDING ONE FORM "A" AND ASSOCIATED FORM "B"(s) TO THE FOLLOWING ADDRESS.

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
C/O S.W.E.E.P.S.
DATA PROCESSING CENTER
P.O. BOX 527
PARAMOUNT, CA 90723

DRAFT

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM B

COMPLETE A SEPARATE FORM FOR EACH TANK SYSTEM.

MARK ONLY ONE ITEM: ☐ 1 NEW PERMIT ☐ 2 INTERIM PERMIT ☐ 3 RENEWAL PERMIT ☐ 4 AMENDED PERMIT ☐ 5 CHANGE OF INFORMATION ☐ 6 TEMPORARY TANK CLOSURE ☐ 7 PERMANENTLY CLOSED ON SITE ☒ 8 TANK REMOVED

DBA OR FACILITY NAME WHERE TANK IS INSTALLED: 134 Main St. R.C. 94063

I. TANK DESCRIPTION

COMPLETE ALL ITEMS -- SPECIFY IF UNKNOWN

A. OWNER'S TANK I. D. # Un Known	B. MANUFACTURED BY:
C. DATE INSTALLED (MO/DAY/YEAR) 1979	D. TANK CAPACITY IN GALLONS: 500 Gallons

II. TANK CONTENTS

IF A-1 IS MARKED, COMPLETE ITEM C.

A. ☒ 1 MOTOR VEHICLE FUEL ☐ 2 PETROLEUM ☐ 3 CHEMICAL PRODUCT ☐ 4 OIL ☐ 80 EMPTY ☐ 95 UNKNOWN

B. ☒ 1 PRODUCT ☐ 2 WASTE

C. ☐ 1a REGULAR UNLEADED ☐ 1b PREMIUM UNLEADED ☐ 2 LEADED ☐ 3 DIESEL ☐ 4 GASAHOL ☐ 5 JET FUEL ☐ 6 AVIATION GAS ☐ 7 METHANOL ☐ 99 OTHER (DESCRIBE IN ITEM D. BELOW)

D. IF (A.1) IS NOT MARKED, ENTER NAME OF SUBSTANCE STORED C. A. S. # :

III. TANK CONSTRUCTION

MARK ONE ITEM ONLY IN BOXES A, B, AND C, AND ALL THAT APPLIES IN BOX D AND E

A. TYPE OF SYSTEM: ☐ 1 DOUBLE WALL ☒ 2 SINGLE WALL ☐ 3 SINGLE WALL WITH EXTERIOR LINER ☐ 4 SECONDARY CONTAINMENT (VAULTED TANK) ☐ 95 UNKNOWN ☐ 99 OTHER

B. TANK MATERIAL (Primary Tank): ☐ 1 BARE STEEL ☐ 2 STAINLESS STEEL ☐ 3 FIBERGLASS ☐ 4 STEEL CLAD W/ FIBERGLASS REINFORCED PLASTIC ☐ 5 CONCRETE ☐ 6 POLYVINYL CHLORIDE ☐ 7 ALUMINUM ☐ 8 100% METHANOL COMPATIBLE W/FRP ☐ 9 BRONZE ☐ 10 GALVANIZED STEEL ☒ 95 UNKNOWN ☐ 99 OTHER

C. INTERIOR LINING: ☐ 1 RUBBER LINED ☐ 2 ALKYD LINING ☐ 3 EPOXY LINING ☐ 4 PHENOLIC LINING ☐ 5 GLASS LINING ☐ 6 UNLINED ☒ 95 UNKNOWN ☐ 99 OTHER
IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL ? YES ___ NO ___

D. CORROSION PROTECTION: ☐ 1 POLYETHYLENE WRAP ☐ 2 COATING ☐ 3 VINYL WRAP ☐ 4 FIBERGLASS REINFORCED PLASTIC ☒ 5 CATHODIC PROTECTION ☐ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

E. SPILL AND OVERFILL: SPILL CONTAINMENT INSTALLED (YEAR) None OVERFILL PREVENTION EQUIPMENT INSTALLED (YEAR) None

IV. PIPING INFORMATION

CIRCLE A IF ABOVE GROUND OR U IF UNDERGROUND, BOTH IF APPLICABLE

A. SYSTEM TYPE: (A) (U) 1 SUCTION; A U 2 PRESSURE; A U 3 GRAVITY; A U 99 OTHER

B. CONSTRUCTION: A (U) 1 SINGLE WALL; A U 2 DOUBLE WALL; A U 3 LINED TRENCH; A U 95 UNKNOWN; A U 99 OTHER

C. MATERIAL AND CORROSION PROTECTION: A (U) 1 BARE STEEL; A U 2 STAINLESS STEEL; A U 3 POLYVINYL CHLORIDE (PVC); A U 4 FIBERGLASS PIPE; A U 5 ALUMINUM; A U 6 CONCRETE; A (U) 7 STEEL W/ COATING; A U 8 100% METHANOL COMPATIBLE W/FRP; A (U) 9 GALVANIZED STEEL; A (U) 10 CATHODIC PROTECTION; A U 95 UNKNOWN; A U 99 OTHER

D. LEAK DETECTION: ☐ 1 AUTOMATIC LINE LEAK DETECTOR ☐ 2 LINE TIGHTNESS TESTING ☐ 3 INTERSTITIAL MONITORING ☐ 99 OTHER None

V. TANK LEAK DETECTION

☐ 1 VISUAL CHECK ☐ 2 INVENTORY RECONCILIATION ☐ 3 VADOZE MONITORING ☐ 4 AUTOMATIC TANK GAUGING ☐ 5 GROUND WATER MONITORING ☐ 6 TANK TESTING ☐ 7 INTERSTITIAL MONITORING ☒ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

VI. TANK CLOSURE INFORMATION

1. ESTIMATED DATE LAST USED (MO/DAY/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING	3. WAS TANK FILLED WITH INERT MATERIAL ?
1990	None GALLONS	YES ☐ NO ☒

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE
Nicki Marcello Nicki Marcello	5-26-94

LOCAL AGENCY USE ONLY

THE STATE I.D. NUMBER IS COMPOSED OF THE FOUR NUMBERS BELOW

STATE I.D.#	COUNTY #	JURISDICTION #	FACILITY #	TANK #
	41	000	33621	2

PERMIT NUMBER	PERMIT APPROVED BY/DATE	PERMIT EXPIRATION DATE

THIS FORM MUST BE ACCOMPANIED BY A PERMIT APPLICATION - FORM A, UNLESS A CURRENT FORM A HAS BEEN FILED.
FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

FORM B (12-91)

FOR00348-R6

DRAFT

INSTRUCTIONS FOR COMPLETING FORM "B"

GENERAL INSTRUCTIONS

1. One COPY of "B" shall be completed for each tank for all NEW PERMITS, PERMIT CHANGES, REMOVALS and/or any other TANK INFORMATION CHANGE.
2. This form should be completed by either the PERMIT APPLICANT or the LOCAL AGENCY UNDERGROUND TANK INSPECTOR.
3. Please type or print clearly all requested information.
4. Use a ball point pen writing instrument, you are making 3 copies.

TOP OF FORM: MARK ONLY ONE ITEM

1. Mark an (X) in the box next to the item that best describes the reason the form is being completed.
2. Indicate the DBA or facility name where the tank is installed.

I. TANK DESCRIPTION - COMPLETE ALL ITEMS - IF UNKNOWN - SO SPECIFY

A. Indicate owners tank ID #. - If there is a tank number that is used by the owner to identify the tank (ex. AB 0/69).
B. Indicate the name of the company that manufactured the tank (ex. ACME TANK MFG.).
C. Indicate the year the tank was installed (ex. 1987)
D. Indicate the tank capacity in gallons (ex. 25,000 or 10,000 etc.).

II. TANK CONTENTS

A. 1. IF MOTOR VEHICLE FUEL, check box 1 and complete items B & C.
2. If not MOTOR VEHICLE FUEL, check the appropriate box in section A and complete items B & D.
B. Check the appropriate box.
C. Check the type of MOTOR VEHICLE FUEL (if box 1 is checked in A).
D. Print the chemical name of the hazardous substance stored in the tank and the C.A.S.#. (Chemical Abstract Service number), if box 1 is NOT checked in A.

III. TANK CONSTRUCTION - MARK ONE ITEM ONLY IN BOX A, B, C & D

1. Check only one item in TYPE OF SYSTEM, TANK MATERIAL, INTERIOR LINING and CORROSION PROTECTION.
2. If OTHER, print in the space provided.

IV. PIPING INFORMATION

1. Circle A if above ground; circle U if underground; and circle both if applicable.
2. If UNKNOWN, circle; or if OTHER, print in space provided.
3. Indicate the LEAK DETECTION system(s) used to comply with the monitoring requirement for the piping.

V. TANK LEAK DETECTION

1. Indicate the LEAK DETECTION system(s) used to comply with the monitoring requirements for the tank.

VI. INFORMATION ON TANK PERMANENTLY CLOSED IN PLACE

1. ESTIMATED DATE LAST USED - MONTH/YEAR (January, 1983 or 01/88).
2. ESTIMATED QUANTITY of HAZARDOUS SUBSTANCE remaining in the tank (in Gallons).
3. WAS TANK FILLED WITH INERT MATERIAL? Check "Yes" or "NO".

APPLICANT MUST SIGN AND DATE THE FORM AS INDICATED.

INSTRUCTION FOR THE LOCAL AGENCIES

The state underground storage tank identification number is composed of the two digit county number, the three digit jurisdiction number, the six digit facility number and the six digit tank number. The county and jurisdiction numbers are predetermined and can be obtained by calling the State Board (916)739-2421. The facility number must be the same as shown in form "A". The tank number may be assigned by the local agency; however, this number must be numerical and cannot contain an alphabet. If the local agency prefers the State Board to assign the tank number, please leave it blank.

IT IS THE RESPONSIBILITY OF THE LOCAL AGENCY THAT INSPECTS THE FACILITY TO VERIFY THE ACCURACY OF THE INFORMATION. THE LOCAL AGENCY IS RESPONSIBLE FOR THE COMPLETION OF THE "LOCAL AGENCY USE ONLY" INFORMATION BOX AND FOR FORWARDING ONE FORM "A" AND ASSOCIATED FORM "B"(s) TO THE FOLLOWING ADDRESS:

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
C/O SACRAMENTO
DATA PROCESSING CENTER
P.O. BOX 671
RANCHO CORDOVA, CA 95741

DRAFT

INTERSTATE GRADING & PAVING, INC.
Cont. Lic. No. 366020

June 1, 1994

VIA FAX: 415-363-7882

Theresa Belasco
Environmental Health
County of San Mateo
590 Hamilton Street, Fourth Floor
Redwood City, CA 94063

Re: Property at 144 Maple Street, Redwood City, California
Nick Marcelli, Jr, Owner

Dear Ms. Belasco:

This is to inform you that Interstate Grading and Paving, Inc. will be the contractor removing the underground tank at the above referenced location.

Interstate's California Contractors License Number is 366020 with classifications "A" and "HAZ". Copies are attached.

Workers Compensation insurance is with Republic Indemnity, Policy No. PC 943307. A copy of certificate is also attached.

If you will need any additional information, please give me a call.

Very truly yours,

INTERSTATE GRADING AND PAVING, INC.

Nancy P. Zammuto
President

cc: Nick Marcelli, Jr.

FAX: 4 Pages

DRAFT

DRAFT

State of California
Consumer Affairs

CONTRACTORS STATE LICENSE BOARD

License Number 366040

Entity CORP

Business Name INTERSTATE GRADING AND PAVING INC

Classification

Expiration Date 11/30/94

STATE OF CALIFORNIA
DEPARTMENT OF
Consumer Affairs

CONTRACTORS' STATE LICENSE BOARD

LIC. 366020

This license is the property of the Registrar of Contractors, is not transferable, and shall be returned to the Registrar upon demand when suspended, revoked, or invalidated for any reason. It becomes void if not renewed.

CONTRACTOR'S LICENSE

DEPARTMENT OF CONSUMER AFFAIRS
REGISTRAR OF CONTRACTORS
STATE OF CALIFORNIA

Pursuant to the provisions of Chapter 9 of Division 3 of the Business and Professions Code and the Rules and Regulations of the Contractors' State License Board, the Registrar of Contractors does hereby issue this license to:

INTERSTATE GRADING AND PAVING, INC.

to engage in the business or act in the capacity of a contractor in the following classification(s):

A GENERAL ENGINEERING CONTRACTOR

WITNESS *my hand and official seal this* 28TH *day of* NOVEMBER, 1978

Registrar of Contractors

Signature of licensee C.O.S.

Signature of person who qualified on behalf of the licensee

STATE OF CALIFORNIA
STATE AND CONSUMER SERVICES AGENCY CONTRACTORS STATE LICENSE BOARD

Consumer Affairs

Building Quality

HAZARDOUS SUBSTANCES REMOVAL AND REMEDIAL ACTIONS CERTIFICATION

Pursuant to the provisions of Section 7058 of the Business and Professions Code, the Registrar of Contractors does hereby certify that the following qualifying person has successfully completed the hazardous substances removal and remedial actions examination.

Qualifier: NANCY PARIANI ZAMMUTO

License No.: 366020

Business Name: INTERSTATE GRADING AND PAVING, INC.

DEPARTMENT OF CONSUMER AFFAIRS
REGISTRAR OF CONTRACTORS
STATE OF CALIFORNIA

WITNESS *my hand and official seal this* 3rd *day of* APRIL, 1992

Registrar of Contractors

This certification is the property of the Registrar of Contractors, is not transferable, and shall be returned to the Registrar upon demand when suspended, revoked, or invalidated for any reason.

DRAFT

WORKER COMPENSATION AND EMPLOYERS' LIABILITY POLICY

Republic Indemnity Company of America

HOME OFFICE ENCINO, CALIFORNIA Company No. 19739

RENEWAL CERTIFICATE
POLICY NO. PC 943307

1. Name and mailing address of the insured:
INTERSTATE GRADING AND PAVING
INC., ETAL
P.O. BOX 389
SO. SAN FRANCISCO CA 94080

Insured is: CORPORATION

Other workplaces not shown above: 128 SOUTH MAPLE AVENUE, SOUTH SAN FRANCISCO CA

2. The policy period is from NOV 01, 1993 To NOV 01, 1994 12:01a.m. standard time at the insured's mailing address.

3. A Workers' Compensation Insurance: Part One of the policy applies to the Workers' Compensation Law of the states listed here: CA.

B. Employers' Liability Insurance: Part Two of the policy applies to work in each state listed in item 3A. The limits of our liability under Part Two are:

Bodily Injury by Accident $ 1,000,000 each accident
Bodily Injury by Disease $ 1,000,000 each employee
Bodily Injury by Disease $ 1,000,000 policy limit

C. Other States Insurance: Part Three of the policy applies to the states, if any, listed here:
ALL STATES EXCEPT: NV,ND,OH,WA,WV,WY, AND CA.

D. This policy includes these endorsements and schedules: WC-040309 WC-040360 WC-106 WC-300 WC-500 WC-503 WC-505 WC-9

4. The premium for this policy will be determined by our Manual of Rules, Classifications, Rates and Rating Plans. All information required below is subject to verification and change by audit.

Code No.	CLASSIFICATIONS	Estimated Annual Remuneration	Rate Per $ 100	Estimated Annual Premium
3506	CONTRACTORS SCHEDULE ATTACHED		10.56	
6218-1	CONTRACTORS SCHEDULE ATTACHED		9.43	
6320-1	CONTRACTORS SCHEDULE ATTACHED		8.32	
8227	CONSTRUCTION OR ERECTION PERMANENT YARDS--FOR MAINTENANCE OF EQUIPMENT OR STORAGE OF MATERIAL.		8.17	
8742-1	SALESPERSONS--OUTSIDE.		1.30	
8810-1	CLERICAL OFFICE EMPLOYEES--N.O.C.		.91	
	PREMIUM MODIFIED TO REFLECT EXPERIENCE MODIFICATION OF BUREAU NUMBER: 2 37 39 71-F	54%		
	STATE WORKERS' COMPENSATION ADMINISTRATIVE SURCHARGE OF		.1257%	$60
	STATE FRAUD INVESTIGATION AND PROSECUTION SURCHARGE		.09806%	$46

Deposit Premium $ 7,145 + WCAS $60 + FIPS $46 = Total $7,251 Minimum Premium $ 3,500 Total Estimated Annual Premium $ 47,620

If indicated, interim adjustments of premium shall be made: MONTHLY Cov. Code 57 YRS 03

Name of Producer WINTHROP INS. PLANS

Countersigned by

Code No. 04-00-8988 8
Servicing Office SAN FRANCISCO

Date

WC 11 10-06-93 Insured Copy

DRAFT

ASE
APPLIED SCIENCE AND ENGINEERING INC.

November 21, 1994

Mr. Nick Marcelli
Five Star Development
9 Cerritos Place
Redwood City, CA 94061

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
NOV 29 1994
RECEIVED

TRANSMITTAL: Laboratory Results
Stockpile Re-Sampling
134 Maple Street
Redwood City, California

Dear Mr. Marcelli,

Applied Science and Engineering, Inc. (ASE) respectfully submits the enclosed laboratory results for stockpile re-sampling conducted at 134 Maple Street in Redwood City, California on November 9, 1994. The stockpile was generated during removal of two underground storage tanks (USTs). Also attached are a copy of my field notes which include a sketch of the site, a table summarizing the laboratory reports, and a copy of the chain of custody form.

DRAFT

Introduction

ASE was present during removal of a 1,000 gallon diesel UST and 580 gallon gasoline UST on September 9, 1994. Both USTs appeared to be in good condition. A shallow trench was also excavated along the route of the pipeline which led to the dispenser location. Soils excavated from above the USTs and along the pipeline trench were placed in a stockpile and covered with plastic. Soils excavated from beneath the USTs were stockpiled separately and covered with plastic. A total of about 30 cubic yards of soil were stockpiled.

Soil samples were collected from the bottom of the UST excavation using the backhoe bucket, as previously reported in a September 28, 1994 letter. Ms. Teresa Belasco of the San Mateo County Department of Health Services (SMCDHS) observed the soil sampling. One soil sample was collected from beneath the fill end of the gasoline UST. Two soil samples were collected from beneath former diesel UST, one from beneath each end. These samples were collected at depths of approximately 8 feet, one foot below the bottom of the UST pits. A soil sample was also collected from the location of the fuel dispenser at a depth of about 3 feet. Finally, ASE collected two soil samples, one from each stockpile, for laboratory analysis. Laboratory results for these samples are shown in Table 1. Upon receipt of the laboratory analyses Ms. Belasco closed the site.

Because low concentrations of petroleum hydrocarbons were detected in the stockpile soil samples, the soil could not be used to backfill the excavation according to SMCDHS guidelines (see attached). Thus, you spread out the stockpile soils and passively aerated them at the site for two months. This report transmits the results of re-sampling of the stockpile after aeration.

Soil Sampling

Two soil samples were collected from the approximately 30 cubic yards of stockpile, in accordance with SMCDHS guidelines requiring one discrete sample for every 20 cubic yards. The sample locations were chosen randomly. Soil samples were collected by scraping away about 6 inches of soil from the surface, then pushing a 2-inch diameter, six inch long brass liner into the exposed soil. The ends of the liner were covered with teflon tape, followed by plastic caps, and then a label was attached to the liner for identification purposes. The liner was placed into an ice chest containing blue ice for preservation during shipment to the laboratory.

Laboratory Analyses

The soil samples were transported under chain of custody (see attached) to Priority Environmental Laboratories (PEL), a state certified laboratory, for analysis. The laboratory report is attached. Laboratory methods used are listed on the reports. Analyses were conducted only for compounds that were detected in the initial stockpile samples.

No benzene, toluene, ethylbenzene, or xylenes (BTEX) were detected in the two soil samples collected as re-sampling of the stockpiles.

Conclusion

Laboratory results for two discrete soil samples collected from a stockpile of approximately 30 cubic yards show no detectable BTEX. Based on these results the stockpile soils have been successfully remediated by passive aeration at the site.

In accordance with SMCDHS guidelines which require no detectable hydrocarbons in the stockpile (see attached), the stockpiled soil can now be used as site backfill.

DRAFT

Please call me at (415) 363-2445 if you have any questions or require additional information. Thank you for the opportunity to work on this project.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

Enclosures

cc: Ms. Teresa Belasco, SMCDHS

DRAFT

ASE
APPLIED SCIENCE AND ENGINEERING INC.

Table 1
Soil Analytical Results (mg/kg)
134 Maple Street
Redwood City, California

Location	ID	TPH-g	TPH-d	B	T	E	X
Excavation							
Gas-fill	10049	ND	ND	ND	ND	ND	ND
Diesel-opp.	10050	ND	ND	ND	ND	ND	ND
Diesel-fill	10051	ND	ND	ND	ND	ND	ND
Dispenser	10052	ND	30	ND	ND	ND	ND
Stockpiles							
Stockpile #1	10053	ND	ND	ND	0.0088	0.0058	0.027
Stockpile #2	10054	ND	ND	ND	ND	ND	0.0056
Re-sample	10100	--	--	ND	ND	ND	ND
Re-sample	10101	--	--	ND	ND	ND	ND

Note: TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
B = benzene
T = toluene
E = ethylbenzene
X = xylene
-- = not analyzed

DRAFT

Date: 11.9.04 By: EW To: _____ Sheet _____

Job Name: Marcelli Job No: _____

Main Activity: Sample Stockpile

Equipment Rental | Company | Hours | Rate

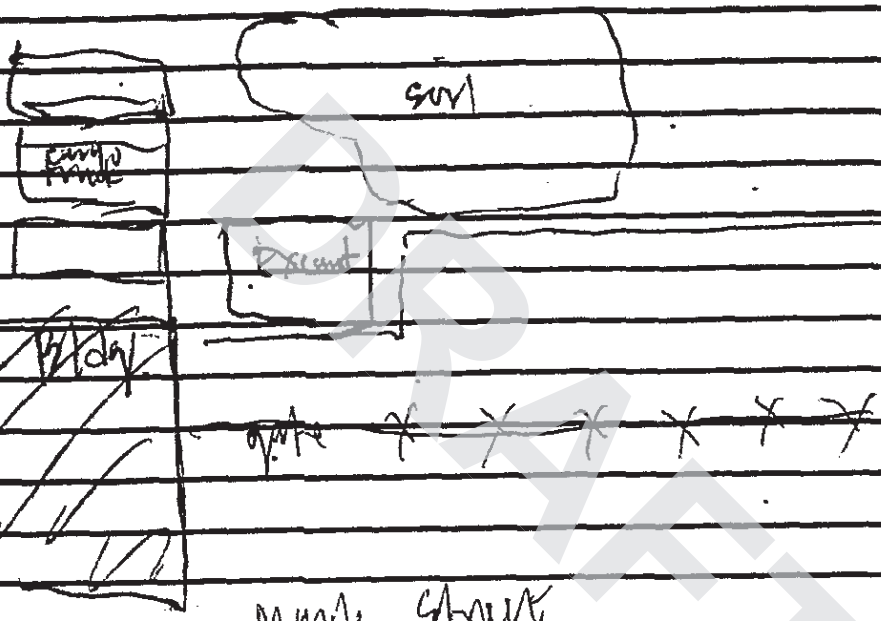
[Attach receipts for all outside expenses]

Odometer In _____

Vehicle Pers. _____ Odometer Out _____

Rent. _____ Mileage _____

Time	Description
10:30	Arrive site



Maple Street

soil spread them in stockpiles ~ 0.5 - 1 deep

collect 2 samples

scrape away 6"

push liner into soil

11:45 leave site

DRAFT

PRIORITY ENVIRONMENTAL LABS

PEL # 9411029

INV # 25421

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 11/9/94 PAGE: 1 OF 1

PROJECT MGR.: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
SAN CARLOS, CA 94070
PHONE: 415-363-2495 FAX: 415-363-8249
SIGNATURE: [signature]

ANALYSIS REPORT

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030.8015)	TPH-Gasoline(5030.8015) w/BTEX(EPA 602.8020)	TPH-Diesel (EPA 3510/3550.8015)	PURGEABLE AROMATICS BTEX (EPA 602.8020)	TOTAL OIL & GREASE (EPA 5520 C.D&F)	PESTICIDES/PCB (EPA 608.8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601.8010)	NUMBER OF CONTAINERS
10100	11-9-94	10:35	SOIL				X					1
10101	11-9-94	10:45	SOIL				X					1

DRAFT

PROJECT INFORMATION
PROJECT NAME: Marelli
PROJECT NUMBER: —

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 1 Week Turnaround

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
SIGNATURE: [signature]	SIGNATURE: [signature]	SIGNATURE:	SIGNATURE: [signature]
Date: 11.9.94 Time: 13:00	Date: 11/9/94 Time: 13:00	Date: Time:	Date: 11/9/94 Time: 13:57
COMPANY: ASE	COMPANY: ASE	COMPANY:	COMPANY: PEL

PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

November 16, 1994 PEL # 9411029

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: Two soil samples for BTEX analysis.

Project name: Marcelli

Date sampled: Nov 09, 1994
Date extracted: Nov 10-11, 1994
Date submitted: Nov 09, 1994
Date analyzed: Nov 10-11, 1994

RESULTS:

DRAFT

SAMPLE I.D.	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylenes (ug/Kg)
10100	N.D.	N.D.	N.D.	N.D.
10101	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	81.6%	106.0%	101.3%	104.7%
Detection limit	5.0	5.0	5.0	5.0
Method of Analysis	8020	8020	8020	8020

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

E[illegible]rtment of Health S[illegible]ices
PUBLIC HEALTH DIVISION — Environmental Health

BOARD OF SUPERVISORS
ANNA G. ESHOO
MARY GRIFFIN
TOM HUENING
TOM NOLAN
WILLIAM J. SCHUMACHER

COUNTY OF SAN MATEO

MARGARET TAYLOR
DIRECTOR OF HEALTH SERVICES

590 HAMILTON STREET • REDWOOD CITY • CALIFORNIA 94063 363-4305

SAN MATEO COUNTY POLICY STATEMENT: HANDLING AND DISPOSAL OF REMEDIATED SOIL

APRIL, 1990

BACKGROUND The San Francisco Bay Regional Water Quality Control Board (RWQCB) has recently created policy addressing the fate of soils being excavated at underground tank sites. The RWQCB's policy reads to the effect that soils being tested below detection levels of all contaminants may be used for general fill needs. Any soils tested with levels above the detection limit must be either 1) remediated to below detection limits, 2) disposed of at a properly rated landfill or 3) obtain a variance from the RWQCB to place the soil back into the excavation.

GOAL The goal of this policy statement is to clarify the options available of disposing of soils and to establish a protocol for sampling the soils.

DISCUSSION As discussed in the Tri-regional Guidelines of June 1988, the 100 ppm level is not a cleanup level but is merely used as a tool to prioritize sites and indicate the severity of the original release. Whenever soil contaminated at any level is introduced to the ground the risk of groundwater degradation exists. Such degradation would require additional remedial activities. Offered below is a list of concentration levels and the handling option associated with each concentration.

TPH and BTXE

All Contaminants Non-Detectable	-Reuse for general site fill needs -Dispose of at Class III
10-100 ppm	-Remediate to N.D. -Dispose of at Class III -Obtain variance from RWQCB
100-1000 ppm	-Remediate further -Dispose of at Class II or I
1000 or greater	-Remediate further -Dispose of at Class I

POLICY It shall be the policy of San Mateo County to allow reuse of remediated soils only when laboratory analysis show that the soils contain a nondetectable amount of contaminant. All other soils shall be handled as outlined above.

To characterize the soil in order to determine the levels of contamination present the sampling protocol below has been established. This protocol must be followed whenever the responsible party is attempting to dispose of the soils within San Mateo County.

TTLC = 1000
STLC = 5

* In addition to site specific contaminants, i.e. TPH-G, TPH-D and BTXE etc., all soils being hauled to Ox Mountain Landfill must include testing for total and soluble lead (TTLC/STLC). Approval to haul the soils to Ox Mountain must first be received from San Mateo County.

* Any nonhazardous soils being disposed of outside of San Mateo County must be documented with a Bill of Laden submitted to this office within fifteen (15) days of disposal

All sampling techniques, handling procedures and analytical methodologies as described in both the LUFT guidance and the Tri-regional guidelines shall apply.

A representative of San Mateo County must be notified a minimum of forty-eight (48) hours prior to sampling and shall be present at the time of sampling.

One discrete sample for every 20 cubic yards of soil must be collected and analyzed via the appropriate methods. Composite sampling will no longer be accepted for disposal of soils. The Bay Area Air Quality Management District still requires that their sampling protocol be followed before any aeration begins.

Piles of soil should be spread out to a maximum thickness of two (2) feet and the requisite number of samples are to be obtained one (1) foot into the soil.

If the pile cannot be spread, then the appropriate number of samples shall be taken with a hand auger in a way to best characterize the pile. A grid system should be utilized in conjunction with a random sampling protocol.

ASE
APPLIED SCIENCE AND ENGINEERING INC.

September 28, 1994

Mr. Nick Marcelli
Five Star Development
9 Cerritos Place
Redwood City, CA 94061

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
OCT - 3 1994
RECEIVED

TRANSMITTAL: Laboratory Results
Soil Sampling
134 Maple Street
Redwood City, California

DRAFT

Dear Mr. Marcelli,

Applied Science and Engineering, Inc. (ASE) respectfully submits the enclosed laboratory results for soil sampling conducted at 134 Maple Street in Redwood City, California on September 9, 1994 as part of removal of two underground storage tanks (USTs). Also attached are a copy of my field notes which include a sketch of the site, a table summarizing the laboratory reports, and a copy of the chain of custody form.

Observations

ASE was present during removal of both the approximately 1,088 gallon diesel UST and the approximately 580 gallon gasoline UST. Both USTs appeared to be in good condition. A shallow trench was also excavated along the route of the pipeline which led to the dispenser location.

Soils excavated from above the USTs and along the pipeline trench were placed in a stockpile and covered with plastic. Soils excavated from beneath the USTs were stockpiled separately and covered with plastic. A total of about 30 cubic yards of soil were stockpiled.

Soil Samples

Soil samples were collected from the backhoe bucket in the presence of Ms. Teresa Belasco of the San Mateo County Department of Health Services (SMCDHS). Soil samples were collected by scraping away about 3 inches of soil from the backhoe bucket, then driving a 2-inch diameter, six inch long brass liner into the exposed soil surface. The ends of the liner were covered with teflon tape, followed by plastic caps, and then a label was attached to the liner for identification purposes. The liner was placed into an ice chest containing blue ice for preservation during shipment to the laboratory.

One soil sample was collected from beneath the fill end of the gasoline UST. Two soil samples were collected from beneath former diesel UST, one from beneath each end. These samples were collected at depths of approximately 8 feet, one foot below the bottom of the UST pits.

A soil sample was also collected from the location of the fuel dispenser at a depth of about 3 feet. Finally, ASE collected two soil samples, one from each stockpile, for laboratory analysis. Ms. Teresa Belasco of SMCDHS was present during this sampling.

Laboratory Analyses

The soil samples were transported under chain of custody (see attached) to Priority Environmental Laboratories (PEL), a state certified laboratory, for analysis. The laboratory report is attached. Laboratory methods used are listed on the reports.

No petroleum hydrocarbons were detected in the three soil samples collected from beneath the USTs.

The soil sample from beneath the dispenser was found to contain 30 ppm of total petroleum hydrocarbons (TPH) as diesel but no detectable TPH as gasoline, benzene, toluene, ethylbenzene, or xylenes (BTEX).

The soil sample from stockpile #1 was found to contain 8.8 ppb of toluene, 5.8 ppb of ethylbenzene, and 27 ppb of xylenes. No TPH as gasoline, TPH as diesel, or benzene were detected in the sample.

The soil sample from stockpile #2 was found to contain 5.6 ppb of xylenes. No TPH as gasoline, TPH as diesel, benzene, toluene, or ethylbenzene were detected in the sample.

Conclusion

On September 15, 1994 the laboratory data was FAXed to Ms. Teresa Belasco at SMCDHS. Subsequently, ASE called her by telephone to discuss the results.

When asked if the excavation could be backfilled with the stockpiled soil Ms. Belasco stated that the lab results must be no petroleum hydrocarbons detected prior to backfilling. Therefore, the stockpiled soils must be aerated and resampled (with results showing no hydrocarbons) prior to re-use in backfilling the excavation.

When asked about the need for further excavation at the fuel dispenser, Ms. Belasco stated that no additional excavation was required because the concentrations were relatively low and the piping and USTs looked in good shape.

DRAFT

Please call me at (415) 363-2445 if you have any questions or require additional information. Thank you for the opportunity to work on this project.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

Enclosures

cc: Ms. Teresa Belasco, SMCDHS

DRAFT

ASE
APPLIED SCIENCE AND ENGINEERING INC.

Table 1
Soil Analytical Results (mg/kg)
134 Maple Street
Redwood City, California

Location	ID	TPH-g	TPH-d	B	T	E	X
Excavation							
Gas-fill	10049	ND	ND	ND	ND	ND	ND
Diesel-opp.	10050	ND	ND	ND	ND	ND	ND
Diesel-fill	10051	ND	ND	ND	ND	ND	ND
Dispenser	10052	ND	30	ND	ND	ND	ND
Stockpiles							
Stockpile #1	10053	ND	ND	ND	0.0088	0.0058	0.027
Stockpile #2	10054	ND	ND	ND	ND	ND	0.0056

Note: TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
B = benzene
T = toluene
E = ethylbenzene
X = xylene

DRAFT

Marcelli 9.7-24 FJ

10:55 Arrive site - Interstate @ site
Teresa on site. run all samples for
"unleaded & diesel in port - TPH-gas, diesel & BTEX"
larger tank out of ground = diesel
46.5" ϕ, L = 148" ⇒ V ≅ 1,088 gals.
in good condition for coating, steel,
load diesel VST on H&H truck
11:10 pull gasoline VST
48" ϕ, L = 6'-2" V ≅ 580 gals
tar wrapped, steel good condition
11:45 collect samples from bottom.

stockpile $V \cong \frac{16 \times 13 \times 6}{2} \cong 624\ ft^3 \cong 23\ yd^3$

cut @ dispenser ~ 1'
sample @ 3'

gas readings - stockpile @ 2 ppm
gas dispenser - 0 ppm

12:00 break for lunch
~~Subcontractor leave.~~
Teresa leave.
12:20 FJ leave site for lunch
12:40 FJ return

9.7.24 FJ

Subsurface ~ 0.5' 3" asphalt & 3" AB

FM – bricks

3.5'

tan SyC mottled grey

8'

13:00 start cleaning/excavation of backfill – create stockpile #2

Teresa return

13:25 finish cleaning

sample stockpiles – #1 N end

#2 E end

13:30

remove pocket from E wall

13:48 End of digging

14:00 FJ leave site

DRAFT

PRIORITY ENVIRONMENTAL LABS

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 9/07/94 PAGE: 1 OF 1

PROJECT MGR.: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
: SAN CARLOS, CA 94070
PHONE: 415-363-2445 FAX: 415-363-8449
SIGNATURE: FAYukic

ANALYSIS REPORT

PEL # 9409020

INV # 25201

SAMPLE ID.	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030.8015)	TPH-Gasoline(5030.8015) w/BTEX(EPA 602.8020)	TPH-Diesel (EPA 3510/3550.8015)	PURGEABLE AROMATICS BTEX (EPA 602.8020)	TOTAL OIL & GREASE (EPA 5520 C.D&F)	PESTICIDES/PCB (EPA 608.8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601.8010)	NUMBER OF CONTAINERS
10049	9.7.94	11:45	SOIL		X	X						1
10050	↓	11:50	↓		X	X						1
10051		11:55			X	X						1
10052		12:00			X	X						1
10053		13:33			X	X						1
10054	↓	13:37	↓		X	X						1

DRAFT

PROJECT INFORMATION

PROJECT NAME: MARCELLI
PROJECT NUMBER:

SAMPLE RECEIPT

TOTAL # OF CONTAINERS: 6
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS:
1 week turnaround

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
FA Yukic	David Olkowski	David Olkowski	
SIGNATURE: FAYukic	SIGNATURE: DAVID OLKOWSKI	SIGNATURE: DAVID OLKOWSKI	SIGNATURE: THAO LAM
Date: 9.7.94 Time: 16:00	Date: 9/7/94 Time: 16:00	Date: 9/8/94 Time: 10:27	Date: 9/8/94 Time: 10:28
COMPANY: ASE	COMPANY: ASE	COMPANY: ASE	COMPANY: PEL

PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

September 15, 1994 PEL # 9409020

APPLIED SCIENCE EINGINEERING, INC.

Attn: Fred Yukic
Re: Six soil samples for Gasoline/BTEX and Diesel analyses.

Project name: Marcelli

Date sampled: Sep 07, 1994 Date submitted: Sep 08, 1994
Date extracted: Sep 12-15, 1994 Date analyzed: Sep 12-15, 1994

RESULTS:

SAMPLE I.D.	Gasoline (mg/kg)	Diesel (mg/Kg)	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylenes (ug/Kg)
10049	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
10050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
10051	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
10052	N.D.	30	N.D.	N.D.	N.D.	N.D.
10053	N.D.	N.D.	N.D.	8.8	5.8	27
10054	N.D.	N.D.	N.D.	N.D.	N.D.	5.6
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	96.0%	84.1%	94.5%	106.6%	89.9%	100.1%
Detection limit	1.0	1.0	5.0	5.0	5.0	5.0
Method of Analysis	5030 / 8015	3550 / 8015	8020	8020	8020	8020

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

ASE
APPLIED SCIENCE AND ENGINEERING INC.

APPLIED SCIENCE AND ENGINEERING
P.O. BOX 1166, SAN CARLOS, CA 94070
(415) 363-2445 Voice
(415) 363-8449 FAX

FAX TRANSMISSION SHEET

To: Teresa Belasco
Company: SMC - DHS
FAX No: 363-7882
Subject: Marelli 134 Maple, RWC

From: Fred Yuki
Date: 9.15.94
Number of Pages (including this page): 2

Note: Lab results. Please call if illegible.

1. Can he backfill with stockpile soils?

2. Can he drop deeper out dispenser and resample?

DRAFT

PERMANENT TANK CLOSURE INSPECTION SHEET

SITE NAME: Marcelli Lighting DATE: 9/7/94
ADDRESS: 134 Maple / Redwood City CA 94063
RESPONSIBLE PARTY: Nick Marcelli CONTACT: Same
ADDRESS: 9 Cerrito Place, Redwood City PHONE: (415) 364-9835

PRE-INSPECTION INFORMATION | HAS PERMIT BEEN ISSUED? X Y ___ N
PERMIT # HM 063947

AND SIZE OF TANKS: 500 UL ___ REG 1000 D
___ WO ___ OTHER

REASON FOR REMOVAL: No longer in use
HISTORY INDICATE PROBLEM ~~X~~ Y X N EXPLAIN ___

DO MONITORING WELLS EXIST ON SITE? ___ Y X N (incidate on site map)
DEPTH TO GROUNDWATER: ~7 Ft

ON-SITE INFORMATION (PREPARE SITE MAP ON SECOND PAGE)

1. IS SITE SAFETY PLAN ON SITE: ___ Y X N Please bring site specific safety plan to every removal site
2. CONDITION OF TANKS AND PIPING: Diesel tank - very good. Gas tank - very good
3. EVIDENCE OF LEAKAGE? X Y ___ N Explain At dispenser.
4. WAS GROUNDWATER ENCOUNTERED IN PIT? ___ Y X N IF SO, DEPTH? ___
   FLOATING PRODUCT? ___ Y ___ N SHEEN? ___ Y ___ N
   WAS WATER SAMPLED? ___ Y ___ N PIT PUMPED? ___ Y ___ N

   VOLUME PUMPED (Approx) NA gal
5. INDICATE ON SITE PLAN WHERE SOIL/GW SAMPLES TAKEN See map.
6. ANALYSIS REQUIRED? X 5030 X (3550)/3510 X 8020/(8240) ___ 5520
   ___ 601/624 ___ TEL ___ METALS ___ 8010/8240 ___ 8270
* 7. SAMPLES FROM STOCKPILE TAKEN? X Y ___ N If so, How Many 2 discrete
   VOLUME OF STOCKPILED SOIL? (Approx) ~30 cu yds
* 8. CHAIN OF CUSTODY CHECKED? X Y ___ N
9. SOIL/GW SAMPLING COMMENTS: Standard procedures.
* 10. WAS PIT OVEREXCAVATED ___ Y X N Volume? Backfill only. cu yds
   (Indicate on site map)
* 11. TANK MANIFEST #? 93620726 RINSATE MANIFEST#? ___
   PIT WATER MANIFEST #: ___

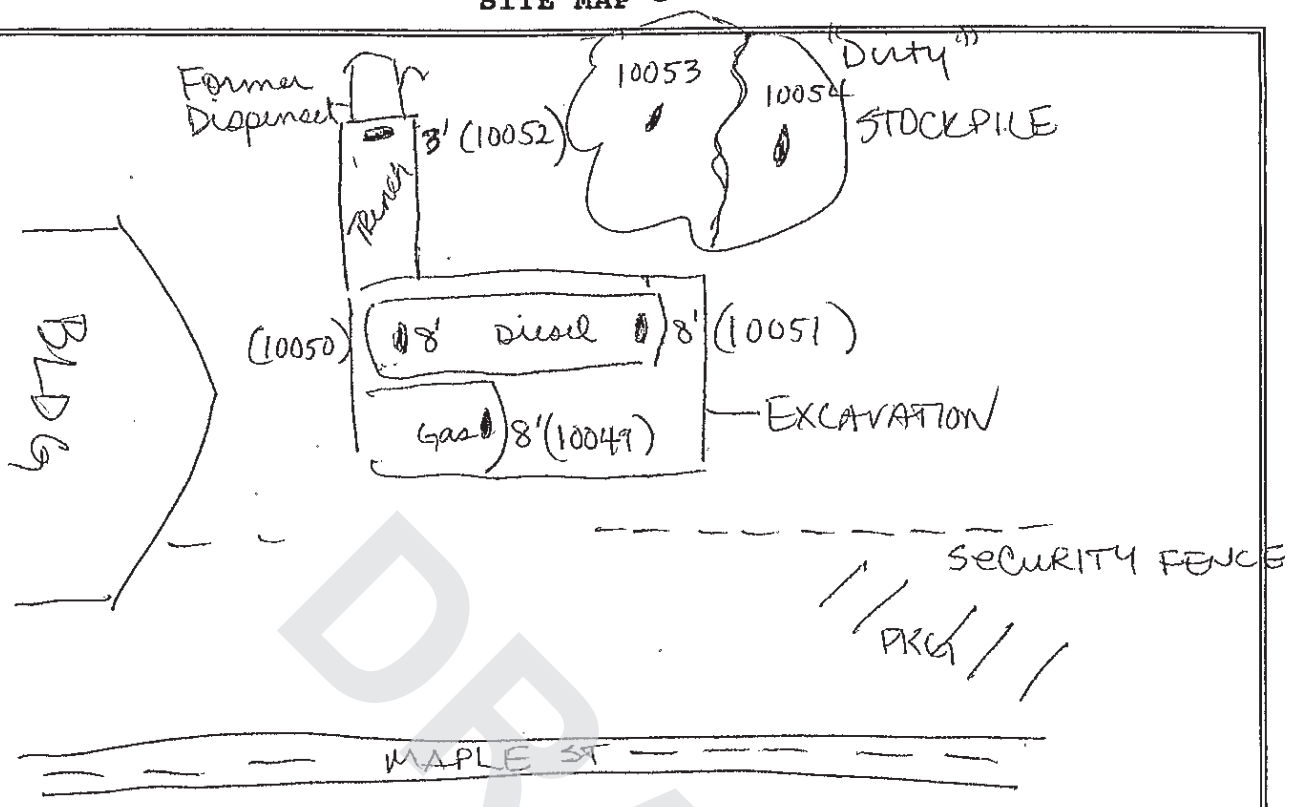
INSPECTOR: Susan Blasch
TITLE: HMS IV DATE: 9/7/94

RECEIVED BY: X Lab Marcelli COMPANY: ___
DATE: ___ PHONE #: ___

DRAFT

printed on recycled paper

SITE MAP



DRAFT

Indicate:-North Arrow
-Cross Streets
-Excavation
-Sampling Points
-Stockpile(s)
-Structures
-Etc.

ADDITIONAL COMMENTS: Gas Tank 7% LEL 27% O2 OK to pull tanks
Diesel Tank 0% LEL 13% O2

Both tanks in excellent condition. Tar wrap in tact. Native soil with no discoloration or staining. Backfill removed from excavation. Pit will be left open until results are received. All samples must be analyzed for TPH D, G, BTXE.

INTERSTATE:

* You must use 40 hour Health and Safety Trained staff when performing tank removals.
* Site Specific Safety plan must be available for review at all jobsites.

printed on recycled paper

4/14/94

134 Maple - Marcelli Lighting

Property owner - Nick Marcelli

Left business card w/ shop manager. He told me owner wants to remove tank. Tank no longer being used. Asked him to have Mr. Marcelli call me.

GP

- Marcelli Lighting -
365-0360

DRAFT

3/22/94

T -

ANOTHER UNREGISTERED UGT ?

MARCELLI'S LIGHTING
134 MAPLE ST.

(BEHIND CHUBS, XS FROM CARBERATOR COMPANY.)

BW

DRAFT

Marelli Lighting

134 Maple

DRAFT

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

October 4, 1994

Mr. Nick Marcelli
9 Cerrito Place
Redwood City, CA 94063

SUBJECT: Closure of Underground Storage Tank, 134 Maple Street, Redwood City, CA

Dear Mr. Marcelli:

This letter confirms the closure of two underground storage tanks under San Mateo County permit number HM 063 94 at the subject site. With the provision that the information provided to this agency was accurate and representative of existing conditions, it is our position that no further action is required at this time.

Please be advised that this letter does not relieve you of any liability under the California Health and Safety Code or Water Code for past, present, or future operations at the site. Nor does it relieve you of the responsibility to clean up existing, additional, or previously unidentified conditions at the site which cause or threaten to cause pollution or nuisance or otherwise pose a threat to water quality or public health.

Additionally, be advised that changes in the present or proposed use of the site may require further site characterization and mitigation activity. It is the property owner's responsibility to notify this agency of any changes in report content, future contamination findings, or site usage.

Thank you for your cooperation in this matter. I may be reached at (415) 363-4565.

Sincerely,

Teresa Belasco, REHS, MPH
Hazardous Materials Specialist IV

cc: Dean Peterson, Hazardous Materials Program Manager

DRAFT

SAN MATEO COUNTY BOARD OF SUPERVISORS
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HEALTH SERVICES AGENCY DIRECTOR
MARGARET TAYLOR

ENVIRONMENTAL HEALTH SERVICES DIVISION DIRECTOR
BRIAN ZAMORA, MPH, REHS

590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX (415) 363-7882

P 153 302 493

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to NICHOLAS/BARBARA MARCELLI	
Street and No. 9 CERRITO PLACE	
P.O., State and ZIP Code REDWOOD CITY, CA 94061	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 4/25/94	

PS Form 3800, June 1991

DRAFT

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

April 25, 1994

Certified P 153 302 493

Nicholas and Barbara Marcelli
9 Cerrito Place
Redwood City, CA 94061

Subject: Underground Storage Tank, 134 Maple St., Redwood City, CA

This letter is in regard to the underground storage tank located at the above referenced property. Our records indicate that you are the owner of this property.

Pursuant to the California Underground Storage Tank Regulations, all underground tanks storing hazardous materials, either presently or previously, must be brought under permit, inspected and monitored, or properly abandoned. Please be advised that because you are the property owner, you are responsible for assuring that this tank is in compliance with the California Underground Tank Regulations.

I have enclosed permit applications for both actions for you to complete along with a permit fee schedule. Regardless of which action you choose to take, you must submit the proper application and fees within thirty (30) days from the receipt of this letter.

If you have any questions, please contact me at (415) 363-4565.

Sincerely,

Teresa Belasco, REHS, MPH
Underground Storage Tank Program Specialist

enclosures

cc: Dean Peterson, Hazardous Materials Program Manager

DRAFT

SAN MATEO COUNTY BOARD OF SUPERVISORS
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590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX [415] 363-7882

CERTIFIED

P 153 302 450

MAIL

County of San Mateo
Environmental Health Services Division
County Office Building
590 Hamilton Street
Redwood City, CA 94063

REDWOOD CITY CA APR 20'94 PB METER 7003839 U.S. POSTAGE $2.52

RETURNED TO SENDER

REASON CHECKED
Unclaimed
Attempted-Not-known
Insufficient Address
No such street
No such office in state
Do not remail in this envelope
Refused X
number

FROM
COUNTY OF SAN MATEO
ENV.HLTH.,590 HAMILTON ST.,R WC
County Government Center Redwood City, Colif. 94063

MR. NICK MARCELLI
MARCELLI LIGHTING
134 MAPLE STREET
REDWOOD CITY, CA 94063

Nicholas T and Barbara Marcelli
a Curtis Pl
Redwood Ct.
9406

NICK Marcelli is not affiliated with Marcelli Lighting and is not at this address.

DRAFT

AS1G0055-AS50 COUNTY OF SAN MATEO 04/25/94-11:07
TERM PGA9 PUBLIC ASSESSOR INFORMATION PROPERTY INFO

DRAFT

PARCEL NO = 053-147-010
FIRST NAME = MARCELLI NICHOLAS T & BARBARA
SECOND NAME =
C/O NAME =
MAIL ADDR = 9 CERRITO PL
CITY/ST/ZIP = REDWOOD CITY, CA 94061
PROPERTY LOC = 134 MAPLE ST
CITY = RC
TAX RATE AREA = 009-091

LEGAL DESC = N 1/2 OF BLOCK 2 & PTN MAPLE ST ABAND HANCOCKS ADDITION RSM
= 1/80 CITY OF REDWOOD CITY
RECORDER'S SERIAL NUMBER = AM084825 DATE OF RECORDING = 06-28-78

PF8 TO GO TO MAIN MENU
PF11 TO RETRIEVE PRIOR INPUT PF5 TO EXIT APPLICATION
S_ Aa

UNITED STATES POSTAL SERVICE

Official Business

PENALTY FOR PRIVATE USE TO AVOID PAYMENT OF POSTAGE, $300

U.S.MAIL

Print your name, address and ZIP Code here

County of San Mateo
Environmental Health Services Division
County Office Building
590 Hamilton Street
Redwood City, CA 94063

TB Sleeve

DRAFT

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

MR. NICK MARCELLI
MARCELLI LIGHTING
134 MAPLE STREET
REDWOOD CITY, CA 94063

4a. Article Number

P 153 302 450

4b. Service Type

☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

Thank you for using Return Receipt Service.

PS Form 3811, December 1991 ☆U.S. GPO: 1992—323-402 DOMESTIC RETURN RECEIPT

P 153 302 450

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to: Nick Marcelli	
Street and No.: 134 Maple St.	
P.O., State, and ZIP Code: RWC 94063	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date: 4-19-93	

PS Form 3800, June 1991

DRAFT

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

April 15, 1994

Certified P 153 302 450

Mr. Nick Marcelli
Marcelli Lighting
134 Maple Street
Redwood City, CA 94063

Subject: Underground Storage Tank, 134 Maple St., Redwood City, CA

This letter is in regard to the underground storage tank located at the above referenced property. Our records indicate that you are the owner of this property.

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If you have any questions, please contact me at (415) 363-4565.

Sincerely,

Teresa Belasco, REHS, MPH
Underground Storage Tank Program Specialist

enclosures

cc: Dean Peterson, Hazardous Materials Program Manager

DRAFT

SAN MATEO COUNTY BOARD OF SUPERVISORS
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PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX [415] 363-7882

AS1G0055-AS50 COUNTY OF SAN MATEO 04/25/94-11:07
TERM PGA9 PUBLIC ASSESSOR INFORMATION PROPERTY INFO

PARCEL NO = 053-147-010
FIRST NAME = MARCELLI NICHOLAS T & BARBARA
SECOND NAME =
C/O NAME =
MAIL ADDR = 9 CERRITO PL
CITY/ST/ZIP = REDWOOD CITY, CA 94061
PROPERTY LOC = 134 MAPLE ST
CITY = RC
TAX RATE AREA = 009-091

LEGAL DESC = N 1/2 OF BLOCK 2 & PTN MAPLE ST ABAND HANCOCKS ADDITION RSM
= 1/80 CITY OF REDWOOD CITY
RECORDER'S SERIAL NUMBER = AM084825 DATE OF RECORDING = 06-28-78

PF8 TO GO TO MAIN MENU
PF11 TO RETRIEVE PRIOR INPUT PF5 TO EXIT APPLICATION
S_ Aa

DRAFT

7/13/95

CROP - CLOSURE CHECKLIST

Site Name CHUBS

Site Address 1180 MAIN

Site Number 330120

☒ Closure memo review signatures

	Staff	Lead	PM	Director
Initials	MS			
Date	6/13	6/13	6/13	10/24/95

☒ Closure summary to RWQCB for 30 day review

After 30 day review:

☒ CROP data report

☐ SWRCB quarterly report 6/21/95

☐ Closure letter for BZ signature to sign

☒ Send letter to RP for well destruction and waste disposal stating BZ letter will be sent once report of destruction/disposal is submitted

☐ Well destruction permit

☐ Soil disposal, drum disposal documentation

Copies to:

	RP	Site file	RWQCB	SWRCB	corr file	City Bldg Dpt
closure letter	x	x	x	x	x	x
closure memo		x			x	
closure summary		x		x	x	
cover letter		x			x	x

DRAFT

SAN MATEO COUNTY

DEPARTMENT OF HEALTH SERVICES - ENVIRONMENTAL HEALTH
590 Hamilton Street, Redwood City, CA 94063
(415) 363-4305

OFFICIAL INSPECTION REPORT / FIELD OBSERVATIONS

Site Name: Chubb's Auto Repair
Site Address: 1180 Main St., PVC

Page 1 of
Date: 6/21/95
Program: CROP
Site Computer #
APN:

On site for scheduled well abandonment by pressure grouting. MW-2 in gravel, took 55 gal grout in pit, then concrete & cement in PVC piping.

MW-1 took approximately 20 gal grout & held pressure.

Larry Chubbuck to finish top 3" of seal to match his pavement / concrete floor.

DRAFT

Inspector: M Schemah
Received By: the file

1180 Main St., RWC Club's Auto

4/26/95 Fred Yukic called. He wanted to know if Chubb could pump water from well in lift pit. I said ok. xns

5/2/95 Reviewed report on gradient & called Fred. Asked to sample MW-1 for O+G also. Fred said "MW-2" will be pumped extensively on 5/13/95 which is a Saturday - it won't interrupt business. Will sample for O+G. xns. Turn close

5/24/95 Submitted for closure.
5/25/95 Gail Lee rejected for closure. If no gradient, then shouldn't conclude the source of oil & grease is from the Redwood Creek. I called Fred & asked him to sample MW-1 for oil & grease. He said the lab quantified a sample from MW-1 for motor oil, diesel, & kerosene (0.5/50/50 ppb detection) & all were non-detect. Spoke w/ Gail she said sample MW-1 for O+G.

5/30/95 Called Larry, asked to sample well (MW-1) for O+G.
6/2/95 Fred Yukic called. MW-1 was non-detect for O+G.
6/13/95 Ken Horowitz 415-328-4500 ext. 14 - Attny handling sale of property. Would like to know when send closure request to state.

DRAFT

Chubs Auto, 1180 Main St., RWC #330120

2/(17)/95 Sent fax to Fred Yukic about well construction.

2/21/95 Rec'd quarterly report. Requests case closure. KMS
Performed partial closure review, but need gradient at site and also need to resolve oil and grease issue. Sent letter. KMS

date not recorded (before 4/20/95)
Spoke with Fred Yukic regarding gradient at the site. Told him it is necessary to know it before can close. Use other wells, or provide rationale. KMS

4/20/95 Fred Yukic called. Put piezometer into one of the hydraulic hoist ~~rep~~ holes. Determined that gradient is flat. KMS

DRAFT

SAN MATEO COUNTY

DEPARTMENT OF HEALTH SERVICES - ENVIRONMENTAL HEALTH
590 Hamilton Street, Redwood City, CA 94063
(415) 363-4305

OFFICIAL INSPECTION REPORT / FIELD OBSERVATIONS

Site Name: Chub's Auto
Site Address: 1180 Main St., RWC

Page 1 of 1
Date: 3FEB95
Program: 330120
Site Computer #:
APN:

2/3/95 On site for scheduled groundwater sampling. No odor/sheen. David O. w/ ASE = sampler TPH-d, BTEX. Water is brownish. ASE questioning tidal influence had done some monitoring of depth yesterday. 2x amber l ~~VOA~~ bottle, x40 ml VOA

Piping in the hoist excavation present but not concreted. Recommend that cover-cement the pea gravel. Mr Chubbuck wondered if needed well in that area & I said yes, based on conversation w/ RWQCB & levels detected in the soil. xms

Inspector: Michele Shoemaker
Received By: File

DRAFT

1180 Main St. RWC chubs #330120

JANUARY 31, 1995 - David of ASF called to say he's sampling at 11 on 2/3/95. xms

DRAFT

Chubb's Auto, 1180 Main St. RWC #330120

12/9/94 Spoke w/ Fred Yukic. He wanted to remind me that the overexcavation would be occurring tomorrow at the site. I told Fred I may not go, but that Fred should go, if possible. Fred said he didn't know if he was going to be there so he would talk with Mr. Chubbick today and call me back.

Need grab water sample if hit water (probably will). Stockpile going to Vasco Rd. What is going to be used as fill? Fred will find out. tmg

12/12/14 (on Saturday) Fred called. He said he put in a saw cut (6"screen") PVC pipe in the hole @ Chubbs to act as a well. He pumped out approximately 100 gallons & then sampled Monday. The water appeared oily. The pit was dug out to 12' bgs.

Question: is the pipe considered a well??

12/20/94 - Spoke with Fred Yukic - the water sample from the pit came back at 2 ppm O+G.

1/12/95 Fred Y. called. Wanted to know why a well was needed if O+G are at detection. I called back 1/13/95 and left message for him to call me. tmg

DRAFT

Chubbs Auto, 1180 main St., RWC #330120

8/4/94 On-site for scheduled gw sampling. Did not stay to witness sampling. Brought student intern Barry Buy. XMS

9/1/94 Rec'd quarterly. Still non-detect. Need gradients wrote letter XMS

10/5/94 Fred Yukic called. A hydraulic hoist was removed from the site. Soil samples have been taken and they had hits so dug deeper and still have 500 ppm oil and grease at the water level. I told Fred that I would be the main contact person for this cleanup. I asked him to forward all analytical to me and a brief workplan for the work that he's proposing. We'll probably have to take a water sample and take it from there - XMS

10/7/94
Received fax of analytical to date. Called Fred to see when work is occurring. Left message.

11/16/94 Rec'd quarterly report. Send letter.

11/28/94 Fred Yukic called. He'll be sending a letter to update me on the site. RP is hiring someone to overdig if it may happen on a weekend. I told Fred to have RP call me for notifications regardless of the day XMS

DRAFT

Chub's Auto Repair, 1180 Main St., RWC #330120

5/4/94 On site to witness monitoring well installation. Showed up just as ready to pour seal. Well is 20' deep, water at 10' took soil samples at 5½', 10½ feet. Will analyze one of them, depending on water level tomorrow when the well is developed. Dave of Applied Science + Engineering will be on site tomorrow from 10-1 to develop the well.

Soils were clayey to 14' and then gravel/course sand encountered.

Soil sample to run for TPH-d, BTEX, water sample for the whole scan, without oil and grease as this was low in the original water sample. TPH-gd, BTEX, volatiles. xMshoemaker.

5/5/94 On site for well sampling. Well hadn't fully recovered so I didn't wait for sampling. Water was very silty. No odors. xMshoemaker

5/31/94 Received well monitoring report. All ND. I called Fred because his report states the ~~well~~ pit (MS) was pumped dry and didn't re-charge but SMCo. asked for well anyway. I told him I would send him a copy of my notes. Also, Fred asked if volatiles could be eliminated from sampling requirements.

6/2/94 called SMCo. Revised report should be out soon. xMS

DRAFT

1180 Main Street, Redwood City, CA # 330120 CHUB'S AUTO REPAIR

4/8/94 (continued) submitted, then maybe I won't require so many analyses. Soil does not need to be analyzed for everything, just TPH-d and BTEX, as workplan proposes. x MShoemaker

4/18/94 Fred Called. He said the pit sample on 2/9/94 was only analyzed for oil and grease and was at 9 ppm. He said the tank was analyzed for volatiles before disposal, but results were low. I said the well needs to be analyzed for volatiles, but can hold oil and grease. MShoemaker

4/19/94 received drilling application. I approved it. MShoemaker

4/29/94 Received Tank Removal Report from SEMCO dated 4/26/94. x MShoemaker. Sent letter 5/4/94.

DRAFT

1180 Main St, PWC CHUB'S AUTO REPAIR SM # 330120

2/17 called Chuck w/ SEMCO. Asked him why pumped pit more than one time. He said thought it was ok to do three times. SM Co. Guidelines state one time only. I faxed him copy of Guidelines page iii. x MSroemaker

3/3/94 Randy w/ SEMCO called. Wants to pump pit again. I asked for results from previous water sampling before I make a decision. Told Randy that more purging and sampling is not going to preclude Chub's from putting in a well.

3/15/94 Called Chuck w/ Semco because I received a call from a prospective consultant at the site (Fred Yukic 363-2445). Fred had talked with Mr. Chubbick and was told the water had some weird chemicals in it. I don't have the pit water results yet so I requested them from Chucks. K MSroemaker

3/18/94 Received analytical results from SEMCO, from second sampling. Have not received sample results for original pit water sampling (2/9/94) x MSroemaker

3/31/94 Redd workplan for the installation of one monitoring well. Consultant is Applied Science and Engineering. x MSroemaker

4/8/94 - Fred Yukic called abt. the letter from this office 4/4/94. I want gradient determined once the well is in place, just for confirmation. I want water sampled for parameters listed because SEMCO overpumped the pit, invalidating results. If 2/9/94 water sample results are

continued

DRAFT

(415) 368-2224

Chubs Auto Repair

1180 Main St., RWC

2/16/94 - Semco pumped pit, set appt for sampling 1 pm. [(2) of 5000 gal tanks]

2/17/94 arrived on site. Pit was being pumped when I arrived. Pit had been pumped dry yesterday & re-filled partially.

It rained last night, not covered, but bermed. (water level unchanged per Pat of Semco). Berming material was soil but not covered with plastic.

There was sheen on water seen.

~100 gal was pumped today.

Worker @ Chub's said the water level had varied, he thought due to tidal influence. Redwood Creek very close to pit - approx. 60' to the west. The paved ditch was running quickly

- Sample #: Pit H_2O #1 to be submitted to laboratory. Sampler didn't know which lab, nor which were the proper containers. Suggested he call lab to check.

x Michele Stromski

DRAFT

1180 Main St., RWC - Chubs Auto Repair
2/3/94 - Rec'd and approved brief workplan
2/9/94 - on site for over excavation

- Arrived on site, had already began digging and hit groundwater. were pumping the pit (having problems w/ pump) but were pumping slower than re-charge so got no. where. There was a sheen on the water - Took a water sample. Samples to be submitted for TPH-g, TPH-d, BTEX, CL hydrocarbons, GTO. Soil Sample was taken at ~8' on the west wall. Depth to groundwater was approximately 9½ feet.

x Michele Sholund

2/14/94 Chuck w/ SEMCO wanted to know if could re-pump pit because of pump difficulties. The samples are on hold that were submitted 2/9/94. He has a tank on site to pump into. OK by me.

DRAFT

SAN MATEO COUNTY DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL HEALTH SERVICES DIVISION

PERMIT NO. XXXXXXXXXXX 03425

LMW-123-95

ENVIRONMENTAL HEALTH PERMIT

DRAFT

FEE CATEGORY 2010 SOIL BORINGS/VADOSE/VAPOR/MONITORING WELLS

ORDINANCE NO. 03101

DATE ISSUED 06/16/95 EXP. DATE 09/16/95 ISSUED BY: M SHOEMAKER

ENVIRONMENTAL HEALTH SPECIALIST

ISSUED TO

OWNER:
LAWRENCE H CHUBICK
1180 MAIN ST
REDWOOD CITY 94063

CONTRACTOR:
HEW DRILLING INC
P O BOX 51182
PALO ALTO 94303

CONSULTANT: ASE INC

APN/CN 053-147-020 CT AMOUNT PAID:

TERMS AND CONDITIONS

MONITORING WELL DESTRUCTION (2)

LOCATION: 1180 MAIN ST, RWC

THIS PERMIT IS NONTRANSFERABLE AND MUST BE ON SITE.

SUBSURFACE DRILLING APPLICATION

ENVIRONMENTAL HEALTH DIVISION
SAN MATEO COUNTY DEPARTMENT OF HEALTH SERVICES
COUNTY GOVERNMENT CENTER
590 HAMILTON STREET
REDWOOD CITY, CA 94063
(415) 363-4305

DATE ISSUED: JUN 16 1995
PERMIT NO.: LMW-123-95
FEE:
RECEIPT NO:
ASSIGNED TO: M. Shaemaker

060098

PRESSURE GROUT

PURPOSE OF APPLICATION: ☐ Monitoring Well Installation ☒ Monitoring Well Destruction ☐ Groundwater Extraction ☐ Soil Boring ☐ Vapor Extraction ☐ Vadose

No. of Wells 2 No. of Borings

ALLOW A MINIMUM OF FIVE DAYS FOR PROCESSING

Well/Boring Location
Address: 1180 MAIN ST City Redwood City CA.
Well #(s) MW-1 MW-2 Assesor's Parcel No.: 053-147-020

Property Owner
Name: LAWRENCE H. Chubick
Address: 1180 MAIN ST. Redwood City, State, Zip 94063
Telephone No.: 415 368 2224

Well Owner (if different than property owner)
Name: SAME
Address: City, State, Zip
Telephone No.:

Drilling Company
Name: H.E.W. DRILLING INC.
Address: P.O. Box 51182 PALO ALTO City State, Zip 94303
Telephone No.: 322-2857 Driller's License No.: 604 987

Consultant
Name: ASE, Inc.
Address: PO Box 1166 City, State, Zip San Carlos CA 94070
Telephone No.: (415) 363-2445 Contact: FRED YUKIC

FA Yukic
Signature of Responsible Professional

46369
Registration or Certification No. of RG/PE/CEG

Depth of Proposed Wells/Borings: Drilling Method

Purpose of Drilling: ☐ County LUFT Requirements ☐ Exploration Studies (PSA) ☐ Title 22 Requirements ☐ Other

Well is to be constructed in: ☐ A Public Sidewalk ☐ A Roadway ☐ Public Property ☐ Private Property ☐ Refuse

Well Information:
Well Diameter Slot Size
Gravel Pack Size Est Screen Interval Depth
Development Method (proposed)
Planned Drilling Date (72-hour notification is required to County)

Certification by Well Owner/Agent and Driller/Agent:
I certify that the information given above is correct to the best of my knowledge. I certify that the well will be constructed in compliance with the conditions of this permit, the San Mateo County Ordinance and the State Water Well Standards. It is my responsibility as the well owner/agent to notify the County of any changes in the purpose of this well from that which is indicated on this application form.

Well Owner/Agent 6/15/95 Date

FAY for HEW 6-15-95
Driller/Agent Date

☐ I certify that in the performance of the work for which this permit is being issued. I shall not employ any person in any manner so as to become subject to the Workmen's Compensation laws of California. or ☐ I certify that I have a valid Workmen's Compensation Coverage.

REV. 6/22/94

DRAFT

SUBSURFACE DRILLING APPLICATION

Upon review of the information on this application and submitted workplan and subject to approval noted below, a permit will be issued allowing owner/agent driller/agent to construct the described well. Permission to mobilize may be withheld until a field check verifies all statements made on application by Permittee and is also subject to the "General" and "Special" Conditions stated below.

In addition to the well location map included in the workplan, attach a copy to the permit. The well location map shall include the following:

1. Sketch well location to scale, show dimension to nearest foot
2. Show a minimum of two dimensions at right angles. Dimensions shall be from the centerline of the closest named street and or property lines. These dimensions may be estimated and subsequently finalized in the report of findings.
3. North Arrow, existing site features, existing wells and any other pertinent information.

GENERAL CONDITIONS:

A. Construction under this permit is subject to any instructions by a Health Department representative relative to the "Standards for the Construction of Wells in San Mateo County" and the State Water Well Standards.

B. Permit may be voided before work begins if field check reveals any misrepresentation under "well location" of the submitted workplan.

C. The permit is valid only for the purpose specified herein. No change in construction procedure as prescribed in the workplan and in the special conditions below will be allowed except upon written permission of the County.

D. Permittee shall assume entire responsibility for all activities and uses under the permit and shall indemnify, defend and save the County of San Mateo, its' officers, agents and employees free and harmless from any and all expense, cost or liability in connection with or resulting from the exercise of the permit including, but not limited to property damage, personal injury and wrongful death.

E. The wells may not be used for domestic water supplies unless separately approved by the Office of Environmental Health.

F. Permit will be automatically canceled if not exercised or if an extension is not requested by Permittee with 90 calendar days of above date.

G. Driller is to complete State DWR Form 188 and mail original to San Mateo County Environmental Health within 30 days of completion of well construction.

H. For the construction of water producing wells a Permittee must be a licensed water well drilling contractor unless the work is to be done by the landowner or employees of the landowner. (See Business & Professions Code 7026.3, 7028).

I. Dry holes and/or soil borings must be grouted within one week of drilling.

J. Well destruction shall be done in accordance with State and County Standards.

K. All workplans and reports need to conform to County LUFT Enforcement guidelines as well as Regional Water Quality Control Board guidelines and the State Water Well Standards.

L. If contamination is discovered, verbal notification to the county is required within 48 hours. A written report is required within 30 days.

SPECIAL CONDITIONS:

~~ALL MONITORING WELLS ARE TO BE SURVEYED TO MEAN SEA LEVEL DATUM.~~

Approved: Michele Stroenke Date: 6/15/95

DRAFT

ENVIRONMENTAL HEALTH PERMIT

San Mateo County Department of Health Services
590 Hamilton Street, Redwood City, CA 94063

DRAFT

Permit to MONITORING WELL INSTALLATION

ONE (1) MONITORING WELL INSTALLATION, MW-1

At 1180 MAIN STREET, REDWOOD CITY

No.	LKN-055-94
Date	4/20/94
Fee paid	FEE EXEMPT
APN	053-147-020
Ordinance No.	03101

This permit has been granted to:

OWNER:
LARRY CHUBICK
1180 MAIN STREET
REDWOOD CITY, CA 94063

CONSULTANT:
FRED YUKIC
APPLIED SCIENCE & ENGINEERING, INC.
P.O. BOX 1166
SAN CARLOS, CA 94070

ISSUED BY: M. SHOEMAKER

Contractor:
HEW DRILLING CO.INC.
P.O. BOX 51182
PALO ALTO, CA 94303

For the Director of
Environmental Health

BRIAN J. ZHAO, DIRECTOR

EL

THIS PERMIT IS NONTRANSFERABLE AND MUST BE ON JOB SITE
Permit shall be void if construction is not started
within 90 days of date of this permit.

recycled paper

SUBSURFACE DRILLING APPLICATION

ENVIRONMENTAL HEALTH DIVISION
SAN MATEO COUNTY DEPARTMENT OF HEALTH SERVICES
COUNTY GOVERNMENT CENTER
590 HAMILTON STREET
REDWOOD CITY, CA 94063
(415) 363-4305

DATE ISSUED: _____
PERMIT NO.: _____
FEE: _____
RECEIPT NO: _____
ASSIGNED TO: _____

ALLOW A MINIMUM OF FIVE DAYS FOR PROCESSING

PURPOSE OF APPLICATION: ☒ Monitoring Well Installation ☐ Monitoring Well Destruction ☐ Groundwater Extraction ☐ Soil Boring ☐ Vapor Extraction ☐ Vadose

No. of Wells 1 No. of Borings _____

Well/Boring Location
Address: 1180 Main St. City Redwood City
Well #(s) MW-1 Assesor's Parcel No.: 053-147-020

Property Owner
Name: Larry Chmbrck
Address: 1180 Main St. City, State, Zip Redwood City, CA 94063
Telephone No.: (415) 368-2224

Well Owner (if different than property owner)
Name: _____
Address: _____ City, State, Zip _____
Telephone No.: _____

Drilling Company
Name: HEW Drilling Co., Inc.
Address: PO Box 51182 City State, Zip Palo Alto CA 94303
Telephone No.: (415) 322-2851 Driller's License No.: 604987

Consultant
Name: Applied Science & Engineering, Inc.
Address: P.O. Box 1166 City, State, Zip San Carlos, CA 94070
Telephone No.: (415) 363-2445 Contact: Fred Yuktis

Signature of Responsible Professional

C46369
Registration or Certification No. of RG/PE/CEG

Depth of Proposed Wells/Borings: 20' Drilling Method HSA

Purpose of Drilling: ☒ County LUFT Requirements ☐ Exploration Studies (PSA) ☐ Title 22 Requirements ☐ Other _____

Well is to be constructed in: ☐ A Public Sidewalk ☐ A Roadway ☐ Public Property ☒ Private Property ☐ Refuse

Well Information:
Well Diameter Slot Size 0.020 / /
Gravel Pack Size #3 Est Screen Interval Depth 5-20
Development Method (proposed) bail
Planned Drilling Date 4/27/94 (72-hour notification is required to County)

Certification by Well Owner/Agent and Driller/Agent:

I certify that the information given above is correct to the best of my knowledge. I certify that the well will be constructed in compliance with the conditions of this permit, the San Mateo County Ordinance and the State Water Well Standards. It is my responsibility as the well owner/agent to notify the County of any changes in the purpose of this well from that which is indicated on this application form.

Say for Larry Chmbrck 4.18.94
Well Owner/Agent Date ☐

I certify that in the performance of the work for which this permit is being issued. I shall not employ any person in any manner so as to become subject to the Workmen's Compensation laws of California.

Say for HEW 4.18.94
Driller/Agent Date ☒

I certify that I have a valid Workmen's Compensation Coverage.

DRAFT

SUBSURFACE DRILLING APPLICATION

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E. The wells may not be used for domestic water supplies unless separately approved by the Office of Environmental Health.

F. Permit will be automatically canceled if not exercised or if an extension is not requested by Permittee with 90 calendar days of above date.

G. Driller is to complete State DWR Form 188 and mail original to San Mateo County Environmental Health within 30 days of completion of well construction.

H. For the construction of water producing wells a Permittee must be a licensed water well drilling contractor unless the work is to be done by the landowner or employees of the landowner. (See Business & Professions Code 7026.3, 7028).

I. Dry holes and/or soil borings must be grouted within one week of drilling.

J. Well destruction shall be done in accordance with State and County Standards.

K. All workplans and reports need to conform to County LUFT Enforcement guidelines as well as Regional Water Quality Control Board guidelines and the State Water Well Standards.

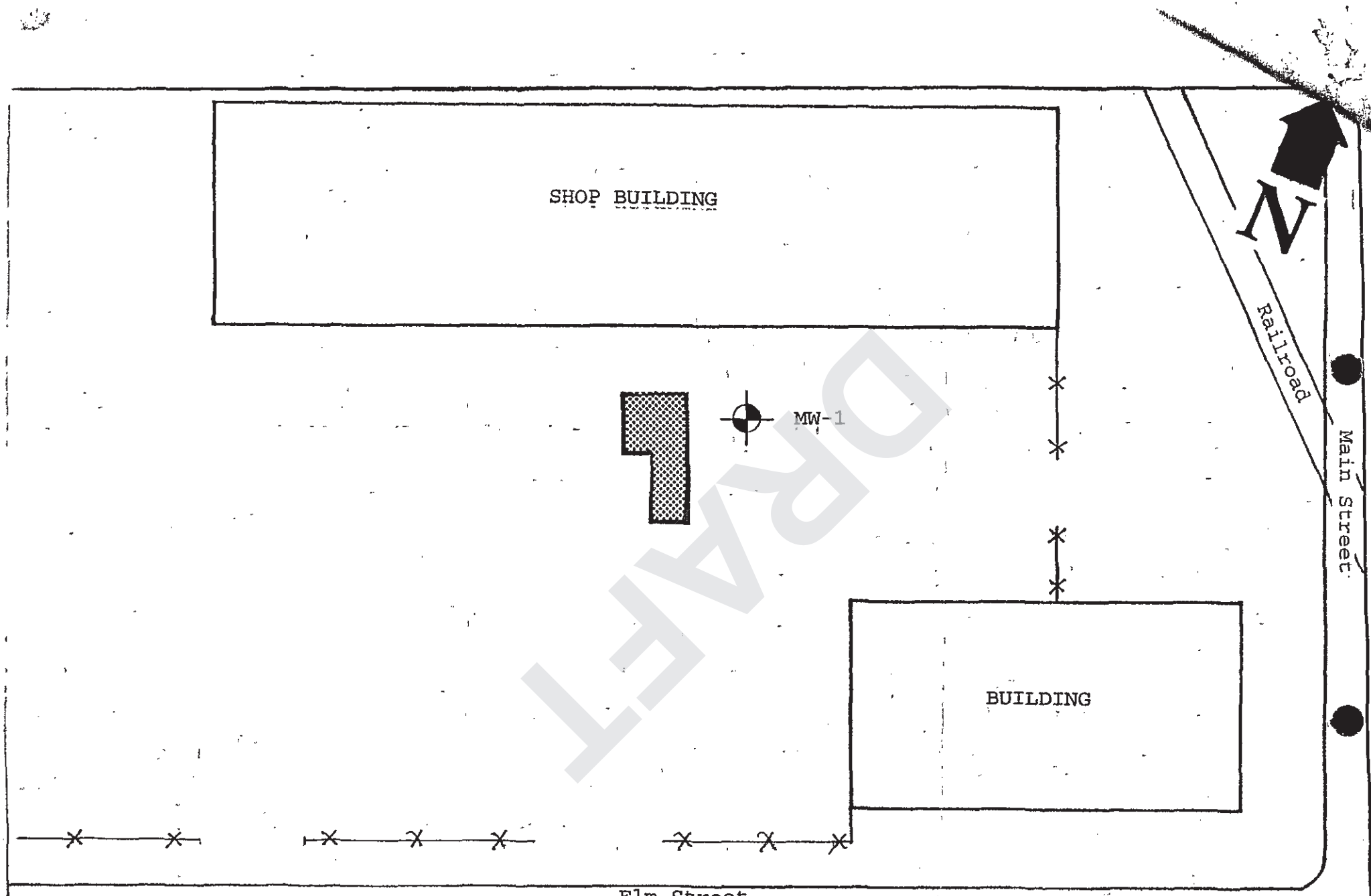
L. If contamination is discovered, verbal notification to the county is required within 48 hours. A written report is required within 30 days.

SPECIAL CONDITIONS:

All wells must be surveyed to mean sea level datum.

Approved: Michele Kroemer Date: 4/19/94

DRAFT



ASE
APPLIED SCIENCE AND ENGINEERING INC.

1" = 20'

PROPOSED MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

PERMANENT TANK CLOSURE INSPECTION SHEET

SITE NAME: Chubs Auto Repair DATE: 1/14/93 & 1/15
ADDRESS: 1180 main St, Redwood City CA
RESPONSIBLE PARTY: Larry Chubsick CONTACT: Larry Chubsick
ADDRESS: Same PHONE: (415) 368-2224

PRE-INSPECTION INFORMATION | HAS PERMIT BEEN ISSUED? X Y ___ N
PERMIT # HM 81793

AND SIZE OF TANKS: ___ UL 1000 REG ___ D
1000 WO ___ OTHER

REASON FOR REMOVAL: Discontinued use
HISTORY INDICATE PROBLEM ___ Y X N EXPLAIN ___

DO MONITORING WELLS EXIST ON SITE? ___ Y X N (incidate on site map)
DEPTH TO GROUNDWATER: ___ Ft

ON-SITE INFORMATION (PREPARE SITE MAP ON SECOND PAGE)

1. IS SITE SAFETY PLAN ON SITE: ✓ Y ___ N
2. CONDITION OF TANKS AND PIPING: W.O: Holes on top. Reg - OK Piping many holes
3. EVIDENCE OF LEAKAGE? X Y ___ N Explain Soil discolored (WO tank)
4. WAS GROUNDWATER ENCOUNTERED IN PIT? ___ Y X N IF SO, DEPTH? ___
   FLOATING PRODUCT? ___ Y ___ N SHEEN? ___ Y ___ N
   WAS WATER SAMPLED? ___ Y ___ N PIT PUMPED? ___ Y ___ N
   VOLUME PUMPED (Approx) ___ gal
5. INDICATE ON SITE PLAN WHERE SOIL/GW SAMPLES TAKEN
6. ANALYSIS REQUIRED? ✓ 5030 ✓ 3550/3510 ___ 8020/8240 ✓ 5520
   ___ 601/624 ✓ TEL ✓ METALS ✓ 8010/8240 ~~✓~~ 8270
7. SAMPLES FROM STOCKPILE TAKEN? X Y ___ N If so, How Many 2 comps
   VOLUME OF STOCKPILED SOIL? (Approx) ~ 24 cu yds
8. CHAIN OF CUSTODY CHECKED? ✓ Y ___ N
9. SOIL/GW SAMPLING COMMENTS: Standard procedures
10. WAS PIT OVEREXCAVATED ___ Y X N Volume? ~~24 (12 ea)~~ cu yds
    (Indicate on site map)
11. TANK MANIFEST #? 92885656 RINSATE MANIFEST#? ___
    PIT WATER MANIFEST #: ___

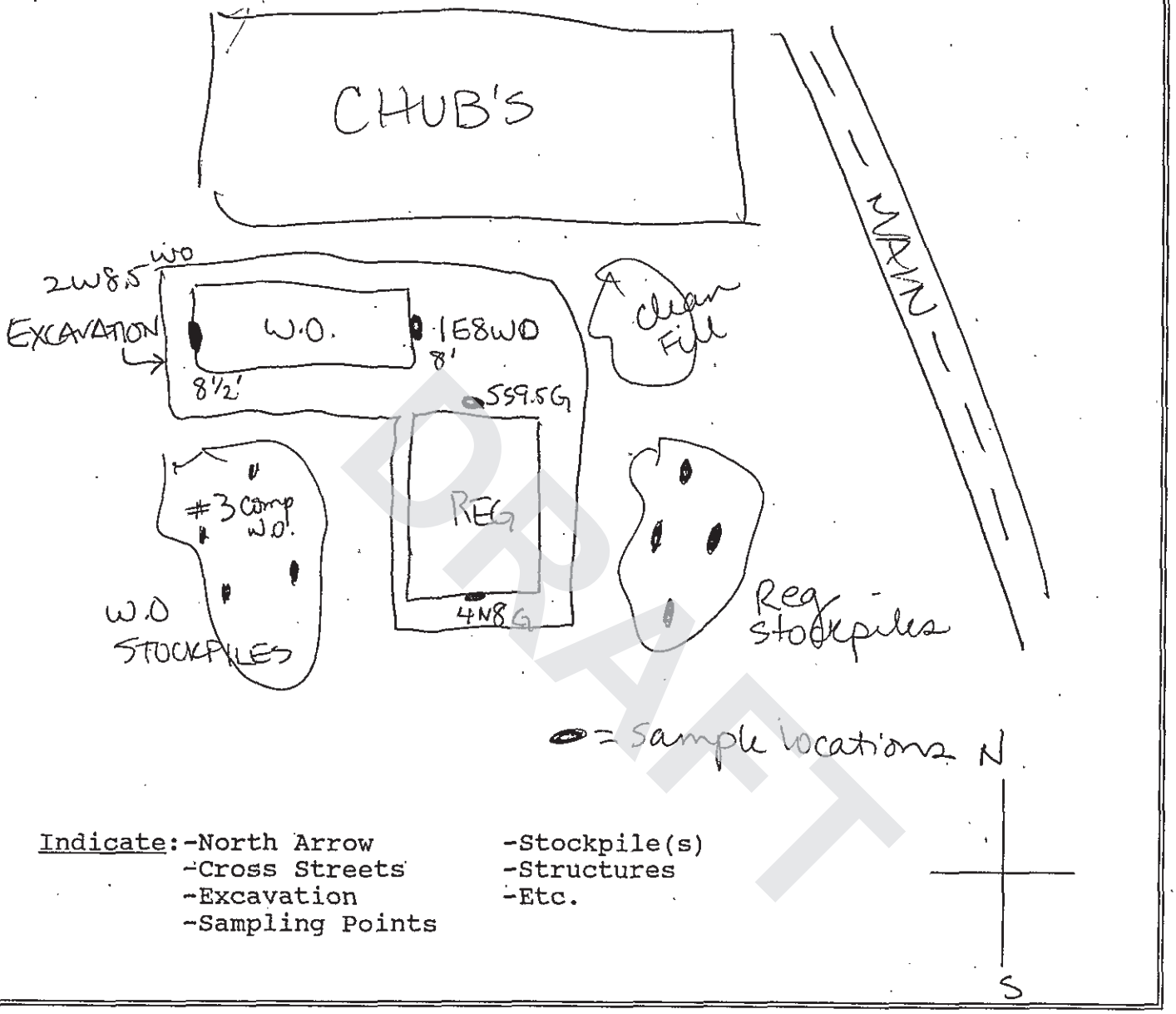
INSPECTOR: Susa Blasco
TITLE: HMS IV DATE: 1/14/94
RECEIVED BY: X Chuck Kepi COMPANY: Semco
DATE: 1/14/94 PHONE #: 522-8033

Michele Shoemaker, HMS II on site too

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SITE MAP



Indicate: -North Arrow
-Cross Streets
-Excavation
-Sampling Points
-Stockpile(s)
-Structures
-Etc.

ADDITIONAL COMMENTS: W.O. Tank - LEL 0% O2 2% OK to pull
Reg Tank - LEL 11% O2 20% - inert to safe levels. LEL 15% O2 4% - 2% - O.K.
Waste Oil - Several small holes on top and top 1/3 E end seam. Bottom of tank looks good.
Reg Tank - Corrosion and pitting, but no holes.
Soil beneath W.O tank diff. display discoloration and slight solvent odor. Bring cooler to all future jobs.
Soil under Reg tank looked good.

* Second tank discovered during excavation. You must complete paperwork and pay fee for second tank by Tues. 11/18.

* Please call to schedule sampling beneath dispenser.

Charles Lyon

DRAFT

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AEI Consultants
3880 S. Bascom Ave., Suite 109, San Jose, CA 95124
Environmental & Engineering Services
Tel: 408.559.7600 Fax: 408.559.7601

July 12, 2017

Redwood City Fire Prevention
755 Marshall Street
Redwood City, California 94063
(650) 780-7400
(650) 780-7461 FAX

Subject: File Review Request
AEI Project No. 374905

Dear Fire Dept Staff,

AEI has been contracted to perform a Phase I Environmental Site Assessment. Please indicate if you have any current or archived records pertaining to aboveground storage tanks (ASTs), underground storage tanks (USTs), hazardous materials storage/disposal and/or industrial waste discharges for the following site(s):

- 1150 to 1190 (evens #s only) Main Street Ø
- 134-160 (even #s only) Maple Street Ø
- 139 Elm Street Ø
- 620 Railroad Avenue —— not RC Street?
- 144 Lathrop Street Ø

If you do not have any records, please indicate in the space below and fax back this sheet to (408) 559-7601, call me at (408) 559-7600, or e-mail me at mnolet@aeiconsultants.com if you have any questions.

Sincerely,

Megan Nolet
Project Manager

☒ No Files for address(es) listed above
Name: Theresa Malina
Title: Secretary
Phone: (650) 780-7400

DRAFT

Matthew Rodriquez
Secretary for
Environmental Protection

Department of Toxic Substances Control

Barbara A. Lee , Director
1001 I Street
P.O. Box 806
Sacramento , CA 958120806

Edmund G. Brown Jr.
Governor

Facility Search Results

Selection Criteria:

Facility:
Search on: Physical Address
Street: Main
City: Redwood City
Status: Active and Inactive
Sort Direction: asc
Sorted By: EPA ID
Records Found: 66

DRAFT

EPA ID Number	Name	Address	City	Zip
CAC000003178	1X PHIL FINER REFRIGERATION INC	1001 MAIN ST	REDWOOD CITY	940630000
CAC000212425	1X AUTOHAUS BRUGGER	201 MAIN STREET	REDWOOD CITY	940630000
CAC000804832	1X REDWOOD CITY	908 MAIN ST	REDWOOD CITY	940630000
CAC000824168	1X PG&E	6000 MAIN STREET	REDWOOD CITY	000000000
CAC000847400	1X BRUGGER CORP	201 MAIN ST	REDWOOD CITY	940630000
CAC001001392	CHUB'S AUTO REPAIR	1180 MAIN ST	REDWOOD CITY	940630000
CAC001246736	MEZES PLAZA ASSOCIATES	MAIN & BROADWAY	REDWOOD CITY	940630000
CAC001347448	THE BRUGGER CORP	201,249, & 305 MAIN ST	REDWOOD CITY	940630000
CAC001365824	MENLOW MGT	999 MAIN ST	REDWOOD CITY	940250000
CAC001408424	BROCKWAY PROPERTIES	305 MAIN ST	REDWOOD CITY	940630000
CAC001435052	REDWOOD ASSOCIATES	875 MAIN ST	REDWOOD CITY	940630000
CAC002119368	REDWOOD CITY REDEVELOPMENT AGENCY	BRADFORD ST & MAIN ST	REDWOOD CITY	940630000
CAC002321489	CENTER CITY PLAZA	950 MAIN ST	REDWOOD CITY	940630000
CAC002583730	JOHN WOOD	1104 MAIN ST	REDWOOD CITY	94063
CAC002618736	DAVIDOVITZ & CO INC	369 MAIN ST	REDWOOD CITY	940631729
CAC002627003	THE MATHESON CO	333 MAIN ST	REDWOOD CITY	940631729
CAC002634021	333 MAIN ST	333 MAIN ST	REDWOOD CITY	94063
CAC002636379	BIZZARROS INC	935 MAIN ST	REDWOOD CITY	940631903
CAC002672682	PACIFIC EURO HOTEL	868 MAIN ST	REDWOOD CITY	940631902
CAC002678441	LIQUID DIGITAL MEDIA	999 MAIN ST	REDWOOD CITY	94063
CAC002683260	LATHROP PARK	1190 MAIN ST	REDWOOD CITY	94063
CAC002684136	BROADWAY CLEANER	1681 MAIN ST	REDWOOD CITY	940632121
CAC002685168	SEQUOIA HOTEL	800 MAIN ST	REDWOOD CITY	940631902
CAC002693842	LATHROP PARK REDWOOD CITY LLC	1190 MAIN ST	REDWOOD CITY	94063
CAC002754460	LMI REDWOOD CITY HOLDINGS, LLC	601 MAIN ST	REDWOOD CITY	940631921
CAC002769201	LMI REDWOOD CITY HOLDINGS, LLC	601 MAIN ST	REDWOOD CITY	940631921
CAC002855188	BUTLER REALTY III, LLC	1629 MAIN ST	REDWOOD CITY	940632121
CAC002888722	CITY CENTER PLAZA	950 MAIN STREET	REDWOOD CITY	94063
CAC002888731	CITY CENTER PLAZA	950 MAIN STREET	REDWOOD CITY	94063
CAC002904188	BUTLER REALTY III, LLC	1629 MAIN ST.	REDWOOD CITY	94063
CAC002905412	BUTLER REALTY III, LLC	1629 MAIN STREET	REDWOOD CITY	94063
CAC002907124	MEZES COURT CITY CENTER PLAZA	950 MAIN ST.	REDWOOD CITY	94063
CAC002910405	PACIFIC BELL TELEPHONE DBA AT&T CA	MAIN AND MAPLE	REDWOOD CITY	94065
CAC002919081	RUST FAMILY PROPERTIES LLC	925 MAIN STREET	REDWOOD CITY	94063
CAD043261544	COOKS AUTO BODY	1104 MAIN ST	REDWOOD CITY	940631913
CAD981457179	COOKS AUTO BODY	1104 MAIN STREET	REDWOOD CITY	940630000
CAD981622517	BROADWAY CLEANERS	1681 MAIN ST	REDWOOD CITY	940630000
CAD981632581	AUTOBAHN INC	201 MAIN ST	REDWOOD CITY	940630000

CAD983616343	B P S REDWOOD CITY	1201 MAIN ST	REDWOOD CITY	940630000
CAH777000579	SAN MATEO COUNTY ENVIRONMENTAL HEALTH	REDWOOD CITY MAINTENANCE YARD	REDWOOD CITY	940640000
CAL000007612	CHUBS AUTO RPR	1180 MAIN ST	REDWOOD CITY	940630000
CAL000011238	ROOTES GROUP DEPOT	1224 MAIN ST	REDWOOD CITY	940630000
CAL000013692	COOKS AUTO BODY	1104 MAIN ST	REDWOOD CITY	940630000
CAL000030741	ROOTES GROUP DEPOT	1224 MAIN ST	REDWOOD CITY	940630000
CAL000064800	BYINGTON AUTOMOTIVE CENTER INC DBA B&D AUTOMOTIVE CENTER	1510 MAIN ST	REDWOOD CITY	940630000
CAL000068791	DR DUC MARCEL NGUYEN	260 A MAIN ST	REDWOOD CITY	940630000
CAL000075434	BIZZARRO'S RESTORATIVE	849 MAIN ST	REDWOOD CITY	940630000
CAL000077884	SCHARBACH CHIROPRACTIC CENTER	650 MAIN ST STE 100	REDWOOD CITY	940630000
CAL000078066	IMAGE AUTO INC	623 MAIN ST	REDWOOD CITY	940630000
CAL000094209	DR DVC MARCEL NGVYEN	260 A MAIN ST	REDWOOD CITY	940630000
CAL000111509	DR RAMON REYNOSO	1526 MAIN STREET	REDWOOD CITY	940630000
CAL000112029	JIM'S MACHINE SHOP	929 MAIN STREET	REDWOOD CITY	940630000
CAL000162018	AFI ENTERPRISES INC	615 MAIN ST	REDWOOD CITY	940630000
CAL000293735	PHIL FINER REFRIGERATION AIC	1001 MAIN ST	REDWOOD CITY	94063
CAL000323310	PENINSULA PRODURE CENTER LP	369 MAIN ST STE 100	REDWOOD CITY	940631729
CAL000327950	LADY PARTS AUTOMOTIVE SERVICES LLC	623 MAIN ST	REDWOOD CITY	940631921
CAL000329605	C & C AUTOMOTIVE	623 MAIN ST	REDWOOD CITY	940631921
CAL000344748	ERIKA KAMAYATSU PETERSON DDS	369 MAIN ST STE 250	REDWOOD CITY	940631760
CAL000371291	BROADWAY CLEANER	1681 MAIN ST	REDWOOD CITY	940632121
CAL000378599	A PLUS IMPORTS	1629 MAIN ST	REDWOOD CITY	94063
CAL000393972	NAILS BY YEN	921 MAIN ST	REDWOOD CITY	94063
CAL913506185	IMAGE AUTO	623 MAIN ST	REDWOOD CITY	940630000
CAL922313952	DR DUC MARCEL-NGUYEN	260-A MAIN STREET	REDWOOD CITY	940630000
CAR000002766	REDEVELOPMENT AGENCY OF THE CITY OF	878 950 MAIN ST	REDWOOD CITY	940640000
CAR000004721	CHUBS AUTO REPAIR	1180 MAIN ST	REDWOOD CITY	940630000
CAR000197004	CHEVRON 307542 FORMER MOHAWK OIL	1001 MAIN ST	REDWOOD CITY	940630000

DRAFT

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Report Generation Date: 07/27/2017

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Department of Toxic Substances Control

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Edmund G. Brown Jr.
Governor

EPA ID PROFILE

Map

ID Number:	CAC001001392	**Status:**	INACTIVE
Name:	CHUB'S AUTO REPAIR	**Inactive Date:**	10/25/2000 12:00:00 AM
County:	SAN MATEO	**Record Entered:**	12/15/1993 12:00:00 AM
NAICS:	N/A	**Last Updated:**	10/25/2000 12:00:00 AM

DRAFT

	Name	Address	City	State	Zip Code	Phone
Location	CHUB'S AUTO REPAIR	1180 MAIN ST	REDWOOD CITY	CA	940630000	
Mailing		1180 MAIN ST	REDWOOD CITY	CA	940630000	
Owner	LAWRENCE H. CHUBICK	1180 MAIN ST	REDWOOD	CA	940630000	4153668977
Operator/Contact	LARRY CHUBICK	1180 MAIN ST	REDWOOD	CA	940630000	4153682224

Based Only Upon ID Number: **CAC001001392**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
1994	2 1.41700	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

DRAFT

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Report Generation Date: 07/27/2017

California Waste Code by Year Matrix

ID Number: CAC001001392
Entity Type: Generator

1994 ▾ 2017 ▾ Select Years

DRAFT

Calif. Code	Description	1994
223	UNSPECIFIED OIL-CONTAINING WASTE	0.41700
512	OTHER EMPTY CONTAINERS >= 30 GALLONS	1.00000
	Grand Total	1.41700

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EPA ID PROFILE

Map

ID Number:	CAL000007612	**Status:**	INACTIVE
Name:	CHUBS AUTO RPR	**Inactive Date:**	6/30/2002 12:00:00 AM
County:	SAN MATEO	**Record Entered:**	11/14/1989 12:00:00 AM
NAICS:	N/A	**Last Updated:**	10/8/2002 1:26:14 PM

DRAFT

	Name	Address	City	State	Zip Code	Phone
Location	CHUBS AUTO RPR	1180 MAIN ST	REDWOOD CITY	CA	940630000	
Mailing		1180 MAIN ST	REDWOOD CITY	CA	940631913	
Owner	CHUBICK LAWRENCE	--	--	99	--	0000000000
Operator/Contact	LAWRENCE H CHUBICK	INACTIVE PER VQ01 - BMI	--	99	--	--

Based Only Upon ID Number: **CAL000007612**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
1993	2 0.59500	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1994	4 1.17300	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1995	6 1.58100	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1996	4 1.36000	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1997	4 1.36000	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1998	4 1.30900	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1999	4 1.29200	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2000	4 1.02000	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

DRAFT

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Report Generation Date: 07/27/2017

Results for California Waste Codes, as a Generator, for EPA-ID: CAL000007612

Calif. Waste Code	Description	1993	1994	1995	1996	1997	1998	1999	2000
343	UNSPECIFIED ORGANIC LIQUID MIXTURE	0.595	1.173	1.581	1.36	1.36	1.309	1.292	1.02
	Grand Totals	0.595	1.173	1.581	1.36	1.36	1.309	1.292	1.02

No results for California Waste Codes, as a Transporter 1, for EPA-ID: CAL000007612
No results for California Waste Codes, as a Transporter 2, for EPA-ID: CAL000007612
No results for California Waste Codes, as a TSDF, for EPA-ID: CAL000007612
No results for California Waste Codes, as a Alternate TSDF, for EPA-ID: CAL000007612
Results for RCRA, as a Generator, for EPA-ID: CAL000007612

RCRA	Description	1993	1994	1995	1996	1997	1998	1999	2000
	Blank/Unknown	0.595	1.173	1.581	1.36	1.36	1.309	1.292	1.02
	Grand Totals	0.595	1.173	1.581	1.36	1.36	1.309	1.292	1.02

No results for RCRA, as a Transporter 1, for EPA-ID: CAL000007612
No results for RCRA, as a Transporter 2, for EPA-ID: CAL000007612
No results for RCRA, as a TSDF, for EPA-ID: CAL000007612
No results for RCRA, as a Alternate TSDF, for EPA-ID: CAL000007612

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EPA ID PROFILE

Map

ID Number:	CAR000004721	**Status:**	INACTIVE
Name:	CHUBS AUTO REPAIR	**Inactive Date:**	6/30/2007 9:15:34 AM
County:	SAN MATEO	**Record Entered:**	12/8/1995 12:00:00 AM
NAICS:	811111	**Last Updated:**	7/6/2010 11:09:30 AM

DRAFT

	Name	Address	City	State	Zip Code	Phone
Location	CHUBS AUTO REPAIR	1180 MAIN ST	REDWOOD CITY	CA	940630000	
Mailing		331 ANGELA CT	LOS ALTOS	CA	940223014	
Owner	STEVE BRUGMAN	1180 MAIN ST	REDWOOD CITY	CA	940631913	6503682224
Operator/Contact	STEVE BRUGMAN PRESIDENT	331 ANGELA CT	LOS ALTOS	CA	940220000	6509416344

Based Only Upon ID Number: **CAR000004721**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
2002	2 0.54400	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2003	2 0.69700	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2004	2 0.66300	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2005	4 1.32600	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2006	3 1.00300	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2007	1 0.10200	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

DRAFT

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Report Generation Date: 07/27/2017

California Waste Code by Year Matrix

ID Number: CAR000004721
Entity Type: Generator

2002 ▾ 2017 ▾ Select Years

DRAFT

Calif. Code	Description	2002	2003	2004	2005	2006	2007
343	UNSPECIFIED ORGANIC LIQUID MIXTURE	0.54400	0.69700	0.66300	1.32600	1.00300	0.10200
	Grand Totals	**0.54400**	**0.69700**	**0.66300**	**1.32600**	**1.00300**	**0.10200**

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EPA ID PROFILE

Map

ID Number:	CAC002683260	**Status:**	INACTIVE
Name:	LATHROP PARK	**Inactive Date:**	7/5/2012 1:31:06 PM
County:	SAN MATEO	**Record Entered:**	1/6/2012 1:31:06 PM
NAICS:	N/A	**Last Updated:**	1/6/2012 1:31:06 PM

DRAFT

	Name	Address	City	State	Zip Code	Phone
Location	LATHROP PARK	1190 MAIN ST	REDWOOD CITY	CA	94063	
Mailing		1190 MAIN ST	REDWOOD CITY	CA	94063	
Owner	LATHROP PARK	1190 MAIN ST	REDWOOD CITY	CA	94063	6504624670
Operator/Contact	LOUS DEZIEL JR	1190 MAIN ST	REDWOOD CITY	CA	94063	6504624670

Based Only Upon ID Number: **CAC002683260**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
N/A	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

No Records Found

Non California Manifest Total Tonnage

No Records Found

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EPA ID PROFILE

Map

ID Number: CAC002693842
Name: LATHROP PARK REDWOOD CITY LLC
County: SAN MATEO
NAICS: N/A

Status: INACTIVE
Inactive Date: 11/14/2012 10:28:40 AM
Record Entered: 5/17/2012 10:28:40 AM
Last Updated: 5/17/2012 10:28:40 AM

DRAFT

	Name	Address	City	State	Zip Code	Phone
Location	LATHROP PARK REDWOOD CITY LLC	1190 MAIN ST	REDWOOD CITY	CA	94063	
Mailing		100 SEMINARY DR	MENLO PARK	CA	94025	
Owner	LATHROP PARK REDWOOD CITY LLC	100 SEMINARY DR	MENLO PARK	CA	94025	6504624670
Operator/Contact	LOUIS DEZIEL JR	100 SEMINARY DR	MENLO PARK	CA	94025	6504624670

Based Only Upon ID Number: **CAC002693842**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
2012	1 0.00500	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

DRAFT

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Report Generation Date: 07/27/2017

California Waste Code by Year Matrix

ID Number: CAC002693842
Entity Type: Generator

2012 ▾ 2017 ▾ Select Years

DRAFT

Calif. Code	Description	2012
352	OTHER ORGANIC SOLIDS	0.00500
	Grand Total	0.00500

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Report Generation Date: 07/27/2017

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RCRA Waste Code by Year Matrix

ID Number: CAC002693842
Entity Type: Generator

2012 ▾ 2017 ▾ Select Years

RCRA Code	Federal Waste Description	2012
D008	Lead	0.00500
	Grand Totals	0.00500

DRAFT

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Facility Search Results

Selection Criteria:

Facility:
Search on: Physical Address
Street: Maple
City: Redwood City
Status: Active and Inactive
Sort Direction: asc
Sorted By: EPA ID
Records Found: 36

DRAFT

EPA ID Number	Name	Address	City	Zip
CA0000142281	J L SHELTON TRUCKING	1402 MAPLE ST	REDWOOD CITY	940630000
CAC000530896	1X PERCYS BODY SHOP	19 MAPLE STREET	REDWOOD CITY	940630000
CAC000574864	1X RMC LONESTAR	25 MAPLE STREET	REDWOOD CITY	940630000
CAC000669216	1X RMC LONESTAR	25 MAPLE STREET	REDWOOD CITY	940630000
CAC000937704	SCHROEDER SHEET METALS	640 MAPLE ST.	REDWOOD CITY	940630000
CAC000955304	NICK MARCELLI	134 MAPLE ST	REDWOOD CITY	940630000
CAC000972920	RMC LONESTAR	1440 MAPLE STREET	REDWOOD CITY	940630000
CAC001308448	AUTO ELECTRIC CARBEUTOR	135 MAPLE ST	REDWOOD CITY	904630000
CAC002603696	SOUTHBAY SIDE SYSTEMS AUTHORITIES/REDWOOD CITY PUMP STATION	1581 MAPLE ST	REDWOOD CITY	94063
CAC002604399	PINNACLE PAINTING	1548 MAPLE ST	REDWOOD CITY	94063
CAC002610326	PINNACLE PAINTING	1548 MAPLE ST	REDWOOD CITY	94063
CAC002673633	MARCELLI LIGHTING	134 MAPLE ST	REDWOOD CITY	940631917
CAC002787784	REDWOOD CITY PUBLIC WORKS	1529 MAPLE ST	REDWOOD CITY	940632728
CAC002862751	JACK YANG AND CINDY HSU TRUST	860 MAPLE ST	REDWOOD CITY	940632006
CAC002891779	SILICON VALLEY CLEAN WATER	1581 MAPLE STREET	REDWOOD CITY	94063
CAC002910405	PACIFIC BELL TELEPHONE DBA AT&T CA	MAIN AND MAPLE	REDWOOD CITY	94065
CAD982504508	SUMMIT MARINE	1548 MAPLE ST	REDWOOD CITY	940630000
CAD983606815	H N LOCKWOOD INC	450 MAPLE ST	REDWOOD CITY	940630000
CAL000001249	AUTO ELECTRIC CARBURETOR	135 MAPLE ST	REDWOOD CITY	940630000
CAL000006881	SOUTH BAY BOAT WORKS INC	1450 MAPLE ST	REDWOOD CITY	940630000
CAL000010035	VIP MARINE	1548 MAPLE ST	REDWOOD CITY	940630000
CAL000020805	PERCY'S BODY SHOP	19 MAPLE STREET	REDWOOD CITY	940630000
CAL000029452	SOUTH BAY BOAT WORKS INC	1450 MAPLE STREET	REDWOOD CITY	940630000
CAL000043198	RMC LONESTAR PLANT 302	25 MAPLE STREET	REDWOOD CITY	940630000
CAL000056994	AUTO ELECTRIC CARBURATOR	135 Maple St	Redwood City	940631916
CAL000060388	AFFORDABLE MARINE SERVICE INC	1548 MAPLE ST DOCKTOWN MARINA	REDWOOD CITY	940030000
CAL000067688	LC FREY COMPANY INC	1400 MAPLE ST	REDWOOD CITY	940610000
CAL000105297	TOWNE FORD SALES	135 MAPLE ST	REDWOOD CITY	940630000
CAL000110297	ARTISTIC CLEANERS	860 MAPLE ST	REDWOOD CITY	940630000
CAL000115170	GLASCO MARINE	1548 MAPLE ST	REDWOOD CITY	940630000
CAL000174257	CITY OF REDWOOD CITY POLICE DEPARTMENT	1301 MAPLE ST	REDWOOD CITY	940630000
CAL000189890	ARTISTIC CLEANERS	860 MAPLE ST	REDWOOD CITY	940630000
CAL000221795	JIMS DIESEL REPAIR	1548 MAPLE ST	REDWOOD CITY	940630000
CAL000252349	GIUSTI TRUCKING INC	1402 MAPLE ST	REDWOOD CITY	940630000
CAL000320670	JOSEPH RYAN CONSTRUCTION	1548 MAPLE ST	REDWOOD CITY	940632797
CAL913313824	MALLARD INDUSTRIES	1548 MAPLE ST	REDWOOD CITY	940630000

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EPA ID PROFILE

Map

ID Number:	CAC000955304	**Status:**	INACTIVE
Name:	NICK MARCELLI	**Inactive Date:**	10/25/2000 12:00:00 AM
County:	SAN MATEO	**Record Entered:**	8/30/1994 12:00:00 AM
NAICS:	N/A	**Last Updated:**	10/25/2000 12:00:00 AM

DRAFT

	Name	Address	City	State	Zip Code	Phone
Location	NICK MARCELLI	134 MAPLE ST	REDWOOD CITY	CA	940630000	
Mailing		#9 CERRITO PL	REDWOOD CITY	CA	940610000	
Owner	NICK MARCELLI	--	--	99	--	0000000000
Operator/Contact	NICK	--	--	99	--	4153649855

Based Only Upon ID Number: **CAC000955304**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
1993	1 3.96150	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1994	2 1.24200	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

DRAFT

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Report Generation Date: 07/27/2017

California Waste Code by Year Matrix

ID Number: CAC000955304
Entity Type: Generator

1993 ▾ 2017 ▾ Select Years

DRAFT

Calif. Code	Description	1993	1994
223	UNSPECIFIED OIL-CONTAINING WASTE	3.96150	0.41700
512	OTHER EMPTY CONTAINERS >= 30 GALLONS	0.00000	0.82500
	Grand Totals	3.96150	1.24200

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Matthew Rodriquez
Secretary for
Environmental Protection

Department of Toxic Substances Control

Barbara A. Lee , Director
1001 I Street
P.O. Box 806
Sacramento , CA 958120806

Edmund G. Brown Jr.
Governor

EPA ID PROFILE

Map

ID Number:	CAC002673633	**Status:**	INACTIVE
Name:	MARCELLI LIGHTING	**Inactive Date:**	2/12/2012 11:41:48 AM
County:	SAN MATEO	**Record Entered:**	8/15/2011 11:41:48 AM
NAICS:	N/A	**Last Updated:**	8/15/2011 11:41:48 AM

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	Name	Address	City	State	Zip Code	Phone
Location	MARCELLI LIGHTING	134 MAPLE ST	REDWOOD CITY	CA	940631917	
Mailing		134 MAPLE ST	REDWOOD CITY	CA	940631917	
Owner	LOU DEZIEL	134 MAPLE ST	REDWOOD CITY	CA	940631917	6509962758
Operator/Contact	LOU DEZIEL	134 MAPLE ST	REDWOOD CITY	CA	940631917	6509962758

Based Only Upon ID Number: **CAC002673633**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
N/A	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

No Records Found

Non California Manifest Total Tonnage

No Records Found

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Report Generation Date: 07/27/2017

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Facility Search Results

Selection Criteria:

Facility:
Search on: Physical Address
Street: Elm
City: Redwood City
Status: Active and Inactive
Sort Direction: asc
Sorted By: EPA ID
Records Found: 1

EPA ID Number	Name	Address	City	Zip
CAL000428867	BAYHILL EQUINE INC	123 BELMONTE AVENUE	REDWOOD CITY	94061

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Facility Search Results

Selection Criteria:

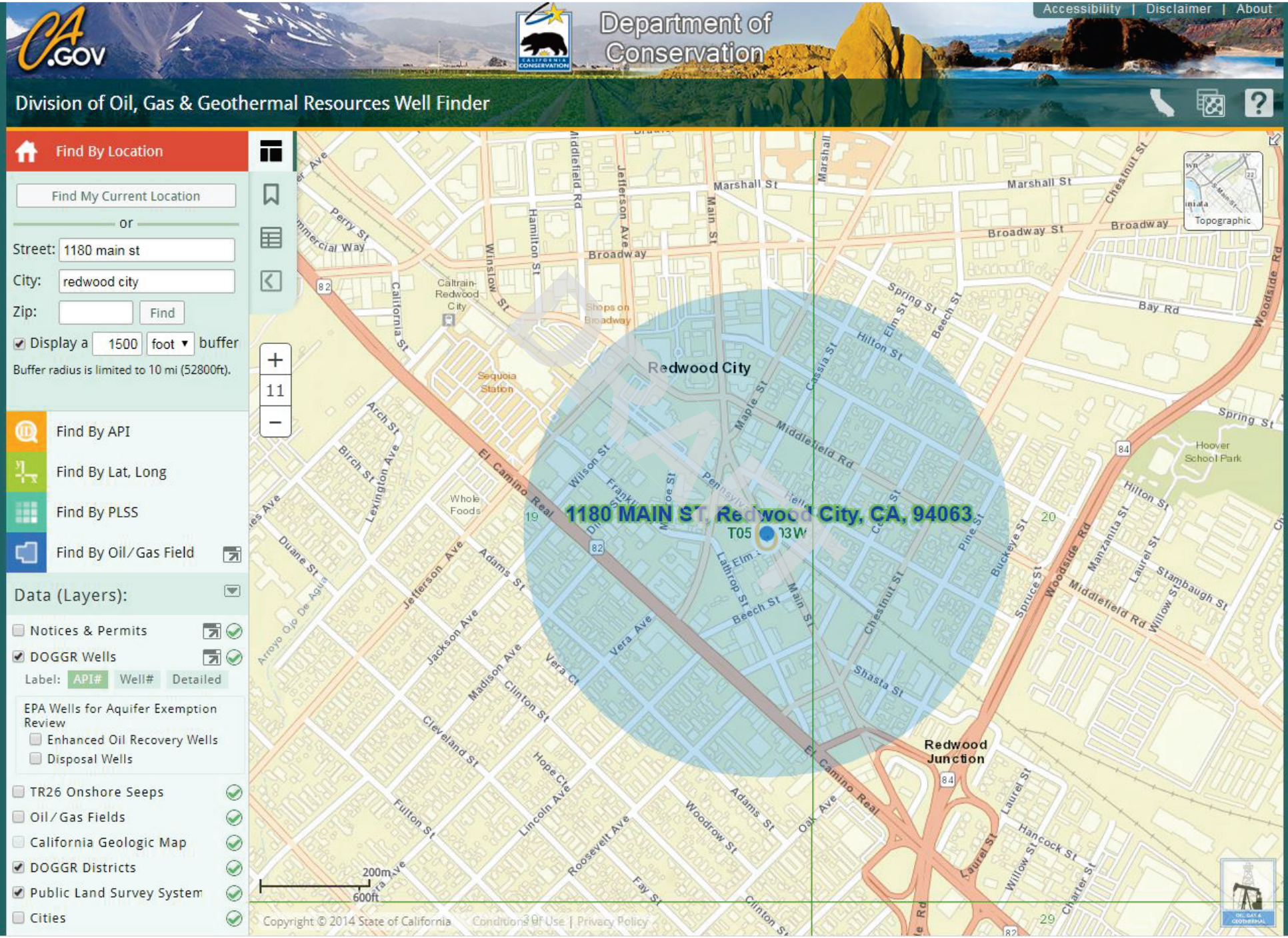
Facility:
Search on: Physical Address
Street: Lathrop
City: Redwood City
Status: Active and Inactive
Sort Direction: asc
Sorted By: EPA ID
Records Found: 5

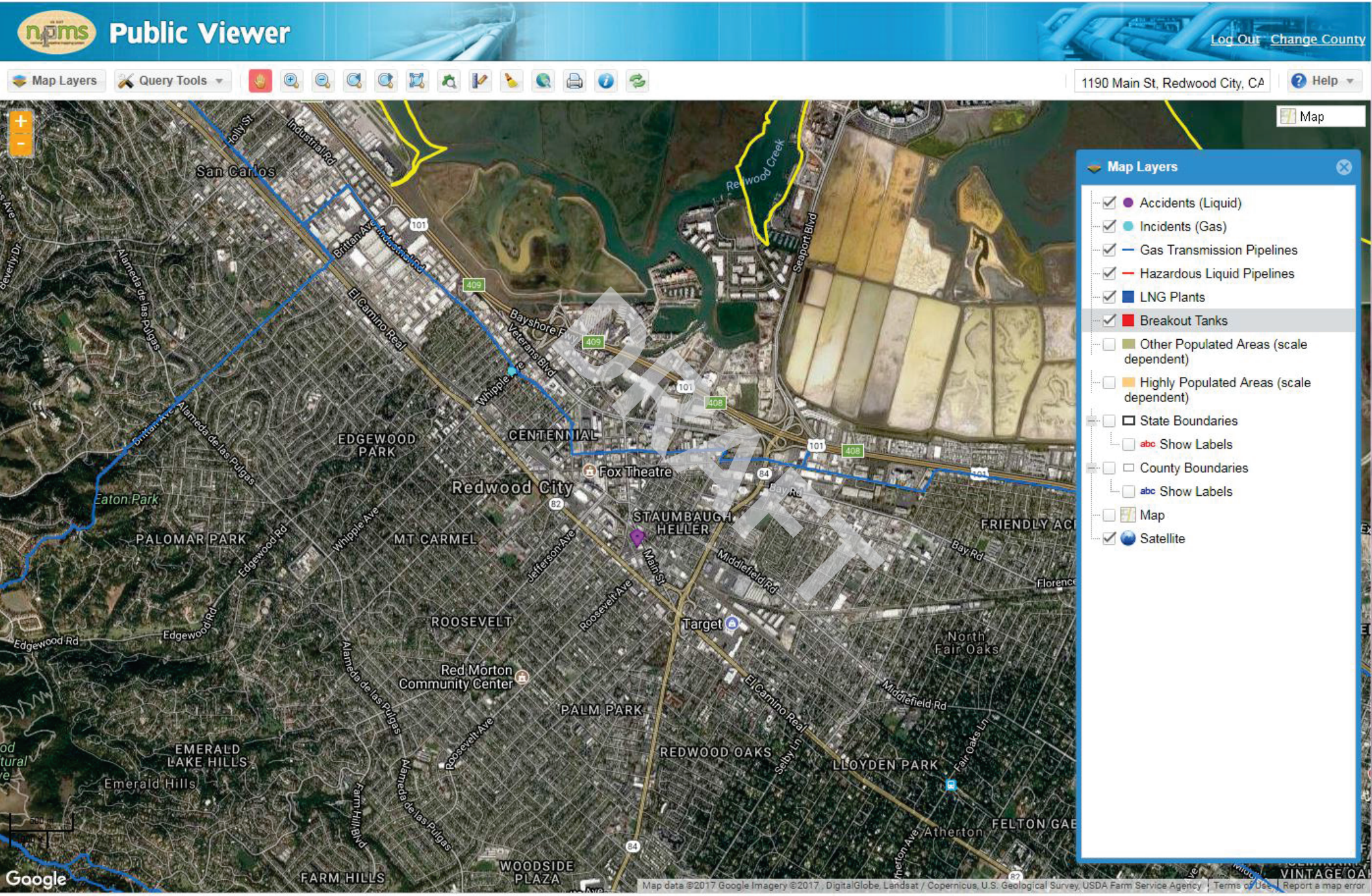
EPA ID Number	Name	Address	City	Zip
CAL000012360	REDWOOD FOUR WHEEL DRIVE	411 LATHROP ST	REDWOOD CITY	940630000
CAL000030604	CALIFORNIA AUTO CONCEPTS	411 LATHROP ST	REDWOOD CITY	940630000
CAL000213242	GERMAN CAR CARE	413 LATHROP AVE	REDWOOD CITY	940630000
CAL000250110	Ben's Autotech	413 Lathrop Ave	REDWOOD CITY	94063
CAL000316618	BENS AUTO TECH	413 LATHROP ST	REDWOOD CITY	940632114

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Report Generation Date: 07/27/2017


Accessibility | Disclaimer | About
Department of Conservation
Division of Oil, Gas & Geothermal Resources Well Finder
Find By Location
Find My Current Location
or
Street: 1180 main st
City: redwood city
Zip:
Find
Display a 1500 foot buffer
Buffer radius is limited to 10 mi (52800ft).
Find By API
Find By Lat, Long
Find By PLSS
Find By Oil/Gas Field
Data (Layers):
Notices & Permits
DOGGR Wells
Label: API# Well# Detailed
EPA Wells for Aquifer Exemption Review
Enhanced Oil Recovery Wells
Disposal Wells
TR26 Onshore Seeps
Oil/Gas Fields
California Geologic Map
DOGGR Districts
Public Land Survey System
Cities
1180 MAIN ST, Redwood City, CA, 94063
Redwood City
Redwood Junction
Topographic
200m
600ft
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Megan Nolet

From: Rochelle Reed <publicrecords@baaqmd.gov>
Sent: Thursday, July 13, 2017 1:34 PM
To: Megan Nolet
Subject: Public Records Request No. 2017-07-0079

Dear Megan Nolet,

Thank you for your request. We have searched our records and have no records that respond to your below request for:

1180-1190 Main Street
Redwood City

If you have any questions or concerns, please call or e-mail me.

Sincerely,

Rochelle Reed
Public Records Section
BAAQMD
415-749-4784

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APPENDIX F

ENVIRONMENTAL LIEN SEARCH AND/OR CHAIN OF TITLE

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Environmental Lien & AUL Search Report

DRAFT

374905 PM

1180 MAIN STREET
REDWOOD CITY, CALIFORNIA 94063

AFX Order #79-50276-47

07/12/2017

AFX Research, LLC

211B Tank Farm Rd San Luis Obispo, CA 93401
(877) 848-5337 / www.afxllc.com

ENVIRONMENTAL LIEN REPORT

374905 PM

The AFX Lien Search Report is intended to assist in the search for environmental liens filed in land title records.

TARGET PROPERTY INFORMATION

ADDRESS

1180 MAIN ST
REDWOOD CITY, CA

RESEARCH SOURCE

Source 1: SAN MATEO COUNTY RECORDER OF DEEDS

Source 2: CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

Source 3: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DEED INFORMATION

Type of Instrument: GRANT DEED

Grantor: BUTLER REALTY LLC

Grantee: LATHROP PARC REDWOOD CITY LLC

Deed Dated: 12/14/2010

Deed Recorded: 12/16/2010

Instrument: 2010-155806

LEGAL DESCRIPTION

1.186 AC MOL PARCEL 1 PARCEL MAP VOL 79/74-76

Assessor's Parcel Number (s): 053-147-060

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ENVIRONMENTAL LIEN REPORT

374905 PM

ENVIRONMENTAL LIEN

Environmental Lien: ☐ Found
☒ Not Found

If Found Describe:

OTHER ACTIVITY AND USE LIMITATIONS (AULs)

Other AULs: ☐ Found
☒ Not Found

If Found Describe:

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Thank you for your order!

Please contact our office at (877) 848-5337 with any questions.

The AFX Research, LLC Environmental Lien & AUL Search Report, provides results from available current land title records for environmental cleanup liens and other activities and use limitations, such as engineering and institutional controls.

A network of trained, professional researchers, following established industry protocols, use client supplied property information to search for:

- Parcel information and / or legal description
- Ownership information
- Official land title documents recorded at jurisdictional agencies such as recorder's' office, registries of deeds, county clerks' offices, etc.
- Access a copy of the deed
- Environmental encumbrance(s) associate with the deed
- Provide a copy of any environmental encumbrance(s) based upon a review of keywords in the instrument(s) (title, parties involved and description)
- Provide a copy of the deed or cite documents reviewed

AFX Research, LLC
211B Tank Farm Rd San Luis Obispo, CA 93402
(877) 848-5337 Fax: (800) 201-0620

ENVIRONMENTAL LIEN REPORT

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(877) 848-5337 Fax: (800) 201-0620

Environmental Lien & AUL Search Report

374905 PM

1190 MAIN STREET
REDWOOD CITY, CALIFORNIA 94063

AFX Order #79-50277-47

07/12/2017

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ENVIRONMENTAL LIEN REPORT

374905 PM

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TARGET PROPERTY INFORMATION

ADDRESS

1190 MAIN ST
REDWOOD CITY, CA

RESEARCH SOURCE

Source 1: SAN MATEO COUNTY RECORDER OF DEEDS

Source 2: CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

Source 3: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DEED INFORMATION

Type of Instrument: GRANT DEED

Grantor: BUTLER REALTY LLC

Grantee: LATHROP PARC REDWOOD CITY LLC

Deed Dated: 12/14/2010

Deed Recorded: 12/16/2010

Instrument: 2010-155806

LEGAL DESCRIPTION

0.126 AC MOL PARCEL 2 PARCEL MAP VOL 79/74-76

Assessor's Parcel Number (s): 053-147-070

DRAFT

ENVIRONMENTAL LIEN REPORT

374905 PM

ENVIRONMENTAL LIEN

Environmental Lien: ☐ Found
☒ Not Found

If Found Describe:

OTHER ACTIVITY AND USE LIMITATIONS (AULs)

Other AULs: ☐ Found
☒ Not Found

If Found Describe:

DRAFT

Thank you for your order!

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A network of trained, professional researchers, following established industry protocols, use client supplied property information to search for:

- Parcel information and / or legal description
- Ownership information
- Official land title documents recorded at jurisdictional agencies such as recorder's' office, registries of deeds, county clerks' offices, etc.
- Access a copy of the deed
- Environmental encumbrance(s) associate with the deed
- Provide a copy of any environmental encumbrance(s) based upon a review of keywords in the instrument(s) (title, parties involved and description)
- Provide a copy of the deed or cite documents reviewed

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ENVIRONMENTAL LIEN REPORT

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APPENDIX G

PREVIOUS REPORTS

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November 11, 2010

NESHAP ASBESTOS SURVEY and LEAD-BASED PAINT INSPECTION

134 Maple Street & 1180 Main Street
Redwood City, California 94063

DRAFT

Project No. 292738

Prepared For

Lathrop PARC Redwood City, LLC
101 Seminary Drive
Menlo Park, CA 94025

Prepared By

AEI Consultants
2500 Camino Diablo, Suite 200
Walnut Creek, CA 94597
(925) 746-6000

EXECUTIVE SUMMARY

AEI Consultants (AEI) was retained by Lathrop PARC Redwood City, LLC (Client) to conduct a NESHAP Asbestos Survey and Lead-based Paint Inspection for the structures located at 134 Maple Street and 1180 Main Street in Redwood City, California. The survey was performed on November 5, 2010. The purpose of the survey was to locate, identify, sample and assess the condition of interior and exterior building materials suspected of containing greater than one percent (1%) asbestos and to perform a lead paint inspection. The survey included the assessment and characterization of suspect friable and non-friable ACM and lead content in painted surfaces. Asbestos containing construction material (ACCM) will also be identified, if applicable.

The subject property at 134 Maple Street is located on the east side of Maple Street in a mixed residential and commercial area of Redwood City, California. The property is improved with a concrete warehouse/retail facility that was vacant at the time of this investigation.

The subject property at 1180 Main Street is located on the south side of Main Street in a mixed residential and commercial area of Redwood City, California. The property is improved with two structures: a stand-alone office building at the southeast corner of the property, as well as a warehouse/retail facility along the north side of the property; both properties were occupied at the time of this investigation. The warehouse/retail facility is the only structure involved under the scope of this survey.

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NESHAP Asbestos Summary

A total of thirty-two (32) samples of suspect ACM were collected from the subject property buildings during the survey.

- RACM was detected in the materials collected from 134 Maple Street, and is listed in the table below:

RACM identified at 134 Maple Street

Material	Location	NESHAP Category	Quantity	% Asbestos
Tan Vinyl Floor Sheet	**Hallway and Bathroom**	**RACM**	**~ 200 ft^2**	**60% Chrysotile**

Any repairs or renovations to the ACMs should be performed by a licensed asbestos contractor. Proper safety procedures for the removal or repair of ACMs should always be followed in order to protect the occupants of the building and the abatement workers.

- No asbestos-containing materials were detected from the sampling conducted at 1180 Main Street.

See attached asbestos analytical results in Appendix A.

Lead-based Paint Inspection

A total of ninety-seven (97) samples of suspect paint were taken from the painted surfaces of components throughout the subject property buildings. The United States Department of

Housing and Urban Development (HUD) standard for 'lead-based paint' (LBP) is ≥1.0 mg/cm² (0.50% by weight).

- None of the painted surfaces sampled registered above the action level of ≥1.0 mg/cm² (0.5% wt and 5,000 ppm).

See attached analytical results with details and locations of areas inspected in Appendix B.

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A ASBESTOS ANALYTICAL DOCUMENTATION
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1.0 INTRODUCTION

This report documents the methods and findings of a NESHAP Asbestos Survey and Lead-based Paint Inspection for the structures located at 134 Maple Street and 1180 Main Street in Redwood City, California. The survey was performed on November 5, 2010. AEI Consultants (AEI) inspected all readily accessible areas of the buildings.

The Code of Federal Regulations (CFR), 40 CFR 61, Subpart M, National Emissions Standards for Hazardous Air Pollutants (NESHAP), classifies Asbestos Containing Materials (ACM) as any material or product that contains *greater than* 1% asbestos. As suspect ACM is identified, it is classified as either friable or non-friable.

Non-friable ACM is classified as either Category 1 or Category 2 material as follows:

- **Category 1** – Asbestos containing packings, gaskets, resilient floor coverings and asphalt roofing products; and

- **Category 2** – All remaining types of non-friable asbestos containing material not included in Category 1 that when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.

Friable materials are more hazardous than non-friable materials since they are more likely to release fibers into the air. Friable is defined as any ACM that when dry, can be crumbled, pulverized or reduced to powder by hand pressure.

- **Regulated Asbestos containing materials (RACM) –** A hazardous waste when friable, is classified as any manufactured material that contains *greater than* 1% asbestos and is:

    1. Friable – The material can be crumbled, pulverized or reduced to powder by hand pressure;

    2. Category 1 that are subjected to sanding, grinding, cutting or abrading;

    3. Category 1 material that has become friable during renovation activities; or

    4. Category 2 material that has become friable during renovation activities.

Materials containing *greater than* 1% asbestos are subject to the NESHAP regulations (40 CFR Part 61, Subpart M). RACM (friable ACM and non-friable ACM that will become friable during renovation/demolition operations) must be removed from structures prior to renovations or demolitions. Certain non-friable ACM and materials containing 1% or less asbestos may remain in structures during renovations/demolitions; however, there are waste handling/disposal issues and Cal/OSHA work requirements that may make it cost ineffective to do so. Contractors are responsible for segregating and characterizing waste streams prior to disposal.

With respect to potential worker exposure, notification, and registration requirements, Cal/OSHA regulations (Title 8, California Code of Regulations (CCR) Section 1529) define asbestos-containing construction material (ACCM) as any material with an asbestos content of >0.1% (Title 8, CCR §341.6). Removal or disturbance of more than 100 ft^2 of ACCM must be performed by a DOSH registered contractor utilizing asbestos-trained workers. It is important to

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note the associated EPA waste labeling is not required if the material contains 1% or less asbestos, however, Cal/OSHA labeling is still required at concentrations $\leq$1%. Furthermore, at concentrations >1% all requirements of the standards become effective.

Construction activities (including demolition) that disturb materials or paints containing any amount of lead (both LCP and LBP) are subject to certain requirements of the Cal/OSHA lead standard contained in Title 8, CCR, §1532.1. Deteriorated paint is defined be Title 17, CCR, Division 1, Chapter 8, §35022 as a surface coating that is cracking, chalking, flaking, chipping, peeling, non-intact, failed or otherwise separating from a component. Demolition of a deteriorated Lead Containing Paint (LCP) component would require waste characterization and appropriate disposal. Intact LCP on a component is currently accepted by most landfill facilities; however, contractors are responsible for segregating and characterizing waste streams prior to disposal.

Potential hazards exist to workers who remove or cut through LCP coatings during demolition. Dust containing hazardous concentrations of lead may be generated during scraping or cutting materials coated with LCP. Torching of these materials may produce lead oxide fumes. Therefore, air monitoring and/or respiratory protection may be required during the demolition of materials coated with LCP. Guidelines regarding regulatory provisions for construction work where workers by be exposed to lead are presented in Title 8, CCR, §1532.1.

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1.1 Scope of Work

The purpose of the survey was to locate, identify, sample and assess the condition of random building materials suspected of containing greater than one percent (1%) asbestos, as well as perform a lead-based paint inspection.

The survey was performed on November 5, 2010, by Alain Grissette of AEI, a Certified Asbestos Consultant (CAC #07-4300) and a Cal/DOSH Certified Lead-Paint Inspector/Assessor (#18206). The asbestos inspection was performed in conformance with modified protocols set forth by the Environmental Protection Agency (EPA) Asbestos Hazard Emergency Response Act (AHERA), the National Emission Standards for Hazardous Air Pollutants (NESHAP) and Cal/OSHA. The lead inspection was performed in conformance with modified protocols set forth by the Housing for Urban Development (HUD) Lead-Based Paint Inspection Guidelines.

1.2 Limitations

The data presented and the opinions expressed in this report are qualified as follows:

- The sole purpose of the investigation and of this report is to assess the Site with respect to asbestos materials as defined in AEI's Scope of Work and the applicable State, Federal and local environmental laws and regulations.

- AEI derived the data in this report primarily from visual inspections, interviews with individuals with information about the Site and a limited number of environmental samples. The passage of time, manifestation of latent conditions, or occurrence of future events may require further exploration at the Site, analysis of the data, and reevaluation of the findings, observations, conclusions, and recommendations expressed in the report.

- In preparing this report, AEI has relied upon and presumed accurate certain information (or absence thereof) about the Site provided by the Client, and others identified herein. Except as otherwise stated in the report, AEI has not attempted to verify the accuracy or completeness of such information.

- The data reported and the findings, observations, conclusions, and recommendations expressed in the report are limited by the Scope of Services, including the extent of environmental sampling and other tests. The Scope of Services was defined by the requests of the Client, the time and budgetary constraints imposed by the Client, and the availability of access to the Site.

- The collection of bulk building material samples for analysis is a destructive procedure and may cause damage to the integrity of building systems. AEI will take normal state-of-the-art precautions to minimize damage, however, AEI will not be held responsible for damage to the building systems as a result of sample collection.

- Suspect ACMs may be present in the building in inaccessible areas such as hidden or concealed wall cavities or ceiling; the discovery of hidden or concealed materials is a destructive process, not in the scope of work for this survey.

- Because of the limitations stated above, the findings, observations, conclusions and recommendations expressed by AEI in this report are limited to the information obtained and the surface and subsurface investigation undertaken and should not be considered an opinion concerning the compliance of any past or current owner(s) or operator(s) of the Site with any Federal, State or local laws or regulations. No warranty or guarantee, whether express or implied, is made with respect to the data reported or findings, observations, conclusions, or recommendations expressed in this report. Furthermore, such data, findings, observations, conclusions and recommendations are based solely upon Site conditions in existence at the time of investigation.

- This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the Agreement and the provisions thereof.

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2.0 SITE DESCRIPTION

2.1 Site Description

The subject property at 134 Maple Street is located on the east side of Maple Street in a mixed residential and commercial area of Redwood City, California. The property is improved with a concrete warehouse/retail facility that was vacant at the time of this investigation.

The subject property at 1180 Main Street is located on the south side of Main Street in a mixed residential and commercial area of Redwood City, California. The property is improved with two structures: a stand-alone office building at the southeast corner of the property, as well as a warehouse/retail facility along the north side of the property; both properties were occupied at the time of this investigation. The warehouse/retail facility is the only structure involved under the scope of this survey.

Suspect building materials that may contain asbestos include: gypsum drywall panel with associated joint compound, vinyl floor sheet, and roofing materials.

Suspect painted surfaces include paint on interior drywall/plaster walls and associated trim, as well as paint on exterior brick and stucco walls and associated trim.

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3.0 METHODOLOGY

3.1 Material Sampling

3.1.1 Asbestos Sampling Procedures

During the survey, AEI visually inspected all readily accessible areas of the subject buildings, identified homogeneous areas of suspect material (materials that share the same texture, color, use, and appear to have been applied at approximately the same time) and collected representative samples of suspect material for laboratory analysis. The samples collected were placed in plastic bags, sealed, labeled and transported under chain of custody documentation to an accredited laboratory.

3.1.2 Lead Sampling Procedures

An RMD XRF Lead Paint Analyzer was utilized. The XRF works by exposing a paint surface to radiation emitted from a sealed source inside the instrument. The source of the radiation in all the XRF analyzers currently used is the cobalt-57 (^{57}C0) or the cadmium-109 (^{109}Cd) isotopes. Both of these radioactive materials spontaneously emit energy in the form of X-rays and gamma rays. When these rays are released from an XRF analyzer and hit a painted surface, the elements in the paint matrix – which include lead – are "excited" and respond by emitting energy in the form of X-rays characteristic of each of the elements. This response is known as fluorescence. The detector in the analyzer then reports the concentration, if any, of lead in the surface. In addition to the XRF analysis, each painted area was evaluated for evidence of deterioration (i.e., flaking or cracking).

3.2 Analytical Methods

All asbestos samples collected were transported under chain of custody documentation to EMSL Analytical Inc. (EMSL) in San Leandro, California for analysis. EMSL is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP #101208-0) and the California Environmental Laboratory Accreditation Program (CA-ELAP # 1620).

All paint samples from the survey were analyzed using a RMD XRF Lead Paint Analyzer.

3.2.1 Asbestos Analysis

All bulk suspect asbestos samples were analyzed using polarized light microscopy (PLM) in accordance with the Environmental Protection Agency's (EPA) "Method of Determination of Asbestos in Bulk Samples" (EPA 600/R-93/116, July, 1993). This method is referred to as the "Improved Method" and is recommended by EPA as a preferred substitute to the Interim Method EPA 600/M4-82-020, 1982.

The EPA regulations define ACM as any material with an asbestos content greater than one percent (>1%). However, Cal/OSHA regulations define ACCM as any material with an asbestos content of >0.1%; Cal/OSHA and EPA regulations regarding the proper handling of ACMs and ACCMs must be followed.

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If based on the results of the initial sampling, a 400-Point Count Reanalysis may be necessary for asbestos results of 1% or less to confirm the material is 1% or less by NESHAP rule. A 1000- Point Count Reanalysis would be necessary to confirm the material is 0.1% or less by Cal/OSHA rule. If point count reanalysis is not performed on these materials, then the material is covered by NESHAP and Cal/OSHA as ACM.

3.2.2 Lead Analysis

All LCP samples from the survey were analyzed using a RMD XRF Lead Paint Analyzer.

3.3 Limiting Conditions

AEI was granted access to all areas of the subject property.

Suspect ACMs and LBP may be present in the building in inaccessible areas such as hidden or concealed wall cavities or ceiling. Upon exposure of the inaccessible areas, AEI recommends sampling and analysis of any newly discovered suspect materials.

This report was prepared for the sole use and benefit of Lathrop PARC Redwood City, LLC. Neither this report, nor any of the information contained herein shall be used or relied upon for any purpose by any person or entity other than Lathrop PARC Redwood City, LLC.

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4.0 SAMPLING AND ANALYSIS

4.1 Asbestos Survey

A total of thirty-two (32) bulk suspect asbestos-containing building material samples were collected from the structures throughout the subject property. In addition, two (2) additional 1000 point count analyses were conducted to better characterize materials with trace amounts of asbestos for the establishing proper work practices during renovation or demolition.

The sample descriptions and results are listed in the tables below:

Sample Analytical Results for 1180 Main Street, Redwood City, CA

Sample #	Material (Layer) Description	Location of Materials	NESHAP Category	% Asbestos
A-101	A. Acoustic Ceiling Tile	Rear Storage Area	n/a	None Detect
A-102	A. Drywall	Rear Storage Area	n/a	None Detect
	B. Joint Compound		n/a	None Detect
A-103	A. Drywall	Main Storage Area	n/a	None Detect
	B. Joint Compound		n/a	None Detect
A-104	A. Grey Base Cove	Rear Storage Area	n/a	None Detect
	B. White Mastic		n/a	None Detect
A-105	A. Drywall	Office	n/a	None Detect
A-106	A. Black Roofing Mastic	Roof – Penetrations & Edges	n/a	None Detect
A-107	A. Roof Core	Roof – Near Main Street	n/a	None Detect
A-108	A. Roof Core	Roof – Rear of Building	n/a	<0.1 Chrysotile*
A-109	A. Window Putty	Exterior Windows North Side	n/a	0.1 Chrysotile*

** Reanalyzed utilizing 1000 Point Count Method*

See attached analytical results and chain of custody documentation in Appendix A.

- No asbestos-containing materials were detected in the samples collected.

While trace amounts of asbestos was detected in samples A-108 & A-109, further point count analysis reduced the asbestos percentage to below the threshold both EPA and Cal/OSHA require for ACM or ACCM categorization.

DRAFT

Sample Analytical Results for 134 Main Street, Redwood City, CA

Sample #	Material (Layer) Description	Location of Materials	NESHAP Category	% Asbestos
B-101	A. Drywall	Front Room Front Wall	n/a	None Detect
	B. Joint Compound		n/a	None Detect
B-102	A. Drywall	Front Room Side Wall	n/a	None Detect
	B. Joint Compound		n/a	None Detect
B-103	A. Drywall	Front Room Wall Behind Counter	n/a	None Detect
	B. Joint Compound		n/a	None Detect
B-104	A. Tan Vinyl Floor Sheet	**Front Room Hallways & Bathroom**	n/a	None Detect
	B. Paper Backing		**RACM**	**60% Chrysotile**
B-105	A. Drywall	Rear Storage Ceiling	n/a	None Detect
	B. Joint Compound		n/a	None Detect
B-106	A. Drywall	Rear Storage Wall Next To Stairs	n/a	None Detect
	B. Joint Compound		n/a	None Detect
B-107	A. Roof Core	Roof – Front of Building	n/a	None Detect
	B. Paint		n/a	None Detect
B-108	A. Roof Core	Roof – Rear of Building	n/a	None Detect
	B. Paint		n/a	None Detect
B-109	A. Roof Felt	Roof – Parapet	n/a	None Detect
	B. Paint		n/a	None Detect
B-110	A. Grey/Black Roof Mastic	Roof – Penetrations	n/a	None Detect
	B. Paint		n/a	None Detect

DRAFT

See attached analytical results and chain of custody documentation in Appendix A.

The following materials were determined to be asbestos-containing materials (>1% Asbestos):

- Tan Vinyl Floor Sheet & Paper Backing – Front Room, Hallway & Bathroom *~ 200 sq. ft.*

The ACMs were observed in poor condition and do pose a health and safety concern to occupants of the subject property in their current state.

Any repairs or renovations to the ACMs should be performed by a licensed asbestos contractor. Proper safety procedures for the removal or repair of ACMs should always be followed in order to protect the occupants of the building and the abatement workers.

DRAFT

4.2 Lead-based Paint Inspection

A total of ninety-seven (97) samples of suspect paint were taken from the painted surfaces of components throughout the subject property buildings.

The United States Department of Housing and Urban Development (HUD) standard for 'lead-based paint' (LBP) is ≥1.0 mg/cm² (0.50% by weight).

- None of the painted surfaces sampled registered above the action level of ≥1.0 mg/cm² (0.5% wt and 5,000 ppm).

OSHA and Cal/OSHA standards require protection for all workers when working with paint containing lead, regardless of the concentration. A contractor performing paint removal work should follow the OSHA lead standard for the construction industry. The lead content of the paint should be considered when choosing a method to remove the paint, as proper waste disposal requirements and worker protection measures must be taken.

Lead Containing Paint Compliance Summary

Construction activities that disturb materials or paints containing *any* amount of lead are subject to certain requirements of the Cal/OSHA lead standard contained in Title 8, CCR, §1532.1. Deteriorated paint is defined be Title 17, CCR, Division 1, Chapter 8, §35022 as a surface coating that is cracking, chalking, flaking, chipping, peeling, non-intact, failed or otherwise separating from a component. Demolition of a deteriorated Lead Containing Paint (LCP) component would require waste characterization and appropriate disposal. Intact LCP on a component is currently accepted by most landfill facilities; however, contractors are responsible for segregating and characterizing waste streams prior to disposal.

Potential hazards exist to workers who remove or cut through LCP coatings during demolition. Dust containing hazardous concentrations of lead may be generated during scraping or cutting materials coated with LCP. Torching of these materials may produce lead oxide fumes. Therefore, air monitoring and/or respiratory protection may be required during the demolition of materials coated with LCP. Guidelines regarding regulatory provisions for construction work where workers by be exposed to lead are presented in Title 8, CCR, §1532.1.

DRAFT

5.0 SUMMARY

AEI Consultants (AEI) was retained by Lathrop PARC Redwood City, LLC (Client) to conduct a NESHAP Asbestos Survey and Lead-based Paint Inspection for the structures located at 134 Maple Street and 1180 Main Street in Redwood City, California. The survey was performed on November 5, 2010. The purpose of the survey was to locate, identify, sample and assess the condition of interior and exterior building materials suspected of containing greater than one percent (1%) asbestos and to perform a lead paint inspection. The survey included the assessment and characterization of suspect friable and non-friable ACM and lead content in painted surfaces. Asbestos containing construction material (ACCM) will also be identified, if applicable.

NESHAP Asbestos Summary

A total of thirty-two (32) samples of suspect ACM were collected from the subject property buildings during the survey.

- RACM was detected in the materials collected from 134 Maple Street, and is listed in the table below:

RACM identified at 134 Maple Street

Material	Location	NESHAP Category	Quantity	% Asbestos
Tan Vinyl Floor Sheet	**Hallway and Bathroom**	**RACM**	**~ 200 ft^2**	**60% Chrysotile**

Any repairs or renovations to the ACMs should be performed by a licensed asbestos contractor. Proper safety procedures for the removal or repair of ACMs should always be followed in order to protect the occupants of the building and the abatement workers.

- No asbestos-containing materials were detected from the sampling conducted at 1180 Main Street.

See attached asbestos analytical results in Appendix A.

Lead-based Paint Inspection

A total of ninety-seven (97) samples of suspect paint were taken from the painted surfaces of components throughout the subject property buildings. The United States Department of Housing and Urban Development (HUD) standard for 'lead-based paint' (LBP) is ≥1.0 mg/cm² (0.50% by weight).

- None of the painted surfaces sampled registered above the action level of ≥1.0 mg/cm² (0.5% wt and 5,000 ppm).

See attached analytical results with details and locations of areas inspected in Appendix B.

DRAFT

6.0 RECOMMENDATIONS

AEI recommends the following:

- Written notification to contractors (that will be conducting renovation, demolition, relocation, or related activities) of the presence and location of asbestos and lead-based paint;

- Prepare bid documents and specifications for the demolition project to control the project and ensure lawful removal techniques are used;

- Remove and dispose of ACM prior to demolition using licensed abatement contractors in accordance with Federal, State, and Local regulations and ordinances, and

- Follow Federal, State, and Local regulations and ordinances for proper disposal of ACM.

DRAFT

7.0 SIGNATURE OF ENVIRONMENTAL PROFESSIONALS

AEI Consultants (AEI) was retained by Lathrop PARC Redwood City, LLC (Client) to conduct a NESHAP Asbestos Survey and Lead-based Paint Inspection for the structures located at 134 Maple Street and 1180 Main Street in Redwood City, California. The survey was performed on November 5, 2010. Any exceptions to, or deletions from, this practice are described in Sections 1.2 and 3.3 of this report.

Prepared By:



Alain Grissette, CAC 07-4300, CLIA 18206
Project Manager

Reviewed By:



Aaron Buchanan
Senior Reviewer

DRAFT

APPENDIX A

DRAFT

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AEI Consultants
2500 Camino Diablo #100
Walnut Creek, CA 94597

Fax: (925) 746-6095 Phone: (925) 746-6000
Project: **134 Maple, Redwood City**

Customer ID: AEIC62
Customer PO: TBD
Received: 11/05/10 3:30 PM
EMSL Order: 091009777

EMSL Proj:
Analysis Date: 11/7/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

DRAFT

			Non-Asbestos			Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**	**% Type**
B-101-Drywall *091009777-0001*	Front room front wall	Brown/White Fibrous Heterogeneous	10%	Cellulose	90% Non-fibrous (other)	**None Detected**
B-101-Joint Compound *091009777-0001A*	Front room front wall	White Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
B-102-Drywall *091009777-0002*	Front room side wall	Brown/White Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
B-102-Joint Compound *091009777-0002A*	Front room side wall	White Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
B-103-Drywall *091009777-0003*	Front room wall behind counter	Brown/White Fibrous Heterogeneous	10%	Cellulose	90% Non-fibrous (other)	**None Detected**
B-103-Joint Compound *091009777-0003A*	Front room wall behind counter	White Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**

Initial report from 11/07/2010 14:42:42

Analyst(s)

Rui Cindy Geng (20)

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San Leandro CA NVLAP Lab Code 101048-3, MA AA000201, WA C2007

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DRAFT

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
B-104-VInyl floor sheet *091009777-0004*	Front room bath and hallway	Tan Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
B-104-Backing *091009777-0004A*	Front room bath and hallway	Tan Fibrous Heterogeneous		40% Non-fibrous (other)	**60% Chrysotile**
B-105-Drywall *091009777-0005*	Rear storage ceiling	Brown/White Fibrous Heterogeneous	10% Cellulose 2% Glass	88% Non-fibrous (other)	**None Detected**
B-105-Joint Compound *091009777-0005A*	Rear storage ceiling	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
B-106-Drywall *091009777-0006*	Rear storage wall next to stairs	Brown/White Fibrous Heterogeneous	10% Cellulose 2% Glass	88% Non-fibrous (other)	**None Detected**
B-106-Joint Compound *091009777-0006A*	Rear storage wall next to stairs	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
B-107-Roof core *091009777-0007*	Roof front	Black Fibrous Heterogeneous	20% Glass	80% Non-fibrous (other)	**None Detected**

Initial report from 11/07/2010 14:42:42

Analyst(s)

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

DRAFT

			Non-Asbestos			Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**	**% Type**
B-107-Paint *091009777-0007A*	Roof front	Silver Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
B-108-Roof core *091009777-0008*	Roof rear	Black Fibrous Heterogeneous	20%	Synthetic	80% Non-fibrous (other)	**None Detected**
B-108-Paint *091009777-0008A*	Roof rear	Silver Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
B-109-Roof felt *091009777-0009*	Roof parapet	Black Fibrous Heterogeneous	20%	Synthetic	80% Non-fibrous (other)	**None Detected**
B-109-Paint *091009777-0009A*	Roof parapet	Silver Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
B-110-Roof mastic *091009777-0010*	Roof penetrations	Gray/Black Fibrous Heterogeneous	50%	Cellulose	50% Non-fibrous (other)	**None Detected**
B-110-Paint *091009777-0010A*	Roof penetrations	Silver Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**

Initial report from 11/07/2010 14:42:42

Analyst(s)

Rui Cindy Geng (20)

Baojia Ke, Laboratory Manager
or other approved signatory

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Project: **1180 Main, Redwood City**

Customer ID: AEIC62
Customer PO: TBD
Received: 11/05/10 3:30 PM
EMSL Order: 091009779

EMSL Proj:
Analysis Date: 11/7/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

DRAFT

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
A-101-Acoustic ceiling tile *091009779-0001*	Rear storage	White Fibrous Heterogeneous	70% Cellulose 10% Glass	20% Non-fibrous (other)	None Detected
A-102-Drywall *091009779-0002*	Rear storage wall against bricks	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
A-102-Joint Compound *091009779-0002A*	Rear storage wall against bricks	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
A-103-Drywall *091009779-0003*	Main storage	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
A-103-Joint Compound *091009779-0003A*	Main storage	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
A-104-Base base *091009779-0004*	Rear storage	Gray Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
A-104-Mastic *091009779-0004A*	Rear storage	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected

Initial report from 11/07/2010 14:35:28

Analyst(s)

Rui Cindy Geng (12)

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.

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Project: **1180 Main, Redwood City**

Customer ID: AEIC62
Customer PO: TBD
Received: 11/05/10 3:30 PM
EMSL Order: 091009779

EMSL Proj:
Analysis Date: 11/7/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

DRAFT

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
A-105-Drywall *091009779-0005*	Office	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (other)	**None Detected**
		No Joint compound in the sample			
A-106-Roof mastic *091009779-0006*	Roof penetrations and edges	Black Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
A-107-Roof core *091009779-0007*	Roof front	Black Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
A-108-Roof core *091009779-0008*	Roof rear	Black Non-Fibrous Heterogeneous		**100% Non-fibrous (other)**	**<1% Chrysotile**
A-109-Window putty *091009779-0009*	Side ext windows	Green Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**<1% Chrysotile**

Initial report from 11/07/2010 14:35:28

Analyst(s)

Rui Cindy Geng (12)

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.

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Project: **1180 Main, Redwood City**

Customer ID: AEIC62
Customer PO: TBD
Received: 11/05/10 3:30 PM
EMSL Order: 091009779

EMSL Proj:
Analysis Date: 11/11/2010

Test Report: Asbestos Analysis of Bulk Material via EPA 600/R-93/116. Quantitation using the 1,000 Point Count Procedure

DRAFT

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
A-108-Roof core *091009779-0008*	Roof rear	Black Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	**<0.1% Chrysotile**
A-109-Window putty *091009779-0009*	Side ext windows	White Non-Fibrous Homogeneous		99.90% Non-fibrous (other)	**0.10% Chrysotile**

Initial report from 11/07/2010 14:35:28

Analyst(s)
Nonette Patron (2)

Baojia Ke, Laboratory Manager
or other approved signatory

Disclaimer:Some samples may contain asbestos fibers present in dimensions below PLM resolution limits.The limit of detection as stated in the method is 0.1%. EMSL Analytical Inc suggests that samples reported as <0.1% or none detected undergo additional analysis via TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval EMSL Analytical Inc. This test report must not be used by the client to claim product endorsement by NVLAP or any agency of the United States Government. EMSL Analytical Inc. bears no responsibility for sample collection activities, analytical method limitations, or the accuracy of results when requested to separate layered samples. EMSL Analytical Inc liability is limited to the cost of sample analysis.The test results contained within this report meet the requirements of NELAC unless otherwise noted.Samples received in good condition unless otherwise noted. Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San Leandro CA NVLAP Lab Code 101048-3, MA AA000201, WA C2007

THIS IS THE LAST PAGE OF THE REPORT.

091009777

EMSL

Chain of Custody Form

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091009777

Project Manager: ALAIN GRISSETTE

Project Name: 134 MAPLE **Project #:** TBD

Project Location: REDWOOD CITY **Project State (US):** CA

TURNAROUND TIME

☐ 3 Hours	☐ 6 Hours	☐ 12 Hours	☒ 24 Hours	☐ 48 Hours	☐ 72 Hours	☐ 4 Days	☐ 5 Days	☐ 6-10 Days

SAMPLE MATRIX

☐ Air	☒ Bulk	☐ Soil	☐ Wipe	☐ Micro-Vac	☐ Drinking Water	☐ Wastewater	☐ Chips	☐ Other

ASBESTOS ANALYSIS

PCM - Air
- ☐ NIOSH 7400 (A) Issue 2: August 1994
- ☐ OSHA w/TWA

TEM AIR
- ☐ AHERA 40 CFR, Part 763 Subpart E
- ☐ NIOSH 7402 Issue 2
- ☐ EPA Level II

PLM - Bulk
- ☑ EPA 600/R-93/116
- ☐ NY Stratified Point Count
- ☐ California Air Resource Board (CARB) 435
- ☐ NIOSH 9002
- ☐ PLM NOB (Gravimetric) NYS 198.1
- ☐ EPA Point Count (400 Points)
- ☐ EPA Point Count (1,000 Points)
- ☐ Standard Addition Point Count

SOILS
- ☐ EPA Protocol Qualitative
- ☐ EPA Protocol Quantitative
- ☐ EMSL MSD 9000 Method fibers/gram
- ☐ Superfund EPA 540-R097-028 (dust generation)

TEM BULK
- ☐ Drop Mount (Qualitative)
- ☐ Chatfield SOP-1988-02
- ☐ TEM NOB (Gravimetric) NY 198.4

TEM MICROVAC
- ☐ ASTM D 5755-95 (Quantitative)

TEM WIPE
- ☐ ASTM D-6480-99
- ☐ Qualitative☐

TEM WATER
- ☐ EPA 100.1
- ☐ EPA 100.2
- ☐ NYS 198.2
- ☐ Other:_____

LEAD ANALYSIS

Flame Atomic Absorption
- ☐ Wipe, SW846-7420☐ASTM ☐ non ASTM
- ☐ Soil, SW846-7420
- ☐ Air, NIOSH 7082
- ☐ Chips, SW846-7420 or AOAC 5.009 (974.02)
- ☐ Wastewater, SW 846-7420
- ☐ TCLP LEAD SW846-1311/7420

Graphite Furnace Atomic Absorption
- ☐ Air, NIOSH 7105
- ☐ Wastewater, SW846-7421
- ☐ Soil, SW846-7421
- ☐ Drinking Water, EPA 239.2

ICP – Inductively Coupled Plasma
- ☐Wipe, SW846-6010☐ASTM ☐ non ASTM
- ☐ Soil, SW846-6010
- ☐ Air, NIOSH 7300

MATERIALS ANALYSIS

- ☐ Full Particle Identification
- ☐ Optical Particle Identification
- ☐ Dust Mites and Insect Fragments
- ☐ Particle Size & Distribution
- ☐ Product Comparison
- ☐ Paint Characterization
- ☐ Failure Analysis
- ☐ Corrosion Analysis
- ☐ Glove Box Containment Study
- ☐ Petrographic Examination of Concrete
- ☐ Portland Cement in Workplace Atmospheres (OSHA ID-143)
- ☐ Man Made Vitrous Fibers – MMVF's
- ☐ Synthetic Fiber Identification
- ☐ Other:_____

MICROBIAL ANALYSIS

Air Samples
- ☐Mold & Fungi by Air O Cell
- ☐Mold & Fungi by Agar Plate count & id
- ☐Bacterial Count and Gram Stain
- ☐Bacterial Count and Identification

Water Samples
- ☐ Total Coliforms, Fecal Coliforms
- ☐ Escherichia Coli, Fecal Streptococcus
- ☐ Legionella
- ☐ Salmonella
- ☐ Giardia and Cryptosporidium

Wipe and Bulk Samples
- ☐ Mold & Fungi – Direct Examination
- ☐ Mold & Fungi – (Culture follow up to direct examination if necessary)
- ☐ Mold & Fungi – Culture (Count & ID)
- ☐ Mold & Fungi – Culture (Count only)
- ☐ Bacterial Count & Gram Stain
- ☐ Bacterial Count & Identification (3 most prominent types)
- ☐ Other:_____

IAQ ANALYSIS

- ☐ Nuisance Dust (NIOSH 0500 & 0600)
- ☐ Airborne Dust (PM10, TSP)
- ☐ Silica Analysis by XRD ☐NIOSH 7500
- ☐ HVAC Efficiency
- ☐ Carbon Black
- ☐ Airborne Oil Mist
- ☐ Other:_____

Additional Information/Comments/Instructions: PLEASE COMPOSITE ANY POSITIVE SC W/ DW

Email Results to: AGRISSETTE@AEICONSULTANTS.COM **TOTAL SAMPLE #** 10

Relinquished:		**Date:**	11/5/10	**Time:** 3:30 PM
Received:		**Date:**	11/5/10	**Time:** 3:30 PM PDT
Relinquished:		**Date:**		**Time:**
Received:		**Date:**		**Time:**

Please Submit Samples to: EMSL Analytical, Inc. - 107 Haddon Avenue - Westmont, NJ 08108 **800-220-3675**

DRAFT

091009777

EMSL

Chain of Custody Form

☒ AEI CONSULTANTS
2500 CAMINO DIABLO
SUITE 200
WALNUT CREEK, CA 94597
TEL. 925.283.6000
FAX. 925.283.6121

☐ AEI (SAN JOSE)
3880 S. BASCOM AVENUE
SUITE112
SAN JOSE, CA 95124
TEL. 408.559.7600
FAX. 408.559.7601

☐ AEI (LOS ANGELES)
2447 PACIFIC COAST HWY
SUITE 101
HERMOSA BEACH, CA 90254
TEL. 310.798.4255
FAX. 310.798.2841

☐ AEI (CHICAGO)
1140 LAKE STREET
SUITE 501
OAK PARK, IL 60301
TEL. 708.386.6140
FAX. 708.386.6135

☐ AEI (KANSAS CITY)
10502 N. AMBASSADOR DR.
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KANSAS CITY, MO 64153
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FAX: 816.801.7028

☐ AEI (MIAMI)
200 SOUTH PARK ROAD
SUITE 400
HOLLYWOOD, FL 33021
TEL. 954.966.1746
Fax.954.966.1747

☐ AEI (ATLANTA)
TWO RAVINIA DRIVE
SUITE 500
ATLANTA, GA 30346
TEL. 678.855.7142
FAX. 404.963.0834

☐ AEI (DENVER)
165 SOUTH UNION BLVD.
SUITE 270
LAKEWOOD, CO 80228
TEL. 720.238.4582
FAX. 303.524.3401

☐ AEI (DALLAS)
2501OAKLAWN AVENUE
SUITE 420
DALLAS, TX 75219
TEL. 214.393.5810
FAX 214.393.5815

☐ AEI (NEW YORK)
30 MONTGOMERY STREET
SUITE 1450
JERSEY CITY, NJ 07302
TEL.201.332.1844
FAX.201.332-1880

☐ AEI (ARIZONA)
1255 W. BASELINE RD
SUITE 212
MESA, AZ 85202
TEL. 480.820.2545
Fax. 480.820.2598

134 MAPLE

091009777

	SAMPLE NUMBER	SAMPLE DESCRIPTION/LOCATION	VOLUME Air (L)	Area (Inches sq.)
1	B-101	DWS (DRYWALL SYSTEM)	FRONT ROOM -	FRONT WALL
2	B-102	DWS	"	- SIDE WALL
3	B-103	DWS	"	- WALL BEHIND COUNTER
4	B-104	TAN VINYL FLOOR SHEET	"	- BATH & HALLWAY
5	B-105	DWS	REAR STORAGE -	CEILING
6	B-106	DWS	"	- WALL NEXT TO STAIRS
7	B-107	ROOF CORE	ROOF -	FRONT
8	B-108	ROOF CORE	"	- REAR
9	B-109	ROOF FELT	"	- PARAPET
10	B-110	BLACK/GREY ROOF MASTIC	"	- PENETRATIONS

DRAFT

Relinquished:		**Date:**	11/5/10	**Time:**	3:00 PM
Received:		**Date:**		**Time:**	
Relinquished:		**Date:**		**Time:**	
Received:		**Date:**	11/5/2010	**Time:**	3:30 PM

Please Submit Samples to: EMSL Analytical, Inc. - 107 Haddon Avenue - Westmont, NJ 08108 800-220-3675

091009779

EMSL

Chain of Custody Form

☒ AEI CONSULTANTS
2500 CAMINO DIABLO
SUITE 200
WALNUT CREEK, CA 94597
TEL. 925.283.6000
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HERMOSA BEACH, CA 90254
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☐ AEI (ARIZONA)
1255 W. BASELINE RD
SUITE 212
MESA, AZ 85202
TEL. 480.820.2545
Fax. 480.820.2598

Project Manager: ALAIN GRISSETTE $910$9779

Project Name: 1180 MAIN **Project #:** TBD

Project Location: REDWOOD CITY **Project State (US):** CA

TURNAROUND TIME

☐ 3 Hours	☐ 6 Hours	☐ 12 Hours	☒ 24 Hours	☐ 48 Hours	☐ 72 Hours	☐ 4 Days	☐ 5 Days	☐ 6-10 Days

SAMPLE MATRIX

☐ Air	☒ Bulk	☐ Soil	☐ Wipe	☐ Micro-Vac	☐ Drinking Water	☐ Wastewater	☐ Chips	☐ Other

ASBESTOS ANALYSIS

PCM - Air
- ☐ NIOSH 7400 (A) Issue 2: August 1994
- ☐ OSHA w/TWA

TEM AIR
- ☐ AHERA 40 CFR, Part 763 Subpart E
- ☐ NIOSH 7402 Issue 2
- ☐ EPA Level II

PLM - Bulk
- ☒ EPA 600/R-93/116
- ☐ NY Stratified Point Count
- ☐ California Air Resource Board (CARB) 435
- ☐ NIOSH 9002
- ☐ PLM NOB (Gravimetric) NYS 198.1
- ☐ EPA Point Count (400 Points)
- ☐ EPA Point Count (1,000 Points)
- ☐ Standard Addition Point Count

SOILS
- ☐ EPA Protocol Qualitative
- ☐ EPA Protocol Quantitative
- ☐ EMSL MSD 9000 Method fibers/gram
- ☐ Superfund EPA 540-R097-028 (dust generation)

TEM BULK
- ☐ Drop Mount (Qualitative)
- ☐ Chatfield SOP-1988-02
- ☐ TEM NOB (Gravimetric) NY 198.4

TEM MICROVAC
- ☐ ASTM D 5755-95 (Quantitative)

TEM WIPE
- ☐ ASTM D-6480-99
- ☐ Qualitative☐

TEM WATER
- ☐ EPA 100.1
- ☐ EPA 100.2
- ☐ NYS 198.2
- ☐ Other:_____

LEAD ANALYSIS

Flame Atomic Absorption
- ☐ Wipe, SW846-7420 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-7420
- ☐ Air, NIOSH 7082
- ☐ Chips, SW846-7420 or AOAC 5.009 (974.02)
- ☐ Wastewater, SW 846-7420
- ☐ TCLP LEAD SW846-1311/7420

Graphite Furnace Atomic Absorption
- ☐ Air, NIOSH 7105
- ☐ Wastewater, SW846-7421
- ☐ Soil, SW846-7421
- ☐ Drinking Water, EPA 239.2

ICP – Inductively Coupled Plasma
- ☐ Wipe, SW846-6010 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-6010
- ☐ Air, NIOSH 7300

MATERIALS ANALYSIS

- ☐ Full Particle Identification
- ☐ Optical Particle Identification
- ☐ Dust Mites and Insect Fragments
- ☐ Particle Size & Distribution
- ☐ Product Comparison
- ☐ Paint Characterization
- ☐ Failure Analysis
- ☐ Corrosion Analysis
- ☐ Glove Box Containment Study
- ☐ Petrographic Examination of Concrete
- ☐ Portland Cement in Workplace Atmospheres (OSHA ID-143)
- ☐ Man Made Vitrous Fibers – MMVF's
- ☐ Synthetic Fiber Identification
- ☐ Other:_____

MICROBIAL ANALYSIS

Air Samples
- ☐ Mold & Fungi by Air O Cell
- ☐ Mold & Fungi by Agar Plate count & id
- ☐ Bacterial Count and Gram Stain
- ☐ Bacterial Count and Identification

Water Samples
- ☐ Total Coliforms, Fecal Coliforms
- ☐ Escherichia Coli, Fecal Streptococcus
- ☐ Legionella
- ☐ Salmonella
- ☐ Giardia and Cryptosporidium

Wipe and Bulk Samples
- ☐ Mold & Fungi – Direct Examination
- ☐ Mold & Fungi – (Culture follow up to direct examination if necessary)
- ☐ Mold & Fungi – Culture (Count & ID)
- ☐ Mold & Fungi – Culture (Count only)
- ☐ Bacterial Count & Gram Stain
- ☐ Bacterial Count & Identification (3 most prominent types)
- ☐ Other:_____

IAQ ANALYSIS

- ☐ Nuisance Dust (NIOSH 0500 & 0600)
- ☐ Airborne Dust (PM10, TSP)
- ☐ Silica Analysis by XRD ☐ NIOSH 7500
- ☐ HVAC Efficiency
- ☐ Carbon Black
- ☐ Airborne Oil Mist
- ☐ Other:_____

Additional Information/Comments/Instructions: ☒ PLEASE COMPOSITE POSITIVE S/C w/ DW

Email Results to: AGRISSETTE@AEICONSULTANTS.COM **TOTAL SAMPLE #** 9

		Date:	Time:
Relinquished:		11/5/10	3:00 PM
Received:		11/5/10	3:30 PM
Relinquished:			
Received:			

Please Submit Samples to: EMSL Analytical, Inc. - 107 Haddon Avenue - Westmont, NJ 08108 **800-220-3675**

DRAFT

091009779

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Chain of Custody Form

☒ AEI Consultants
2500 Camino Diablo
Suite 200
Walnut Creek, CA 94597
Tel. 925.283.6000
Fax. 925.283.6121

☐ AEI (San Jose)
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Fax. 201.332-1880

☐ AEI (Arizona)
1255 W. Baseline Rd
Suite 212
Mesa, AZ 85202
Tel. 480.820.2545
Fax. 480.820.2598

1180 MAIN

091009779

	SAMPLE NUMBER	SAMPLE DESCRIPTION/LOCATION	VOLUME Air (L)	Area (Inches sq.)
1	A-101	2'X4' Acoustic Ceiling Tile	REAR STORAGE	
2	A-102	DWS (Drywall System)	"	WALL AGAINST BRICKS
3	A-103	DWS	MAIN STORAGE	
4	A-104	GREY BASE COVE & MASTIC	REAR STORAGE	
5	A-105	DWS	OFFICE	
6	A-106	GREY ROOF MASTIC	ROOF -	PENETRATIONS & EDGES
7	A-107	ROOF CORE	ROOF -	FRONT
8	A-108	ROOF CORE	ROOF -	REAR
9	A-109	WINDOW PUTTY	SIDE EXT.	WINDOWS

DRAFT

Relinquished:		Date:	11/5/10	Time:	5:00pm
Received:		Date:		Time:	
Relinquished:		Date:		Time:	
Received:		Date:	11/5/2010	Time:	3:30pm

Please Submit Samples to: EMSL Analytical, Inc. - 107 Haddon Avenue - Westmont, NJ 08108 800-220-3675

APPENDIX B

DRAFT

LEAD PAINT INSPECTION REPORT

REPORT NUMBER: 11/05/10 16:03

INSPECTION FOR: Lathrop Parc Redwood City, LLC

PERFORMED AT: **134 Maple Street, Redwood City**

INSPECTION DATE: 11/05/10

INSTRUMENT TYPE: R M D
MODEL LPA-1
XRF TYPE ANALYZER
Serial Number: 2683

ACTION LEVEL: 1.0 mg/cm**2

OPERATOR LICENSE: CLIA #18206



SIGNED _____ DATE November 10, 2010

DRAFT

SUMMARY REPORT OF LEAD PAINT INSPECTION FOR: **134 Maple Street, Redwood City**

Inspection Date: 11/05/10
Report Date: 11/9/2010
Abatement Level: 1.0
Report No. 11/05/10 16:03
Total Readings: 45
Actionable: **0**
Job Started: 11/05/10 16:03
Job Finished: 11/05/10 16:32

Read No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm²)	Mode

---- End of Readings ----

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION FOR: **134 Maple Street, Redwood City**

Inspection Date: 11/05/10
Report Date: 11/9/2010
Abatement Level: 1.0
Report No. 11/05/10 16:03
Total Readings: 45
Job Started: 11/05/10 16:03
Job Finished: 11/05/10 16:32

Read No.	Rm	Room Name	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm²)	Mode
1		CALIBRATION								0.9	TC
2	001	Front Room	A	Wall	Lft		I	Brick	White	0.0	QM
3	001	Front Room	D	Wall	Ctr		I	Brick	White	0.0	QM
4	001	Front Room	A	Wall	Ctr		I	Brick	White	0.2	QM
5	001	Front Room	A	Wall	Rgt		I	Brick	White	-0.3	QM
6	001	Front Room	B	Wall	Rgt		I	Dry wall	White	-0.1	QM
7	001	Front Room	B	Wall	Lft		I	Dry wall	White	-0.1	QM
8	001	Front Room	C	Wall	Lft		I	Dry wall	White	0.0	QM
9	001	Front Room	C	Wall	Rgt		I	Dry wall	White	-0.4	QM
10	001	Front Room	C	Ceiling	Rgt		I	Dry wall	White	-0.2	QM
11	002	Office	C	Wall	Rgt		I	Dry wall	White	-0.2	QM
12	002	Office	D	Wall	Rgt		I	Dry wall	White	-0.2	QM
13	002	Office	B	Wall	Rgt		I	Dry wall	White	0.0	QM
14	002	Office	B	Door	Rgt	U Rgt	I	Wood	White	-0.4	QM
15	002	Office	B	Door	Rgt	Frame	I	Wood	White	-0.2	QM
16	003	Bathroom	D	Door	Rgt	U Rgt	I	Wood	White	-0.3	QM
17	003	Bathroom	D	Door	Rgt	Frame	I	Wood	White	-0.2	QM
18	003	Bathroom	D	Wall	U Rgt		I	Brick	White	-0.1	QM
19	003	Bathroom	C	Wall	U Rgt		I	Dry wall	White	-0.1	QM
20	003	Bathroom	D	Wall	U Rgt		I	Dry wall	White	0.0	QM
21	001	Front Room	C	Door	Rgt	U Rgt	I	Wood	White	-0.3	QM
22	001	Front Room	C	Door	Rgt	Frame	I	Wood	White	-0.2	QM
23	004	Rear Storag	A	Door	Rgt	Frame	I	Wood	White	0.0	QM
24	004	Rear Storag	A	Door	Rgt	U Rgt	I	Wood	White	-0.3	QM
25	004	Rear Storag	A	Wall	Lft		I	Dry wall	Lt. Blue	0.0	QM
26	004	Rear Storag	D	Door	Rgt	U Rgt	I	Metal	Brown	0.0	QM
27	004	Rear Storag	D	Door	Rgt	Frame	I	Metal	Brown	0.2	QM
28	004	Rear Storag	A	Wall	Ctr		I	Dry wall	Lt. Blue	-0.2	QM
29	004	Rear Storag	A	Wall	Rgt		I	Dry wall	Lt. Blue	-0.1	QM
30	004	Rear Storag	A	Door	Rgt	Frame	I	Wood	White	-0.1	QM
31	004	Rear Storag	A	Door	Rgt	U Rgt	I	Wood	White	-0.3	QM
32	004	Rear Storag	A	Stairs	Ctr	Railing cap	I	Wood	Lt. Blue	-0.2	QM
33	004	Rear Storag	A	Stairs	Ctr	Column	I	Wood	Lt. Blue	0.0	QM
34	004	Rear Storag	A	Stairs	Ctr	Baseboard	I	Wood	Lt. Blue	-0.1	QM
35	004	Rear Storag upstairs	A	Railing	Ctr	Frame	I	Wood	Lt. Blue	0.0	QM
36	001	Number Only	D	Wall	Ctr		I	Brick	Yellow	0.1	QM
37	001	Number Only	D	Wall	Rgt		I	Brick	Yellow	0.2	QM
38	001	Number Only	D	Garage Door	Rgt		I	Metal	red	0.1	QM
39	001	Number Only	C	Wall	Lft		I	Brick	Yellow	0.0	QM
40	001	Number Only	C	Wall	Rgt		I	Brick	Yellow	0.0	QM
41	001	Number Only	C	Down Spout	Rgt		I	Metal	Yellow	0.1	QM
42	001	Number Only	C	Down Spout	Lft		I	Metal	Yellow	-0.1	QM
43	001	Number Only	D	Wall	Lft		I	Brick	Yellow	-0.2	QM
44	001	Number Only	A	Wall	Lft		I	Brick	Yellow	-0.3	QM
45		CALIBRATION								0.9	TC

---- End of Readings ----

DRAFT

LEAD PAINT INSPECTION REPORT

REPORT NUMBER: 11/05/10 15:07

INSPECTION FOR: Lathrop Parc Redwood City, LLC

PERFORMED AT: **1180 Main St, Redwood City, CA**

INSPECTION DATE: 11/05/10

INSTRUMENT TYPE: R M D
MODEL LPA-1
XRF TYPE ANALYZER
Serial Number: 2683

ACTION LEVEL: 1.0 mg/cm**2

OPERATOR LICENSE: CLIA #18206



SIGNED _____ DATE November 10, 2010

DRAFT

SUMMARY REPORT OF LEAD PAINT INSPECTION FOR: **1180 Main St, Redwood City**

Inspection Date: 11/05/10
Report Date: 11/9/2010
Abatement Level: 1.0
Report No. 11/05/10 15:07
Total Readings: **52**
Actionable: **0**
Job Started: 11/05/10 15:07
Job Finished: 11/05/10 15:38

Read No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm²)	Mode

---- End of Readings ----

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION FOR: **1180 Main St, Redwood city**

Inspection Date: 11/05/10
Report Date: 11/9/2010
Abatement Level: 1.0
Report No. 11/05/10 15:07
Total Readings: 52
Job Started: 11/05/10 15:07
Job Finished: 11/05/10 15:38

Read No.	Rm	Room Name	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm²)	Mode
1		CALIBRATION								0.6	TC
2	001	Main Garage	B	Wall	U	Lft	I	Dry wall	White	-0.1	QM
3	001	Main Garage	B	Wall	L	Lft	I	Dry wall	Grey	0.1	QM
4	001	Main Garage	B	Door		Lft U Rgt	I	Wood	White	-0.3	QM
5	001	Main Garage	B	Door		Lft Lft casing	I	Wood	White	0.1	QM
6	001	Main Garage	B	Door		Lft Rgt jamb	I	Wood	White	-0.1	QM
7	001	Main Garage	A	Wall		Rgt	I	Brick	White	0.0	QM
8	001	Main Garage	A	Wall		Ctr	I	Brick	White	0.3	QM
9	001	Main Garage	A	Wall		Lft	I	Brick	White	0.0	QM
10	001	Main Garage	A	Garage Door		Lft	I	Wood	White	0.1	QM
11	001	Main Garage	A	Garage Door		Ctr	I	Wood	White	0.0	QM
12	001	Main Garage	A	Garage Door		Rgt	I	Wood	White	0.1	QM
13	001	Main Garage	D	Wall		Rgt	I	Brick	White	0.0	QM
14	001	Main Garage	C	Wall		Rgt	I	Brick	White	0.0	QM
15	001	Main Garage	C	Ceiling		Rgt	I	Wood	White	0.0	QM
16	001	Main Garage	C	Ceiling		Rgt Beam	I	Wood	White	-0.2	QM
17	001	Main Garage	C	Wall		Ctr	I	Brick	White	0.2	QM
18	002	Rear Storag	C	Wall		Ctr	I	Brick	White	0.1	QM
19	002	Rear Storag	A	Wall		Ctr	I	Dry wall	White	0.1	QM
20	002	Rear Storag	D	Wall		Ctr	I	Dry wall	White	-0.2	QM
21	002	Rear Storag	B	Wall		Ctr	I	Dry wall	White	-0.1	QM
22	002	Rear Storag	B	Door		Ctr U Rgt	I	Wood	White	-0.2	QM
23	002	Rear Storag	B	Door		Ctr Rgt casing	I	Wood	White	-0.2	QM
24	002	Rear Storag	A	Door		Ctr U Rgt	I	Wood	White	-0.6	QM
25	003	Bathroom	B	Wall		Ctr	I	Brick	White	-0.1	QM
26	003	Bathroom	A	Wall		Ctr	I	Dry wall	White	-0.3	QM
27	003	Bathroom	A	Cabinet		Ctr	I	Wood	Grey	-0.2	QM
28	003	Bathroom	A	Baseboard		Ctr	I	Wood	Grey	0.0	QM
29	001	Main Garage	A	Floor		Ctr	F	Cement	Grey	-0.3	QM
30	004	Office	D	Wall		Ctr	I	Dry wall	Grey	-0.1	QM
31	004	Office	A	Wall		Ctr	I	Brick	Grey	0.0	QM
32	004	Office	B	Wall		Ctr	I	Brick	Grey	0.1	QM
33	004	Office	C	Wall		Ctr	I	Dry wall	Grey	0.0	QM
34	004	Office	C	Ceiling		Ctr	I	Dry wall	White	-0.1	QM
35	004	Office	A	Door		Ctr U Rgt	I	Wood	Blue	-0.3	QM
36	004	Office	A	Door		Ctr Rgt casing	I	Wood	White	-0.2	QM
37	001	Number Only to office	A	Door		Ctr Rgt casing	I	Wood	Lt. Blue	-0.2	QM
38	001	Number Only	A	Door		Ctr Rgt casing	I	Wood	Lt. Blue	-0.2	QM
39	001	Number Only	A	Door		Ctr Header	I	Wood	Lt. Blue	0.1	QM
40	001	Number Only	A	Wall		Lft	I	Brick	Lt. Blue	0.0	QM
41	001	Number Only electrical panel	A	Door		Lft U Rgt	I	Wood	Lt. Blue	-0.2	QM
42	001	Number Only	A	Window		Lft Sill	I	Cement	Lt. Blue	0.0	QM
43	001	Number Only	A	Garage Door		Lft	I	Wood	Blue	-0.1	QM
44	001	Number Only	A	Garage Door		Lft Frame	I	Wood	Blue	-0.1	QM
45	001	Number Only	A	Overhang		Lft	I	Wood	Lt. Blue	0.1	QM
46	001	Number Only	A	Garage Door		Ctr	I	Wood	Blue	0.0	QM
47	001	Number Only	A	Garage Door		Rgt	I	Wood	Blue	0.0	QM
48	001	Number Only	A	Wall		Rgt	I	Brick	Lt. Blue	0.0	QM
49	001	Number Only	D	Wall		Lft	I	Brick	Lt. Blue	-0.1	QM
50	001	Number Only	D	Window		Lft Sill	I	Cement	Blue	0.0	QM
51	001	Number Only	D	Window		Lft Frame	I	Metal	Blue	-0.3	QM
52	001	Number Only	A	Rain Gutter		Lft	I	Metal	Blue	0.0	QM

---- End of Readings ----

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PHASE I
ENVIRONMENTAL SITE ASSESSMENT
PROPOSED LATHROP POST-ACUTE RECOVERY CENTER
134 MAPLE STREET
REDWOOD CITY, CALIFORNIA

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D3G PROJECT NUMBER:
2010-1527

FINAL REPORT ISSUE DATE:
JANUARY 28, 2011

INSPECTION DATE:
DECEMBER 21, 2010

PREPARED FOR:
WELLS FARGO BANK, N.A.
13115 NE 4TH STREET, SUITE 250
VANCOUVER, WASHINGTON 98684

Chad M. Prevatte
Site Assessor/Environmental Professional

Jesse R. Cottrell
Project Manager

Jen W. Friend
Environmental Professional

Signature

Signature

Signature

EXECUTIVE PROPERTY DESCRIPTION

Property: Proposed Lathrop Post-Acute Recovery Center
134 Maple Street
Redwood City, San Mateo County, California

Site Description: The subject property consists of three (3) parcels totaling approximately 1.313 acres of land. The subject property is currently developed with one (1) two-story vacant office/showroom/warehouse building (formerly Marcelli Lighting) constructed circa 1974, one (1) one-story auto repair building (formerly Chubs Auto Repair) constructed circa 1955, and one (1) one-story vacant office building constructed circa 1950-1962. In addition, the subject property is improved upon by the Redwood Creek (a concrete-lined culvert), an exterior storage yard, landscaped regions and asphalt parking areas. The vacant two-story office/showroom/warehouse building and auto repair building will be demolished and a five-story, 114-bed skilled nursing facility will be constructed. The vacant office building will remain at the subject property (the building's future use has not been determined). The subject property is serviced by electricity, natural gas, and municipally supplied water and sewer.



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1.0 EXECUTIVE SUMMARY

The following table summarizes the conclusions and opinions representing Dominion Due Diligence Group's (D3G's) best professional judgment based on information accessed during the course of this investigation. D3G performed a Phase I Environmental Site Assessment that included subject property observations of the Proposed Lathrop Post-Acute Recovery Center on December 21, 2010 located at 134 Maple Street in Redwood City, San Mateo County, California (subject property).

OBSERVED CONDITIONS	SECTION REFERENCE	ACCEPTABLE	RECOMMENDED RESPONSE ACTION
STANDARD ENVIRONMENTAL RECORDS REVIEW	5.1	√	
UNREGULATED UNDERGROUND STORAGE TANK(S) (UST)	6.3	√	
PAST INDUSTRIAL/DETRIMENTAL OPERATIONS	5.4 5.5	√	
VAPOR ENCROACHMENT CONDITION	5.6	√	
STORED HAZARDOUS MATERIALS	6.3 6.4	√	
POLYCHLORINATED BIPHENYLS (PCBS)	6.3 6.4	√	
ABOVEGROUND STORAGE TANK(S) (AST)	6.3 6.4	√	
DUMPING, LANDFILLS	6.3	√	
HAZARDOUS RUN-OFF	6.3	√	
ASBESTOS-CONTAINING MATERIALS	8.1		(1)
LEAD-BASED PAINT	8.2		(2)
FLOOD ZONE	8.4		(3)
NOISE	8.10		(4)

(√) = there are no environmental concerns associated with the observed condition

(1) If PACMs are to be impacted during any proposed renovation activities, they should be sampled by an appropriately licensed asbestos inspector prior to impaction and treated accordingly. Identified friable or damaged ACMs and ACMs which are to be impacted by renovation activities should be removed by a licensed asbestos abatement contractor in accordance with applicable regulations. Any remaining ACMs should be managed under a site-specific Operations and Maintenance (O&M) Program. In addition, compliance with 40 CFR 61 Subpart M is recommended prior to any renovation or demolition activities at the subject property.

(2) D3G recommends that if presumed LBP is to be impacted during any future renovation or demolition activities, the contractor must adhere to the OSHA Lead in Construction Standard (29 CFR 1926.62) and all generated debris containing lead-based paint is to be

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appropriately characterized and disposed of in accordance with applicable EPA RCRA requirements.

(3) If the proposed development directly or indirectly impacts the identified floodplain areas, compliance with Executive Order 11988, "Floodplain Management," is required by either obtaining a Conditional Letter of Map Amendment (CLOMA) or Conditional Letter of Map Revision (CLOMR) or by implementing procedures contained in 24 CFR Part 55.20 (8-step Process). This 8-Step Process is intended to address the requirements of Executive Order (EO) 11988, Floodplain Management, as well as the requirements of Federal Register 24 CFR Parts 50, 55 and 58.

In addition, per HUD Chapter 9 Guidelines, all "critical actions" as defined in 24 CFR 55.2(b)(2), must comply with the requirements of 24 CFR 55.20(e) – "…All critical actions in the 500-year floodplain shall be designed and built at or above the 100-year floodplain (in the case of new construction) and modified to include: 1. Preparation of and participation in an early warning system; 2. An emergency evacuation and relocation plan; 3. Identification of evacuation route(s) out of the 500-year floodplain; and 4. Identification marks of past or estimated flood levels on all structures."

(4) The projected DNL value for all noise sources is 87.8 dB. Pursuant to 24 CFR 51.101(a)(3), the composite DNL 87.8 dB is "unacceptable". The requirements set out in Section 51.104(a) are designated to ensure that interior levels do not exceed the established 45 dB level. D3G recommends that appropriate noise mitigation measures be undertaken.

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2.0 INTRODUCTION

2.1 Purpose

Wells Fargo Bank, N.A. contracted Dominion Due Diligence Group (D3G) to perform a Phase I Environmental Site Assessment (ESA) of the Proposed Lathrop Post-Acute Recovery Center located at 134 Maple Street in Redwood City, San Mateo County, California (subject property). As such, Wells Fargo Bank, N.A. is considered the "User" of this report as defined under ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process Designation: E 1527-05 (ASTM E 1527 05).

The purpose of the Phase I ESA is to provide appropriate inquiry into the previous ownership and uses of the subject property and to identify recognized environmental conditions (RECs), which are the presence or likely presence of any hazardous substances or petroleum products at the subject property under conditions that indicate an existing release, a past release, or a material threat of a release into structures, the ground, groundwater or surface water of the subject property. In addition, this report assesses non-scope considerations as directed by the client. Factual information regarding on-site business operations, conditions, and historical data provided to D3G is assumed to be correct and complete.

This investigation was conducted in accordance with ASTM E 1527-05 published guidelines, 40 CFR Part 312, Standards and Practices for All Appropriate Inquiries: Final Rule, U.S. Housing and Urban Development (HUD) Multifamily Housing Accelerated Processing Guide, and accepted Phase I ESA industry standards.

2.2 Detailed Scope of Services

The ASTM E 1527-05 scope of work for this Phase I ESA consisted of the following:

- site reconnaissance of the subject property and a visual survey of the adjacent properties to evaluate the potential for RECs;
- review of applicable and reasonably ascertainable information about the subject property, including aerial photography, USGS topographic map, state and federal databases, Sanborn maps, property assessment information and other governmental sources that are publically available, practically reviewable, and obtainable within reasonable time and cost constraints;
- interviews with selected individuals knowledgeable about the subject property and vicinity properties; and
- if provided, a review of existing environmental reports documenting previous assessment and remediation efforts completed at the subject property.

D3G also evaluated the following ASTM Non-Scope Considerations in accordance with the 2009 U.S. HUD Multifamily Housing Accelerated Processing (MAP) Guide: Tier 1 Vapor Encroachment Screening in general compliance with ASTM Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions Designation: E 2600-10, asbestos-containing materials, lead-based paint, floodplain hazards, wetlands, coastal barrier resources area, coastal zone management, historic properties, threatened and endangered species, sole source aquifers, noise, airport clear zones, air emissions and additional nuisances and hazards. See the completed HUD Environmental Questionnaire provided in Appendix M and the HUD Form 4128 and Environmental Field Data Sheets in Appendix N for the remaining HUD report protocols.

This Phase I ESA did not include the collection or analysis of soil or groundwater samples.

2.3 Significant Assumptions

Factual information regarding on-site business operations, conditions, and historical data provided to D3G is assumed to be correct and complete. D3G assumes no responsibility for hidden or latent conditions or misrepresentation by the property owner, its representatives, public information officials or any authority consulted in connection with the compilation of this report.

D3G assumes that all information provided by Environmental FirstSearch regarding the regulatory status of facilities within the approximate minimum search distance is complete, accurate and current.

2.4 Limitations and Exceptions

D3G encountered the following limitations, exceptions, and/or data gaps during the performance of this Phase I ESA:

- Our on-site observations pertain only to specific locations at specific times on specific dates. This report and conclusions herein are based upon data collection between December 21, 2010 and January 12, 2011. Our observations and conclusions do not reflect variations in conditions that may exist, in unexplored areas of the subject property, or at times other than those represented by our observations.
- In order for the prospective purchaser to claim protection from CERCLA liability as an innocent landowner, bona fide prospective purchaser, or contiguous property owner, the acquisition of the subject property should be completed within 180 days after the subject property inspection date.
- According to 40 CFR Part 312, Standards and Practices for All Appropriate Inquiries: Final Rule, CERCLA liability rests with the owner or operator of a property and not with an environmental professional hired by the prospective landowner and who is not involved with the ownership or operation of the property.
- This report meets the requirements set forth in 40 CFR Part 312 Standards and Practices for All Appropriate Inquiries: Final Rule. However, in order to qualify for certain landowner liability protections under CERCLA, Bona Fide Prospective Purchasers, Contiguous Property Owners, and/or Innocent Landowners must meet additional requirements in 101(35)(B) of CERCLA (42 U.S.C. 9601(35)) of the Federal Register.
- No significant data gaps in historical information were identified that would impact D3G's ability to identify RECs. Collectively the sources considered and consulted during the course of this assessment allowed D3G to adequately determine the subject property history. Therefore, these data gaps are not considered to be significant.
- In regards to the Tier 1 Vapor Encroachment Screening, D3G has reduced the approximate minimum search distance for up-gradient and cross-gradient off-site contaminated properties based on actual plume data collected for dry cleaners, state hazardous waste sites, and evaluation of actual gas station LUST data as outlined in the article, *A Smaller Intrusion,* by Anthony J. Buonicore, P.E. published in the May 2009 Issue of Pollution Engineering magazine.
- During the subject property reconnaissance, areas of the property were covered in dense vegetation. Therefore, D3G was unable to identify items including, but not limited to, stained areas, stressed vegetation, monitoring wells, vent pipes, fill ports, or manhole covers.

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- Historical information was not reasonably ascertainable to the subject property's first developed use. D3G obtained historical information to 1891 at which time the subject property was developed with the Bunn's Feed Mill, an elevated grain tank/silo and a dwelling. Due to the age of any development activities previous to 1891, this limitation is not significant.
- At the time this report was issued, D3G had not received the completed user, current landowner, previous landowner, or key site manager questionnaires.

2.5 Special Terms and Conditions

This investigation was conducted in accordance with ASTM E 1527-05 published guidelines and 40 CFR Part 312, Standards and Practices for All Appropriate Inquiries: Final Rule. In addition, Non-Scope items are addressed in accordance with the 2009 U.S. HUD Multifamily Housing Accelerated Processing (MAP) Guide.

2.6 User Reliance

This report has been prepared for, and can be relied upon by the Client, Wells Fargo Bank, N.A., and the United States Department of Housing and Urban Development (HUD). This report is not to be relied upon or reproduced, either in whole or in part, without written consent from D3G.

3.0 SUBJECT PROPERTY DESCRIPTION

3.1 Location and Legal Description

The subject property is located at 134 Maple Street in Redwood City, San Mateo County, California and contains a total of 1.313 acres of land. The subject property is situated at an elevation of approximately fifteen (15) feet above mean sea level and is located at Latitude, 37.481191 and Longitude, -122.225172.

SUBJECT PROPERTY MUNICIPAL IDENTIFICATION	
ASSESSOR PARCEL NUMBERS	053147010, 053147020 and 053147050
SOURCE - San Mateo County assessment documents	

A copy of the tax cards and map illustrating the legal property boundary is included in Appendix A of this report.

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3.2 Site and Vicinity General Characteristics

The subject property is located in an area of residential and commercial development.

3.3 Current Use of the Subject Property

The subject property is currently utilized as a vacant office/showroom/warehouse building (formerly Marcelli Lighting), an auto repair building (formerly Chubs Auto Repair), and a vacant office building.

3.4 Description of Structures, Roads, and Other Improvements

The following section describes general conditions and features as noted during D3G's inspection:

GENERAL SUBJECT PROPERTY DESCRIPTION AND IMPROVEMENTS	
SUBJECT PROPERTY ACREAGE	1.313 acres
BUILDING(S) DESCRIPTION	One (1) two-story vacant office/showroom/warehouse building, one (1) one-story auto repair building, and one (1) one-story vacant office building
ADJOINING ROADS	Maple Street, Lathrop Street, Main Street, and Elm Street
CONSTRUCTION DATE(S)	Circa 1974, circa 1955 and between 1950 and 1962
EXTERIOR IMPROVEMENTS	Redwood Creek (a concrete-lined culvert), an exterior storage yard, landscaped regions and asphalt parking areas
UNIMPROVED AREAS	None

D3G reviewed the Preliminary Lot Line Adjustment via Parcel Map plans produced by BKF Engineers in May 2010. Subject property acreage was obtained from the plans. A copy of the Preliminary Lot Line Adjustment via Parcel Map plans is included in Appendix B of this report.

D3G reviewed the proposed Site Plan maps produced by Fong & Chan Architects on April 16, 2010. Information regarding the proposed structure was obtained from the maps. A copy of the proposed Site Plan maps is included in Appendix B of this report.

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3.4.1 Subject Property Utilities

SUBJECT PROPERTY UTILITIES	
ELECTRICITY	Pacific Gas & Electric Company
NATURAL GAS	Pacific Gas & Electric Company
WATER	Redwood City Public Works Water Services
SANITARY SEWER	Redwood City Public Works Water Services
INDUSTRIAL WASTEWATER	NA
SOLID WASTE	Not provided

HEATING SOURCE	AGE
Electricity (Marcelli Lighting) and natural gas (office building)	Circa 1974 and circa 1950-1962 - current

COOLING SOURCE	AGE
Electricity (Marcelli Lighting and the office building)	Circa 1974 and circa 1950-1962 - current

The auto repair structure did not appear to be constructed with a permanent heating or cooling system.

3.5 Current Uses of Adjoining Properties

DIRECTION	LAND USAGE
NORTH	Southern Pacific railroad and Cook's Collision
SOUTH	Elm Street and ATA Reprographics, Main Street Coffee Roasting Company, California Auto Detailers and Hopkins Acura Dealership
EAST	Southern Pacific railroad, Main Street, RPH (commercial plumbing) and a church
WEST	Maple Street, Lathrop Street and Franklin Street Apartments

Cook's Collision, which is listed in the Environmental FirstSearch Report as Cook's Auto Body/Repair, is discussed further in Sections 5.1.1 and 5.1.2. RPH, which is listed in the FirstSearch Report as Baker Graphics or BPS Baker Graphics Redwood City, is discussed further in Section 5.1.2.

The Franklin Street Apartments are are further discussed in Section 5.1.1 and 5.6.

See Appendix B for a copy of the Site Plan, which identifies subject property structure(s) and general vicinity characteristics.

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4.0 USER PROVIDED INFORMATION

4.1 Title Records

Assessor Parcel Number (APN) 053147010		
OWNER	**PURCHASE DATE**	**DEED BOOK/PAGE**
Lathrop PARC Redwood City, LLC	2006	Unknown
Nicolas and Barbara Marcelli	1976	Unknown
SOURCE - Interview with Mr. Louis Deziel, Jr., current landowner representative		

Assessor Parcel Number (APN) 053147020 & 053147050		
OWNER	**PURCHASE DATE**	**DEED BOOK/PAGE**
Butler Realty, LLC	2002 and 2007	Unknown
SOURCE - Interview with Mr. Kevin Flaherty, Leasing Agent and current landowner representative		

Due to the nature of the tax assessment documents and deed records, a thorough chain-of-title was not reasonably ascertainable.

4.2 Environmental Liens or Activity and Use Limitations (AULs)

D3G has not been provided information regarding environmental liens and activity use limitations by the User.

4.3 Specialized Knowledge

D3G has not been provided information regarding specialized knowledge or experience that is material to recognized environmental conditions in connection with the subject property by the User.

4.4 Commonly Known or Reasonably Ascertainable Information

D3G has not been provided information regarding commonly known or reasonably ascertainable information within the local community about the property that is material to recognized environmental conditions in connection with the property by the User.

4.5 Valuation Reduction for Environmental Issues

D3G has not been provided any knowledge of valuation reduction for environmental issues pertaining to the subject property by the User or Current Landowner Representative.

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4.6 Owner, Property Manager, and Occupant Information

The subject property is currently owned by Lathrop PARC Redwood City, LLC and Butler Realty, LLC and the Current Landowner questionnaire is discussed further in Section 7.2. Mr. Kevin Flaherty is the current Key Site Manager and the questionnaire is discussed further in Section 7.4.

4.7 Reason for Performing Phase I ESA

The user informed D3G that the Phase I ESA is being performed because the subject property is being purchased and developed with a five-story, 114-bed, skilled nursing facility.

4.8 Previous Environmental Reports

D3G reviewed a previous Phase I ESA produced by TRC on July 23, 2007 for the northwestern portion of the subject property identified as Assessor Parcel Number (APN) 053147010 (formerly Marcelli Lighting). TRC reviewed reports associated with two (2) previous underground storage tanks (USTs). TRC wrote, "In September 1994, a 580-gallon gasoline UST and a 1,000-gallon diesel UST, as well as a fuel dispenser and below ground piping, were removed from a location near the southern corner of the on-site building. The USTs were reported to be in good condition. Soil samples were collected from beneath the USTs and dispenser, and from stockpiled soil. The samples were analyzed for total gasoline and diesel range petroleum hydrocarbons (TPHg and TPHd, respectively), and benzene, toluene, ethylbenzene and xylenes (BTEX). TPHd at 30 parts per million (ppm) was detected in the sample collected beneath the dispenser, which was below applicable clean up levels. Toluene, ethylbenzene and xylenes were additionally detected in the stockpile soil samples at up to 0.0088, 0.0058 and 0.27 ppm, respectively, which is above regulatory standards. The stockpiled soil was subsequently aerated on-site and re-sampled; no BTEX compounds were detected in the samples collected after aeration. The soil was subsequently used on-site to backfill the excavation. The reports indicate that the work was performed under oversight from the County of San Mateo Department of Health Service (CSMDHS) and that the CSMDHS closed the site after reviewing the laboratory results." TRC concluded that, "the planned use appears compatible with the known on-site environmental conditions. No further work appears required". No RECs were identified. See Appendix P for a copy of the previous Phase I ESA.

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D3G reviewed the Laboratory Results Soil Sampling report produced by Applied Science and Engineering, Inc. (ASE) on September 28, 1994, which confirmed TRC's findings. In addition, D3G reviewed the Laboratory Results Stockpile Re-Sampling report produced by ASE on November 21, 1994. These reports describe the removal of the 1,088-gallon diesel UST, the 580-gallon gasoline UST and the associated piping and equipment located at the Marcelli Lighting location. Based on the condition of the removed USTs, the analytical data, remediation of the soils from the UST tank pit, and regulatory status, D3G does not believe that the previous USTs are an environmental concern to the subject property. Based on the fact that the above-listed reports identify USTs removed in September 1994 and the highly unlikely probability that four (4) USTs were located at Marcelli Lighting, D3G believes that there were only two (2) previous USTs at the subject property even though the UST size is different but similar in the reports. See Appendix Q for a copy of the Laboratory Results Soil Sampling report. See Section 7.6 for San Mateo County Department of Health Services-Environmental Health information regarding the previous on-site USTs. The former USTs located at the former Marcelli Lighting building are discussed further in Section 5.6.

D3G reviewed a previous Phase I ESA produced by Odic Environmental (Odic) on January 17, 2007 for the eastern portion of the subject property identified as APN 053147020 and 053147050 occupied by Chubs Auto Repair. Odic concluded that, "Historic RECs were found. The subject site had a release of petroleum hydrocarbons to soil and groundwater, with case closure achieved. While closure was granted for the release from the former UST, impact to groundwater from petroleum hydrocarbons has been documented. However, the reported levels are considered to be a low risk for impact to the groundwater beyond the property boundaries, and are not expect to affect any nearby sensitive receptors. Odic hereby recommends no further action based on the current site condition and available public records due to a minimal risk of regulatory action related to the existing contamination at the subject property." See Section 5.6 for additional information regarding the previous subject property LUST incident and UST facility. See Appendix R for a copy of the body of the Odic previous Phase I ESA.

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5.0 RECORDS REVIEW

5.1 Standard Environmental Record Sources

5.1.1 State Regulatory Records

According to ASTM E 1527-05, Section 8.1.2.1, the search radius may be reduced due to the urban nature of the subject property and surrounding area. Therefore, the concern attributed to leaking underground storage tank (LUST) sites and State Hazardous Waste Sites (SHWS) is minimized to within 0.33 miles of the subject property.

DATABASE	FINDINGS	
STATE AND TRIBAL LEAKING UNDERGROUND STORAGE TANK DATA (LUST)	On-Site: Adjacent: 0.33 Mile Radius:	Two (2) Two (2) Fifty-three (53)
STATE AND TRIBAL UNDERGROUND STORAGE TANK DATA (UST)	On-Site: Adjacent: 0.25 Mile Radius:	One (1) None Twenty-six (26)
STATE AND TRIBAL VOLUNTARY CLEANUP PROGRAM SITES (VCP)	On-Site: Adjacent: 0.50 Mile Radius:	None None Three (3)
STATE AND TRIBAL BROWNFIELD SITES (BROWNFIELDS)	On-Site: Adjacent: 0.50 Mile Radius:	None None None
STATE AND TRIBAL HAZARDOUS WASTE SITES (SHWS)	On-Site: Adjacent: 0.33 Mile Radius:	None None None
STATE AND TRIBAL INSTITUTIONAL/ENGINEERING CONTROLS (IC/EC)	On-Site: Adjacent: 0.15 Mile Radius:	None None None
STATE AND TRIBAL REGISTERED SOLID WASTE LANDFILLS (SWL)	On-Site: Adjacent: 0.75 Mile Radius:	None None One (1)
STATE SPILLS SITES (SPILLS)	On-Site: Adjacent: 0.15 Mile Radius:	None None Two (2)
Source - State of California governmental records accessed by Environmental FirstSearch		

According to ASTM E 1527.05 Section 3.2.39, an historical recognized environmental condition (HREC) which in the past may have been a REC, but may or may not be considered a REC currently. The on-site LUST listings for the subject property are considered an HREC.

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The subject property, identified as Chub's Auto Repair, is listed in the Environmental FirstSearch Report twice (a duplicate record) as a Closed LUST facility and once as a UST facility. D3G reviewed available files from the San Mateo County Department of Health Services-Environmental Health regarding the Closed LUST cases. According to the Revised Tank Removal Report produced by SEMCO on June 8, 1994, a 1,000 gallon waste oil tank and a 1,000 gallon gasoline tank were removed on January 14, 1994. Soil samples from the gasoline tank pit indicated that no detectable traces of analyzed constituents were present except for de minimis amounts of lead. Soil samples from the waste oil tank pit indicated that diesel impacted the soil at 1,100 parts per million (ppm). The tank pit was over-excavated and the subsequent sample indicated diesel at 530 parts per billion (ppb) in the soil, which was above the regulatory levels. See Appendix U for a copy of the Revised Tank Removal Report.

According to the Monitoring Well Construction Report produced by Applied Science and Engineering, Inc. (ASE) on May 24, 1994, in compliance with regulatory requests, a monitoring well (MW-1) was constructed adjacent to the former waste oil UST tank pit to 20 feet below ground surface (bgs). Soil samples were also collected during drilling activities. MW-1 was completed, developed and sampled. Collected soil and groundwater samples were analyzed for petroleum hydrocarbons. Laboratory analysis indicated that soil and groundwater samples were non-detect for petroleum hydrocarbons during the sampling events. ASE recommended collecting groundwater samples quarterly for one year. See Appendix V for a copy of the Monitoring Well Construction Report.

D3G reviewed the Monitor Well Sampling Report produced by ASE on February 16, 1995. The Report states that four (4) quarters of groundwater monitoring were conducted and that analyzed groundwater was non-detect for petroleum hydrocarbons. ASE recommended site closure. See Appendix W for a copy of the Monitor Well Sampling Report.

According to field notes from the San Mateo County Department of Health Services-Environmental Health dated June 21, 1995, MW-1 was abandoned. According to the June 21, 1995 correspondence from the San Mateo County Department of Health Services-Environmental Health, the investigation of the site and remediation of the previous USTs is complete. Based upon available information, no further action (NFA) related to the USTs is required. Additionally, based on the absence of contamination in the subsurface, after the final sampling of MW-1, related to the previous USTs and the regulatory status, D3G does not believe that the previous USTs are an environmental concern to the subject property. See Appendix X for a copy of the NFA letter. The former UST/LUST facility is discussed in Section 5.6.

Cook's Auto Body, which is located across the railroad tracks adjacent to the north and topographically down-gradient, is listed in the Environmental FirstSearch Report as an open LUST facility. According to the Environmental FirstSearch Report, the facility is under site cleanup. D3G reviewed documentation related to the adjacent LUST incident on the California State Water Resources Control Board GeoTracker GIS site accessed at

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http://geotracker.waterboard.ca.gov/. The LUST incident occurred on the northern portion of the Cook's Auto Body property at an actual distance of approximately 0.04 miles from the subject property. Based on distance and topographic relationship, the Cook's Auto Body is not suspected to present an environmental concern to the subject property. Refer to Section 5.6 for further discussion.

The Hudson Property which is located at 135 Maple Street is located on the western adjacent and topographically cross-gradient property is listed in the Environmental FirstSearch Report as a closed LUST facility. Additionally, according to historical research performed by D3G the property was previously utilized as a Carburetor and Auto Repair facility starting in 1962 through at least 1968. According to the Environmental FirstSearch Report, the facility is a closed LUST incident. D3G reviewed documentation related to the adjacent LUST incident on the California State Water Resources Control Board GeoTracker GIS site assessed at http://geotracker.waterboard.ca.gov/. According to the reviewed documentation and the Environmental FirstSearch Report, the release was reported on November 2, 1999 and involved solvents and the contaminated media was "other groundwater – not drinking water". Additionally, the LUST incident was closed on October 30, 2002. Finally the property was redeveloped between 1998 and 2005 with the present multi-family apartment complex. Based on the topographic relationship, and current regulatory status, the western adjacent LUST incident is not considered to be of environmental concern to the subject property. Refer to Section 5.6 for further discussion.

The remaining state-regulated facilities are not located on-site or adjacent and are not of environmental concern to the subject property. The closest record is approximately 0.07 miles southwest of the subject property. Based on the listed distances, topographic relationships, and/or current regulatory statuses, the vicinity state-regulated facilities are not suspected to present environmental concerns to the subject property.

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5.1.2 Federal Regulatory Records

DATABASE	FINDINGS	
EPA NATIONAL PRIORITIES LISTING (NPL – SUPERFUND)	On-Site: Adjacent: 1.00 Mile Radius:	None None None
EPA NATIONAL PRIORITIES LISTING (NPL – DELISTED SITES)	On-Site: Adjacent: 0.50 Mile Radius:	None None None
EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLIS)	On-Site: Adjacent: 0.50 Mile Radius:	None None One (1)
EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLIS) NO FURTHER REMEDIAL ACTION PLANNED (NFRAP)	On-Site: Adjacent: 0.50 Mile Radius:	None None Three (3)
EPA RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)	On-Site: Adjacent: 0.25 Mile Radius:	One (1) Two (2) Ten (10)
EPA RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) TREATMENT, STORAGE, AND DISPOSAL (TSD)	On-Site: Adjacent: 0.50 Mile Radius:	None None One (1)
FEDERAL INSTITUTIONAL/ENGINEERING CONTROLS (IC/EC)	On-Site: Adjacent: 0.15 Mile Radius:	None None None
EPA EMERGENCY RESPONSE NOTIFICATION-SITES (ERNS)	On-Site: Adjacent: 0.15 Mile Radius:	None One (1) One (1)
EPA RCRA CORRECTIVE ACTION REPORT (CORRACTS)	On-Site: Adjacent: 1.00 Mile Radius:	None None One (1)
SOURCE - Environmental Protection Agency records accessed by Environmental FirstSearch		

The subject property is listed as Chub's Auto Repair in the Environmental FirstSearch Report as a RCRA small quantity generator of hazardous waste. According to the Environmental FirstSearch Report, no violations are listed. The Chub's Auto Repair is no longer in business and should no longer be classified as a RCRA generator. Based on the regulatory status, the RCRA small quantity generator listing is not an environmental concern to the subject property.

Baker Graphics located at 1201 Main Street, adjacent to the east and topographically cross-gradient of the subject property, is currently known as RPH and is listed in the Environmental FirstSearch Report as a RCRA generator of hazardous waste and an ERNS site. According to the Environmental FirstSearch Report, no violations are listed for the facility. D3G contacted Ms. Mary Misemer, Regulatory Assistance Officer with the California Department of Environmental Protection (CA EPA) (1-800-728-6942) on January 10, 2010 to obtain information pertaining to the ERNS site. However, Ms. Misemer's review of online regulatory database documents found no information available on the adjacent ERNS site. In addition, D3G

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reviewed the California Department of Toxic Substances EnviroStor website accessed at http://www.envirostor.dtsc.ca.gov/public/ for a listing of cleanup sites and hazardous waste permitted facilities, and the National Response Center (NRC) website accessed at http://www.nrc.uscg.mil/nrchp.html for a review of federally-regulated oil and chemical spills. However, the eastern adjacent ERNS site was not listed in either the EnviroStor or the NRC database. Based on the topographic relationship and lack of reported handling violations, the adjacent RCRA generator of hazardous waste and ERNS site are not suspected to be of environmental concern to the subject property.

Cook's Auto Body, which is located across the railroad tracks adjacent to the north and topographically down-gradient, is listed twice in the Environmental FirstSearch Report as a RCRA generator of hazardous waste. According to the Environmental FirstSearch Report, no violations are listed. Based on the listed distance, topographic relationship and current regulatory status, the Cook's Auto Body is not suspected to present an environmental concern to the subject property.

The remaining federally-regulated facilities are not located on-site or adjacent and are not of environmental concern to the subject property. The closest remaining record is located approximately 0.07 miles to the northeast of the subject property. Based on the listed distances, topographical relationships and/or current regulatory statuses, the remaining federally-regulated facilities are not suspected to have negatively impacted the environmental integrity of the subject property.

5.1.3 Database Non-Geocoded/Un-Mapable Sites

No non-geocoded sites were determined to be located within the applicable search radius for ASTM E 1527-05.

5.2 Additional Environmental Record Sources

There were no other sources for environmental records that were reviewed for this study.

5.3 Physical Setting Sources

5.3.1 Topography and Regional Surface Water

TOPOGRAPHY AND REGIONAL SURFACE WATER	
ELEVATION (feet above mean sea level)	15
SLOPE	North
APPROXIMATE GROUNDWATER FLOW	North
REGIONAL SURFACE WATER	Redwood Creek, a concrete-lined culvert, is located on-site and flows north
SOURCE - USGS Topographic Quadrangle – *Palo Alto, California* 1991	

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Located in the Appendix A is a topographic map depicting subject property elevations and drainage patterns. Depth to groundwater fluctuates depending on hydrological and weather conditions.

On-site drainage at the subject property is suspected to consist of flow along the asphalt parking areas to strategically located storm drains and surface percolation in the unpaved areas.

5.3.2 Soil Characteristics

SOIL CHARACTERISTICS	
SOIL TYPE	*Urban land (131):* This map unit consists of soils that have been so altered by man-made activities, that classification is not feasible.
SOURCE - Web Soil Survey accessed at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx	

5.4 Historical Use Information on the Subject Property

5.4.1 Review of Aerial Photographs

YEAR	SUBJECT PROPERTY
1948	The northern portion is developed with structures used as a feed and fuel (wood and coal) facility. The southern portion is partially wooded and undeveloped.
1965	The northern portion is developed with structures used as a feed and fuel (wood and coal) facility. The southern portion is developed with the current auto repair and office structures.
1974	Current subject property structures
1982	Same as 1974
1993	Same as 1974
1998	Same as 1974
2005	Same as 1974
2009	Same as 1974
SOURCES - Google Earth and Environmental Data Resources, Inc.	

A copy of the aerial photography is included in Appendix D of this report.

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5.4.2 Fire Insurance Maps

YEAR	SUBJECT PROPERTY
1891	Bunn's Feed Mill, an elevated grain tank/silo, and a dwelling [PD]
1897	W.J. Bunn's Feed Mill, grain warehouse, engine shop, stable, one (1) unidentified building, an elevated grain tank, and a dwelling
1907	Cullen Co's Grain Warehouse, grain warehouse, one (1) unidentified building, dwellings, sheds and a hen house
1919	"Feed and Fuel" building, dwellings, sheds, and an automobile garage
1950	Ridgeway Feed and Fuel (wood and coal), a feed and grain warehouse, an office, and vacant lots
1962	Palmer Supply Company Feed and Fuel (wood and coal), a feed and grain warehouse, and an office on the northern portion and the current auto repair/spray painting, a store building, and a parking lot on the southern portion
1968	Vacant land on the northern portion and the southern portion is the same as 1962
SOURCE - Environmental Data Resources, Inc. - Certified Sanborn Map Report	

PD = partially depicted

Based on the fact that the fuel that was sold during the historical use of the subject property was wood and coal, D3G does not believe that the historical uses of the subject property as a Feed and Fuel company are considered environmental concerns to the subject property.

The Auto Repair Facility is further discussed in Section 5.1.1 and 5.6.

A copy of the Sanborn Fire Insurance Maps is included in Appendix D.

5.4.3 Other Historical Sources

No additional historical sources were reasonably ascertainable.

5.4.4 Summary of Subject Property History

According to the reviewed subject property historical information, the northern portion of the subject property consisted of a grain mill from at least 1891 through the mid-1960s. An engine shop and stable were associated with the grain mill circa 1897. In addition, the northern portion of the subject property was utilized as a Feed and Fuel (wood and coal) facility from approximately 1919 through 1962. The subject property is believed to have been vacant from at least 1968 until the current northern subject property lighting warehouse/storage/office structure (formerly Marcelli Lighting) was constructed in approximately 1974.

According to the reviewed subject property historical information, the southern portion of the subject property consisted of an elevated grain tank and a dwelling from at least 1891 through 1907 when it was developed with dwellings, sheds and a hen house. The subject property was utilized for residential purposes from approximately 1907 until 1955 when the

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auto repair building was constructed. The vacant office building was constructed between 1950 and 1962 and was used as a store and office building.

None of the accessed data depicts underground storage tanks (USTs) at the former structures; however, there exists the possibility that the former structures utilized underground or aboveground storage tanks (USTs/ASTs). No visual evidence of USTs (fill ports/vent pipes) or ASTs was observed during the site inspection. If additional ASTs or USTs were formerly located at the subject property, they should have been removed during the demolition of the structure. Information regarding previous on-site USTs is located in Section 5.1.1 and 5.6.

5.5 Historical Use Information on Adjoining Properties

5.5.1 Review of Aerial Photographs

YEAR	NORTH	SOUTH	EAST	WEST
1948	Railroad tracks and commercial structures	A single-family residential structure, a parking lot, a commercial structure, and undeveloped land	Railroad tracks, commercial and single-family residential structures, and a church	Undeveloped land and single-family residential structures
1965	Same as 1948	Commercial structures	Railroad tracks, a storage lot, and a church	Commercial structures
1974	Same as 1948	Same as 1965	Same as 1965	Same as 1965
1982	Same as 1948	Same as 1965	Railroad tracks, a commercial structure, and a church	Same as 1965
1993	Same as 1948	Same as 1965	Same as 1982	Same as 1965
1998	Same as 1948	Same as 1965	Same as 1982	Same as 1965
2005	Same as 1948	Same as 1965	Same as 1982	Multi-family apartment structures
2009	Same as 1948	Same as 1965	Same as 1965	Same as 2005
SOURCES - Google Earth and Environmental Data Resources, Inc.				

A copy of the aerial photography is included in Appendix D of this report.

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5.5.2 Fire Insurance Maps

YEAR	NORTH	SOUTH	EAST	WEST
1891	Not depicted	Elm Street, H. Beeger's Tannery, a dwelling, an unidentifiable building, and an elevated water tank	Pennsylvania Railroad, Mound Street, a blacksmith and wagon shop, carriage house, dwellings, sheds, and a Baptist Church	Not depicted
1897	Pennsylvania Railroad, a tin shop, a grocery, and dwellings	Same as 1891	Pennsylvania Railroad, Mound Street, a blacksmith and wagon shop, a cow barn, a grocery, dwellings, sheds, and a Baptist Church	Main Street, dwellings, and sheds
1907	Pennsylvania Railroad, a phonograph store, a commercial building, and dwellings	Elm Street, H. Beeger's Tannery, a dwelling and shed	Pennsylvania Railroad, Mound Street, a blacksmith and wagon shop, dwellings, sheds, and a Baptist Church	Main Street, a tennis court, and dwellings
1919	Pennsylvania Railroad, an automobile garage, and dwellings	Elm Street, Beeger Tannery CO., a dwelling an automobile garage and a vacant lot	Pennsylvania Railroad, Main Street, dwellings, a blacksmith, a Baptist Church, and an automobile repair building	Maple Street, dwellings, and vacant lots
1950	Pennsylvania Railroad, a dwelling, a store, warehouse/ storage and a gas and oil facility	Elm Street, a dwelling, an automobile garage and a vacant lot	Pennsylvania Railroad, Main Street, dwellings, and a Free Methodist Church	Maple Street, Lathrop Street, vacant lots, a Rooming House, and dwellings
1962	Pennsylvania Railroad, an unidentifiable building, an automobile service and produce warehouse building and a gas and oil facility	Elm Street, a storage building, stores, and a vacant lot	Pennsylvania Railroad, Main Street, a used automobile sales and automobile washing facility, a dwelling, and a Free Methodist Church	Maple Street, Lathrop Street, an automobile and carburetor repair facility, speedometer repair shop, and a sand and gravel storage yard

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YEAR	NORTH	SOUTH	EAST	WEST
1968	Pennsylvania Railroad, stores, an automobile service and produce warehouse building, and a gas and oil facility	Same as 1962	Not depicted	Same as 1962
SOURCE - Environmental Data Resources, Inc. - Certified Sanborn Map Report				

The western adjacent Carburetor and Automotive Repair facility is further discussed in Section 5.1.1 and 5.6.

The southern adjacent H. Beeger Tanning facility is depicted on the 1891 through 1948 Sanborn Fire Insurance Maps. However, it is not depicted in the 1950 Sanborn Fire Insurance Map, instead where the Beeger Tanning facility was located is a storage building, stores and a vacant lot. Additionally, the facility is located topographically cross-gradient from the subject property and has since been redeveloped as a car dealership with associated structures. Based on the amount of time, approximately 60 years since the properties last use as a tannery, redevelopment of the property and topographic relationship, the southern adjacent tannery is not suspected to be of environmental concern to the subject property.

The adjacent properties have been occupied by a tannery, automobile service facilities and a gas and oil facility and are down to cross-gradient to the subject property. Based on the regulatory review and site inspection, the adjacent facilities are not considered an environmental concern to the subject property.

A copy of the Sanborn Fire Insurance Maps is included in Appendix D.

5.5.3 Other Historical Sources

No additional historical sources were reasonably ascertainable.

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5.6 Tier 1 Vapor Encroachment Screening

D3G performed a Tier 1 Vapor Encroachment Screening in compliance with ASTM E 2600-10 "ASTM Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions" as amended. The purpose of the Tier 1 Vapor Encroachment Screening is to conduct an initial screen to determine if a Vapor Encroachment Condition (VEC) exists in connection with the subject property. A VEC is defined as the presence or likely presence of chemical of concern (COC) vapors in the subsurface of the subject property caused by the release of vapors from contaminated soil or groundwater either on or near the subject property.

D3G reviewed standard environmental record sources to identify if there are known or suspected sources of contamination within the area of concern (AOC). According to ASTM E 2600-10, the area of concern is defined by the approximate minimum search distance which is based upon the chemical of concern (i.e. petroleum hydrocarbons vs. non-petroleum hydrocarbons) and the location of a known or suspected source of contamination with respect to the subject property.

According to ASTM E 2600-10 8.2.1 *"The area of concern is one third of a mile around the subject property, unless the use of a shorter distance is appropriate."* In addition, according to ASTM E 2600-10 8.3.1, *"The approximate minimum search distance may be expanded or reduced in the up-gradient, down-gradient, and/or cross-gradient directions by the environmental professional conducting the Vapor Encroachment Screening based upon experience in the local area."* Therefore, D3G has reduced the approximate minimum search distance for up-gradient and cross-gradient contaminated properties based on actual plume data collected for dry cleaners, state hazardous waste sites, and evaluation of actual gas station LUST data as outlined in the article, *A Smaller Intrusion*, by Anthony J. Buonicore, P.E. published in the May 2009 Issue of Pollution Engineering magazine. A copy of the article is provided in Appendix E. The revised approximate minimum search distances are provided in the table below. Unless otherwise stated, groundwater flow/gradient is approximated based on surface topography.

D3G was not provided information from the User, Current Landowner, or Key Site Manager, regarding specialized knowledge or experience or commonly known or reasonably ascertainable information within the local community about the subject property that is material to the assessment of a VEC in connection with the subject property.

Subject Property

Based on a review of the Environmental FirstSearch Report, the subject property is identified in the State and Federal Records Search. The subject property, identified as Chub's Auto Repair, is listed in the LUST/UST State Records Search. According to the Environmental FirstSearch Report, the subject property is listed twice as a Closed LUST facility and once as a UST facility. A review of available documentation indicates that two (2) USTs were present at the subject property. In addition, the final sampling analysis indicated that soil and

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groundwater were not contaminated by the previous USTs and the case was closed. Based on the absence of contamination in the subsurface related to the previous USTs and the regulatory status, a VEC does not exist or is not likely to exist at the subject property from the previous on-site USTs. The USTs are discussed further in Section 5.1.1.

D3G contacted the San Mateo County Department of Health Services-Environmental Health for a review of their environmental records including regional environmental health issues, on-site wells and/or septic system records for the subject property. D3G reviewed San Mateo County Department of Health Services-Environmental Health documents related to the previous USTs located at the Marcelli Lighting location. The application for the permit to close two (2) on-site USTs (500-gallon gasoline and 1,000-gallon diesel USTs installed in 1979) was filed on May 26, 1994. D3G reviewed a letter from the San Mateo County Department of Health Services-Environmental Health dated October 4, 1994 which stated, "it is our position that no further action is required at this time." See Section 4.8 for the previous Phase I ESA report regarding the previous on-site USTs. Although there is a slight discrepancy in the size of the USTs between the previous reports discussed in Section 4.8 and the health department documentation, there were only two (2) USTs reported to be located on this portion of the subject property. Based on the condition of the removed USTs, the analytical data, remediation of the soils from the UST tank pit, and regulatory status, D3G believes that a VEC does not exist or is not likely to exist at the subject property from the previous USTs.

D3G reviewed the Hydraulic Lift Sampling Results produced by ASE on December 21, 1994. ASE stated that a hydraulic lift was removed from the automobile repair shop in August 1994 because the cylinder was leaking. The hydraulic pit was over-excavated to twelve (12) feet bgs and a monitoring well (MW-2) was placed in the washed pea gravel backfilled pit. Soil and groundwater samples were collected from the bottom of the pit and MW-2 and analyzed for oil & grease (O&G) by EPA method 418.1. Analytical data indicated that O&G was present in the soil sample at 520 ppm at 12.5 feet bgs and that O&G was present in groundwater at 1.7 ppm, which is below regulatory levels. D3G reviewed the San Mateo County Department of Health Services-Environmental Health Case Closure Memorandum dated June 13, 1995. The memorandum outlined the history of the hydraulic lift removal, prior sampling events and analytical information. In addition, the memorandum stated that it is estimated that approximately 2.5 cubic yards of soil contaminated with approximately one (1) gallon of hydraulic oil remains in place at the site. Based on the de minimis amount (approximately one gallon) of hydraulic oil in the subsurface and the fact that the former hydraulic lift has been previously investigated, D3G does not suspect that the hydraulic oil negatively impacted the environmental integrity of the subject property. Additionally, the objectives of the San Francisco Bay Regional Water Quality Control Board have been satisfied and that the case has been closed, D3G believes that a VEC does not exist or is not likely to exist at the subject property from the previous hydraulic lift. If contamination is discovered during the subject property demolition and/or construction, the contamination should be disposed of in accordance with local, state and federal regulations.

The subject property is listed as Chub's Auto Repair in the Environmental FirstSearch Report as a RCRA small quantity generator of hazardous waste. According to the Environmental FirstSearch Report, no violations are listed. The Chub's Auto Repair is no longer in business and should no longer be classified as a RCRA generator. Based on the regulatory status, the RCRA small quantity generator listing is not an environmental concern to the subject property. Therefore, a VEC does not exist or is not likely to exist at the subject property from the previous RCRA small quantity generator of hazardous waste.

Contaminated Properties within the Area of Concern

The following table identifies contaminated properties within the revised approximate minimum search distances, based on a review of the Environmental FirstSearch Report and a review of adjacent historical use information that is reasonably ascertainable.

	UP-GRADIENT SOURCES: NUMBER OF IDENTIFIED RECORDS		DOWN-GRADIENT SOURCES: NUMBER OF IDENTIFIED RECORDS		CROSS-GRADIENT SOURCES: NUMBER OF IDENTIFIED RECORDS	
Search Distance	**COC : 1/3 mile**	**Petroleum: 1/10 mile**	**COC : 0.02 mile (100 ft)**	**Petroleum: 0.02 mile (100 ft)**	**COC: 0.07 mile (365 ft)**	**Petroleum: 0.03 mile (165 ft)**
State Standard Environmental Record Sources						
LUST	--	--	--	1	--	1
VCP	--	--	--	--	--	--
BROWNFIELDS	--	--	--	--	--	--
SHWS	--	--	--	--	--	--
SWL	--	--	--	--	--	--
Federal Standard Environmental Record Sources						
NPL	--	--	--	--	--	--
CERCLIS	--	--	--	--	--	--
RCRA CORRACTS	--	--	--	--	--	--
RCRA TSD	--	--	--	--	--	--

*A review of the state and federal environmental records sources obtained from the Environmental FirstSearch Report is provided in Appendix E.

Cook's Auto Body, which is located across the railroad tracks adjacent to the north and topographically down-gradient, is listed in the Environmental FirstSearch Report as an open LUST facility. According to the Environmental FirstSearch Report, the facility is under site cleanup. D3G reviewed documentation related to the adjacent LUST incident on the California State Water Resources Control Board GeoTracker GIS site accessed at http://geotracker.waterboard.ca.gov/. The LUST incident occurred on the northern portion of the Cook's Auto Body property at an actual distance of approximately 0.04 miles from the subject property. Based on distance and topographic relationship, the Cook's Auto Body is

not suspected to present an environmental concern to the subject property. Therefore, a VEC does not exist or is not likely to exist at the subject property from the previous LUST incident.

The Hudson Property which is located at 135 Maple Street is located on the western adjacent and topographically cross-gradient property is listed in the Environmental FirstSearch Report as a closed LUST facility. Additionally, according to historical research performed by D3G the property was previously utilized as a Carburetor and Auto Repair facility starting in 1962 through at least 1968. According to the Environmental FirstSearch Report, the facility is a closed LUST incident. D3G reviewed documentation related to the adjacent LUST incident on the California State Water Resources Control Board GeoTracker GIS site assessed at http://geotracker.waterboard.ca.gov/. According to the reviewed documentation and the Environmental FirstSearch Report, the release was reported on November 2, 1999 and involved solvents and the contaminated media was "other groundwater – not drinking water". Additionally, the LUST incident was closed on October 30, 2002. Finally the property was redeveloped between 1998 and 2005 with the present multi-family apartment complex. Located on the western adjacent property is a portion of Redwood Creek, which is a preferential pathway for contaminates as well as acting as a hydraulic barrier to prevent contamination from reaching the residential structure of the subject property. Based on the topographic relationship, current regulatory status and presence of a hydraulic barrier between the subject property and the western adjacent LUST, the LUST incident is not considered to be of environmental concern to the subject property. Therefore, a VEC does not exist or is not likely to exist at the subject property from the previous LUST incident.

6.0 SITE RECONNAISSANCE

6.1 Methodology and Limiting Conditions

D3G's site inspection consisted of visual observations along boundaries and various transects throughout the subject property. On the interior lobbies, hallways, utility rooms, maintenance and repair areas and offices were observed. The adjacent properties were observed from the subject property and the boundaries of the subject property and public right-of-ways.

6.2 General Site Setting

The subject property consists of three (3) parcels totaling approximately 1.313 acres of land. The subject property is currently developed with one (1) two-story vacant office/showroom/warehouse building (formerly Marcelli Lighting) constructed circa 1974, one (1) one-story auto repair building (formerly Chubs Auto Repair) constructed circa 1955, and one (1) one-story vacant office building constructed circa 1950-1962. In addition, the subject property is improved upon by the Redwood Creek (a concrete-lined culvert), an exterior storage yard, landscaped regions and asphalt parking areas. The vacant two-story office/showroom/warehouse building and auto repair building will be demolished and a five-story, 114-bed skilled nursing facility will be constructed. The vacant office building will remain

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at the subject property (the building's future use has not been determined). The subject property is serviced by electricity, natural gas, and municipally supplied water and sewer.

6.3 Exterior Observations

EXTERIOR OBSERVATIONS	OBSERVED	NOT OBSERVED
HAZARDOUS MATERIALS AND PETROLEUM PRODUCTS	(1)	
POLYCHLORINATED BIPHENYLS (PCBS)		√
SUBJECT PROPERTY DUMPED MATERIALS/LANDFILLS		√
SOLID WASTE DISPOSAL		√
SPILLS/STAINED SOILS/STAINED PAVEMENT/STRESSED VEGETATION		√
STORAGE TANKS NOT PREVIOUSLY LISTED		√
WELLS NOT PREVIOUSLY LISTED		√
HAZARDOUS RUNOFF		√
PITS, PONDS, OR LAGOONS*		√
ODORS		√

*Excludes stormwater drainage features

(1) No bulk storage of hazardous materials or petroleum products was observed on the exterior of the subject property. However, D3G observed the following materials on the portion of the property utilized as a storage yard: three (3) empty 55-gallon drums, small quantity (one (1) to five (5) gallon) gasoline containers, automobile batteries, tires, small containers of motor oil and cleaning products. Leakage was not visually observed in the vicinity of the stored materials. The on-site chemicals are commercially available, stored in limited quantities, and are not believed to present an environmental concern to the subject property. D3G recommends that the hazardous materials and petroleum products be proper disposed of during demolition activities.

6.4 Interior Observations

INTERIOR OBSERVATIONS	OBSERVED	NOT OBSERVED
HAZARDOUS MATERIALS AND PETROLEUM PRODUCTS	(1)	
POLYCHLORINATED BIPHENYLS (PCBS)		√
STORAGE TANKS NOT PREVIOUSLY LISTED		√
ODORS		√
DRAINS AND/OR SUMPS		√
POOLS OF LIQUID		√

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(1) No bulk storage of hazardous materials or petroleum products was identified on the interior at the subject property. However, paints, cleaning products, small containers (one (1) to five (5) gallons) of gasoline and small containers of motor oil are stored in the maintenance areas. None of the stored materials were observed to be leaking or to have had signs of major spillage. No floor drains or other potential receptors for the release of hazardous materials were observed within the areas of material storage. The on-site chemicals are commercially available, stored in limited quantities, and are not believed to present an environmental concern to the subject property. D3G recommends that hazardous material or petroleum products be properly disposed of during demolition activities.

7.0 INTERVIEWS

7.1 Prospective Landowner/User Questionnaire

A Property Questionnaire was provided to Wells Fargo Bank, N.A., the User; however, it was not returned to D3G. According to HUD MAP 9.3.A.2, the sponsor/developer is responsible for completing the User Questionnaire. This is noted in Section 2.4.

7.2 Current Landowner Questionnaire

A Property Questionnaire was provided to Mr. Louis Deziel, the Current Landowner Representative; however, it was not returned to D3G. This is noted in Section 2.4.

7.3 Previous Landowner Questionnaire

A Property Questionnaire was provided to Mr. Louis Deziel to forward to Mr. Kevin Flaherty, the Previous Landowner; however, it was not returned to D3G. This is noted in Section 2.4.

7.4 Key Site Manager Questionnaire

A Property Questionnaire was provided to Mr. Louis Deziel, the Key Site Manager; however, it was not returned to D3G. This is noted in Section 2.4.

7.5 Occupant Questionnaire

The subject property consists of two (2) vacant buildings and an auto repair facility; therefore, an Occupant Questionnaire is not necessary for this investigation pursuant to ASTM E 1527 05 Section 10.5.2.1.

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7.6 Local Agencies Contacted

D3G contacted Mr. Bernel Mershon, Fire Prevention Secretary for the City of Redwood City Fire Department, on December 22, 2010 for a review of their environmental records (i.e. USTs, hazardous materials storage, and spills) for the subject property. However, a response has not yet been received. D3G previously contacted the Fire Prevention Secretary on August 16, 2010 and according to Mr. Mershon, records for the subject property at that time included a permit issued on August 24, 1994 for the removal of two (2) USTs. A copy of the correspondence is located in Appendix F of this report.

D3G contacted the San Mateo County Department of Health Services-Environmental Health for a review of their environmental records including regional environmental health issues, on-site wells and/or septic system records for the subject property. D3G reviewed San Mateo County Department of Health Services-Environmental Health documents related to the previous USTs located at the Marcelli Lighting location. The application for the permit to close two on-site USTs (500-gallon gasoline and 1,000-gallon diesel USTs installed in 1979) was filed on May 26, 1994. D3G reviewed a letter from the San Mateo County Department of Health Services-Environmental Health dated October 4, 1994 which stated, "it is our position that no further action is required at this time." See Section 4.8 for the previous Phase I ESA report regarding the previous on-site USTs. Based on the condition of the removed USTs, the analytical data, remediation of the soils from the UST tank pit, and regulatory status, D3G does not believe that the previous USTs are an environmental concern to the subject property. A copy of the County of San Mateo Environmental Health UST information and closure letter can be found in Appendix S.

In addition, according to the San Mateo County Department of Health Services-Environmental Health reviewed files, the subject property at the Marcelli Lighting location was listed as a Hazardous Waste Generator of waste thinner, sludge and waste oil. Based on the fact that no violations are listed in the reviewed records, D3G does not believe that the Hazardous Waste Generator status is an environmental concern. A copy of the County of San Mateo Environmental Health hazardous waste information can be found in Appendix T.

D3G additionally reviewed files from the San Mateo County Department of Health Services-Environmental Health regarding the parcel at the auto repair facility (formerly Chub's Auto Repair). The files identify two (2) previous USTs at the subject property. See Sections 5.1.1 and 5.1.2 for additional information regarding the previous USTs.

Additional files from the San Mateo County Department of Health Services-Environmental Health regarding the parcel at the auto repair facility (formerly Chub's Auto Repair) reference contamination associated with a previous hydraulic lift.

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According to ASTM E 1527.05 Section 3.2.39, an historical recognized environmental condition (HREC) which in the past may have been a REC, but may or may not be considered a REC currently. The contamination from the previous on-site hydraulic lift is considered an HREC.

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D3G reviewed the Hydraulic Lift Sampling Results produced by ASE on December 21, 1994. ASE stated that a hydraulic lift was removed from the automobile repair shop in August 1994 because the cylinder was leaking. The hydraulic pit was over-excavated to twelve feet bgs and a monitoring well (MW-2) was placed in the washed pea gravel backfilled pit. Soil and groundwater samples were collected from the bottom of the pit and MW-2 and analyzed for oil & grease (O&G) by EPA method 418.1. Analytical data indicated that O&G was present in the soil sample at 520 ppm at 12.5 feet bgs and that O&G was present in groundwater at 1.7 ppm. A copy of the Hydraulic Lift Sampling Results report can be found in Appendix Y.

D3G reviewed the MW-1 Groundwater Sampling Report Hydraulic Lift Excavation report produced by ASE on June 2, 1995. ASE summarized the previous sampling events at MW-2 which identified O&G in the groundwater at 1.5-1.7 ppm over three quarterly sampling events. Based on the fact that the concentration of O&G at MW-2 is below the reporting limit required by the Tri-Regional of 5 ppm, that urban run-off into San Francisco Bay has a mean concentration of 3 ppm and that reducing the O&G to the detection limit of 0.5 ppm is cost prohibitive, ASE recommended closing the site. A copy of the MW-2 Groundwater Sampling Report Hydraulic Lift Excavation report produced by ASE report can be found in Appendix Z.

D3G reviewed the San Mateo County Department of Health Services-Environmental Health Case Closure Memorandum dated June 13, 1995. The memorandum outlined the history of the hydraulic lift removal, prior sampling events and analytical information. In addition, the memorandum stated that it is estimated that approximately 2.5 cubic yards of soil contaminated with approximately one (1) gallon of hydraulic oil remains in place at the site. Based on the investigation, monitoring results and other information, no further investigation is required at the site. Therefore, the case is closed. A copy of the San Mateo County Department of Health Services-Environmental Health Case Closure Memorandum can be found in Appendix ZZ.

Based on the de minimis amount (approximately one gallon) of hydraulic oil in the subsurface and the fact that the former hydraulic lift has been previously investigated, D3G does not suspect that the hydraulic oil negatively impacted the environmental integrity of the subject property. Additionally, the objectives of the San Francisco Bay Regional Water Quality Control Board have been satisfied and that the case has been closed. D3G does not believe that the previous hydraulic lift is an environmental concern and it is considered an HREC at the subject property. If contamination is discovered during the subject property demolition and/or construction, the contamination should be disposed of in accordance with local, state and federal regulations.

7.7 Additional Persons Interviewed

INTERVIEWED PERSON	POSITION/RELATION TO PROPERTY	INTERVIEW DATE	CONTENT OF DISCUSSION
Louis Deziel	Current Landowner representative	12/21/2010	Discussed subject property operations, property history, toured the property and accessed the interior.

8.0 INVESTIGATION FOR NON-SCOPE CONSIDERATIONS

8.1 Asbestos-Containing Materials

The current subject property structures were constructed in approximately 1955, 1950-1962 and 1974, during a time of asbestos-containing building material usage; therefore, ACMs are suspected to be present at the subject property. According to a NESHAP Asbestos Survey and Lead-Based Paint Inspection Report prepared by AEI Consultants (AEI) dated November 11, 2010, Mr. Alain Grissette, a State of California licensed Asbestos Consultant (CAC #07-4300) with AEI, conducted an NESHAP Asbestos Survey at the subject property on November 5, 2010. However, the office building located at 1180 Main Street was not included as part of the survey. Sampled materials included acoustic ceiling tiles, drywall/joint compound, window putty, covebase and associated mastics, vinyl flooring materials and associated mastics, and roofing materials. An asbestos-containing material (ACM) is defined by the Federal OSHA, the State of California OSHA and EPA as materials with an asbestos concentration of greater than 1.0%. Asbestos-containing construction materials (ACCMs) are defined by the State of California OSHA as materials with an asbestos concentration between 0.1% and 1.0%. The following table itemizes the sampled materials and their respective asbestos contents:

SAMPLE NUMBER	SAMPLED MATERIAL	LOCATION	% ASBESTOS
A-101	Acoustic ceiling tile	Rear Storage Area	None detected
A-102 (layer 1)	Drywall	Rear Storage Area	None detected
A-102 (layer 2)	Joint compound	Rear Storage Area	None detected
A-103 (layer 1)	Drywall	Main Storage Area	None detected
A-103 (layer 2)	Joint compound	Main Storage Area	None detected
A-104 (layer 1)	Grey base cove	Rear Storage Area	None detected
A-104 (layer 2)	White mastic a/w grey base cove	Rear Storage Area	None detected
A-105	Drywall	Office	None detected
A-106	Black roofing mastic	Roof – Penetrations and Edges	None detected
A-107	Roof core	Roof – Near Main Street	None detected

SAMPLE NUMBER	SAMPLED MATERIAL	LOCATION	% ASBESTOS
A-108	Roof core	Roof – Rear of building	< 0.1% chrysotile*
A-109	Window putty	Exterior Windows North Side	0.1% chrysotile*
B-101 (layer 1)	Drywall	Front Room, Front Wall	None detected
B-101 (layer 2)	Joint compound	Front Room, Front Wall	None detected
B-102 (layer 1)	Drywall	Front Room, Side Wall	None detected
B-102 (layer 2)	Joint compound	Front Room, Side Wall	None detected
B-103 (layer 1)	Drywall	Front Room, Wall Behind Counter	None detected
B-103 (layer 2)	Joint compound	Front Room, Wall Behind Counter	None detected
B-104 (layer 1)	Tan vinyl floor sheet	Front Room, Hallways and Bathroom	None detected
B-104 (layer 2)	**Paper backing a/w tan vinyl floor sheet**	**Front Room, Hallways and Bathroom**	**60% chrysotile**
B-105 (layer 1)	Drywall	Rear Storage, Ceiling	None detected
B-105 (layer 2)	Joint compound	Rear Storage, Ceiling	None detected
B-106 (layer 1)	Drywall	Rear Storage, Wall next to stairs	None detected
B-106 (layer 2)	Joint compound	Rear Storage, Wall next to stairs	None detected
B-107 (layer 1)	Roof core	Roof – Front of Building	None detected
B-107 (layer 2)	Paint a/w roof core	Roof – Front of Building	None detected
B-108 (layer 1)	Roof core	Roof – Rear of Building	None detected
B-108 (layer 2)	Paint a/w roof core	Roof – Rear of Building	None detected
B-109 (layer 1)	Roof felt	Roof - Parapet	None detected
B-109 (layer 2)	Paint a/w roof felt	Roof - Parapet	None detected
B-110 (layer 1)	Grey/black roof mastic	Roof - Penetrations	None detected
B-110 (layer 2)	Paint a/w roof mastic	Roof - Penetrations	None detected

* = analyzed via more precise EPA 1,000 Point Count Method; a/w = associated with

The identified ACMs and ACCMs are denoted in bold type. While trace amount of asbestos was detected in samples A-108 and A-109, further point count analysis reduced the asbestos percentage to below the threshold both EPA and Cal/OsHA require for ACM or ACCM categorization. The identified vinyl floor sheeting paper backing are friable (able to be crushed via hand pressure) and were observed to be in poor physical condition at the time of the survey. However, according to an invoice and Certificate of Completion dated December 30, 2010, 200 square feet of the tan vinyl sheet flooring and scrape mastic were removed from the subject property.

According to a Post-Abatement Clearance Survey Report prepared by AEI Consultants (AEI) dated December 23, 2010, the abatement was performed at the subject property on December 22, 2010 by PW Stevens, a California DOSH registered abatement contractor. Following the abatement procedures, Mr. Alain Grissette with AEI performed a Post-

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Abatement Clearance Survey at the property. Mr. Grissette performed a visual survey of the property to ensure complete removal of the vinyl floor sheet from the containment area and that the containment area of was left free of dust and debris. The results of the visual inspection indicated the all of the vinyl sheet floor had been removed and no dust or debris was observed. In addition, Mr. Grissette performed air sampling clearance using phase contrast microscopy (PCM) air samples to ensure safe work practices were utilized during abatement. The PCM air samples were analyzed using NIOSH 7400 methodology and compared to the clearance level of 0.01 fibers per cubic centimeter (f/cc^2). AEI collected two (2) PCM air samples from within the containment area, one (1) from the hallway and one (1) from the bathroom. In addition, two (2) PCM samples were submitted for quality assurance purposes. The analytical results indicated levels of 0.0025 f/cc^2 and 0.0031 f/cc^2 in the hallway and bathroom, respectively. Based on the results, the asbestos abatement procedures passed both the visual and air sampling clearance requirements.

The office building located at 1180 Main Street was not included as part of the NESHAP Asbestos Survey and Lead-Based Paint Inspection survey. Presumed asbestos containing materials (PACMs) observed at the structure include, but are not limited to: wall and ceiling materials, caulking, vinyl flooring materials, mastics, and roofing materials. Recommendations are listed in Section 11.0.

8.2 Lead-Based Paint

The current subject property structures were constructed in approximately 1955, 1950-1962 and 1974, prior to the 1978 ban on lead-based paint (LBP); therefore, LBP may be present. No peeling or flaking paint was observed at the subject property at the time of the site inspection. According to a NESHAP Asbestos Survey and Lead-Based Paint Inspection Report prepared by AEI Consultants (AEI) dated November 11, 2010, Mr. Alain Grissette, a Cal/DOSH Certified Lead-Paint Inspector/Assessor (license #18206) with AEI, conducted a Lead-Based Paint Inspection at the subject property on November 5, 2010. However, the office building located at 1180 Main Street was not included as part of the survey. Ninety-seven (97) samples were collected from the painted surfaces of components through the subject property structures. The lead paint inspection was completed utilizing an X-ray fluorescence (XRF) lead paint analyzer, which quickly, accurately, and non-destructively measures the concentration of lead-based paint on surfaces. Sampled surfaces consisted of walls, doors, and associated framework, windows and associated framework, ceilings, baseboards, and miscellaneous components. The XRF readings were compared to the EPA and United States Department of Housing and Urban Development lead in paint standard of 1.0 mg/cm^2. The results of this inspection indicate that none of the sampled components contained lead-based paint. Components identified as containing lead in *any concentration* are required be handled in accordance with 29 CFR 1926.62, the OSHA "Lead Exposure in Construction" Standard (OSHA does not define LBP).

A copy of the NESHAP Asbestos Survey and Lead-Based Paint Inspection Report is included in Appendix ZZZZ.

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The office building located at 1180 Main Street was not included as part of the NESHAP Asbestos Survey and Lead-Based Paint Inspection survey. Therefore, LBP is presumed to have been used on interior and exterior surfaces of that structure. No peeling or flaking paint was observed at the subject property at the time of the site inspection. Recommendations are listed in Section 11.0.

8.3 Radon Gas

U.S. EPA RADON DATA	
ZONE	2
ZONE DEFINITION	Average reading between 2 and 4 picocuries/liter (pCi/L)
SOURCE - U.S. EPA Radon Map	

The property does not contain subgrade living areas, which reduces the potential for radon gas. In addition, HUD guidelines do not regulate radon gas.

8.4 Flood Zone

According to FEMA Flood Insurance Rate Map (FIRM) #060325-0011B, dated May 17, 1982, the subject property drainage ditch is located within in Zone A, designated as an area within the 100-year flood zone and the remaining portion of the subject property is located in Zone B, designated as an area within the 500-year flood zone.

Recommendations are listed in Section 11.0 of this report.

8.5 Wetlands

A wetland delineation/determination has not been performed at the subject property; however, according to the National Wetlands Inventory map accessed at http://www.fws.gov/wetlands/Data/Mapper.html and visual observations, there are not suspected to be any wetland areas on the subject property.

8.6 Coastal Barrier Resource Area/Coastal Zone Management

According to Coastal Barrier Resource Area information accessed at http://www.fema.gov/business/nfip/cbrs/cbrs.shtm, the subject property is not located within a coastal barrier. According to the California Coastal Commission, San Mateo County is not located within a Coastal Management Zone.

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8.7 Historic Properties

The structures were constructed in approximately 1955, 1950-1962 and 1974 and are not suspected to qualify as historic properties. The subject property is not listed, and is not suspected to be eligible to be listed, in the National Register of Historic Places. In addition, the subject property is not located within a historic district of the City of Redwood City or San Mateo County. The State of California Office of Historic Preservation requires that SHPO determination correspondence originate from the local HUD office.

A copy of The National Register of Historic Places for Redwood City is provided in Appendix J.

8.8 Threatened and Endangered Species

The U.S. Department of the Interior Endangered Species list was reviewed. Based on the developed nature of the subject property, none of the listed species are suspected to inhabit the subject property.

A copy of The U.S. Department of the Interior Threatened and Endangered Species System for California is provided in Appendix K.

8.9 Sole Source Aquifer

According to an EPA Groundwater and Drinking Water publication, the subject property is not serviced or supplied by a protected aquifer system. A copy of the EPA Groundwater and Drinking Water publication is provided in Appendix L.

8.10 Noise

The subject property is located in the vicinity of the Caltrain and Union Pacific railroad and the San Carlos Airport and Moffett Field. There are no major roadways within 1,000 feet of the subject property. The projected DNL value for all noise sources is 87.8 dB, which is considered "unacceptable."

Recommendations are listed in Section 11.0 of this report. A copy of the completed noise survey is provided in Appendix O.

8.11 Nuisances and Hazards

No "nuisances" or "hazards" were observed at the subject property or surrounding properties during the subject property inspection.

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9.0 FINDINGS

This Phase I ESA was prepared in accordance with ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process Designation: E 1527-05, 40 CFR Part 312 Standards and Practices for All Appropriate Inquiries: Final Rule, U.S. Housing and Urban Development (HUD) Multifamily Housing Accelerated Processing Guide, and accepted Phase I ESA industry standards. This assessment has revealed the following findings based on the subject property inspection, interviews, and review of available records:

OBSERVED CONDITIONS	ON-SITE	ADJACENT
STANDARD ENVIRONMENTAL RECORDS REVIEW	Yes	Yes
UNREGULATED UNDERGROUND STORAGE TANK(S) (UST)	Yes (Former)	No
PAST INDUSTRIAL/DETRIMENTAL OPERATIONS	Yes	No
VAPOR ENCROACHMENT CONDITION	Yes	No
STORED HAZARDOUS MATERIALS	Yes	NA
POLYCHLORINATED BIPHENYLS (PCBS)	No	NA
ABOVEGROUND STORAGE TANK(S) (AST)	No	No
DUMPING, LANDFILLS	No	No
HAZARDOUS RUN-OFF	No	No
ASBESTOS-CONTAINING MATERIALS	Yes	NA
LEAD-BASED PAINT	No	NA
FLOOD ZONE	Yes	NA
NOISE	Yes	NA

NA = Not Applicable

10.0 OPINION

Based on the findings of this Phase I ESA, the following historical recognized environmental conditions (HRECs) were identified in connection with the subject property:

- Previous On-site Underground Storage Tanks at APN 053147020/VEC
  According to ASTM E 1527.05 Section 3.2.39, an historical recognized environmental condition (HREC) which in the past may have been a REC, but may or may not be considered a REC currently. The on-site LUST listing for the subject property is considered an HREC.

  The subject property, identified as Chub's Auto Repair, is listed in the Environmental FirstSearch Report twice (a duplicate record) as a Closed LUST facility and once as a UST facility. D3G reviewed available files from the San Mateo County Department of Health Services-Environmental Health regarding the Closed LUST cases. According to the Revised Tank Removal Report produced by SEMCO on June 8, 1994, a 1,000 gallon waste oil tank and a 1,000 gallon gasoline tank were removed on January 14, 1994. Soil samples

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from the gasoline tank pit indicated that no detectable traces of analyzed constituents were present except for de minimis amounts of lead. Soil samples from the waste oil tank pit indicated that diesel impacted the soil at 1,100 parts per million (ppm). The tank pit was over-excavated and the subsequent sample indicated diesel at 530 parts per billion (ppb) in the soil, which was above the regulatory levels. See Appendix U for a copy of the Revised Tank Removal Report.

According to the Monitoring Well Construction Report produced by Applied Science and Engineering, Inc. (ASE) on May 24, 1994, in compliance with regulatory requests, a monitoring well (MW-1) was constructed adjacent to the former waste oil UST tank pit to 20 feet below ground surface (bgs). Soil samples were also collected during drilling activities. MW-1 was completed, developed and sampled. Collected soil and groundwater samples were analyzed for petroleum hydrocarbons. Laboratory analysis indicated that soil and groundwater samples were non-detect for petroleum hydrocarbons during the sampling events. ASE recommended collecting groundwater samples quarterly for one year. See Appendix V for a copy of the Monitoring Well Construction Report.

D3G reviewed the Monitor Well Sampling Report produced by ASE on February 16, 1995. The Report states that four (4) quarters of groundwater monitoring were conducted and that analyzed groundwater was non-detect for petroleum hydrocarbons. ASE recommended site closure. See Appendix W for a copy of the Monitor Well Sampling Report.

According to field notes from the San Mateo County Department of Health Services-Environmental Health dated June 21, 1995, MW-1 was abandoned. According to the June 21, 1995 correspondence from the San Mateo County Department of Health Services-Environmental Health, the investigation of the site and remediation of the previous USTs is complete. Based upon available information, no further action (NFA) related to the USTs is required. Based on the absence of contamination in the subsurface related to the previous USTs and the regulatory status, D3G does not believe that the previous USTs are an environmental concern to the subject property. Therefore, a VEC does not exist or is not likely to exist at the subject property. See Appendix X for a copy of the NFA letter.

- Previous On-site Hydraulic Lift at APN 053147020/VEC

  According to ASTM E 1527.05 Section 3.2.39, an historical recognized environmental condition (HREC) which in the past may have been a REC, but may or may not be considered a REC currently. The contamination from the previous on-site hydraulic lift is considered an HREC.

  D3G reviewed the Hydraulic Lift Sampling Results produced by ASE on December 21, 1994. ASE stated that a hydraulic lift was removed from the automobile repair shop in August 1994 because the cylinder was leaking. The hydraulic pit was over-excavated to twelve (12) feet bgs and a monitoring well (MW-2) was placed in the washed pea gravel

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backfilled pit. Soil and groundwater samples were collected from the bottom of the pit and MW-2 and analyzed for oil & grease (O&G) by EPA method 418.1. Analytical data indicated that O&G was present in the soil sample at 520 ppm at 12.5 feet bgs and that O&G was present in groundwater at 1.7 ppm. A copy of the Hydraulic Lift Sampling Results report can be found in Appendix Y.

D3G reviewed the MW-1 Groundwater Sampling Report Hydraulic Lift Excavation report produced by ASE on June 2, 1995. ASE summarized the previous sampling events at MW-2 which identified O&G in the groundwater at 1.5-1.7 ppm over three quarterly sampling events. Based on the fact that the concentration of O&G at MW-2 is below the reporting limit required by the Tri-Regional of 5 ppm, that urban run-off into San Francisco Bay has a mean concentration of 3 ppm and that reducing the O&G to the detection limit of 0.5 ppm is cost prohibitive, ASE recommended closing the site. A copy of the MW-1 Groundwater Sampling Report Hydraulic Lift Excavation report produced by ASE report can be found in Appendix Z.

D3G reviewed the San Mateo County Department of Health Services-Environmental Health Case Closure Memorandum dated June 13, 1995. The memorandum outlined the history of the hydraulic lift removal, prior sampling events and analytical information. In addition, the memorandum stated that it is estimated that approximately 2.5 cubic yards of soil contaminated with approximately one (1) gallon of hydraulic oil remains in place at the site. Based on the investigation, monitoring results and other information, no further investigation is required at the site. Therefore, the case is closed. A copy of the San Mateo County Department of Health Services-Environmental Health Case Closure Memorandum can be found in Appendix ZZ.

Based on the de minimis amount (approximately one gallon) of hydraulic oil in the subsurface and the fact that the former hydraulic lift has been previously investigated, D3G does not suspect that the hydraulic oil negatively impacted the environmental integrity of the subject property. Additionally, the objectives of the San Francisco Bay Regional Water Quality Control Board have been satisfied and that the case has been closed, D3G believes that a VEC does not exist or is not likely to exist at the subject property from the previous hydraulic lift. If contamination is discovered during the subject property demolition and/or construction, the contamination should be disposed of in accordance with local, state and federal regulations.

Based on the findings of this Phase I ESA, the following environmental concerns were identified in connection with the subject property:

- Asbestos-Containing Materials (ACMs)
  The office building located at 1180 Main Street was not included as part of the NESHAP Asbestos Survey and Lead-Based Paint Inspection survey. Presumed asbestos containing materials (PACMs) observed at the structure include, but are not limited to: wall and ceiling materials, caulking, vinyl flooring materials, mastics, and roofing materials.

- Lead-Based Paint (LBP)
  The office building located at 1180 Main Street was not included as part of the NESHAP Asbestos Survey and Lead-Based Paint Inspection survey. Therefore, LBP is presumed to have been used on interior and exterior surfaces of that structure. No peeling or flaking paint was observed at the subject property at the time of the site inspection.

- FEMA 100 and 500-year Floodplain
  According to FEMA Flood Insurance Rate Map (FIRM) #060325-0011B, dated May 17, 1982, the subject property drainage ditch is located within in Zone A, designated as an area within the 100-year flood zone and the remaining portion of the subject property is located in Zone B, designated as an area within the 500-year flood zone.

- Unacceptable Noise Level
  The subject property is located in the vicinity of the Caltrain and Union Pacific railroad and the San Carlos Airport and Moffett Field. There are no major roadways within 1,000 feet of the subject property. The projected DNL value for all noise sources is 87.8 dB, which is considered "unacceptable."

Based on the findings of this Phase I ESA, the following observed conditions are not considered a REC or an environmental concern to the subject property:

- Previous On-site Underground Storage Tanks at APN 053147010
  D3G reviewed a previous Phase I ESA produced by TRC on July 23, 2007 for the western portion of the subject property located at APN 053147010. TRC reviewed reports associated with two (2) previous underground storage tanks (USTs). TRC wrote, "In September 1994, a 580-gallon gasoline UST and a 1,000-gallon diesel UST, as well as a fuel dispenser and below ground piping, were removed from a location near the southern corner of the on-site building. The USTs were reported to be in good condition. Soil samples were collected from beneath the USTs and dispenser, and from stockpiled soil. The samples were analyzed for total gasoline and diesel range petroleum hydrocarbons (TPHg and TPHd, respectively), and benzene, toluene, ethylbenzene and xylenes (BTEX). TPHd at 30 parts per million (ppm) was detected in the sample collected beneath the dispenser, which was below applicable clean up levels. Toluene, ethylbenzene and xylenes were additionally detected in the stockpile soil samples at up to 0.0088, 0.0058 and 0.27 ppm, respectively, which is above regulatory levels. The stockpiled soil was subsequently aerated on-site and re-sampled; no BTEX compounds were detected in the samples collected after aeration. The soil was subsequently used on-site to backfill the excavation. The reports indicate that the work was performed under oversight from the County of San Mateo Department of Health Service (CSMDHS) and that the CSMDHS closed the site after reviewing the laboratory results." TRC concluded that, "the planned use appears compatible with the known on-site environmental conditions. No further work appears required". No RECs were identified.

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D3G reviewed the Laboratory Results Soil Sampling report produced by Applied Science and Engineering, Inc. (ASE) on September 28, 1994, which confirmed TRC's findings. In addition, D3G reviewed the Laboratory Results Stockpile Re-Sampling report produced by ASE on November 21, 1994. These reports describe the removal of the 1,088-gallon diesel UST, the 580-gallon gasoline UST and the associated piping and equipment located at the Marcelli Lighting location. Based on the fact that the above-listed reports identify USTs removed in September 1994 and the highly unlikely probability that four (4) USTs were located at Marcelli Lighting, D3G believes that there were only two (2) previous USTs at the subject property even though the UST size is different but similar in the reports.

D3G contacted the San Mateo County Department of Health Services-Environmental Health for a review of their environmental records including regional environmental health issues, on-site wells and/or septic system records for the subject property. D3G reviewed San Mateo County Department of Health Services-Environmental Health documents related to the previous USTs located at the Marcelli Lighting location. The application for the permit to close two on-site USTs (500-gallon gasoline and 1,000-gallon diesel USTs installed in 1979) was filed on May 26, 1994. D3G reviewed a letter from the San Mateo County Department of Health Services-Environmental Health dated October 4, 1994 which stated, "it is our position that no further action is required at this time." See Section 4.8 for the previous Phase I ESA report regarding the previous on-site USTs. Although there is a slight discrepancy in the size of the USTs between the previous reports discussed in Section 4.8 and the health department documentation, there were only two (2) USTs reported to be located on this portion of the subject property. Based on the condition of the removed USTs, the analytical data, remediation of the soils from the UST tank pit, and regulatory status, D3G believes that a VEC does not exist or is not likely to exist at the subject property from the previous USTs.

- <u>On-Site RCRA Facility</u>
  The subject property is listed as Chub's Auto Repair in the Environmental FirstSearch Report as a RCRA small quantity generator of hazardous waste. According to the Environmental FirstSearch Report, no violations are listed. The Chub's Auto Repair is no longer in business and should no longer be classified as a RCRA generator. Based on the regulatory status, the RCRA small quantity generator listing is not an environmental concern to the subject property.

- <u>Adjacent State- and Federally-Regulated Facilities</u>
  Cook's Auto Body, which is located across the railroad tracks adjacent to the north and topographically down-gradient, is listed in the Environmental FirstSearch Report as an open LUST facility. According to the Environmental FirstSearch Report, the facility is under site cleanup. D3G reviewed documentation related to the adjacent LUST incident on the California State Water Resources Control Board GeoTracker GIS site accessed at http://geotracker.waterboard.ca.gov/. The LUST incident occurred on the northern portion of the Cook's Auto Body property at an actual distance of approximately 0.04 miles from the subject property. Based on distance and topographic relationship, the

Cook's Auto Body is not suspected to present an environmental concern to the subject property.

Baker Graphics located at 1201 Main Street, adjacent to the east and topographically cross-gradient of the subject property, is currently known as RPH and is listed in the Environmental FirstSearch Report as a RCRA generator of hazardous waste and an ERNS site. According to the Environmental FirstSearch Report, no violations are listed for the facility. D3G contacted Ms. Mary Misemer, Regulatory Assistance Officer with the California Department of Environmental Protection (CA EPA) (1-800-728-6942) on January 10, 2010 to obtain information pertaining to the ERNS site. However, Ms. Misemer's review of online regulatory database documents found no information available on the adjacent ERNS site. In addition, D3G reviewed the California Department of Toxic Substances EnviroStor website accessed at http://www.envirostor.dtsc.ca.gov/public/ for a listing of cleanup sites and hazardous waste permitted facilities, and the National Response Center (NRC) website accessed at http://www.nrc.uscg.mil/nrchp.html for a review of federally-regulated oil and chemical spills. However, the eastern adjacent ERNS site was not listed in either the EnviroStor or the NRC database. Based on the topographic relationship and lack of reported handling violations, the adjacent RCRA generator of hazardous waste and ERNS site are not suspected to be of environmental concern to the subject property.

Cook's Auto Body, which is located across the railroad tracks adjacent to the north and topographically down-gradient, is listed twice in the Environmental FirstSearch Report as a RCRA generator of hazardous waste. According to the Environmental FirstSearch Report, no violations are listed. Based on the listed distance, topographic relationship and current regulatory status, the Cook's Auto Body is not suspected to present an environmental concern to the subject property.

The Hudson Property which is located at 135 Maple Street is located on the western adjacent and topographically cross-gradient property is listed in the Environmental FirstSearch Report as a closed LUST facility. Additionally, according to historical research performed by D3G the property was previously utilized as a Carburetor and Auto Repair facility starting in 1962 through at least 1968. According to the Environmental FirstSearch Report, the facility is a closed LUST incident. D3G reviewed documentation related to the adjacent LUST incident on the California State Water Resources Control Board GeoTracker GIS site assessed at http://geotracker.waterboard.ca.gov/. According to the reviewed documentation and the Environmental FirstSearch Report, the release was reported on November 2, 1999 and involved solvents and the contaminated media was "other groundwater – not drinking water". Additionally, the LUST incident was closed on October 30, 2002. Finally the property was redeveloped between 1998 and 2005 with the present multi-family apartment complex. Located on the western adjacent property is a portion of Redwood Creek, which is a preferential pathway for contaminates as well as acting as a hydraulic barrier to prevent contamination from reaching the residential structure of the subject property. Based on the topographic relationship, current regulatory status and presence of a hydraulic barrier between the subject property and the western adjacent

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LUST, the LUST incident is not considered to be of environmental concern to the subject property. Therefore, a VEC does not exist or is not likely to exist at the subject property from the previous LUST incident.

- Stored Hazardous Materials

  No bulk storage of hazardous materials or petroleum products was observed on the exterior of the subject property. However, D3G observed the following materials on the portion of the property utilized as a storage yard: three (3) empty 55-gallon drums, small quantity (one (1) to five (5) gallon) gasoline containers, automobile batteries, tires, small containers of motor oil and cleaning products. Leakage was not visually observed in the vicinity of the stored materials. The on-site chemicals are commercially available, stored in limited quantities, and are not believed to present an environmental concern to the subject property. D3G recommends that the hazardous materials and petroleum products be proper disposed of during demolition activities.

  No bulk storage of hazardous materials or petroleum products was identified on the interior at the subject property. However, paints, cleaning products, small containers (one (1) to five (5) gallons) of gasoline and small containers of motor oil are stored in the maintenance areas. None of the stored materials were observed to be leaking or to have had signs of major spillage. No floor drains or other potential receptors for the release of hazardous materials were observed within the areas of material storage. The on-site chemicals are commercially available, stored in limited quantities, and are not believed to present an environmental concern to the subject property. D3G recommends that hazardous material or petroleum products be properly disposed of during demolition activities.

- Asbestos-Containing Materials (ACMs)

  The current subject property structures were constructed in approximately 1955, 1950-1962 and 1974, during a time of asbestos-containing building material usage; therefore, ACMs are suspected to be present at the subject property. Presumed asbestos containing materials (PACMs) observed at the subject property include, but are not limited to: wall and ceiling materials, caulking, vinyl flooring materials, mastics, and roofing materials. D3G did not sample for ACMs. However, according to a NESHAP Asbestos Survey and Lead-Based Paint Inspection Report prepared by AEI Consultants (AEI) dated November 11, 2010, Mr. Alain Grissette, a State of California licensed Asbestos Consultant (CAC #07-4300) with AEI, conducted an NESHAP Asbestos Survey at the subject property on November 5, 2010. Sampled materials included acoustic ceiling tiles, drywall/joint compound, window putty, covebase and associated mastics, vinyl flooring materials and associated mastics, and roofing materials. An asbestos-containing material (ACM) is defined by the Federal OSHA, the State of California OSHA and EPA as materials with an asbestos concentration of greater than 1.0%. Asbestos-containing construction materials (ACCMs) are defined by the State of California OSHA as materials with an asbestos concentration between 0.1% and 1.0%. ACMs were identified during the NESHAP Asbestos Survey and the results are detailed in Section 8.1.

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- Lead-Based Paint (LBP)
  The current subject property structures were constructed in approximately 1955, 1950-1962 and 1974, prior to the 1978 ban on lead-based paint (LBP); therefore, LBP may be present. No peeling or flaking paint was observed at the subject property at the time of the site inspection. According to a NESHAP Asbestos Survey and Lead-Based Paint Inspection Report prepared by AEI Consultants (AEI) dated November 11, 2010, Mr. Alain Grissette, a Cal/DOSH Certified Lead-Paint Inspector/Assessor (license #18206) with AEI, conducted a Lead-Based Paint Inspection at the subject property on November 5, 2010. LBP was identified during the Lead-Based Paint Inspection and the results are detailed in Section 8.2.

11.0 CONCLUSIONS

Dominion Due Diligence Group performed a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of ASTM Practice E 1527-05 of the Proposed Lathrop Post-Acute Recovery Center located at 134 Maple Street in Redwood City, San Mateo County, California (subject property). Any exceptions to, or deletions from, this practice are described in Section 2.4 of this report. This assessment has revealed no evidence of recognized environmental conditions (RECs) in connection with the subject property.

D3G has performed a Phase I ESA at the subject property. Based on the identified environmental concerns discussed in Section 10.0, D3G recommends the following:

- Asbestos-Containing Materials (ACMs)
  If PACMs are to be impacted during any proposed renovation activities, they should be sampled by an appropriately licensed asbestos inspector prior to impaction and treated accordingly. Identified friable or damaged ACMs and ACMs which are to be impacted by renovation activities should be removed by a licensed asbestos abatement contractor in accordance with applicable regulations. Any remaining ACMs should be managed under a site-specific Operations and Maintenance (O&M) Program. In addition, compliance with 40 CFR 61 Subpart M is recommended prior to any renovation or demolition activities at the subject property.

- Lead-Based Paint (LBP)
  D3G recommends that if presumed LBP is to be impacted during any future renovation or demolition activities, the contractor must adhere to the OSHA Lead in Construction Standard (29 CFR 1926.62) and all generated debris containing lead-based paint is to be appropriately characterized and disposed of in accordance with applicable EPA RCRA requirements.

- FEMA 100 and 500-year Floodplain
  If the proposed development directly or indirectly impacts the identified floodplain areas, compliance with Executive Order 11988, "Floodplain Management," is required by either obtaining a Conditional Letter of Map Amendment (CLOMA) or Conditional Letter of Map Revision (CLOMR) or by implementing procedures contained in 24 CFR Part 55.20 (8-step Process). This 8-Step Process is intended to address the requirements of Executive Order (EO) 11988, Floodplain Management, as well as the requirements of Federal Register 24 CFR Parts 50, 55 and 58.

  In addition, per HUD Chapter 9 Guidelines, all "critical actions" as defined in 24 CFR 55.2(b)(2), must comply with the requirements of 24 CFR 55.20(e) – "…All critical actions in the 500-year floodplain shall be designed and built at or above the 100-year floodplain (in the case of new construction) and modified to include: 1. Preparation of and participation in an early warning system; 2. An emergency evacuation and relocation plan; 3. Identification of evacuation route(s) out of the 500-year floodplain; and 4. Identification marks of past or estimated flood levels on all structures."

- Unacceptable Noise Level
  The projected DNL value for all noise sources is 87.8 dB. Pursuant to 24 CFR 51.101(a)(3), the composite DNL 87.8 dB is "unacceptable". The requirements set out in Section 51.104(a) are designated to ensure that interior levels do not exceed the established 45 dB level. D3G recommends that appropriate noise mitigation measures be undertaken.

12.0 DEVIATIONS

There are no deviations from the ASTM standard Phase I ESA except for those outlined in Section 2.4 of this report.

13.0 ADDITIONAL SERVICES

No additional services were contracted between the User and D3G.

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14.0 REFERENCE MATERIALS

- City of Redwood City Fire Prevention Office
- San Mateo County Assessor and Department of Health Services – Environmental Health
- California State Water Resource Control Board GeoTracker accessed at http://geotracker.waterboard.ca.gov/
- California Environmental Protection Agency (CA EPA) – Regulatory Assistance Office
- California Department of Toxic Substances Control – EnviroStor website accessed at http://www.envirostor.dtsc.ca.gov/public/
- Web Soil Survey accessed at http://websoilsurvey.nrcs.usda.gov/app/
- USGS Topographic Quadrangle – *Palo Alto, California* 1991
- Environmental FirstSearch ™ Report, dated December 28, 2010
- FEMA Flood Insurance Rate Map (FIRM) #060325-0011B, dated January 12, 2011
- USFWS National Wetlands Inventory map accessed at http://www.fws.gov/wetlands/Data/Mapper.html
- Delorme Street Atlas USA® 2009
- http://msrmaps.com/Default.aspx
- Google Earth – aerial photographs
- EPA Radon Map
- Environmental Data Resources, Inc. – aerial photographs
- CBRA information: http://www.fema.gov/business/nfip/cbrs/cbrs.shtm
- The U.S. Department of the Interior Threatened and Endangered Species System
- Environmental Protection Agency Office of Water, Office of Groundwater and Drinking Water National Summary of Sole Source Aquifer Designations. This document is accessible at http://www.epa.gov
- The National Register of Historic Places accessed at http://www.nps.gov/nr/
- *A Smaller Intrusion,* by Anthony J. Buonicore, P.E. published in the May 2009 Issue of Pollution Engineering magazine
- National Oceanic and Atmospheric Administration - Ocean and Coastal Resource Management accessed at http://www.coastal.ca.gov/

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15.0 SIGNATURE OF ENVIRONMENTAL PERSONNEL

Data presented in this report is factual to the best of our knowledge. Available sources of data were comprehensively researched to provide a complete Phase I ESA of the subject property. The Phase I ESA was prepared in accordance with ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (Designation E 1527-05), 40 CFR Part 312 Standards and Practices for All Appropriate Inquiry: Final Rule, and portions of the 2009 U.S. Department of HUD MAP Guide protocols. See D3G's HUD Form 4128 and Environmental Field Data Sheets for the remaining HUD MAP report protocols.

D3G understands that this Phase I ESA will be used by the User to document to the U.S. Department of HUD that the MAP Lender's application for FHA multifamily mortgage insurance was prepared and reviewed in accordance with HUD MAP requirements. D3G certifies that the review was in accordance with the HUD MAP requirements applicable on the date of the review and that D3G has no financial interest or family relationship with the officers, directors, stockholders or partners of the Borrower, the general contractor, any subcontractors, the buyer or seller of the proposed property or engage in any business that might present a conflict of interest.

D3G is employed under contract for this specific assignment and has no other side deals, agreements, or financial considerations with the MAP Lender or others in connection with this transaction.

Chad M. Prevatte
Site Assessor/Environmental Professional — Signature

Jesse R. Cottrell
Project Manager — Signature

Jen W. Friend
Environmental Professional — Signature

16.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR Part 312.

We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Warning: Title 18 U.S.C. 1001, provides in part that whoever knowingly and willfully makes or uses a document containing any false, fictitious, or fraudulent statement or entry, in any manner in the jurisdiction of any department of agency of the United States, shall be fined not more than $ 10,000 or imprisoned for not more than five years or both.

17.0 APPENDICES

Appendix A: Site (Vicinity) Maps

Appendix B: Site Plan

Appendix C: Site Photographs

Appendix D: Historical Research Documents

Appendix E: Regulatory Records Documentation

Appendix F: Interview Documentation

Appendix G: Special Contractual Conditions Between User and Environmental Professional

Appendix H: Qualifications of the Environmental Professionals

Appendix I: Certificate of Liability Insurance

Appendix J: The National Register of Historic Places

Appendix K: The U.S. Department of the Interior Threatened and Endangered Species System

Appendix L: Environmental Protection Agency Office of Water, Office of Groundwater and Drinking Water National Summary of Sole Source Aquifer Designations

Appendix M: HUD Environmental Questionnaire

Appendix N: HUD Form 4128 and Environmental Field Data Sheets

Appendix O: HUD Noise Worksheets

Appendix P: Previous Phase I ESA produced by TRC

Appendix Q: Laboratory Results Soil Sampling Report by ASE

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Appendix R:	Body of the previous Phase I ESA produced by Odic Environmental
Appendix S:	County of San Mateo Environmental Health Services UST Closure Information
Appendix T:	County of San Mateo Environmental Health Hazardous Waste Information
Appendix U:	Revised Tank Removal Report produced by SEMCO
Appendix V:	Monitoring Well Construction Report produced by Applied Science and Engineering, Inc.
Appendix W:	Monitor Well Sampling Report produced by Applied Science and Engineering, Inc.
Appendix X:	June 21, 1995 San Mateo County Department of Health Services-Environmental Health NFA letter
Appendix Y:	Hydraulic Lift Sampling Results produced by ASE
Appendix Z:	MW-1 Groundwater Sampling Report Hydraulic Lift Excavation report produced by ASE
Appendix ZZ:	San Mateo County Department of Health Services-Environmental Health Case Closure Memorandum
Appendix ZZZ:	Monitoring Well Closure Documentation
Appendix ZZZZ:	Asbestos and Lead-Based Paint Documentation

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Appendix A

Site Maps



Appendix A
Tax Map

↑
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Assessor Parcel Number (APN): 053147010, 053147020 and 053147050

DOMINION DUE DILIGENCE GROUP

County of San Mateo
Tax Collector/Treasurer

Tuesday December 28, 2010. 06:37:23 AM PST

1st INSTALLMENT PAID

Secured Property Tax			**2010**	Note: Penalties only apply to late payments			
Parcel	Tax Rate Area	Assessment Year	Roll Year		Installment 1	Installment 2	Total
053-147-010	09-091	2010	2010	General Tax	12,417.09	12,417.09	$24,834.18
Owner Address				Total Special Charges	51.41	51.41	$102.82
*Name private per CA AB2238							
101 SEMINARY DR				Total Taxes	12,468.50	12,468.50	$24,937.00
MENLO PARK CA 94025-3580				Penalty + Cost + Fee	0.00	0.00	$0.00
Property Location							
134 MAPLE ST				**Total Amount**	**$12,468.50**	**$12,468.50**	**$24,937.00**
REDWOOD CITY				Due Date Late After	Nov 01, 2010 Dec 10, 2010	Feb 01, 2011 Apr 11, 2011	
				PAID DATE	**NOV 09, 2010**		

Values	
Land	2,309,513
Total Values:	2,309,513

Exemptions

Detail Special Charges	Phone Contact	Amount
SMC Mosquito Abate Dis	(650) 344-8592	3.74
Sequoia UHSD Maintenance	(707) 430-4300	46.80
FedCA&NPDES Storm Fee	(650) 363-4100	18.28
SMCCCD 2010-2013	(800) 273-5167	34.00
Total Special Charges:		102.82

Taxing Agency	Tax Rate	Amount
GENERAL TAX RATE	1.0000	23,095.13
REDWOOD CITY EL BDS 1997 SER A	.0249	575.07
SEQUOIA HIGH BD SER 02 A	.0311	718.25
SM JR COLLEGE BD 2002	.0193	445.73
General Tax Total	1.0753	24,834.18

Net value	$2,309,513	Composite Rate	1.0753	Penalty Rate	10.0%
Legal Description	N 1/2 OF BLOCK 2 + PTN MAPLE S T ABAND HANCOCKS ADDITION RSM 1/80 CITY OF REDW				

Be aware that during peak periods, it may take up to 10 days to receive and process your payments.

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Tax bills that remain unpaid as of June 30th are in default and subject to additional penalties and fees.

Property Summary

Summary

APN:	053147010
Parcel ID:	286068
Situs:	134 Maple St, Redwood City
Owner Address:	101 Seminary Drive, Menlo Park, CA, 94025-

Use Details

Tax Use (code)	**WAREHOUSE (38)**
Land Area (sq. ft.):	
Year Built:	
Gross Bldg Area (sq. ft.):	

Jurisdictions

Supervisorial:	4
Congressional:	14
Assembly:	21
Senatorial:	11
Election Precinct:	4605
City Name:	REDWOOD CITY
Zip Code:	94063
Mitigation Fee Area:	None Assigned
Zoning:	NO DATA ASSIGNED

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Assessor Map



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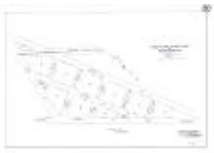
Subdivision Maps (RSM)

TOWN OF MEZESVILLE



1-RSM-PG079

HANCOCKS ADDITION TO REDWOOD CITY



1-RSM-PG080

EASTERN ADDITION OF REDWOOD CITY



18-RSM-PG006

PLAT OF THE PULGAS RANCHO



18-RSM-PG009



18-RSM-PG009

Top

Records of Survey (LLS)

No LLS Maps available for selected property.

Top

Corner Records (CR)

No Corner Records available for selected property.

Top

Parcel Maps (PM)

No Parcel Maps available for selected property.

Top

Display Printable Page

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Welcome Guest Tuesday December 28, 2010. 06:50:00 AM PST

Tax Home Secured Unsecured Log In

Printer Friendly View

For Directions or Maps MAPQUEST Google maps Zillow.com

1st INSTALLMENT PAID

Secured Property Tax			2010	Note: Penalties only apply to late payments			
Parcel	Tax Rate Area	Assessment Year	Roll Year		Installment 1	Installment 2	Total
053-147-020	09-091	2010	2010	General Tax	8,172.28	8,172.28	$16,344.56
Owner Address				Total Special Charges	43.21	43.21	$86.42
***Name private per CA AB2238**				Total Taxes	8,215.49	8,215.49	$16,430.98
204 FRANKLIN ST				Penalty + Cost + Fee	0.00	0.00	$0.00
REDWOOD CITY CA 94063-1929				**Total Amount**	**$8,215.49**	**$8,215.49**	**$16,430.98**
Property Location				Due Date Late After	Nov 01, 2010 Dec 10, 2010	Feb 01, 2011 Apr 11, 2011	
1180 MAIN ST				**PAID DATE**	**DEC 03, 2010**		
REDWOOD CITY				**Detail Special Charges**		Phone Contact	Amount
Values				SMC Mosquito Abate Dis		(650) 344-8592	3.74
Improvements		140,000		Sequoia UHSD Maintenance		(707) 430-4300	35.10
Land		1,380,000		More Special Charges			
Exemptions				**Composite Rate**	1.0753	Penalty Rate	10.0%
Net value		$1,520,000					
Legal Description		200 FT X 121.10 FT COR ELM + M AIN STS PTN BLOCK 2 HANCOCKS ADDITION RSM 1/80 CIT					
Be aware that during peak periods, it may take up to **10 days** to receive and process your payments.							

Tax bills that remain unpaid as of June 30th are in default and subject to additional penalties and fees.

To Pay Taxes On Line

Please select payment method and click on the desired tax installment button below.

Note: A Service fee of approximately 2.5% of Total Amount Due will be charged by our partner Official Payments for all Credit Card payments.

To Pay By ECheck , Enter Property Owner's Last Name for Verification: *

Pay By Credit Card OR Pay By ECheck

Pay Installment 2 Return To Search Back

Payment History

2008 © Tax Collector, County of San Mateo
Please email comments to taxmaster@co.sanmateo.ca.us

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Property Summary

Summary

APN:	053147020
Parcel ID:	286011
Situs:	1180 Main St, Redwood City
Owner Address:	101 Saminary Dr, Menlo Park, CA, 94025-

Use Details

Tax Use (code)	**AUTO SALES / REPAIR (26)**
Land Area (sq. ft.):	0
Year Built:	1955
Gross Bldg Area (sq. ft.):	6290

Jurisdictions

Supervisorial:	4
Congressional:	14
Assembly:	21
Senatorial:	11
Election Precinct:	4605
City Name:	REDWOOD CITY
Zip Code:	94063
Mitigation Fee Area:	None Assigned
Zoning:	NO DATA ASSIGNED

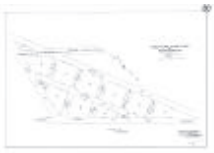
Assessor Map



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Subdivision Maps (RSM)

HANCOCKS ADDITION TO REDWOOD CITY



1-RSM-PG080

EASTERN ADDITION OF REDWOOD CITY



18-RSM-PG006

PLAT OF THE PULGAS RANCHO



18-RSM-PG009



18-RSM-PG009

Top

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Records of Survey (LLS)

No LLS Maps available for selected property.

Top

Corner Records (CR)

No Corner Records available for selected property.

Top

Parcel Maps (PM)

No Parcel Maps available for selected property.

Top

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Welcome Guest Tuesday December 28, 2010. 06:53:45 AM PST

Printer Friendly View

For Directions or Maps MAPQUEST. Google maps Zillow.com

TAX BILL PAID

Secured Property Tax			**2010**	Note: Penalties only apply to late payments			
Parcel	Tax Rate Area	Assessment Year	Roll Year		Installment 1	Installment 2	Total
053-147-050	09-091	2010	2010	**General Tax**	1,171.89	1,171.89	$2,343.78
Owner Address				Total Special Charges	20.46	20.46	$40.92
***Name private per CA AB2238**				Total Taxes	1,192.35	1,192.35	$2,384.70
204 FRANKLIN ST				Penalty + Cost + Fee	0.00	0.00	$0.00
REDWOOD CITY CA 94063-1929				**Total Amount**	**$1,192.35**	**$1,192.35**	**$2,384.70**
Property Location				Due Date Late After	Nov 01, 2010 Dec 10, 2010	Feb 01, 2011 Apr 11, 2011	
				PAID DATE	**DEC 06, 2010**	**DEC 08, 2010**	
				Detail Special Charges		Phone Contact	Amount
Values				SMC Mosquito Abate Dis		(650) 344-8592	3.74
Land		217,966		FedCA&NPDES Storm Fee		(650) 363-4100	3.18
				SMCCCD 2010-2013		(800) 273-5167	$34.00
Exemptions				**Composite Rate**	1.0753	Penalty Rate	10.0%
Net value		$217,966					
Legal Description		3073 SQ FT MOL PTN OF BLK 2 HA NCOCKS ADDN RSM 1/80					
Be aware that during peak periods, it may take up to **10 days** to receive and process your payments.							

Your Taxes Have Been Paid. Thank You.

Return to Search Back To List

Payment History

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2008 © Tax Collector, County of San Mateo
Please email comments to taxmaster@co.sanmateo.ca.us

Property Summary

Summary

APN:	053147050
Parcel ID:	4001714
Situs:	, Redwood City
Owner Address:	101 Saminary Dr, Menlo Park, CA, 94025-

Use Details

Tax Use (code)	**VACANT LAND (00)**

Jurisdictions

Supervisorial:	4
Congressional:	14
Assembly:	21
Senatorial:	11
Election Precinct:	4605
City Name:	REDWOOD CITY
Zip Code:	94063
Mitigation Fee Area:	None Assigned
Zoning:	NO DATA ASSIGNED

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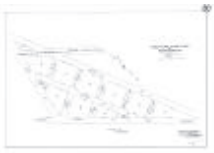
Assessor Map



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Subdivision Maps (RSM)

HANCOCKS ADDITION TO REDWOOD CITY



1-RSM-PG080

EASTERN ADDITION OF REDWOOD CITY



18-RSM-PG006

PLAT OF THE PULGAS RANCHO



18-RSM-PG009



18-RSM-PG009

Top

Records of Survey (LLS)

No LLS Maps available for selected property.

Top

Corner Records (CR)

No Corner Records available for selected property.

Top

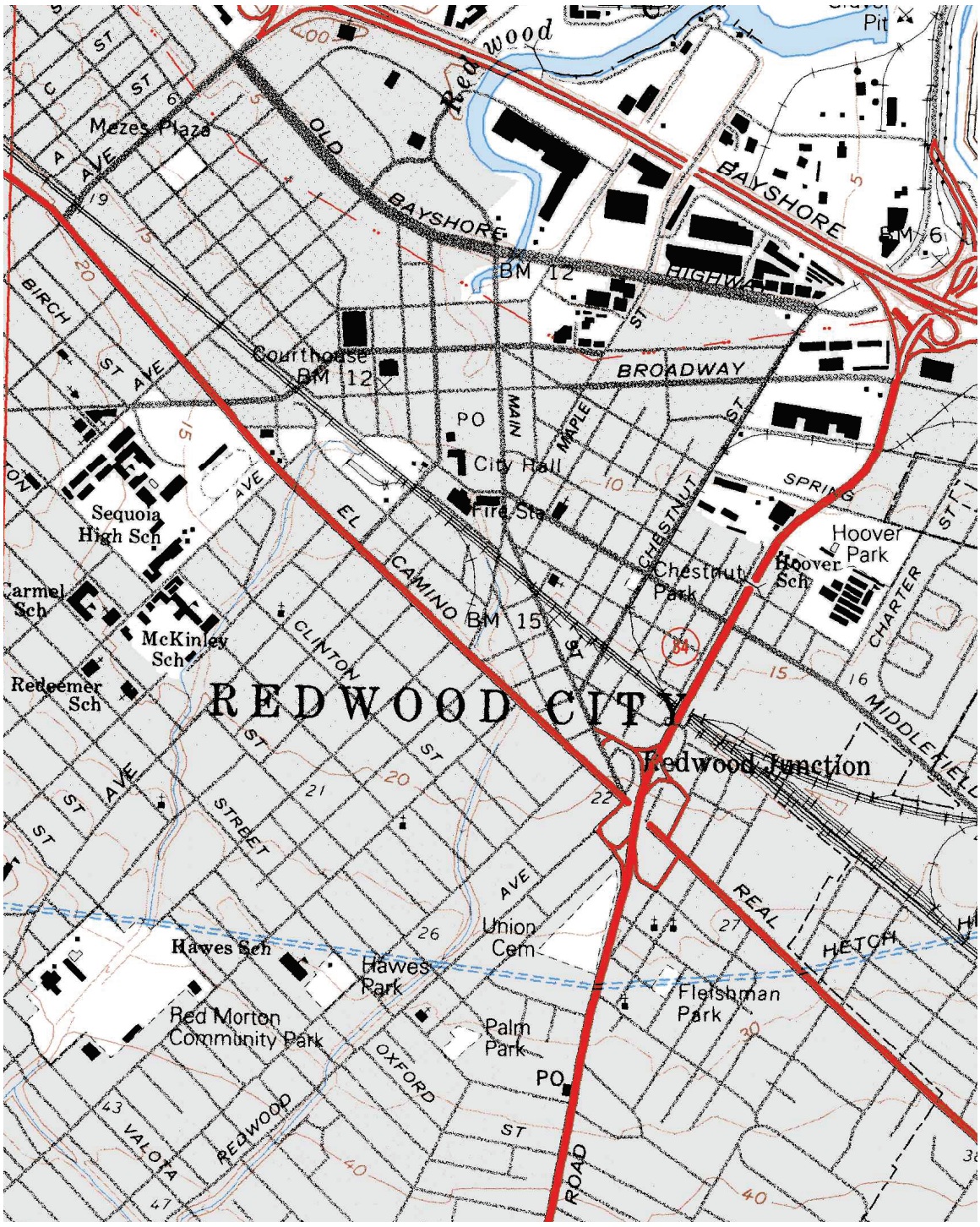
Parcel Maps (PM)

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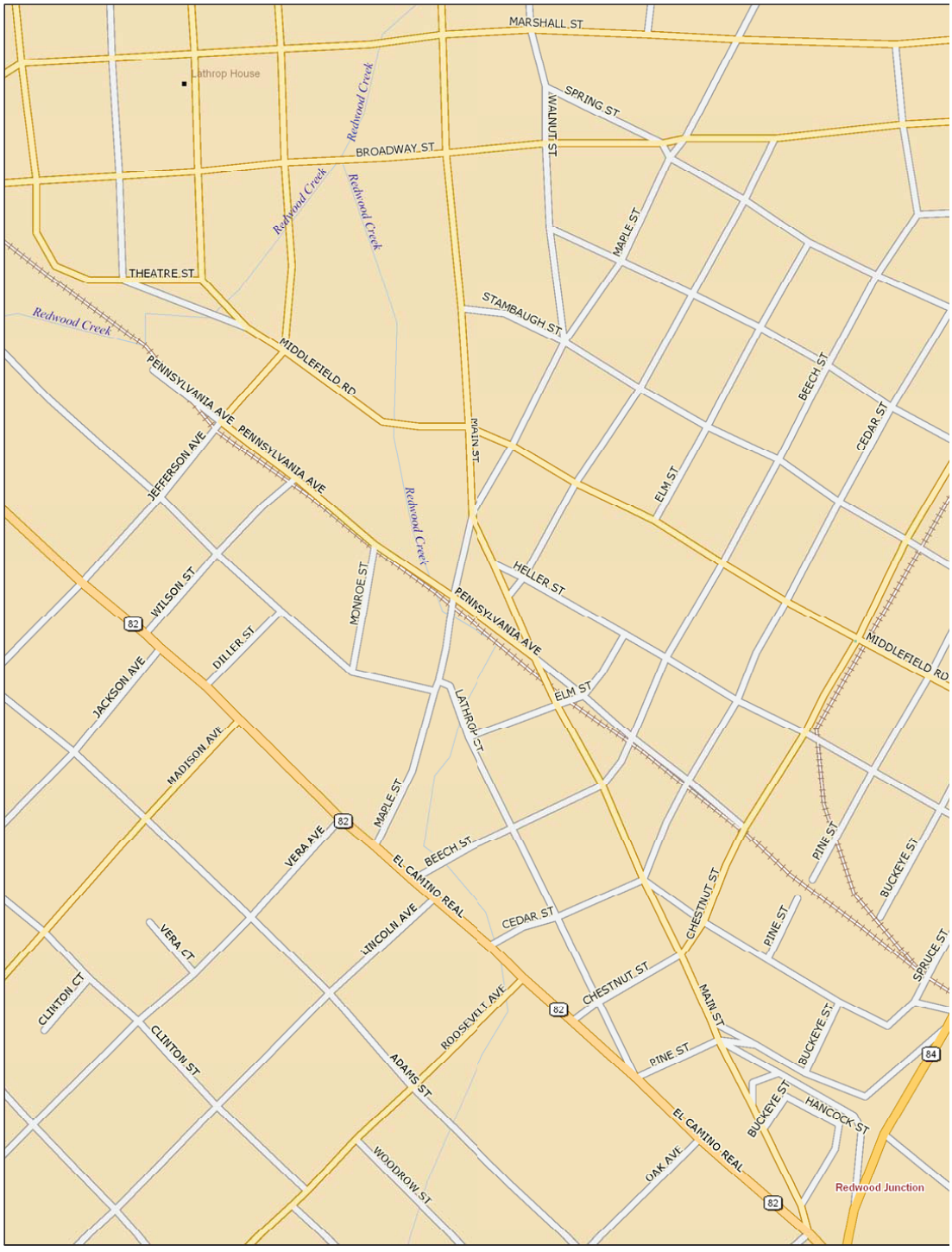
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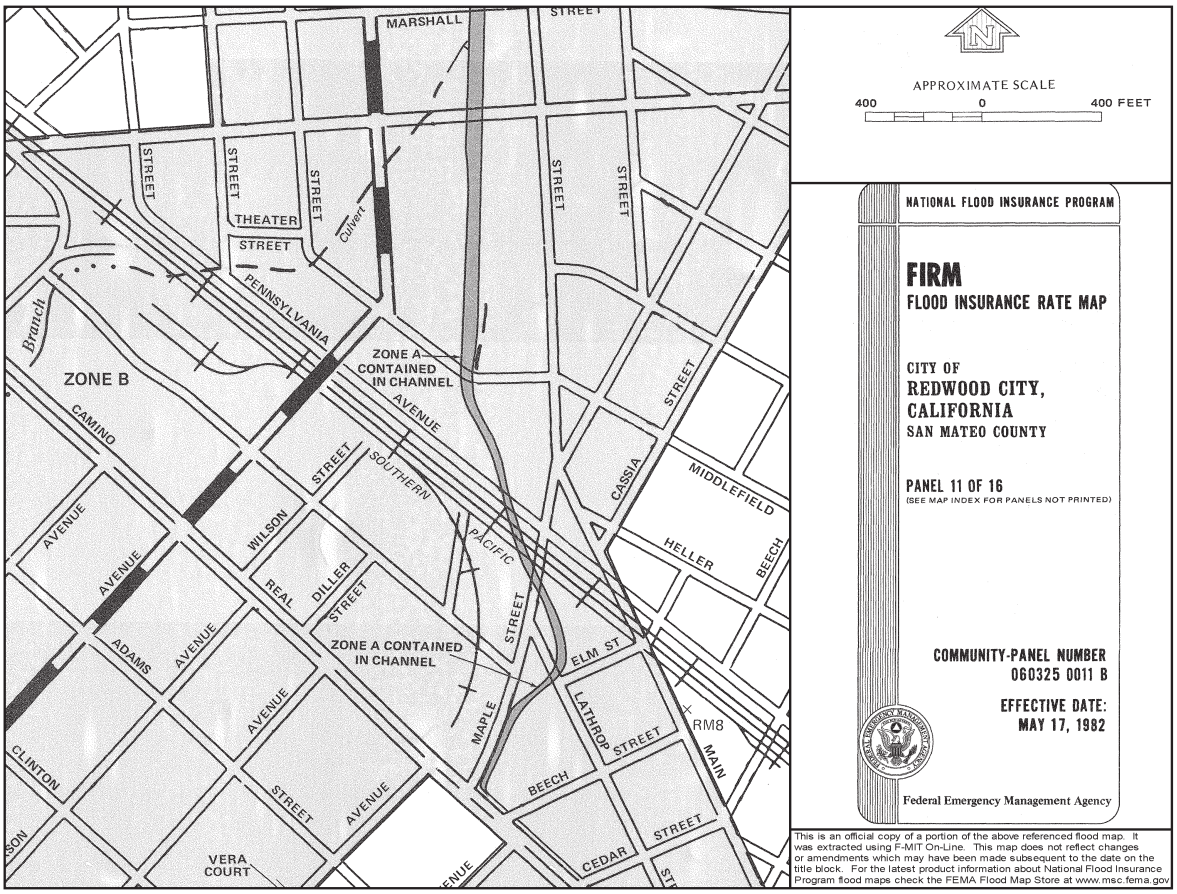
Appendix A Site Topographic Map	↑ **N**	*Topographic Quadrangle:* *Palo Alto, California 1991*	**DOMINION DUE DILIGENCE GROUP**



Appendix A
Site Locator Map

↑
N

DOMINION DUE DILIGENCE GROUP



Appendix A
FEMA Flood Insurance Rate Map

↑
N

Community Panel #060325-0011B
dated May 17, 1982

DOMINION DUE DILIGENCE GROUP

Soil Map—San Mateo County, Eastern Part, and San Francisco County, California



USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

12/28/2010
Page 1 of 3

Appendix A Site Soils Map	↑ N	*http://websoilsurvey.nrcs.usda.gov/app/*	**DOMINION DUE DILIGENCE GROUP**



Appendix A National Wetland Inventory Map	↑ N	*USFWS National Map Viewer*	**DOMINION DUE DILIGENCE GROUP**

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Appendix B

Site Plan



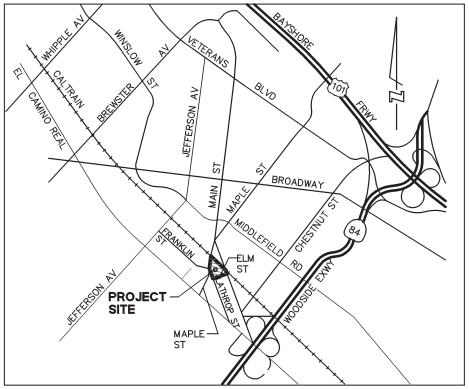
Appendix B Site Plan	↑ N		DOMINION DUE DILIGENCE GROUP

OWNER'S STATEMENT

WE HEREBY STATE THAT WE ARE THE OWNERS OF, OR HAVE SOME RIGHT, TITLE, OR INTEREST IN AND TO THE REAL PROPERTY INCLUDED WITHIN THE SUBDIVISION SHOWN UPON THE HEREIN MAP; THAT WE ARE THE ONLY PERSONS WHOSE CONSENT IS NECESSARY TO PASS CLEAR TITLE TO SAID REAL PROPERTY; AND THAT WE HEREBY CONSENT TO THE MAKING AND RECORDING OF SAID MAP AND SUBDIVISION AS SHOWN WITHIN THE DISTINCTIVE BORDER LINE.

WE ALSO HEREBY RESERVE EASEMENTS FOR STORM DRAIN OVER THOSE CERTAIN STRIPS OF LAND DESIGNATED AND DELINEATED AS "P.S.D.E." (PRIVATE STORM DRAIN EASEMENT). THE MAINTENANCE, REPAIR, AND/OR REPLACEMENT OF FACILITIES WITHIN SAID EASEMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE PROPERTY OWNER.

WE HEREBY DECLARE THAT THE AREAS DESIGNATED ON THIS MAP AS "P.A.E." (PRIVATE ACCESS EASEMENT), ARE TO BE RESERVED AS PRIVATE ACCESS EASEMENTS FOR THE PRIVATE USE OF THE OWNERS OF ALL LOTS SHOWN ON THIS MAP AND THEIR LICENSEES, INVITEES, VISITORS, GUESTS AND TENANTS. THESE EASEMENTS ARE NOT OFFERED NOR ACCEPTED FOR DEDICATION TO THE PUBLIC.



VICINITY MAP

NTS

AS OWNERS:

LATHROP PARC REDWOOD CITY LLC, A CALIFORNIA LIMITED LIABILITY COMPANY

BY: _____

NAME: _____ TITLE: _____

OWNER'S ACKNOWLEDGMENT

STATE OF CALIFORNIA
COUNTY OF _____

ON _____ BEFORE ME, _____ A NOTARY PUBLIC, PERSONALLY APPEARED _____ WHO PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSON(S) WHOSE NAME(S) IS/ARE SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE/SHE /THEY EXECUTED THE SAME IN HIS/HER/THEIR AUTHORIZED CAPACITY(IES) AND BY HIS/HER/THEIR SIGNATURE(S) ON THE INSTRUMENT THE PERSON(S), OR THE ENTITY UPON BEHALF OF WHICH THE PERSON(S) ACTED, EXECUTED THE INSTRUMENT.

I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA THAT THE FOREGOING PARAGRAPH IS TRUE AND CORRECT.

WITNESS MY HAND:

SIGNATURE _____

_____
NAME (TYPED OR PRINTED), NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE.

PRINCIPAL COUNTY OF BUSINESS: _____

COMMISSION EXPIRES: _____

COMMISSION # OF NOTARY: _____

COUNTY RECORDER'S STATEMENT

FILED THIS _____ DAY OF _____ 20__, AT: _____ A.M./P.M.

IN BOOK _____ OF MAPS, AT PAGES(S) _____, AT

THE REQUEST OF BKF ENGINEERS.

WARREN SLOCUM, SAN MATEO COUNTY RECORDER

FILE NO._____ _____
DEPUTY RECORDER

FEE _____

SURVEYOR'S STATEMENT

THIS MAP WAS PREPARED BY ME OR UNDER MY DIRECTION AND IS BASED UPON A FIELD SURVEY IN CONFORMANCE TO THE REQUIREMENTS OF THE SUBDIVISION MAP ACT AND LOCAL ORDINANCE AT THE REQUEST OF LATHROP PARC REDWOOD CITY, LLC. I HEREBY STATE THAT ALL THE MONUMENTS ARE OF THE CHARACTER AND OCCUPY THE POSITIONS INDICATED OR THAT THEY WILL BE SET IN THOSE POSITIONS BEFORE AUGUST 2012, AND THAT THE MONUMENTS ARE, OR WILL BE, SUFFICIENT TO ENABLE THE SURVEY TO BE RETRACED.

DATED: _____

LICENSED LAND SURVEYOR
BILLY MARTIN
No. 5797
STATE OF CALIFORNIA

_____
BILLY MARTIN, P.L.S. NO. 5797
REGISTRATION EXPIRES 06/30/2012

CITY ENGINEER'S STATEMENT

I HEREBY STATE THAT I HAVE EXAMINED THIS MAP AND THAT THE SUBDIVISION SHOWN HEREON IS SUBSTANTIALLY THE SAME AS IT APPEARED ON THE TENTATIVE MAP, AND ANY APPROVED ALTERATIONS THEREOF; THAT ALL PROVISIONS OF THE SUBDIVISION MAP ACT AND LOCAL ORDINANCES APPLICABLE AT THE TIME OF APPROVAL OF THE TENTATIVE MAP, HAVE BEEN COMPLIED WITH.

DATED: _____

_____
PETER S. VORAMETSANTI, R.C.E. NO. 35630
CITY OF REDWOOD CITY, CALIFORNIA
REGISTRATION EXPIRES: 09/30/2011

CITY SURVEYOR'S STATEMENT

I AM SATISIFIED THAT THE WITHIN MAP IS TECHNICALLY CORRECT.

DATED: _____

_____
JON K. LYNCH, R.C.E. 23941
REGISTRATION EXPIRES: 12/31/11

PRELIMINARY

LOT LINE ADJUSTMENT VIA PARCEL MAP

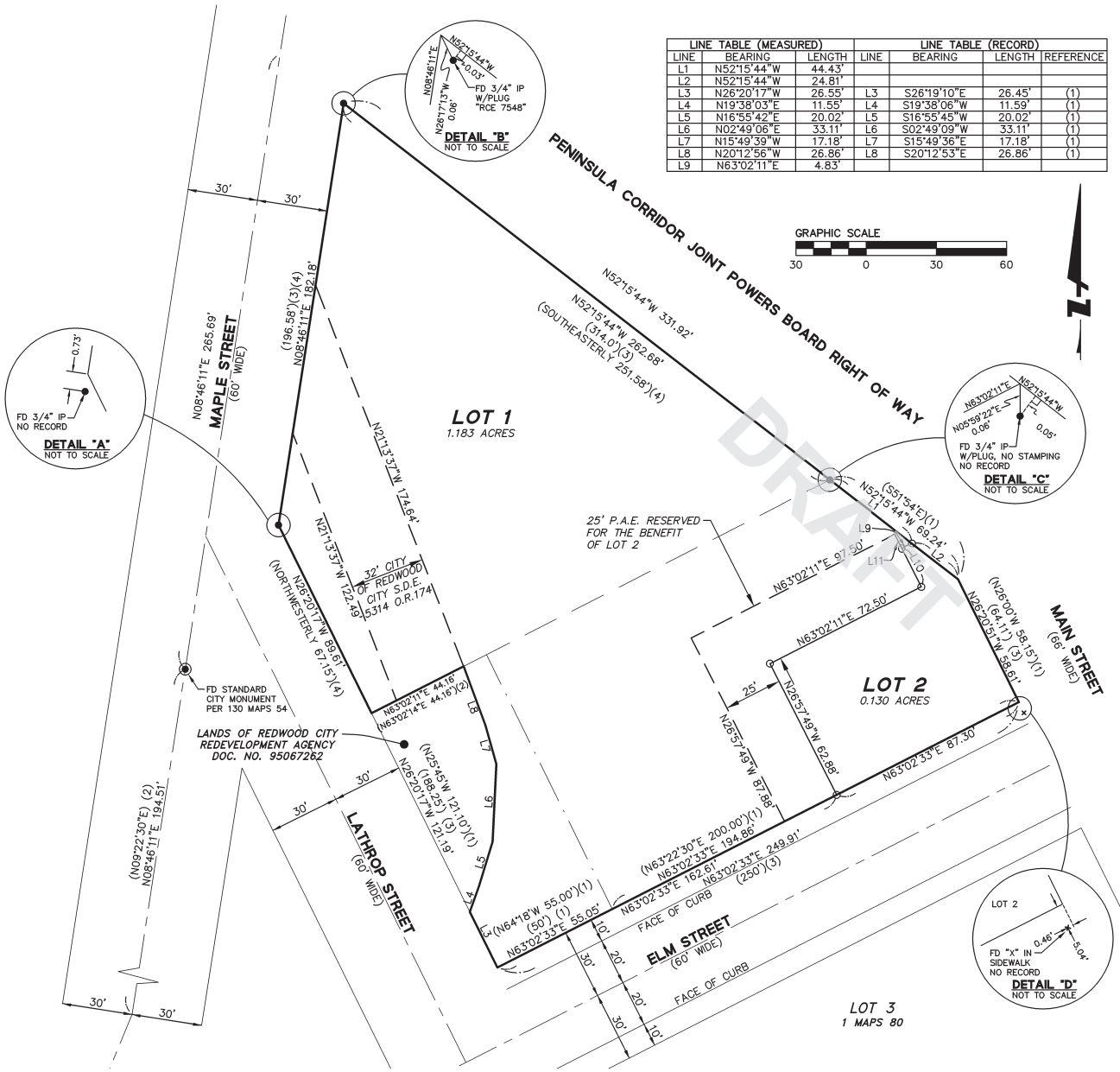
LATHROP POST-ACUTE RECOVERY CENTER

BEING A MERGER AND LOT LINE ADJUSTMENT OF
THE PARCELS DESCRIBED IN
DOCUMENT NO. 2009-066758 AND
DOCUMENT NO. 2009-085600,
SAN MATEO COUNTY RECORDS.
CITY OF REDWOOD CITY SAN MATEO COUNTY CALIFORNIA

MAY 2010

BKF ENGINEERS
ENGINEERS / SURVEYORS / PLANNERS
225 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
650-482-6300

DRAFT



LINE TABLE (MEASURED)			LINE TABLE (RECORD)			
LINE	BEARING	LENGTH	LINE	BEARING	LENGTH	REFERENCE
L1	N52°15'44"W	44.43'				
L2	N52°15'44"W	24.81'				
L3	N26°20'17"W	26.55'	L3	S26°19'10"E	26.45'	(1)
L4	N19°38'03"E	11.55'	L4	S19°38'06"W	11.59'	(1)
L5	N16°55'42"E	20.02'	L5	S16°55'45"W	20.02'	(1)
L6	N02°49'06"E	33.11'	L6	S02°49'09"W	33.11'	(1)
L7	N15°49'39"W	17.18'	L7	S15°49'36"E	17.18'	(1)
L8	N20°12'56"W	26.86'	L8	S20°12'53"E	26.86'	(1)
L9	N63°02'11"E	4.83'				

BASIS OF BEARINGS:

THE BEARING OF NORTH 41°27'57" EAST BETWEEN THE FOUND MONUMENTS ALONG JEFFERSON AVENUE AT FRANKLIN STREET AND EL CAMINO REAL AS SHOWN ON THAT CERTAIN MAP ENTITLED "SEQUOIA STATION" FILED FOR RECORD ON NOVEMBER 21, 1994, IN BOOK 124 OF MAPS AT PAGES 64–74 INCLUSIVE, SAN MATEO COUNTY RECORDS, WAS TAKEN AS THE BASIS OF BEARINGS FOR THIS MAP.

MAP AND DOCUMENT REFERENCES:

(1) RECORD PER DOC.# 2009–066758
SAN MATEO COUNTY RECORDS

(2) 1 MAPS 80
SAN MATEO COUNTY RECORDS

(3) DOC NO. 2009–085600
SAN MATEO COUNTY RECORDS

(4) DOC NO. 2009–066758
SAN MATEO COUNTY RECORDS

BOUNDARY RESOLUTION NOTES:

1. MAPLE STREET AND LATHROP STREET ESTABLISHED BASED ON WORK COMPLETED BY BKF AND SHOWN ON VOLUME 130 MAPS 54, SAN MATEO COUNTY RECORDS
2. CENTERLINE AND RIGHT OF WAY FOR ELM STREET ESTABLISHED BY AVERAGING THE SPLIT OF EXISTING CURBS.
3. RIGHT OF WAY FOR PENINSULA COORIDOR JOINT POWERS BOARD ESTABLISHED BY OFFSETTING THE CENTERLINE OF THE NORTHBOUND TRACK 40.00 FEET SOUTHWESTERLY. BKF USED THE PREVIOUSLY MEASURED LOCATION OF THE TRACKS PER BKF MAP RECORDED IN VOLUME 130 OF MAPS AT PAGE 54, SAN MATEO COUNTY RECORDS. THIS WAS DONE AS THE TRACKS HAVE BEEN RETAMPED SINCE THE RECORDATION OF SAID MAP.

LEGEND:

———	DISTINCTIVE BORDER LINE OF SUBDIVISION
———	PROPOSED LOT LINE
— — —	EASEMENT LINE
——— ———	LOT LINE TO BE ADJUSTED
——— - ———	LOT LINE TO BE REMOVED
O	SET 3/4" IRON PIPE WITH TAG L.S. 5797
◉	FOUND MONUMENT AS NOTED
●	FOUND IRON PIPE AS NOTED
×	FOUND "X" AS NOTED
FD	FOUND AS NOTED
P.A.E.	PUBLIC ACCESS EASEMENT
P.S.D.E.	PRIVATE STORM DRAIN EASEMENT

NOTE:
ALL DISTANCES ARE MEASURED IN FEET AND DECIMALS THEREOF.

PRELIMINARY

LOT LINE ADJUSTMENT VIA PARCEL MAP

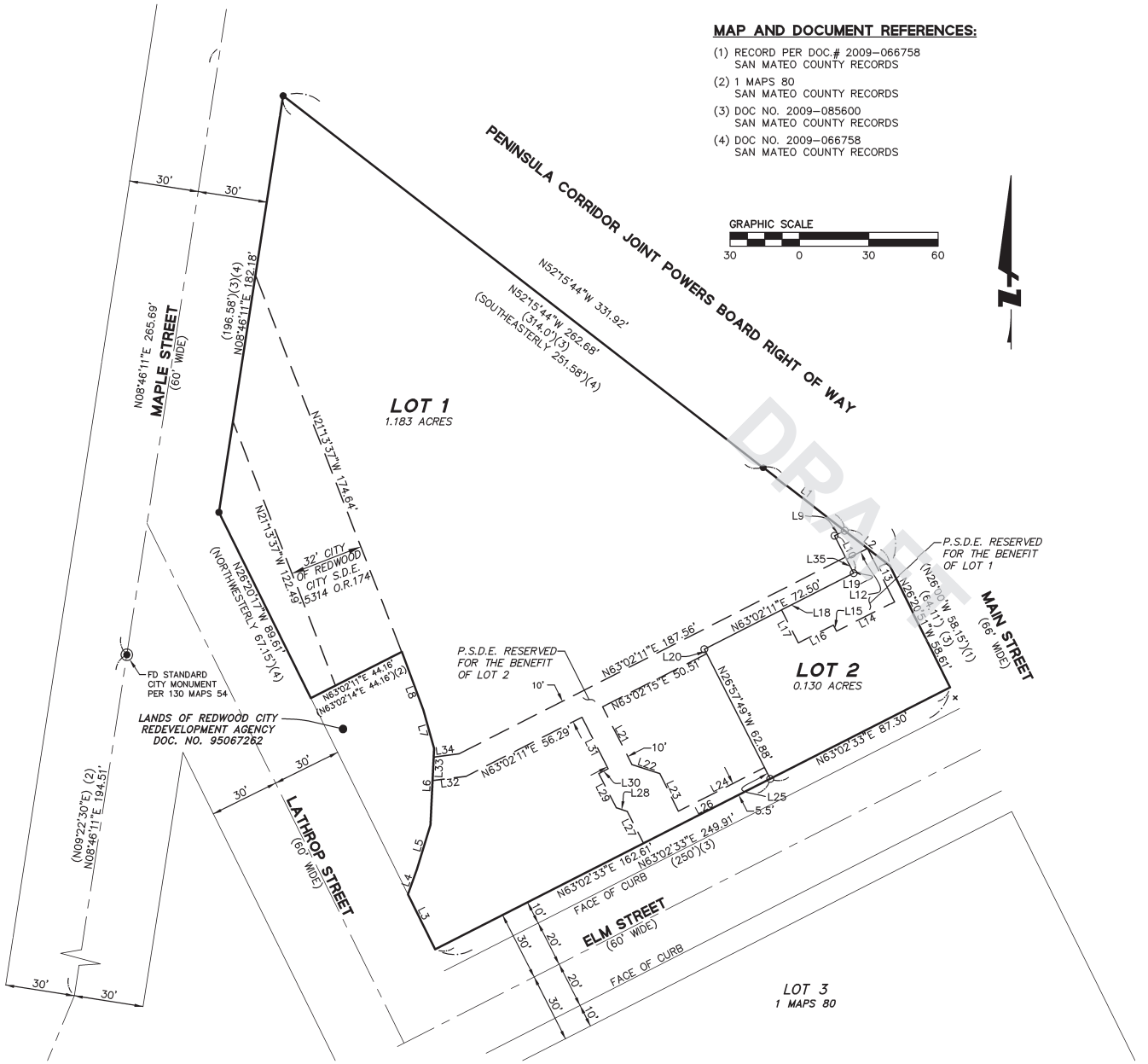
LATHROP POST-ACUTE RECOVERY CENTER

BEING A MERGER AND LOT LINE ADJUSTMENT OF THE PARCELS DESCRIBED IN DOCUMENT NO. 2009–066758 AND DOCUMENT NO. 2009–085600, SAN MATEO COUNTY RECORDS.
CITY OF REDWOOD CITY SAN MATEO COUNTY CALIFORNIA

MAY 2010

BKF ENGINEERS
225 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
650–482–6300

20090023



MAP AND DOCUMENT REFERENCES:

(1) RECORD PER DOC.# 2009-066758
SAN MATEO COUNTY RECORDS

(2) 1 MAPS 80
SAN MATEO COUNTY RECORDS

(3) DOC NO. 2009-085600
SAN MATEO COUNTY RECORDS

(4) DOC NO. 2009-066758
SAN MATEO COUNTY RECORDS

LEGEND:

———	DISTINCTIVE BORDER LINE OF SUBDIVISION
———	PROPOSED LOT LINE
— — —	EASEMENT LINE
———	LOT LINE TO BE ADJUSTED
———	LOT LINE TO BE REMOVED
○	SET 3/4" IRON PIPE WITH TAG L.S. 5797
◉	FOUND MONUMENT AS NOTED
●	FOUND IRON PIPE AS NOTED
×	FOUND "X" AS NOTED
FD	FOUND AS NOTED
P.A.E.	PUBLIC ACCESS EASEMENT
P.S.D.E.	PRIVATE STORM DRAIN EASEMENT

NOTE:
ALL DISTANCES ARE MEASURED IN FEET AND DECIMALS THEREOF.

LINE TABLE (MEASURED)		
LINE	BEARING	LENGTH
L1	N52°15'44"W	44.43'
L2	N52°15'44"W	24.81'
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L5	N16°55'42"E	20.02'
L6	N02°49'06"E	33.11'
L7	N15°49'39"W	17.18'
L8	N20°12'56"W	26.86'
L9	N63°02'11"E	4.83'
L10	N26°57'49"W	18.15'
L11	N26°57'49"W	6.85'
L12	N63°02'11"E	10.19'
L13	N26°57'49"W	25.82'
L14	N63°02'11"E	28.19'
L15	N26°57'49"W	3.00'
L16	N63°02'11"E	17.00'
L17	N26°57'49"W	16.00'
L18	N63°02'11"E	35.00'
L19	N26°57'49"W	6.82'
L20	N26°57'49"W	2.22'
L21	N26°59'47"W	28.00'
L22	N71°59'47"W	12.71'
L23	N26°10'34"W	18.18'
L24	N63°02'33"E	41.75'
L25	N26°57'49"W	5.50'
L26	N63°02'33"E	61.49'
L27	N26°57'49"W	15.50'
L28	N71°57'49"W	5.00'
L29	N26°57'49"W	16.61'
L30	N62°58'55"E	4.53'
L31	N26°59'47"W	25.00'
L32	N82°41'48"E	14.58'
L33	N02°49'06"E	10.16'
L34	N82°41'48"E	11.06'
L35	N26°57'49"W	7.78'

PRELIMINARY
LOT LINE ADJUSTMENT VIA PARCEL MAP

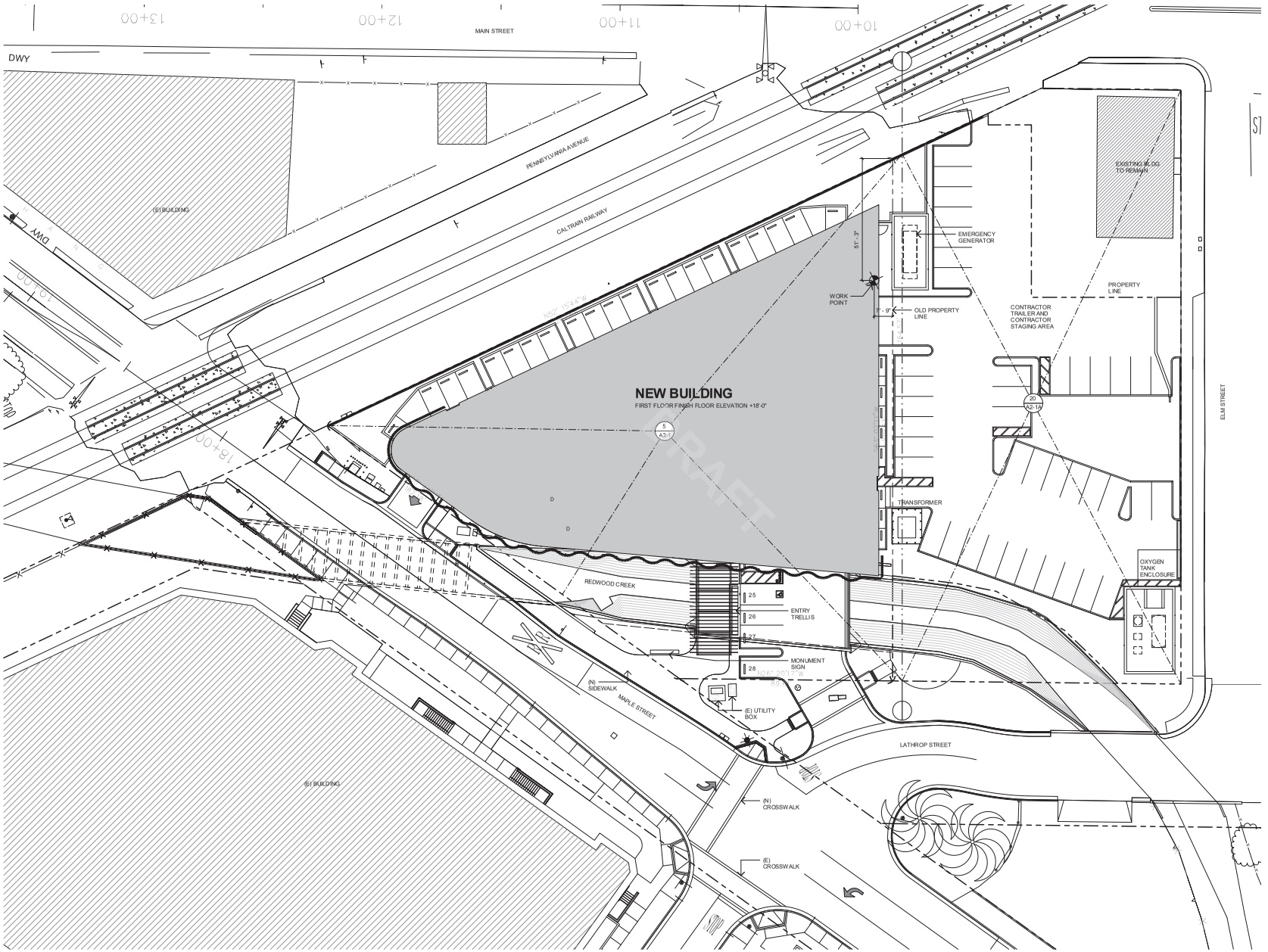
LATHROP POST-ACUTE RECOVERY CENTER

BEING A MERGER AND LOT LINE ADJUSTMENT OF
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MAY 2010

BKF ENGINEERS
225 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
650-482-6300

20090023



5 SITE PLAN

FONG & CHAN ARCHITECTS
ARCHITECTURE • PLANNING • INTERIOR DESIGN
1301 BUSH STREET • SAN FRANCISCO, CALIFORNIA 94109
TEL (415) 931-6600 • FAX (415) 931-6601 • fca@fca-arch.com

LathropGroup

LATHROP POST-ACUTE RECOVERY CENTER

134 MAPLE ST, REDWOOD CITY, CA

OSHPD NO. HS091689-0

CONSULTANTS:

CIVIL ENGINEER
BKF ENGINEERING

STRUCTURAL ENGINEER
RUTHERFORD & CHEKENE CONSULTING

MECHANICAL & PLUMBING ENGINEER
GAYNER ENGINEERS

ELECTRICAL ENGINEER
SCE ENGINEERS

BRIDGE CONSULTANT
CORNERSTONE STRUCTURAL ENGINEERING GROUP

LANDSCAPE
OMG STUDIO

FOOD SERVICES
FEDERIGHI DESIGN INC.

NO.	DATE	DESCRIPTION	BY
	04/16/10	ISSUED TO OSHPD FOR PERMIT	

REVISIONS

KEY PLAN

SHEET TITLE

SITE PLAN

PROJECT NO.: FCA 350	SHEET NO.: **A1-0**
DRAWN BY: JW	
CHECKED BY: KT	
SCALE: 1/16" = 1'-0"	
DATE: 04/16/10	

Plotted on: 4/19/2010 1:31:23 AM
Fong & Chan Architects, Copyright © 2008
If this sheet is not 30" x 42" it is a reduced print - scale accordingly

DRAFT

Appendix C

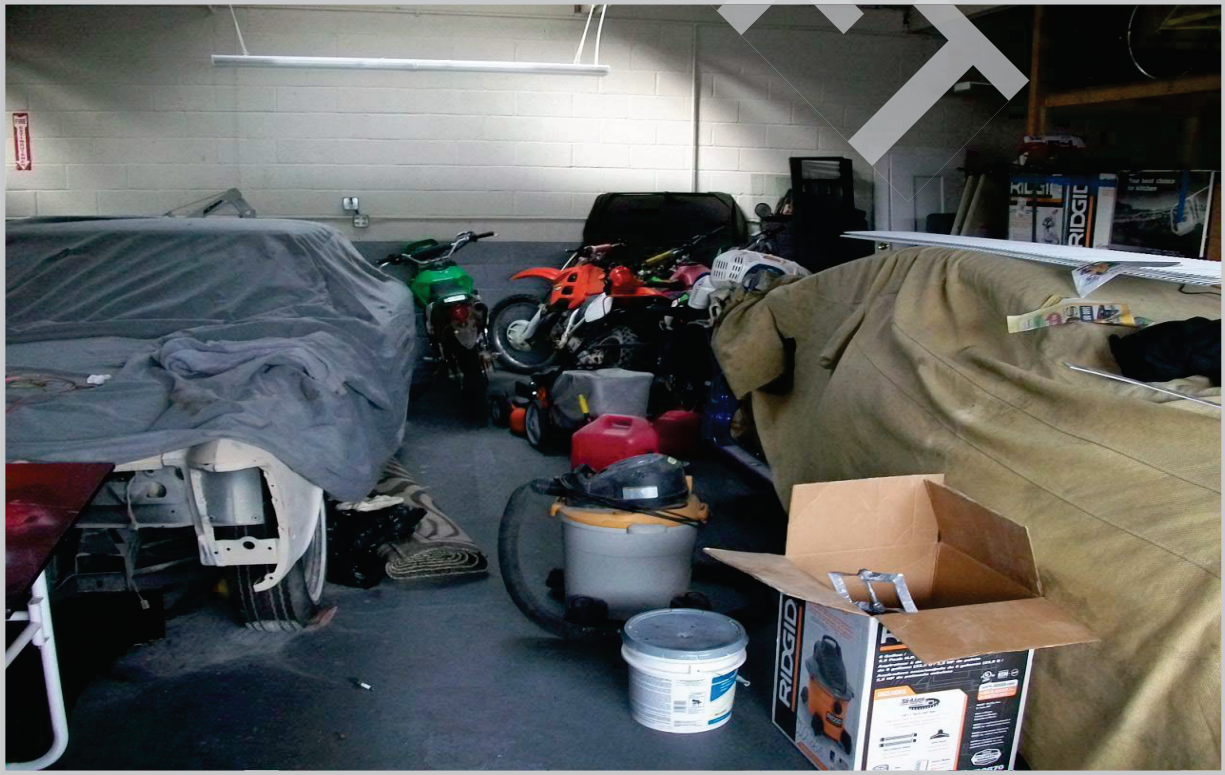
Site Photographs

PHOTOGRAPH #1



Exterior view of the auto repair structure

PHOTOGRAPH #2



Typical interior view of the auto repair facility

DRAFT

Photograph #3



View of the exterior storage area associated with the auto repair facility

Photograph #4



Exterior view of the vacant office structure

DRAFT

Photograph #5



DRAFT

Typical interior view of the vacant office structure

Photograph #6



Exterior view of the vacant Marcelli Lighting structure

Photograph #7



Typical interior view of the showroom portion of the Marcelli Lighting structure

Photograph #8



Typical interior view of the storage portion of the Marcelli Lighting structure

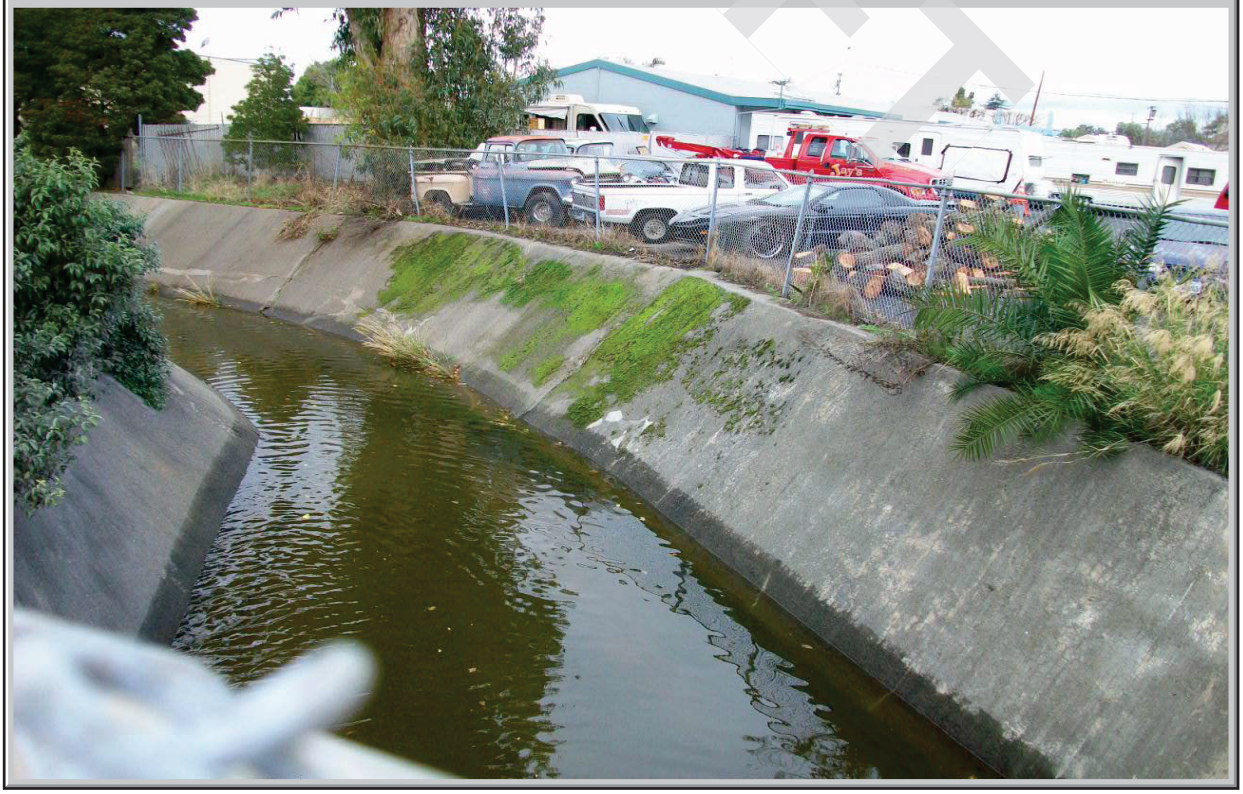
DRAFT

Photograph #9



Typical view of the storage lot associated with the Marcelli Lighting structure

Photograph #10



View of the Redwood Creek culvert as it transects the property

DRAFT

Photograph #11



View of the abandoned on-site monitoring well

Photograph #12



View of the northern adjacent Cook's Collision property

DRAFT

PHOTOGRAPH #13



View of the southern adjacent ATA Reprographics property

PHOTOGRAPH #14



View of the eastern adjacent RPH property

DRAFT

Photograph #15



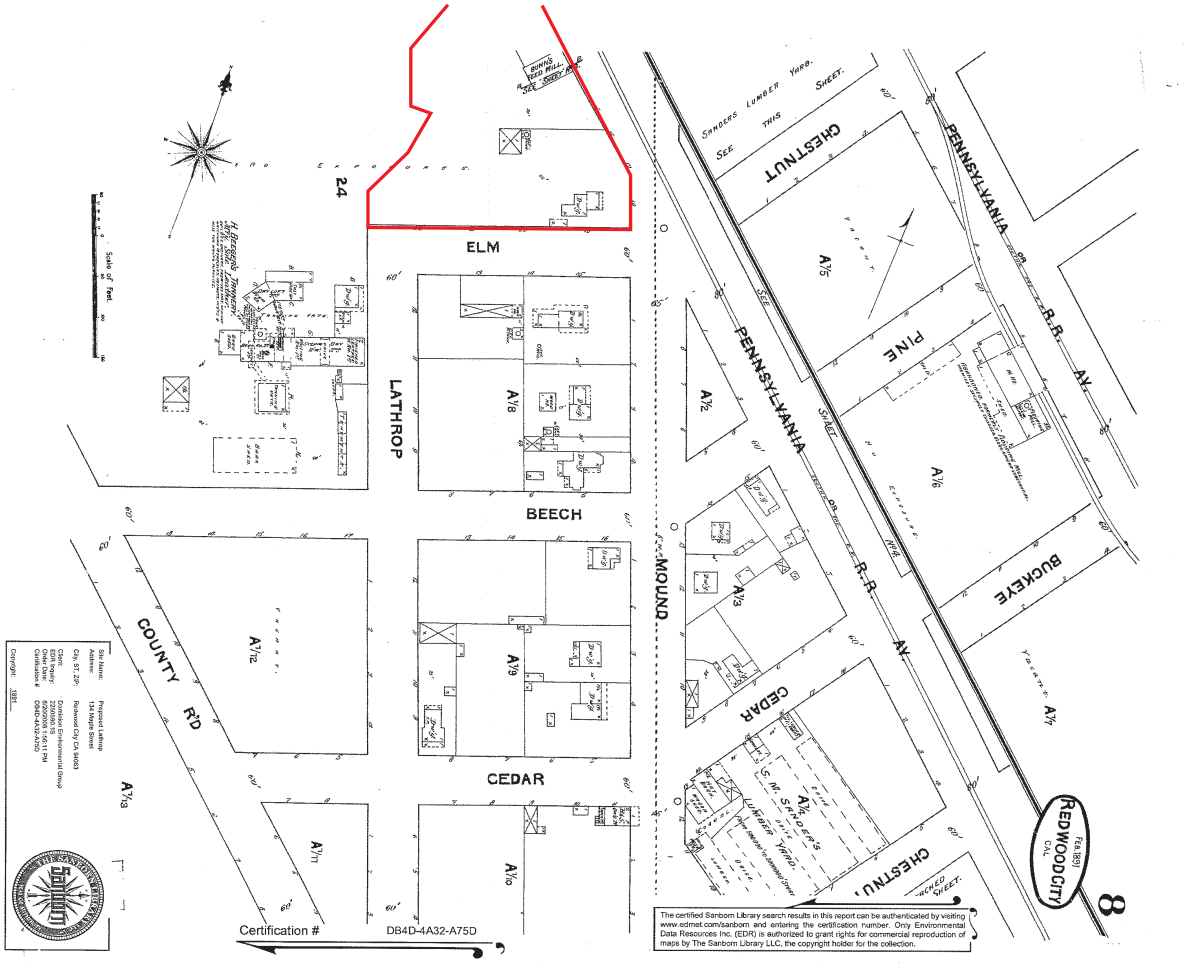
View of the western adjacent Franklin Street Apartments

DRAFT

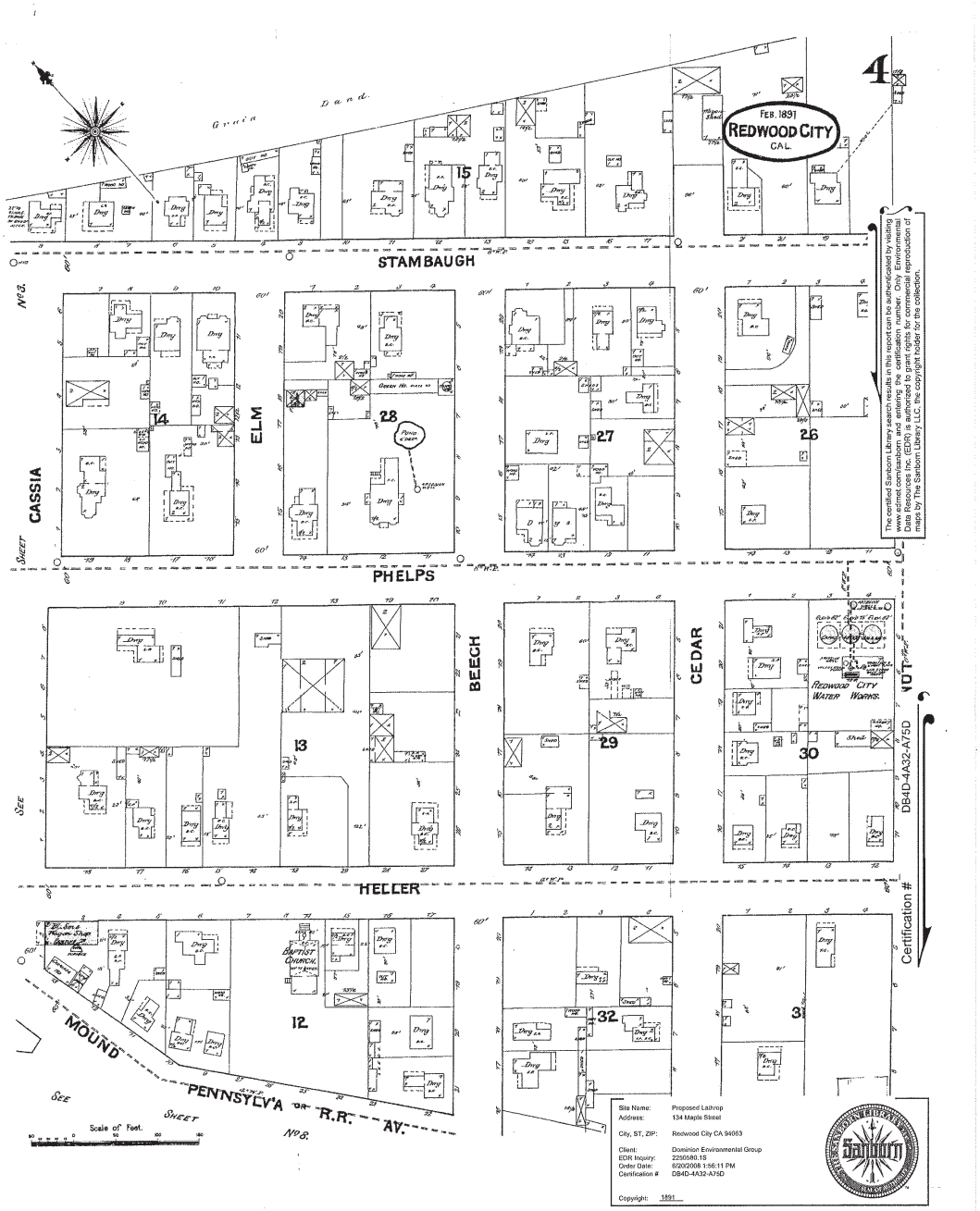
DRAFT

Appendix D

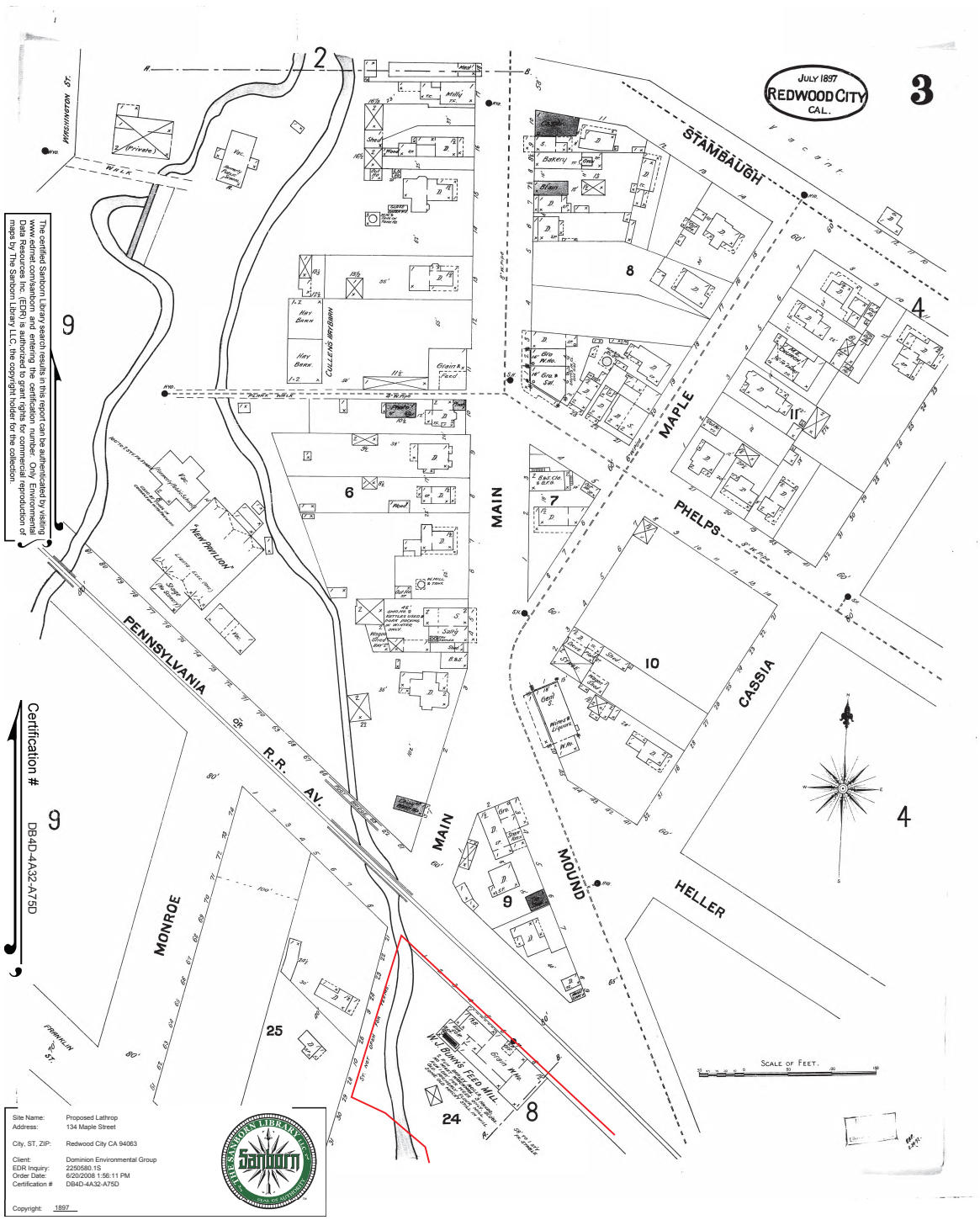
Historical Research Documents



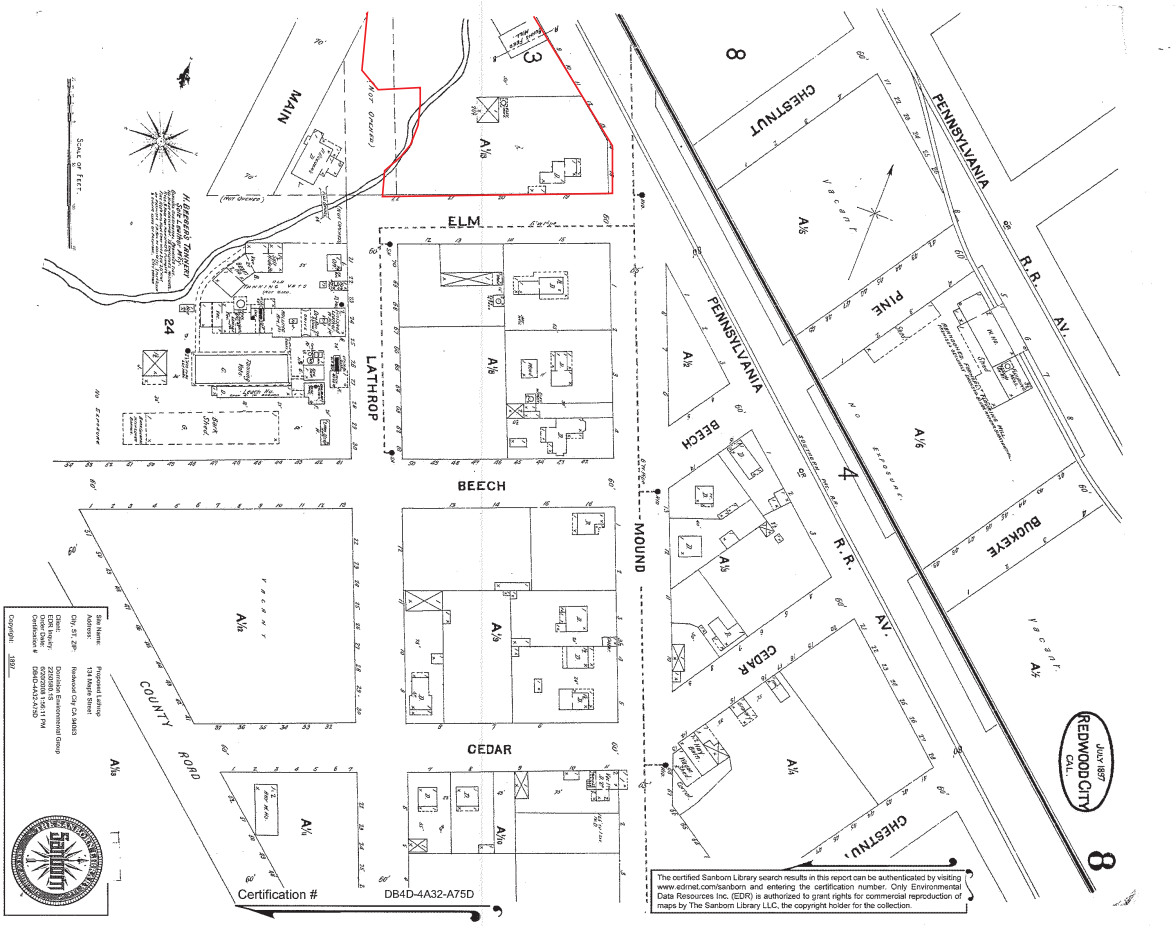
Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1891* *(Subject Property)*	**DOMINION DUE DILIGENCE GROUP**



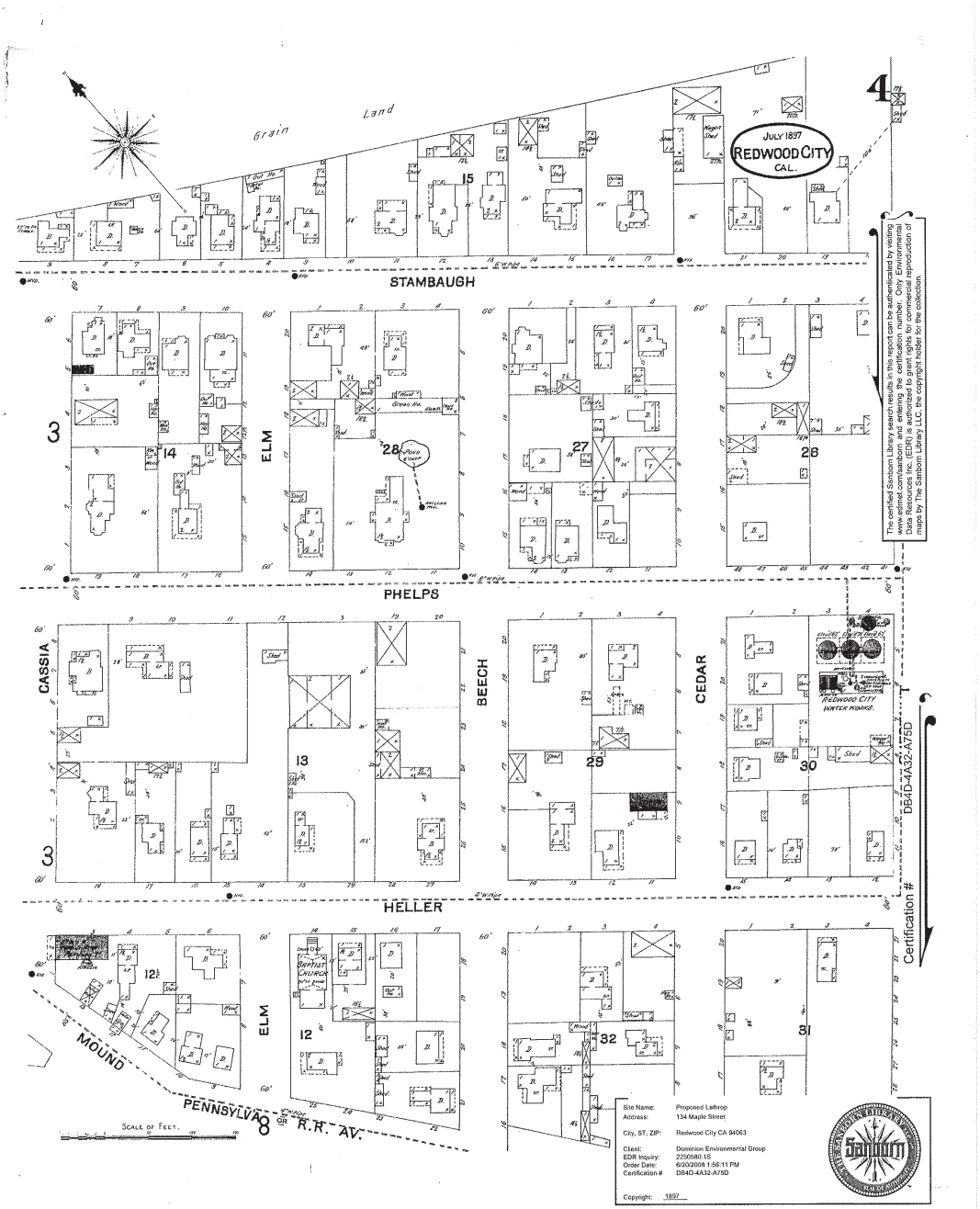
Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1891* *(Eastern Adjacent Properties)*	**DOMINION DUE DILIGENCE GROUP**



Appendix D Sanborn Fire Insurance Map	↑ N	*Date: 1897* *(Subject Property)*	**DOMINION DUE DILIGENCE GROUP**

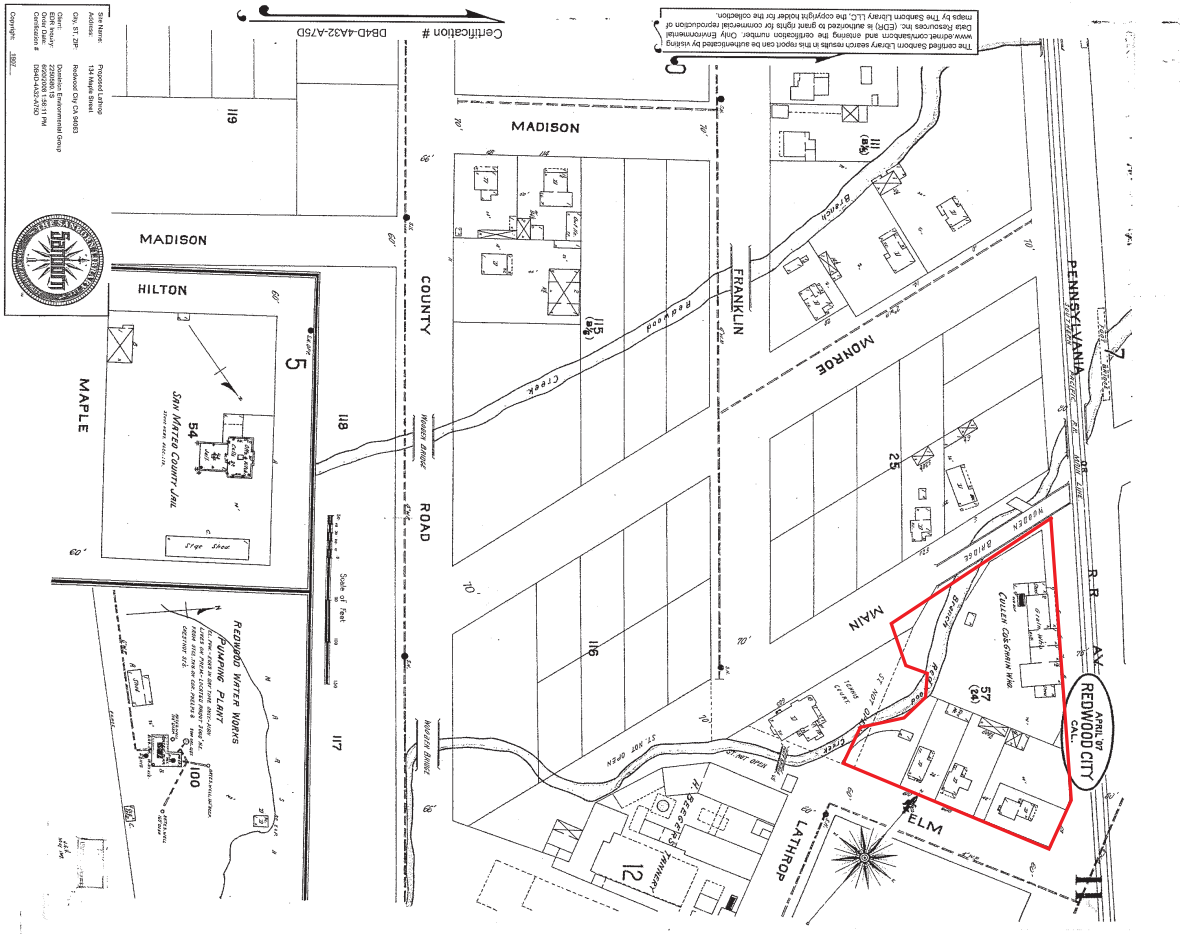


Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1897* *(Subject Property)*	**DOMINION DUE DILIGENCE GROUP**



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Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1897* *(Eastern Adjacent Properties)*	**DOMINION DUE DILIGENCE GROUP**

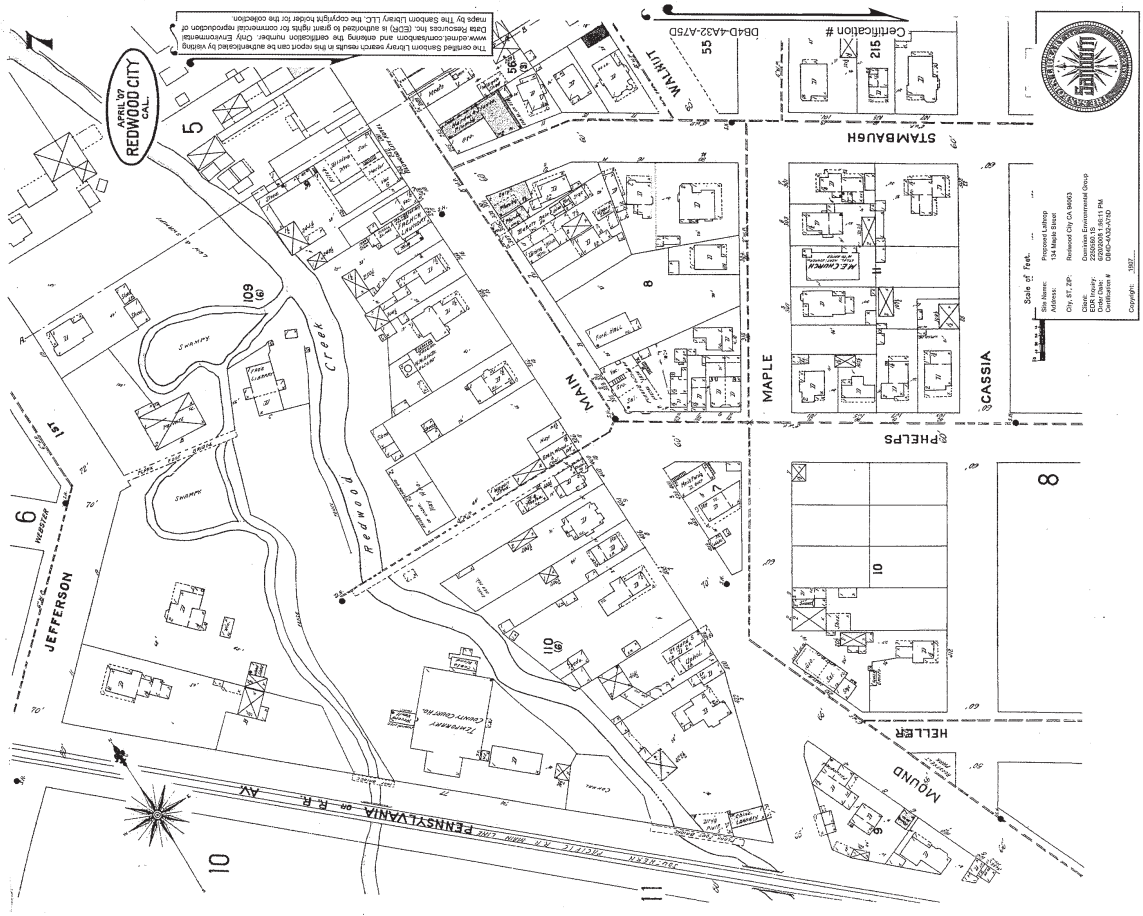


Appendix D
Sanborn Fire Insurance Map

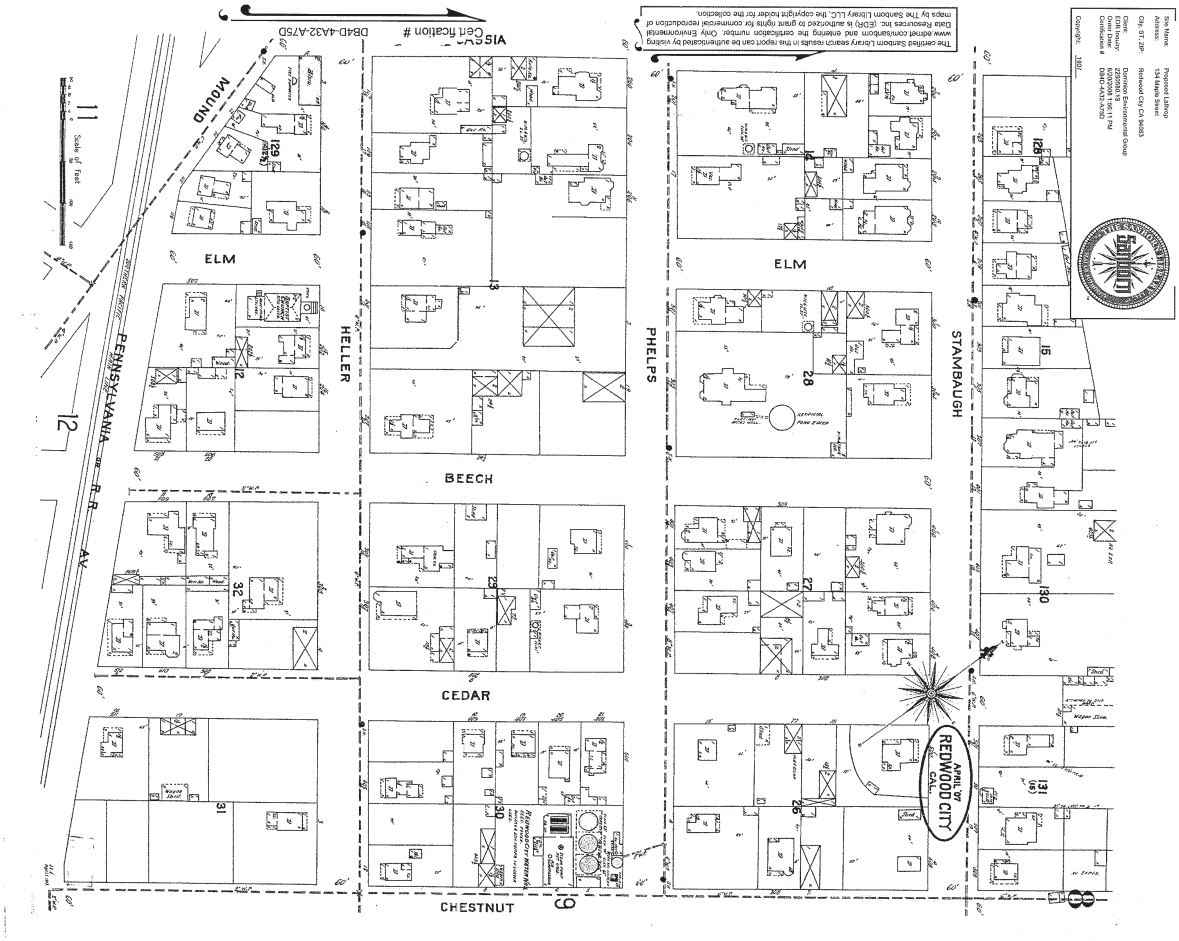
↑ N

Date: 1907
(Subject Property)

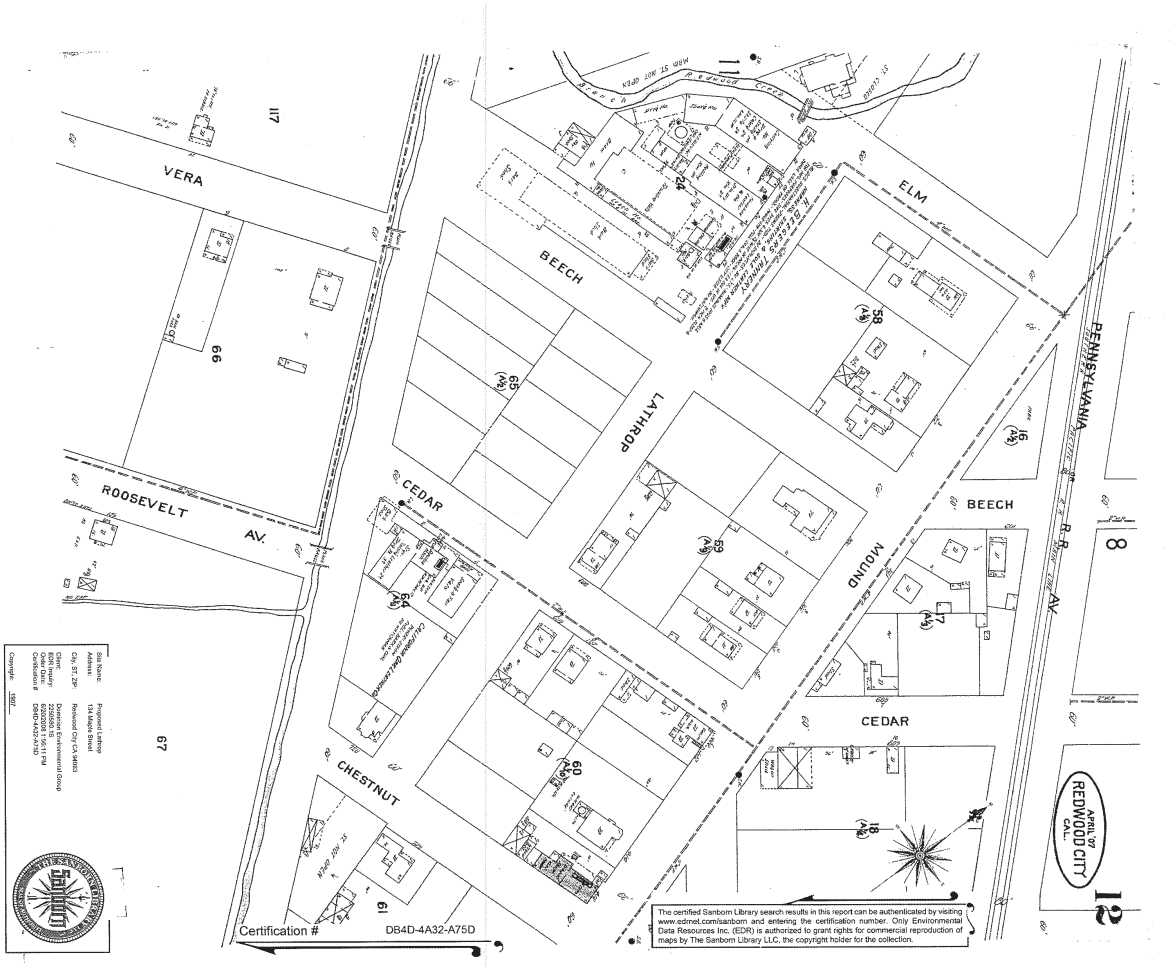
DOMINION DUE DILIGENCE GROUP



Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1907* *(Northern Adjacent Properties)*	**DOMINION DUE DILIGENCE GROUP**



Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1907* *(Eastern Adjacent Properties)*	**DOMINION DUE DILIGENCE GROUP**



Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1907* *(Southern Adjacent Properties)*	**DOMINION DUE DILIGENCE GROUP**

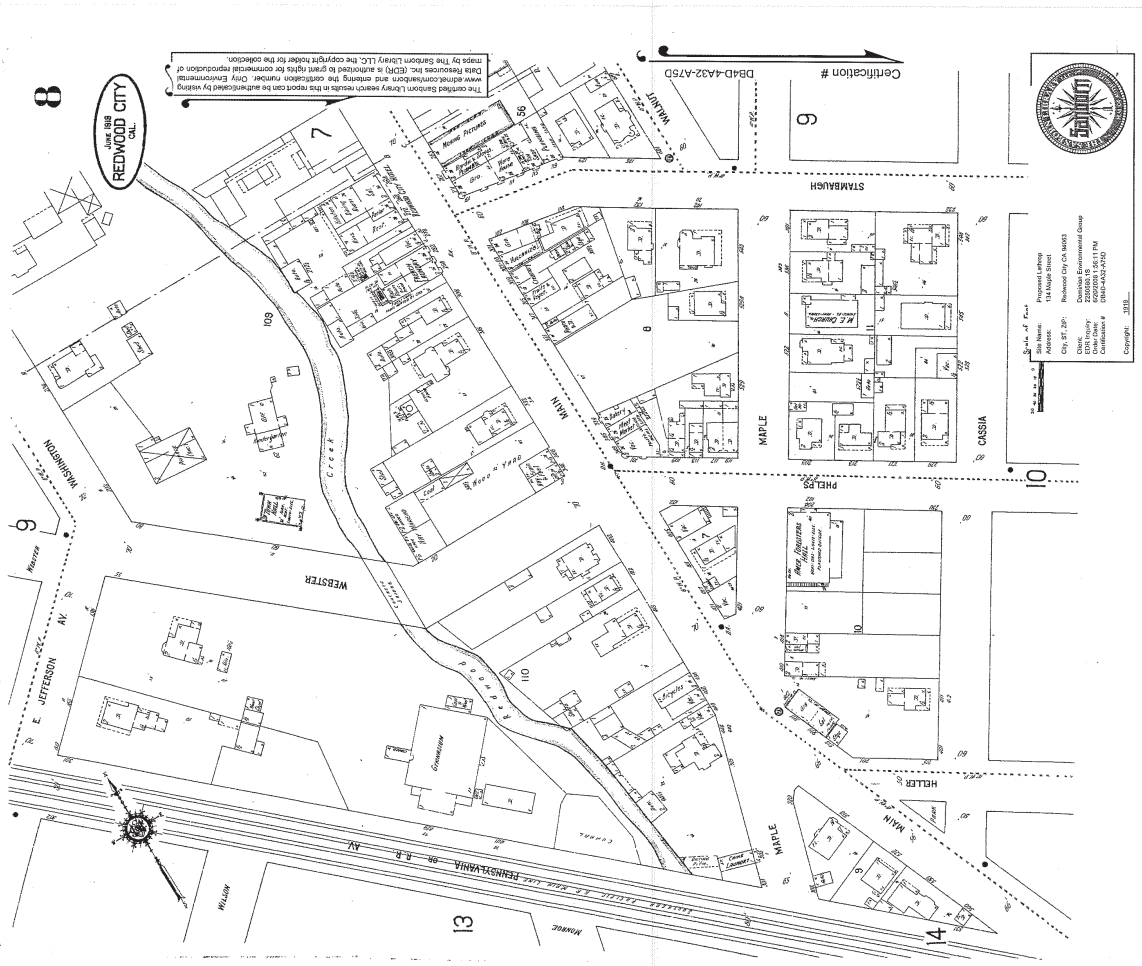


Appendix D
Sanborn Fire Insurance Map

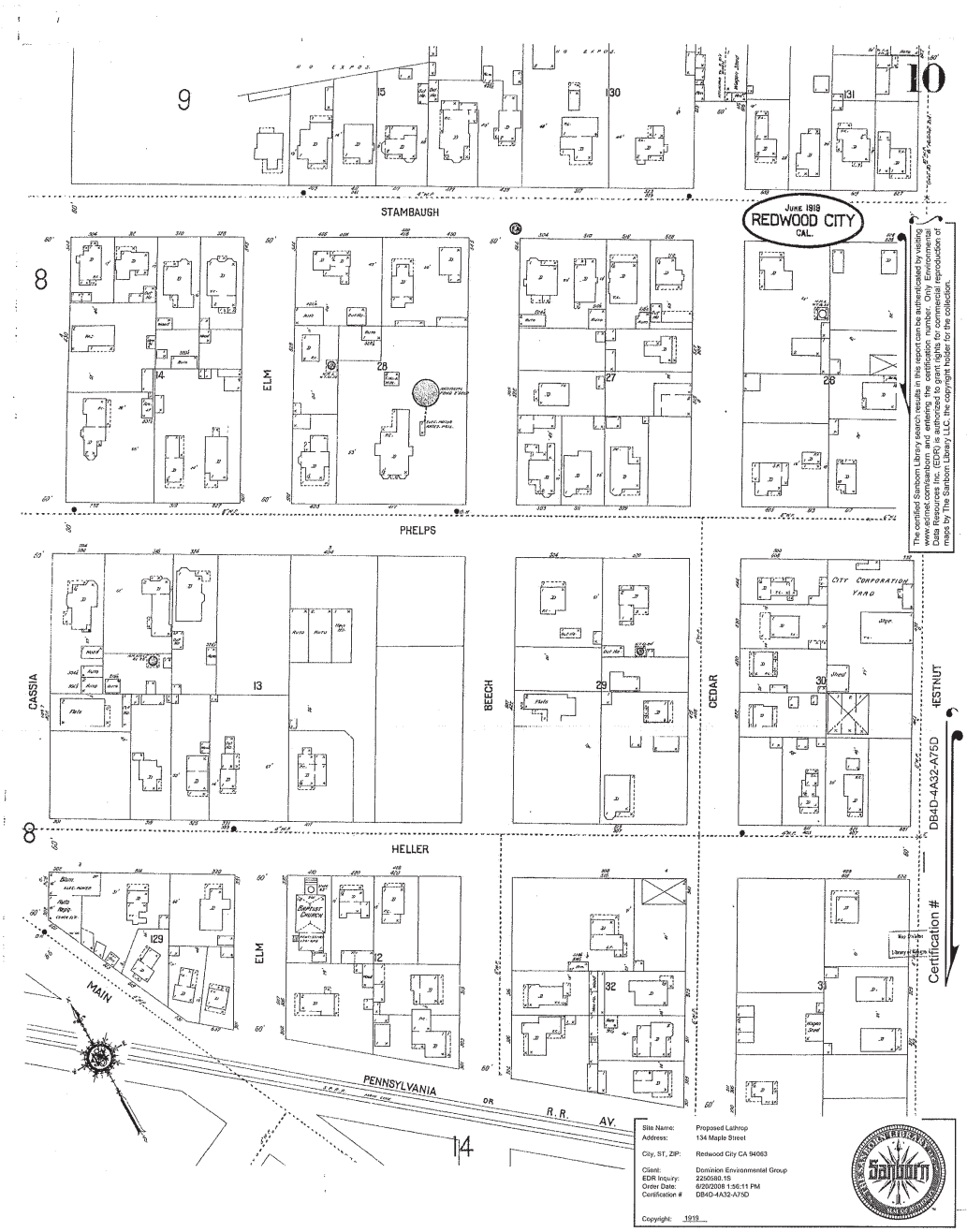
↑
N

Date: 1919
(Subject Property)

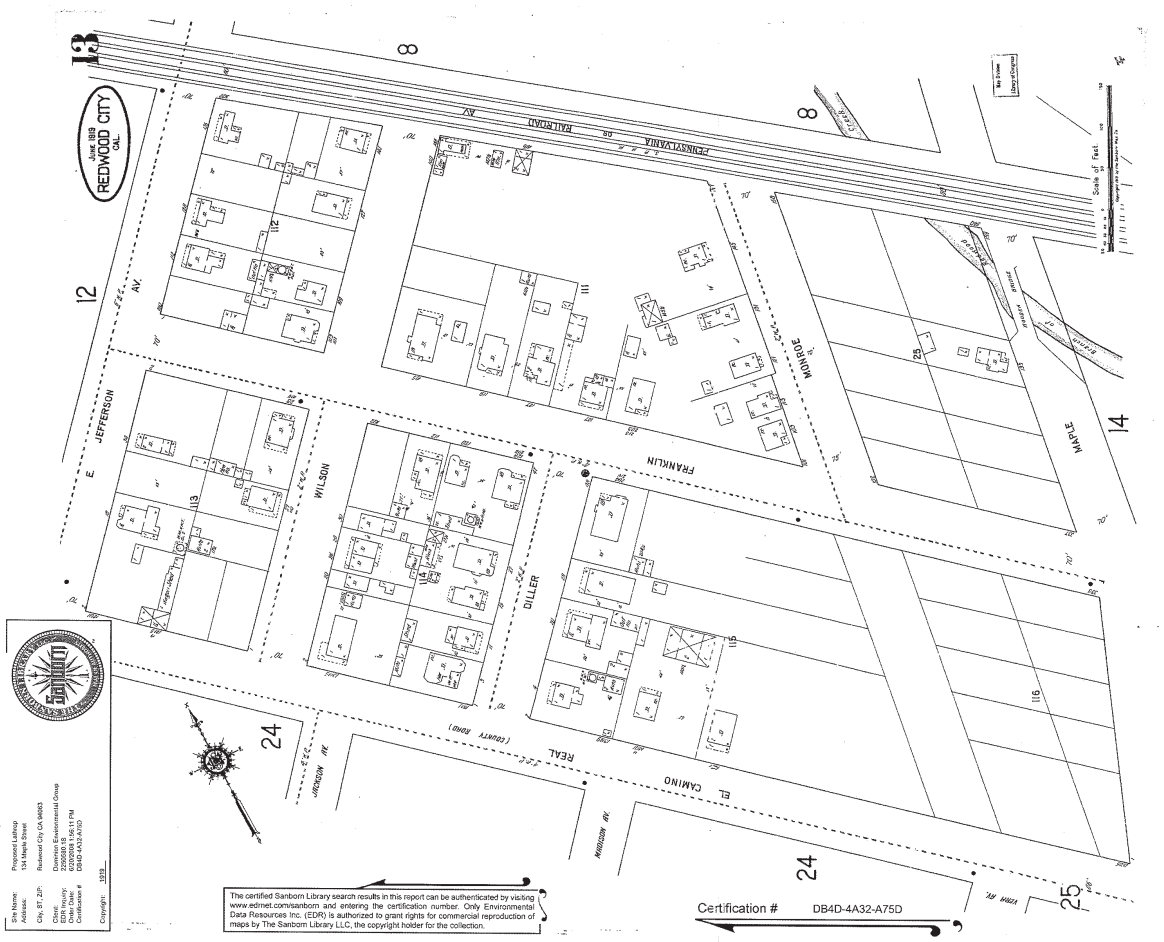
DOMINION DUE DILIGENCE GROUP



Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1919* *(Northern Adjacent Properties)*	**DOMINION DUE DILIGENCE GROUP**



Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1919* *(Eastern Adjacent Properties)*	**DOMINION DUE DILIGENCE GROUP**

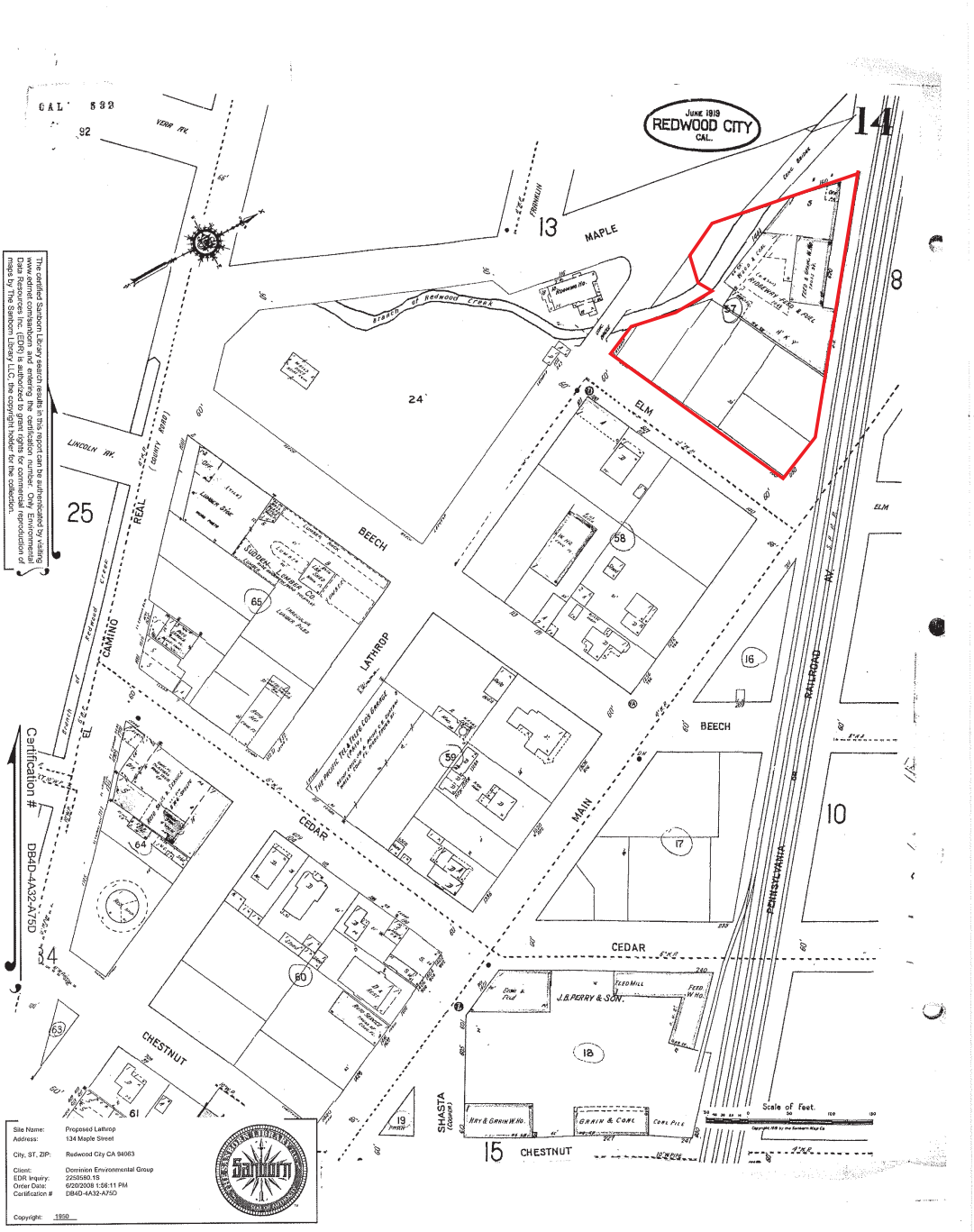


Appendix D
Sanborn Fire Insurance Map

↑ N

Date: 1919
(Western Adjacent Properties)

DOMINION DUE DILIGENCE GROUP



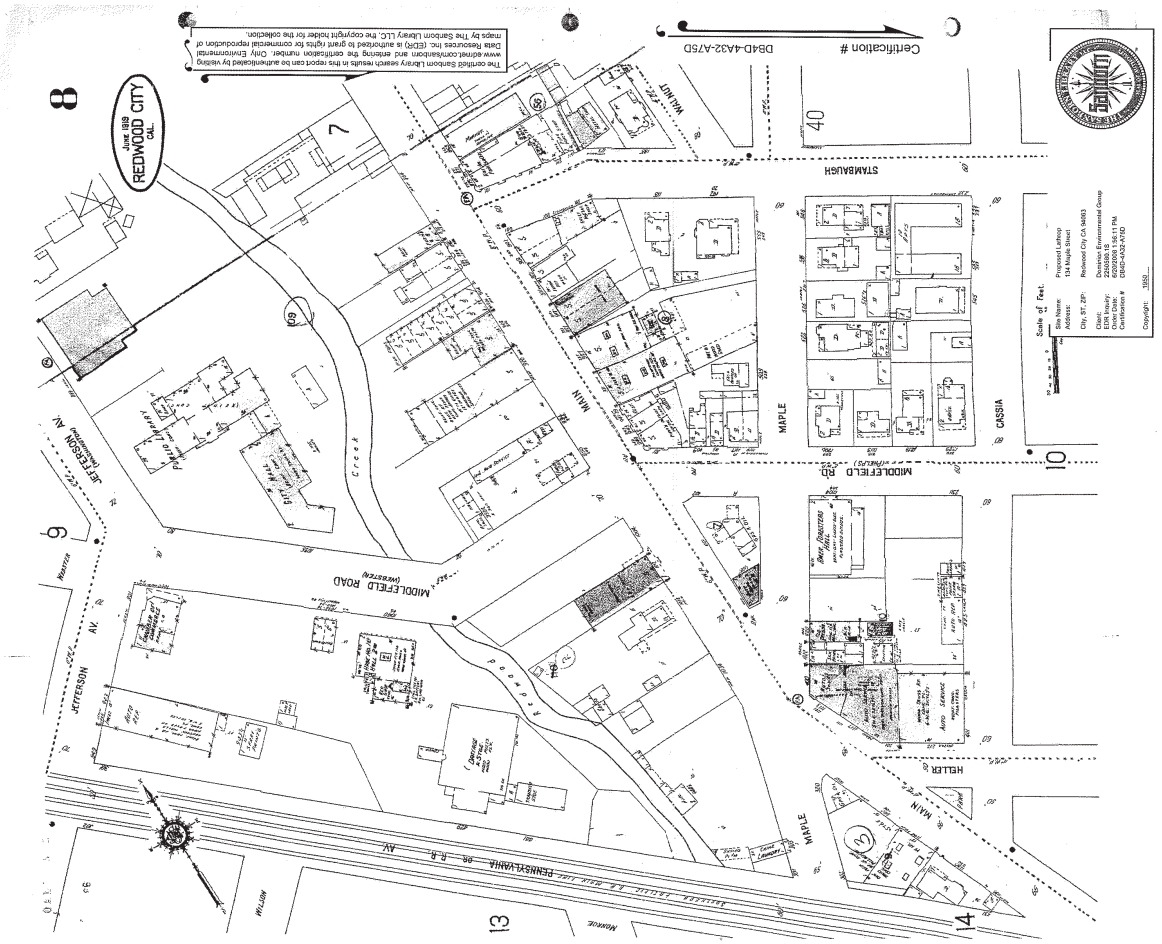
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Appendix D
Sanborn Fire Insurance Map

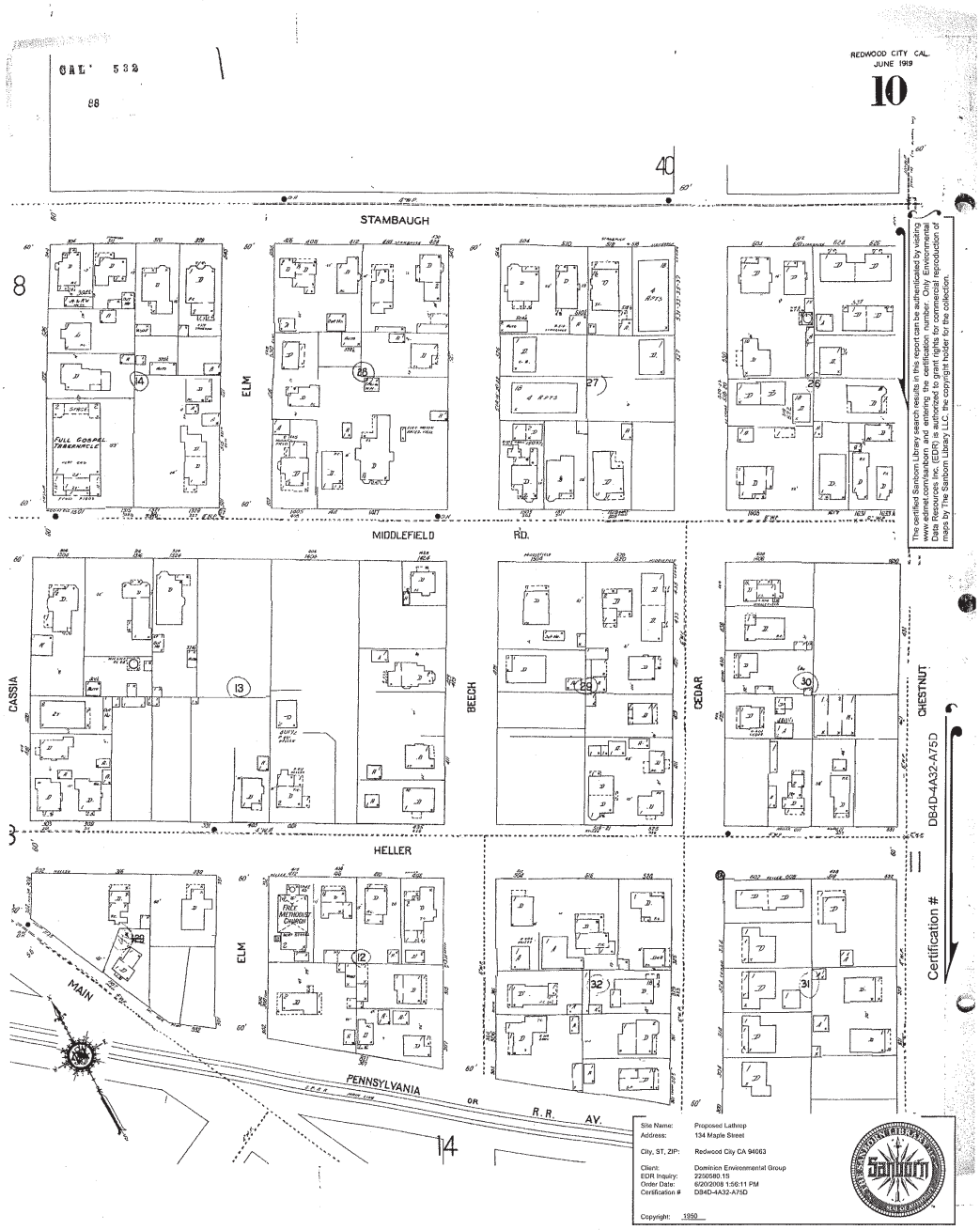
↑ N

Date: 1950
(Subject Property)

DOMINION DUE DILIGENCE GROUP



Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1950* *(Northern Adjacent Properties)*	**DOMINION DUE DILIGENCE GROUP**

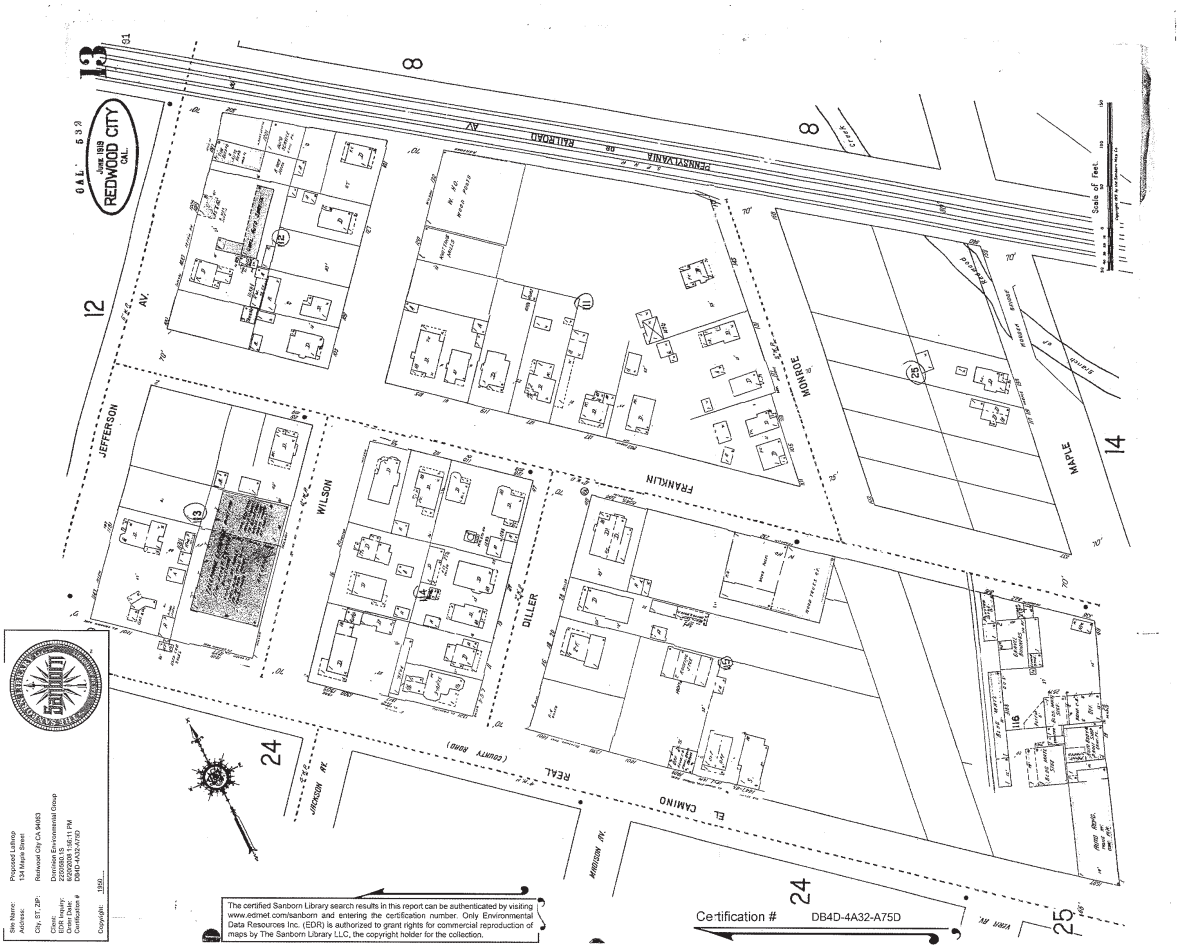


Appendix D
Sanborn Fire Insurance Map

↑ N

Date: 1950
(Eastern Adjacent Properties)

DOMINION DUE DILIGENCE GROUP

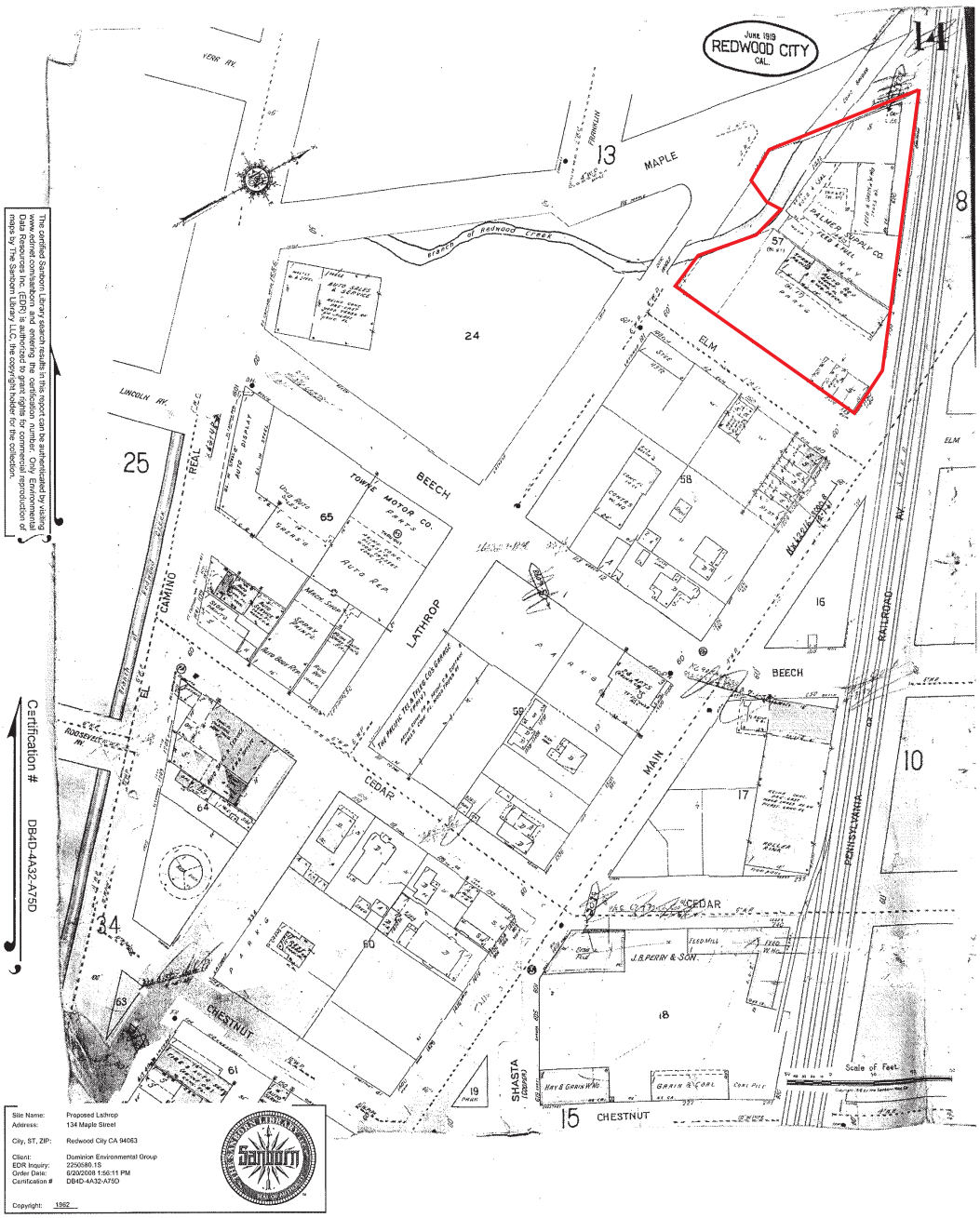


Appendix D
Sanborn Fire Insurance Map

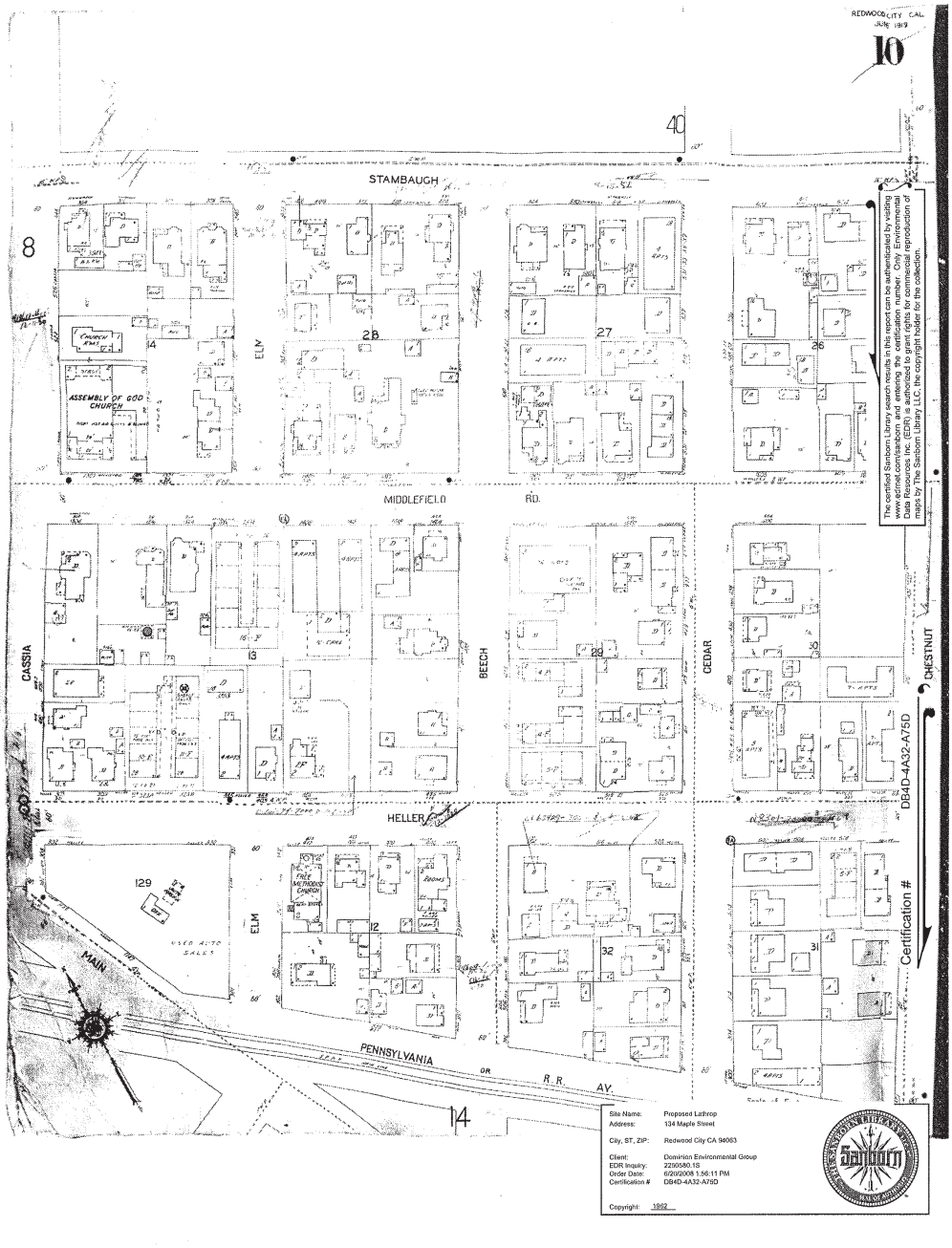
↑ N

Date: 1950
(Western Adjacent Properties)

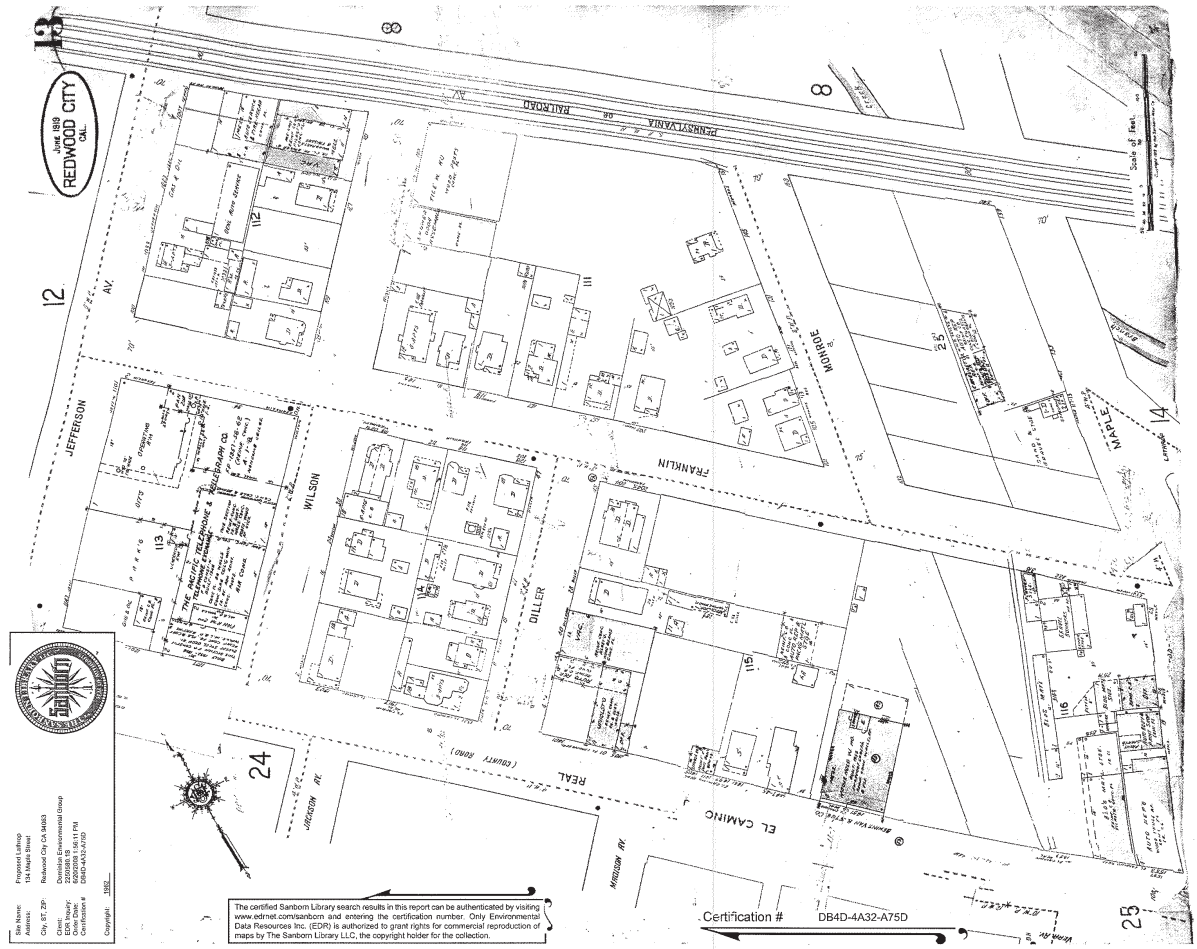
DOMINION DUE DILIGENCE GROUP



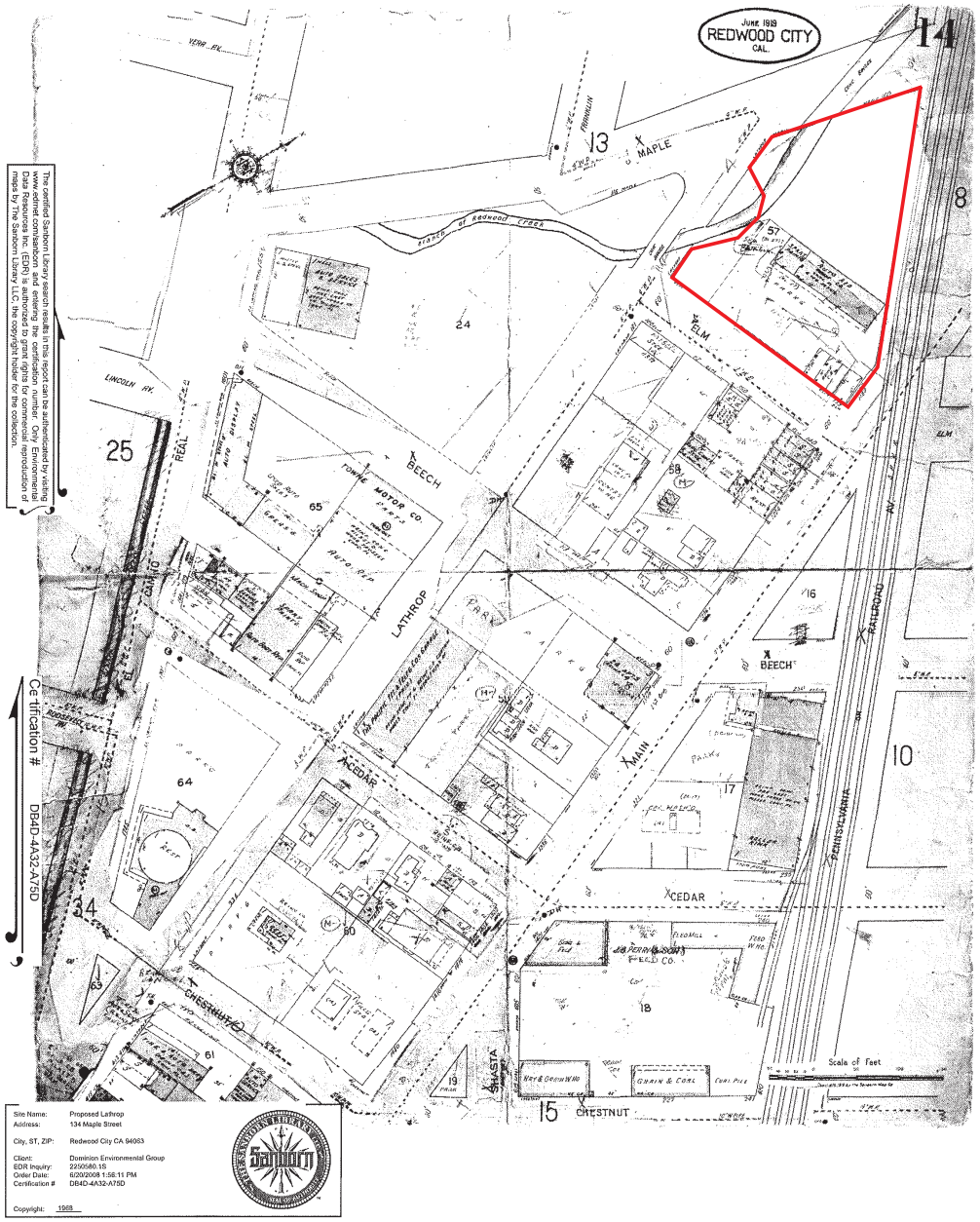
Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1962* *(Subject Property)*	**DOMINION DUE DILIGENCE GROUP**



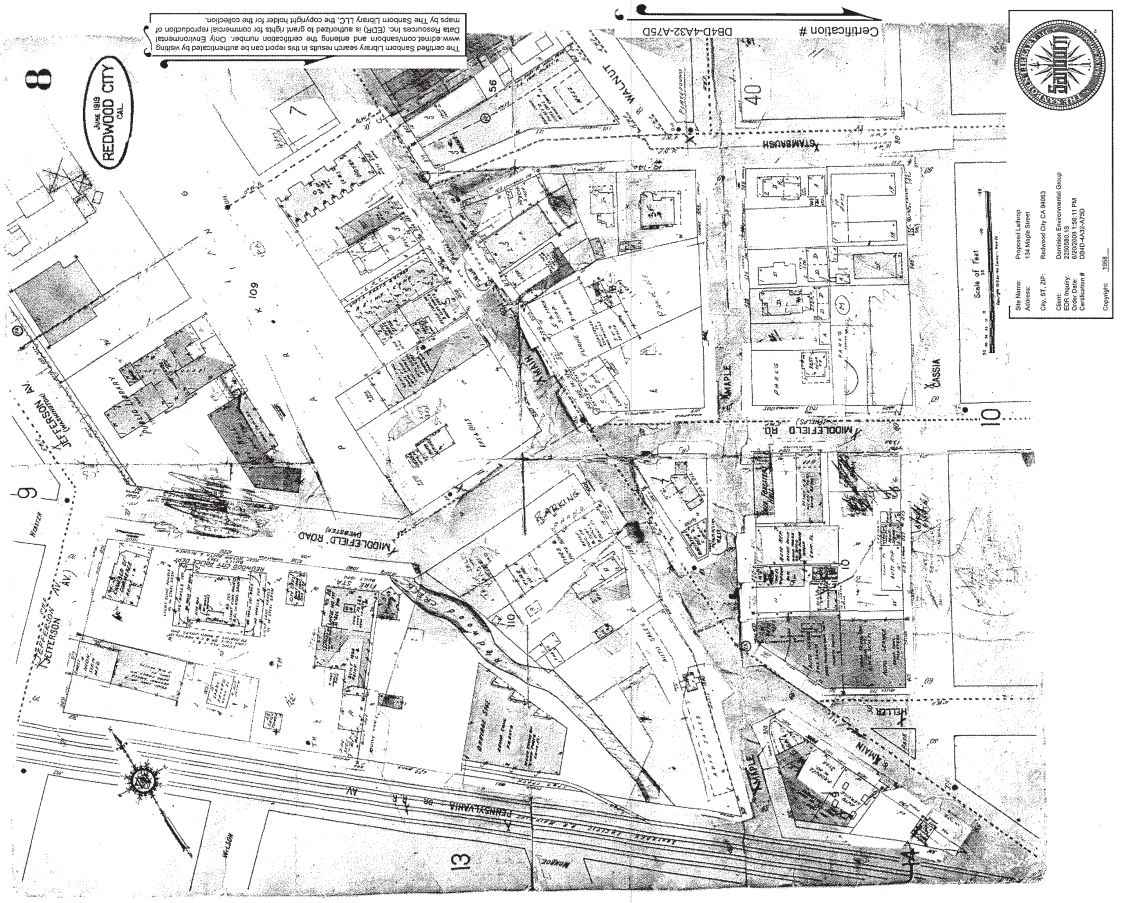
Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1962* *(Eastern Adjacent Properties)*	**DOMINION DUE DILIGENCE GROUP**



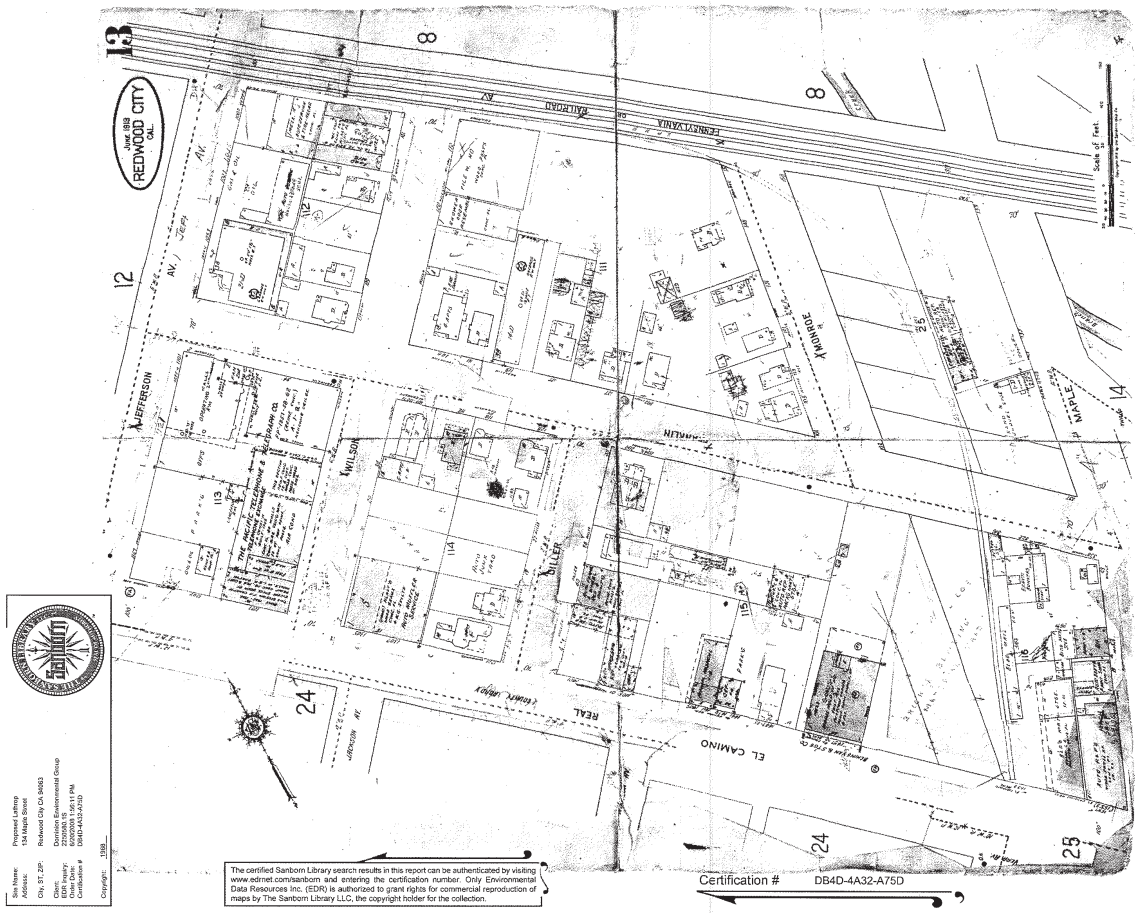
Appendix D Sanborn Fire Insurance Map	↑ N	*Date: 1962* *(Western Adjacent Properties)*	**DOMINION DUE DILIGENCE GROUP**



Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1968* *(Subject Property)*	**DOMINION DUE DILIGENCE GROUP**



Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1968* *(Northern Adjacent Properties)*	**DOMINION DUE DILIGENCE GROUP**



Appendix D Sanborn Fire Insurance Map	↑ **N**	*Date: 1968* *(Western Adjacent Properties)*	**DOMINION DUE DILIGENCE GROUP**



Appendix D Aerial Photograph	↑ N	*Date: 1948*	**DOMINION DUE DILIGENCE GROUP**



Appendix D
Aerial
Photograph

N

Date: 1965

DOMINION DUE DILIGENCE GROUP



Appendix D
Aerial
Photograph

N

Date: 1974

DOMINION DUE DILIGENCE GROUP



Appendix D
Aerial
Photograph

N

Date: 1982

DOMINION DUE DILIGENCE GROUP



Appendix D
Aerial
Photograph

N

Date: 1993

DOMINION DUE DILIGENCE GROUP



Appendix D
Aerial
Photograph

N

Date: 1998

DOMINION DUE DILIGENCE GROUP



Appendix D Aerial Photograph	N	*Date: 2005*	**DOMINION DUE DILIGENCE GROUP**



Appendix D Aerial Photograph	↑ N	*Date: 2009*	**DOMINION DUE DILIGENCE GROUP**

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Appendix E

Regulatory Records Documentation

Non-Invasive Tier 1 Vapor Encroachment Screening - Database Review Worksheet

Proposed Lathrop Post-Acute Recovery Center

					Up-gradient		Down-gradient		Cross-gradient		
				Area of Concern	COC : .33 mile	Petroleum: .10 mile	COC : .02 mile	Petroleum: .02 mile	COC: .07 mile	Petroleum: .03 mile	Notes
State Standard Environmental Record Sources											
Database	**Site Name**	**Site Address**	**Distance/ Direction**	**Gradient**							
LUST	COOKS AUTO BODY	1104 MAIN ST	Adjacent N	down-gradient	N	N	N	Y	N	N	**The record source cannot be ruled out as a VEC- see Phase I ESA for further discussion.**
LUST	HUDSON PROPERTY	135 MAPLE	Adjacent W	cross-gradient	N	N	N	N	N	Y	**The record source cannot be ruled out as a VEC- see Phase I ESA for further discussion.**
LUST	RMC LONESTAR	25 MAPLE ST	0.09 SW	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	RMC LONESTAR	25 MAPLE ST	0.09 SW	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	CHEVRON	1501 EL CAMINO REAL	0.10 SW	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	CHEVRON 9-4256	1501 EL CAMINO REAL	0.10 SW	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	CHEVRON	1501 EL CAMINO REAL	0.10 SW	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	JULES DUC CONSTRUCTION	1451 EL CAMINO REAL	0.11 SW	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	JULES DUC CONSTRUCTION	1451 EL CAMINO REAL	0.11 SW	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	TOWN FORD SALES	1601 EL CAMINO REAL	0.11 SW	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	TOWNE FORD SALES	1601 EL CAMINO REAL	0.11 SW	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	FERIANTE PROPERTY	1612 EL CAMINO REAL	0.12 SW	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	FIRESTONE	1458 EL CAMINO REAL	0.12 SW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	FIRESTONE STORE 3671	1458 EL CAMINO REAL	0.12 SW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	FERIANTE PROPERTY	1612 EL CAMINO REAL	0.12 SW	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	FIRE STATION 1 (FORMER)	1036 MIDDLEFIELD	0.13 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	REDWOOD CITY CITY OF	1036 MIDDLEFIELD RD	0.13 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	TEMPORARY CITY HALL	1020 MIDDLEFIELD RD	0.15 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	TEMPORARY CITY HALL	1020 MIDDLEFIELD	0.15 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	GRADE SEPARATION	923 JEFFERSON	0.15 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	REDWOOD CITY CITY HALL	1017 MIDDLEFIELD RD	0.16 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	MOHAWK PETROLEUM STATION 30	1001 MAIN	0.16 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	REDWOOD CITY CITY HALL	1017 MIDDLEFIELD	0.16 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	ARCO 0306	1700 MIDDLEFIELD	0.18 NE	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	ARCO	1032 JEFFERSON AVE	0.18 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	VANHAM PROPERTY	1015 JEFFERSON	0.18 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	VANHAM PROPERTY	1015 JEFFERSON AVE	0.18 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	ACTERON CORP, FORMER	851 SHASTA	0.18 SE	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	ARCO	1700 MIDDLEFIELD RD	0.19 NE	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	PACIFIC BELL	1121 JEFFERSON AVE	0.20 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	MEZES COURT	950 MAIN	0.20 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	MOBIL 99-142 (FORMER)	950 MAIN	0.20 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	PACIFIC BELL	1121 JEFFERSON	0.20 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.

Federal Standard Environmental Record Sources

Database	Site Name	Site Address	Distance/Direction	Gradient

There are no Federal Environmental Record Sources identified within the Area of Concern.

Sites outside of the maximum area of concern (1/3 mile) for both State and Federal Environmental Record Sources are not a VEC and are therefore not inlcuded in this worksheet.

Total Sources of Vapor Encroachment	**0**	**0**	**0**	**1**	**0**	**1**

Non-Invasive Tier 1 Vapor Encroachment Screening - Database Review Worksheet

Proposed Lathrop Post-Acute Recovery Center

					Up-gradient		Down-gradient		Cross-gradient		Notes
				Area of Concern	COC : .33 mile	Petroleum: .10 mile	COC : .02 mile	Petroleum: .02 mile	COC: .07 mile	Petroleum: .03 mile	
State Standard Environmental Record Sources											
Database	**Site Name**	**Site Address**	**Distance/ Direction**	**Gradient**							
LUST	HUMBLE OIL EXXON	1201 EL CAMINO REAL	0.22 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	HUMBLE OIL, FORMER (EXXON 7847	1201 EL CAMINO REAL	0.22 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	HUMBLE OIL-EXXON	1201 EL CAMINO REAL	0.22 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	CHEVRON	932 MIDDLEFIELD RD	0.24 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	SHELL, FORMER (HARRY S HOFBR/	1909 EL CAMINO REAL	0.24 SE	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	LUCKY STORE	1250 JEFFERSON AVE	0.26 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	LUCKY STORE 15	1250 JEFFERSON	0.26 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	US POSTAL SERVICE	855 JEFFERSON AVE	0.26 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	ACTERON CORPORATION	851 SHASTA ST	0.27 SE	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	DAVIES CHEVROLET	1101 EL CAMINO REAL	0.28 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	ROYS DRIVE IN CLEANERS	1100 EL CAMINO REAL	0.28 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	CHEVRON 20-6318, FORMER	932 MIDDLEFIELD	0.29 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	BROADWAY PRODUCE and FLOWEF	1870 BROADWAY	0.30 NE	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	U.S. POSTAL SERVICE	855 JEFFERSON	0.30 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	G R BROWN CO	989 SHASTA	0.30 SE	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	GR BROWN COMPANY	989 SHASTA ST	0.30 SE	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	GUS S SERVICE STATION	841 HAMILTON ST	0.31 NW	down-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	GRANT YARD, S.M.C.	752 CHESTNUT	0.33 NE	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	FEDERAL MOGUL	1200 BROADWAY	0.33 NE	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
LUST	REDWOOD PLAZA SHOPPING CENT	1200 BROADWAY	0.33 NE	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
VCP	RUST PROPERTY AKA YOUNG AUT(	925 / 929 MAIN ST	0.13 NE	cross-gradient	N	N	N	N	N	N	The record source is associated with petroleum contamination and is outside of the area of concern and is therefore not a VEC.
Federal Standard Environmental Record Sources											
Database	**Site Name**	**Site Address**	**Distance/D irection**	**Gradient**							

There are no Federal Environmental Record Sources identified within the Area of Concern.

Sites outside of the maximum area of concern (1/3 mile) for both State and Federal Environmental Record Sources are not a VEC and are therefore not inlcuded in this worksheet.

Total Sources of Vapor Encroachment	**0**	**0**	**0**	**0**	**0**	**0**	

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A Smaller Intrusion

by Anthony J. Buonicore, P.E.

Posted: May 1, 2009

Reducing the area of concern in the ASTM vapor intrusion standard could make the screening process much more efficient.



Based upon feedback from the marketplace since the ASTM E 2600-08 vapor intrusion standard was published in March 2008,[1] the standard is currently undergoing revision. There are two proposed technical revisions that will enable the area of concern (AOC) for vapor intrusion screening in real estate transactions to be significantly reduced and save considerable time.



A former industrial site located near a residential area which caused a vapor intrusion issue.

The first technical revision is directed at differentiating in Tier 1 between what steps to take when groundwater flow direction cannot be estimated (in the Phase I investigation) and when it can. The second revision would eliminate the secondary area of concern (AOC) in Tier 1 as field experience to-date has shown it not to be necessary. Moreover, it can waste valuable time and money investigating sites a considerable distance from the target property (TP) that are highly unlikely to result in a vapor intrusion problem.

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Starting with the basics

These proposed revisions in the standard have the potential to significantly reduce the AOC, and thus the time and cost of investigations. The existing standard identifies a primary and secondary AOC in the Tier 1 search distance test, distinguished by whether the record search is done within the area completely around a target property (primary AOC), or whether the up-gradient direction beyond the primary AOC (secondary AOC) is included as well.



An old waste dump area located near a residential area that created a vapor intrusion issue.

Also, the search distances are different for sites contaminated with volatile and semi-volatile chemicals of concern (COC) – such as many chlorinated solvents – versus sites contaminated with petroleum hydrocarbon COC – such as BTEX. The search distances are shorter for petroleum hydrocarbons because they are known to undergo significant bio-degradation in the presence of oxygen. The primary AOC search distances were determined based upon conservative consideration of both plume length and

the distance vapors might travel along a path of least resistance from a source (such as contaminated groundwater) through the vadose zone directly to a structure on a TP. The secondary AOC was included to keep the search distances in the E 2600-08 standard consistent with those in the E 1527-05 Phase I standard.[2]

There is sound technical basis for establishing the primary AOC. Plume length research was conducted for both volatile chemical plumes (such as chlorinated solvent plumes from dry cleaners) and volatile petroleum hydrocarbon plumes from leaking underground storage tank sites. In order to be conservative, the plume length selected to determine the primary AOC was based upon the 90th percentile distance.[3-6] For (non-petroleum hydrocarbon) COC plumes – such as may be associated with dry cleaners – 90 percent of the time the plume length was less than approximately 1,590 feet. For volatile petroleum hydrocarbon COC plumes, 90 percent of the time it was less than approximately 390 feet.

Using experience from vapor intrusion sites in the U.S. on the distances vapors may migrate through the vadose zone, and adding them to the 90th percentile plume length, the primary AOC search radii were determined, i.e., 1/3 mile (1,760 feet) for non-petroleum hydrocarbon COC, and 1/10 mile (520 feet) for petroleum hydrocarbon COC.

Under the proposed technical revisions, if it is not possible to estimate groundwater flow direction in the Phase I investigation, then the Tier 1 screen must consider all known or suspect COC-contaminated property surrounding the TP within the search radii of the primary AOC, as defined in the existing standard. However, if it is possible to estimate groundwater flow direction (and assuming four quadrants can be distinguished around a TP: an up-gradient, two cross-gradient, and a down-gradient), then the AOC can be further reduced. This is important because each known or suspect contaminated property within the AOC may need to be investigated further, and may even require a file review at state regulatory offices (in accordance with Tier 2 of the standard). The key consideration is where the known or suspected contaminated property is located with respect to the TP.

Contaminated sources located up-gradient of the TP

For contaminated sources – such as a drycleaner with a PERC release or a gas station with a release from a leaking underground storage tank – located up-gradient of the TP, the focus would continue to be those contaminated properties within the primary AOC distances (i.e., 1,760 feet for COC sources and 520 feet for petroleum hydrocarbon COC sources).

For contaminated sources located cross-gradient of the TP

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A former gas station site.

When a contaminated property (such as a drycleaner with a PERC release or a gas station with a release from a leaking underground storage tank) is located cross gradient from the TP, the length of the plume associated with the cross-gradient source is not really relevant. However, its width is relevant. According to the E 2600-08 standard, what matters for cross-gradient sources is whether the nearest edge of the contaminated plume is within the critical distance from the nearest structure on the TP. The critical distance as defined in E 2600-08 effectively is the maximum distance a vapor can reasonably be expected to migrate in relatively permeable soil, assuming the path of least resistance is directly from the nearest edge of the contaminated media (such as groundwater) to the nearest structure on the TP. The distance of concern from the structure on the TP to the property that created the contamination (e.g., a dry cleaner), would be the critical distance plus a distance to account for the plume width at that point. While the critical distance numbers are specifically identified in E 2600-08 for petroleum hydrocarbon and non-petroleum hydrocarbon contamination, nothing prescriptive is mentioned in the standard about how to deal with plume width if such information is not available. A suggested approach is described later.

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For contaminant sources located down-gradient of the TP

For contaminated sites – such as a dry cleaner with a PERC release or a gas station with a release from a leaking underground storage tank – located down-gradient of the TP, plume length and width matter little and the focus would only be on the critical distance. Hence, the AOC can be reduced from 1,760 feet to 100 feet for COC contamination, except for petroleum hydrocarbon COC contamination where the AOC can be reduced from 520 feet to either 100 feet (when LNAPL or free product is presumed to be present), or 30 feet (when only dissolved petroleum hydrocarbons are presumed to be present in the groundwater).

Suggested methodology for dealing with plume width at cross-gradient sources



A former drycleaners. Such sites present high potential risk in any vapor intrusion

For contaminated properties located cross-gradient from the TP, plume width must be taken into consideration in selecting an appropriate distance of concern ($D_{concern}$). The question is, what would be a reasonably conservative estimate for plume width (a default value) to use in the screening process assuming no actual plume information is available?

One approach is to base the default plume width on 1/3rd of the plume length[7,8] and, to be conservative, use the 90th percentile plume length (PL90) discussed previously, regardless of where the contaminated property is located in the cross-gradient quadrant. Plume width, for example, would matter little if the contaminated property is located close to the boundary separating the cross-gradient quadrant from the down-gradient quadrant. On the other hand, it would be of much greater concern if the contaminated property is located close to the boundary separating the cross-gradient quadrant from the up-gradient quadrant.

screen.

Assuming symmetry of the plume on both sides of the source, one-half of the plume width (PW) would be added to the critical distance ($D_{critical}$) to establish the distance of concern. This can be expressed as:

$$\mathbf{D_{concern} = D_{critical} + 1/2\ PW = D_{critical} + 1/2\ (PL90/3)}$$

Comparing this approach for default plume width with actual plume data[3-6] suggests the approach is reasonable. For non-petroleum hydrocarbon COC contamination sources (such as a dry cleaner) located cross-gradient from the TP:

$$\mathbf{D_{critical} = 100\ ft.}$$
$$\mathbf{PL90 = 1{,}590\ ft.}$$

Therefore:

$$\mathbf{D_{concern} = 100 + 1/2\ (1{,}590/3) = 365\ feet}$$

The default E 2600-08 search radius in the cross-gradient quadrant can then be reduced from 1,760 feet to 365 feet for non-petroleum hydrocarbon COC.

For LNAPL or free product petroleum hydrocarbon sources (such as a gas station with a release from a leaking underground storage tank) located cross gradient from the TP:

$$\mathbf{D_{critical} = 100\ ft.}$$
$$\mathbf{PL90 = 390\ ft.}$$

Therefore:

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$$D_{concern} = 100 + 1/2\ (390/3) = 165\ ft.$$

Using this approach, the default E 2600-08 search radius in the cross-gradient quadrant could then be reduced from 520 feet to 165 feet for LNAPL petroleum hydrocarbon sources. If only dissolved petroleum hydrocarbons (in groundwater) are presumed to be present:

$$D_{critical} = 30\ ft.$$
$$PL90 = 390\ ft.$$

Therefore:

$$D_{concern} = 30 + 1/2\ (390/3) = 95\ ft.$$

Using this approach, the default E 2600-08 search radius in the cross-gradient quadrant could then be reduced from 520 feet to 95 feet for dissolved petroleum hydrocarbon sources.

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Status of E 2600-08

Several changes are planned for the ASTM E 2600-08 standard that should improve its practicality, clarity and consistency. These changes were balloted in April 2009. After discussion of these changes and any further revisions, there will be another ballot in summer 2009. If all goes well, it is anticipated that the revised standard could be approved at the October 2009 ASTM meeting in Atlanta and published by the end of the year.

Furthermore, using reasonable assumptions, it may be possible to reduce significantly the default distances of concern, which could significantly reduce the investigation effort in many cases with minimal reduction to the protectiveness of the screening process. ***PE***

Anthony J. Buonicore, P.E.
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Anthony Buonicore is a consultant and chaired the ASTM task group responsible for developing the vapor intrusion assessment standard. He can be reached at (800) 238-1841, or ajb@edrnet.com.

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Appendix F

Interview Documentation

Prospective Landowner and/or User Questionnaire

SUBJECT PROPERTY NAME:	
SUBJECT PROPERTY ADDRESS:	

QUESTION	YES	NO	UNK?
1. Are you aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property?			
2. Are you aware of any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property?			
3. Are you aware of any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?			
4. Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law?			
5. Are you aware of any activity use limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?			
6. As the user of this ESA do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants?			
7. Are you aware of commonly known or reasonably ascertainable information about the property? For example: Do you know the past uses of the property?			
8. Do you know specific chemicals that are present or once were present at the property?			
9. Do you know of spills or other chemical releases that have taken place at the property?			
10. Do you know of environmental cleanups that have taken place at the property?			
11. Based on your knowledge and experience related to the property, are there any obvious indicators that point to the presence or likely presence of contamination at the property?			
12. Has a title search been performed? If yes, please attach.			
13. Is the property or has the property been used as a gasoline station, motor repair facility, commercial printing, dry cleaners, photo developing, landfill, industrial use, waste treatment or disposal facility?			
14. Are there currently any damaged or discarded automotive or industrial batteries, pesticides, paints, or other chemicals at the subject property?			
15. Are there currently any industrial drums or chemicals at the subject property?			
16. Are you aware of contaminated fill dirt at the subject property? (i.e. Fill dirt from off-site.)			

Not Returned
DRAFT

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Prospective Landowner and/or User Questionnaire

SUBJECT PROPERTY NAME:	
SUBJECT PROPERTY ADDRESS:	

QUESTION	YES	NO	UNK?
17. Are there currently any pits, ponds, or lagoons in connection with waste disposal or treatment at the subject property?			
18. Are there any current or previous underground storage tanks or aboveground storage tanks at the subject property?			
19. Are there currently any vent pipes, fill pipes, or access ways protruding from the ground at the subject property?			
20. Is the subject property served by a private well and or a private septic system?			
21. Does the property discharge industrial wastewater (excluding sanitary sewer)?			
22. Are there monitoring wells at the subject property?			
23. Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If there is a difference, is it because of known contamination?			
24. What type of property transaction is being performed? i.e. sale, purchase, exchange, refinance?			
25. What is the fair market value of the property?	$		
26. What is the purchase price of the property?	$		

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Not Returned

Please attach additional explanation for questions answered "YES".

Please provide the following documentation to D3G, if available:

* Previous Phase I Environmental Site Assessment
* Environmental compliance audit reports
* Registrations for USTs and/or ASTs.
* Geotechnical reports
* Asbestos or Lead-Based Paint reports
* Environmental permits
* Registrations for underground injection systems.
* Hazardous waste generator notices.

In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001, the user must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete.

Please return questionnaire to D3G: fax 804-358-3003 or mail it to 4120 Cox Road, Glen Allen, VA 23060-3316

PRINT NAME	**TITLE**	**DATE**
COMPANY	**PROSPECTIVE LANDOWNER OR USER?**	

Current Landowner Property Questionnaire

SUBJECT PROPERTY NAME:			
SUBJECT PROPERTY ADDRESS:			
QUESTION	**YES**	**NO**	**UNK?**
1. Are you aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property?			
2. Are you aware of any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property?			
3. Are you aware of any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?			
4. Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law?			
5. Are you aware of commonly known or reasonably ascertainable information about the property? For example: Do you know the past uses of the property?			
6. Do you know specific chemicals that are present or once were present at the property?			
7. Do you know of spills or other chemical releases that have taken place at the property?			
8. Do you know of environmental cleanups that have taken place at the property?			
9. Based on your knowledge and experience related to the property, are there any obvious indicators that point to the presence or likely presence of contamination at the property?			
10. Is the property or has the property been used as a gasoline station, motor repair facility, commercial printing, dry cleaners, photo developing, landfill, industrial use, waste treatment or disposal facility?			
11. Are there currently any damaged or discarded automotive or industrial batteries, pesticides, paints, or other chemicals at the subject property?			
12. Are there currently any industrial drums or chemicals at the subject property?			
13. Are you aware of contaminated fill dirt at the subject property? (i.e. Fill dirt from off-site.)			
14. Are there currently any pits, ponds, or lagoons in connection with waste disposal or treatment at the subject property?			
15. Are there any current or previous underground storage tanks or aboveground storage tanks at the subject property?			

Not Returned
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Current Landowner Property Questionnaire

SUBJECT PROPERTY NAME:	
SUBJECT PROPERTY ADDRESS:	

QUESTION	YES	NO	UNK?
16. Are there currently any vent pipes, fill pipes, or access ways protruding from the ground at the subject property?			
17. Is the subject property served by a private well and or a private septic system?			
18. Does the property discharge industrial wastewater (excluding sanitary sewer)?			
19. Are there monitoring wells at the subject property?			
20. What year did you purchase the subject property?			

Additional Comments:

Please attach additional explanation for questions answered "YES".

Please provide the following documentation to D3G, if available:

* Previous Phase I Environmental Site Assessment
* Asbestos or Lead-Based Paint reports
* Environmental compliance audit reports
* Environmental permits
* Registrations for USTs and/or ASTs.
* Registrations for underground injection systems.
* Geotechnical reports
* Hazardous waste generator notices.

Please return questionnaire to D3G:
fax 804-358-3003
or mail it to:
4120 Cox Road
Glen Allen, VA 23060-3316

PRINT NAME	SIGNATURE	DATE

TITLE	YEARS WITH PROPERTY

DRAFT
Not Returned

Previous Landowner Property Questionnaire

SUBJECT PROPERTY NAME:	
SUBJECT PROPERTY ADDRESS:	

QUESTION	YES	NO	UNK?
1. Are you aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property?			
2. Are you aware of any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property?			
3. Are you aware of any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?			
4. Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law?			
5. As the user of this ESA do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants?			
6. Are you aware of commonly known or reasonably ascertainable information about the property? For example: Do you know the past uses of the property?			
7. Do you know specific chemicals that are present or once were present at the property?			
8. Do you know of spills or other chemical releases that have taken place at the property?			
9. Do you know of environmental cleanups that have taken place at the property?			
10. Based on your knowledge and experience related to the property, are there any obvious indicators that point to the presence or likely presence of contamination at the property?			
11. Is the property or has the property been used as a gasoline station, motor repair facility, commercial printing, dry cleaners, photo developing, landfill, industrial use, waste treatment or disposal facility?			
12. Are there any damaged or discarded automotive or industrial batteries, pesticides, paints, or other chemicals at the subject property?			
13. Are there any industrial drums or chemicals at the subject property?			
14. Are you aware of contaminated fill dirt at the subject property? (i.e. Fill dirt from off-site.)			
15. Are there any pits, ponds, or lagoons in connection with waste disposal or treatment at the subject property?			

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Previous Landowner Property Questionnaire

SUBJECT PROPERTY NAME:	
SUBJECT PROPERTY ADDRESS:	

QUESTION	YES	NO	UNK?
16. Are there any previous underground storage tanks or aboveground storage tanks at the subject property?			
17. Are there any vent pipes, fill pipes, or access ways protruding from the ground at the subject property?			
18. Is the subject property served by a private well and or a private septic system?			
19. Does the property discharge industrial wastewater (excluding sanitary sewer)?			
20. Are there monitoring wells at the subject property?			

Additional Comments:

Please attach additional explanation for questions answered "YES".

Please provide the following documentation to D3G, if available:

* Previous Phase I Environmental Site Assessment
* Environmental compliance audit reports
* Registrations for USTs and/or ASTs.
* Geotechnical reports
* Asbestos or Lead-Based Paint reports
* Environmental permits
* Registrations for underground injection systems.
* Hazardous waste generator notices.

Please return questionnaire to D3G:
fax 804-358-3003
or mail it to:
4120 Cox Road
Glen Allen, VA 23060-3316

PRINT NAME	**SIGNATURE**	**DATE**

TITLE	**YEARS WITH PROPERTY**

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Not Returned

Key Site Manager Property Questionnaire

SUBJECT PROPERTY NAME:	
SUBJECT PROPERTY ADDRESS:	

QUESTION	YES	NO	UNK?
1. Are you aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property?			
2. Are you aware of any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property?			
3. Are you aware of any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?			
4. Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law?			
5. Are you aware of commonly known or reasonably ascertainable information about the property? For example: Do you know the past uses of the property?			
6. Do you know specific chemicals that are present or once were present at the property?			
7. Do you know of spills or other chemical releases that have taken place at the property?			
8. Do you know of environmental cleanups that have taken place at the property?			
9. Based on your knowledge and experience related to the property, are there any obvious indicators that point to the presence or likely presence of contamination at the property?			
10. Is the property or has the property been used as a gasoline station, motor repair facility, commercial printing, dry cleaners, photo developing, landfill, industrial use, waste treatment or disposal facility?			
11. Are there currently any damaged or discarded automotive or industrial batteries, pesticides, paints, or other chemicals at the subject property?			
12. Are there currently any industrial drums or chemicals at the subject property?			
13. Are you aware of contaminated fill dirt at the subject property? (i.e. Fill dirt from off-site.)			
14. Are there currently any pits, ponds, or lagoons in connection with waste disposal or treatment at the subject property?			
15. Are there any current or previous underground storage tanks or aboveground storage tanks at the subject property?			

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Key Site Manager Property Questionnaire

SUBJECT PROPERTY NAME:	
SUBJECT PROPERTY ADDRESS:	

QUESTION	YES	NO	UNK?
16. Are there currently any vent pipes, fill pipes, or access ways protruding from the ground at the subject property?			
17. Is the subject property served by a private well and or a private septic system?			
18. Does the property discharge industrial wastewater (excluding sanitary sewer)?			
19. Are there monitoring wells at the subject property?			

Additional Comments:

Please attach additional explanation for questions answered "YES".

Please provide the following documentation to D3G, if available:
* Previous Phase I Environmental Site Assessment
* Asbestos or Lead-Based Paint reports
* Environmental compliance audit reports
* Environmental permits
* Registrations for USTs and/or ASTs.
* Registrations for underground injection systems.
* Geotechnical reports
* Hazardous waste generator notices.

Please return questionnaire to D3G:
fax 804-358-3003 or mail it to
4120 Cox Road
Glen Allen, VA 23060-3316

PRINT NAME	SIGNATURE	DATE

TITLE	YEARS WITH PROPERTY

DRAFT
Not Returned

Jesse Cottrell

From: Lucy Scarberry [l.scarberry@d3g.biz]
Sent: Wednesday, December 22, 2010 1:44 PM
To: 'FD-Bernel Mershon'
Subject: RE: Request for information

Good Afternoon,
Our company is updating a report for Wells Fargo Bank, N.A in regards to the property at 134 Maple Street. I wanted to make sure there is no new information on file for this address or for 1180 Main Street and 1612 El Camino Real. We are interested in UST permit files and any hazmat spills responses. We do already have a copy of the 1994 permit.

Thank you for your time,

Lucy Scarberry – Research Manager
Dominion Due Diligence Group (D3G)
4121 Cox Road, Suite 200 - Glen Allen, VA 23060
804.358.2020 (main) 804.237.1899 (direct) www.d3g.biz
WE HAVE MOVED, PLEASE NOTE THE NEW ADDRESS

DRAFT

From: FD-Bernel Mershon [mailto:bmershon@redwoodcity.org]
Sent: Monday, August 16, 2010 6:42 PM
To: 'l.scarberry@d3g.biz'
Subject: RE: Request for information

Dear Ms. Scarberry,

I have reviewed the records for the properties requested in your email. I have no records for 1180 Main Street and 1612 El Camino Real. I show, however, a permit was issued for 134 Maple Street on August 24, 1994 allowing the removal of two underground tanks.

I hope this will assist you.

Bernel

Bernel I. Mershon
Fire Prevention Secretary
City of Redwood City
755 Marshall Street, 3rd Floor
Redwood City, CA 94063
650-780-7400

From: Lucy Scarberry [mailto:l.scarberry@d3g.biz]
Sent: Monday, August 16, 2010 8:14 AM
To: FD-Bernel Mershon
Subject: FW: Request for information

Lucy Scarberry

From: Lucy Scarberry [mailto:l.scarberry@d3g.biz]
Sent: Tuesday, July 27, 2010 4:53 PM
To: 'bmershon@redwoodcity.org'
Subject: FW: Request for information

Good Afternoon,

I am writing in request of information that is needed for a re-financing loan report in regards to **Proposed Lathrop Post Acute Recovery Center**, located at **134 Maple Street, 1180 Main Street and 1612 El Camino Real**. I am requesting it on behalf of Wells Fargo Bank, N.A. I have attached a form that can be filled out, signed and emailed or faxed back. Please let me know if more information is needed.

Thank you for your time,

Lucy Scarberry
Research Assistant
Dominion Due Diligence Group
4120 Cox Rd, Glen Allen, VA 23060
804-237-1899 (p)
757-257-0291 (f)

No virus found in this incoming message.
Checked by AVG - www.avg.com
Version: 8.5.441 / Virus Database: 271.1.1/3077 - Release Date: 08/17/10 06:35:00

DRAFT

Marta Tomic

From: Marta Tomic [m.tomic@d3g.biz]
Sent: Tuesday, January 11, 2011 1:29 PM
To: 'bmershon@redwoodcity.org'
Cc: 'm.ayers@d3g.biz'
Subject: Hazardous Material Spill information request

Ms. Mershon,

Our company, Dominion Due Diligence Group, is conducting a Phase I Environmental Site Assessment Report for the Proposed Lanthrop Post-Acute Recovery Center, to be located at 134 Maple Street in Redwood City and financed by the Department of Housing and Urban Development (HUD).

A review of CA state-regulated facilities found a spill in the vicinity of the property, listed as Baker Graphics and located at 1201 Main Street, Redwood City, CA 94063.

I contacted the CA EPA regional regulatory assistance officer yesterday to see if they had any information on the spill because the site was assigned an EPA facility number of 181553. However, a review of their records and of the EnviroStor database found no information on the site.

I was hoping you could access the Redwood City Fire Department's records for any response to a hazardous materials spill at 1201 Main Street. Please fax any information you find on the incident to 804-358-3003 (Attn: Marta) or email to m.tomic@d3g.biz.

I greatly appreciate your time and assistance. Please do not hesitate to contact me directly if you have any questions or require any additional information.

Thank you,

Marta Tomic – Environmental Project Manager
Dominion Due Diligence Group (D3G)
4121 Cox Road, Suite 200 - Glen Allen, VA 23060
804.358.2020 (main) 804.237.6849 (direct) www.d3g.biz
WE HAVE MOVED, PLEASE NOTE THE NEW ADDRESS!

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Appendix G

Special Contractual Conditions Between User and Environmental Professional

There are no special contractual conditions between the User and Environmental Professional:

D3G has no financial interest or family relationship with the officers, directors, stockholders or partners of the Borrower, the general contractor, any subcontractors, the buyer or seller of the proposed property or engage in any business that might present a conflict of interest.

D3G is employed under contract for this specific assignment and has no other side deals, agreements, or financial considerations with the Lender or others in connection with this transaction.

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Appendix H

Qualifications for Environmental Professionals

CHAD M. PREVATTE
WESTERN REGIONAL MANAGER
ENVIRONMENTAL PROFESSIONAL

EDUCATION

Pennsylvania State University, B.S. Environmental Resource Management

CERTIFICATIONS/REGISTRATIONS/TRAINING

Nevada Certified Environmental Manager #2223
AHERA Accredited Asbestos Inspector #3303-002940
VA Lead Inspector/Risk Assessor #3356-000728
LPA-1 XRF Lead Paint Detection Device Operator Training/Radiation Safety Training
HUD Multi-Family Accelerate Processing (MAP) Due Diligence Training
ASTM Phase I Environmental Site Assessment Training
40-Hour OSHA Hazwoper Training
8-Hour OSHA Supervisor Certification
Nuclear Density Testing Gauge Operation Certification

EXPERIENCE

Mr. Prevatte is responsible for operations at D3G's western regional office in Denver, Colorado. Mr. Prevatte has over 15 years experience performing investigations of surface and subsurface environmental conditions. Mr. Prevatte has worked on numerous projects involving the identification of hazardous wastes and other site contaminants. In addition, Mr. Prevatte has worked on site characterizations, writing groundwater monitoring plans, quality assurance audits, hazardous waste landfill construction and operation. Specific projects have included:

Phase I Environmental Site Assessments

Conducted environmental assessments in accordance with ASTM E 1527-05 published guidelines, 40 CFR Part 312, Standards and Practices for All Appropriate Inquiry: Final Rule of numerous properties ranging from undeveloped land to contaminated sites such as gasoline stations and manufacturing/industrial facilities. Managed 1000's of Phase I Environmental Site Assessments from project procurement to company staffing to report writing and submittal delivery.

Phase II Environmental Site Assessments

Conducted and managed numerous subsurface sampling investigations and site characterization projects. Duties included the installation of borings and monitoring wells and the collection of potentially contaminated media, including soil and groundwater. Produced corrective action plans and initial site characterization reports for submittal to government regulatory authorities.

DRAFT

Chad M. Prevatte
Western Regional Manager
Environmental Professional

The following sites are a few examples of multi-family and assisted living HUD MAP projects on which Mr. Prevatte has participated:

HUD LEAN 232:	Proposed Residences at Cheeseman Park, Denver, Colorado
	Santa Rita Nursing and Rehabilitation Facility, Green Valley, Arizona
	Arbor Living Center, Boulder, Colorado
	Proposed Trinity Terrace, Pearland, Texas
	Mystic Park Rehabilitation and Health Center, San Antonio, Texas
	Woods at Salem, Salem, Oregon
	Maryland Gardens Senior Center, Phoenix, Arizona
HUD 221 (d)(4):	Hubbell Building, Des Moines, Iowa
	Woodbridge Commons, Edgewood, Maryland
	Savannah Heights Apartments, Washington, DC
HUD 220:	Haynes-Griffith Building, Newark, New Jersey
	Raymond Commerce Building, Newark, New Jersey
HUD 223 (f):	Peabody House, Peabody, Massachusetts
	Beth Am Manor, Los Angeles, California
	Lambert Homes, New Brunswick, New Jersey
	Fulton Gardens, New Brunswick, New Jersey
	Williamsburg on the Lake, Elkhart, Indiana
	Bradford Ridge, Bloomington, Indiana
	Burnham Oaks, University Park, Indiana
HUD 232/223(f):	Willow Lake, Willow Grove, Pennsylvania
	Zionsville Meadows, Zionsville, Indiana
	Rosewood Care Center of Inverness, Inverness, Illinois
	Kirkwood Corners, Lee, New Hampshire
	Heritage Place, Bountiful, Utah
	Burlington House, Cincinnati, Ohio
	Worcester Skilled Nursing Center, Worcester, Massachusetts
	Renova Health Center, Lake Park, Florida
HUD 202/223(f):	King's Daughters' Apartments, Frankfort, Kentucky
	Santa Fe Plaza Apartments, Porterville, California
	Essex Cooperative, Essex, Maryland
	Covenant Homes, Rocky Mount, North Carolina
	Adelaide Walters Apartments, Chapel Hill, North Carolina

DRAFT

Jesse Cottrell
Project Manager

EDUCATION

Middle Tennessee State University
B.S. Anthropology

CERTIFICATION/TRAINING

Virginia Lead Inspector License #3355-000625
RMD LPA-1 Lead Paint Inspection System
Virginia Asbestos Inspector License #3303-003362
EPA/AHERA Asbestos Inspector Initial Certificate #717022502
ASTM Phase I and II Environmental Site Assessments for Commercial Real Estate

EXPERIENCE

Jesse Cottrell is a project manager for Dominion Due Diligence Group. She is directly responsible for conducting and preparing Phase 1 Environmental Site Assessments and risk assessments, throughout the United States. Additionally, Ms. Cottrell is responsible for performance and management of field projects, client contact and comprehensive report writing.

The following sites are examples of projects in which Ms. Cottrell has participated:

ASTM 1527-05:
Greenspring Office Park – Williamsburg, VA
River Forest Apartments - Chester, VA
Former Gas Station – Lynchburg, VA

HUD MAP 221 (d)(4) NC:
Proposed The Parc at Grandview – Birmingham, AL
Proposed Venice ALF – Venice, FL
Proposed Sea Gate Village – Brooksville, FL
Proposed Carriage Park Apartments – Groton, CT
Proposed Metro Town Center –Washington, DC

HUD MAP 221 (d)(4) SR:
Farragut Hotel – Knoxville, TN
Grand Street Guild Apartments – New York, NY
Dante Harper Townhomes – Chicago, IL
Selis Manor – New York, NY

HUD MAP 221 (d)(3) NC:
Carol C. Shanley Homes – Manchester, CT

HUD MAP 232/223(f):
Alexandria Manor – Bath, PA
Jaycee Arms – Columbus, OH
Hebrew Home and Hospital – West Hartford, CT

HUD MAP 223(f):
Virginia Commons Apartments – Dumfries, VA
Senior Town Village – Wabash, IN
Stevens-Duval Apartments – Jacksonville, FL
Briarcliff Apartments – Cary,NC

HUD LEAN 232/223(f):
Laurel Baye Healthcare – Decatur, GA
Lancashire Hall – Lancaster, PA
Hanover Hall – Hanover, PA
Bala Nursing & Retirement Center – Philadelphia, PA

HUD LEAN 232/223(f) NC:
The Lodge at Natchez Trace – Nashville, TN

DRAFT

Jesse Cottrell
Project Manager

Other:

2913 Transport Street – Richmond, VA – ESA for Thrivent Financial for Lutherans
Ash Tree Apartments - Charlottesville, VA – ESA for Freddie Mac
Tanglewood Apartments – Warsaw, NC – ESA for NC QAP
Waterford Place Apartments – Edenton, NC – ESA for NC QAP
Regency Park Apartments – Hinesville, GA – ESA for GA DCA
Proposed Wilsondale Apartments – Hampton, VA – ESA for VHDA

Hazardous Materials Inspections:

Bowtie Property - Richmond, VA
Seven Oaks Apartments - Newport News, VA

DRAFT

Jen W. Friend
Senior Project Manager
Environmental Professional

EDUCATION

Virginia Tech, B.S. Environmental Science

CERTIFICATIONS/REGISTRATIONS/TRAINING

HUD Multi-Family Accelerated Processing (MAP) Due Diligence In-House Training
Virginia Licensed Asbestos Inspector #3303-002987
Virginia Licensed Lead-Based Paint Inspector #3355-000472
North Carolina Asbestos Inspector #12560
LPA-1 XRF Lead Paint Detection Device Operator Training/Radiation Safety Training
ASTM Phase I Site Assessment & Transaction Screen Assessment Training
U.S. Green Building Council - LEED 101: Green Building Basics

EXPERIENCE

Ms. Friend is a Senior Project Manager for Dominion Due Diligence Group. Jen is directly responsible for conducting and preparing Phase 1 Environmental Site Assessments and risk assessments, throughout the United States. Ms. Friend has over 8 years experience performing investigation of surface and subsurface environmental conditions. Ms. Friend also has extensive knowledge of the ASTM E 1527-05 Phase I Environmental Site Assessment regulations as well as the EPA 40 CFR Part 312 Standards and Practices for All Appropriate Inquiries regulations. Ms. Friend's duties as a Senior Project Manager for Dominion Due Diligence Group include coordinating, conducting and reviewing the Phase I/II Environmental Site Assessments (HUD, Freddie Mac, Fannie Mae, VHDA, and ASTM E 1527-05) throughout the United States as well as conducting and coordinating comprehensive lead-based paint, asbestos-containing material and indoor air quality investigation/remediation projects. Additionally, Ms. Friend is responsible for performance and management of field projects, client contact and comprehensive report writing. The following sites are examples of projects in which Ms. Friend has participated:

ASTM 1527-05:

Chartiers Manor Retirement Home – McKee's Rocks, PA
Jonesville Manor Apartments – Jonesville, VA
The Oaks I & II - Roxboro, NC
Scattered Sites – Lynchburg, VA
Proposed Sweetbriar Apartments – Abingdon, VA
Abingdon Green Apartments – Abingdon, VA

HUD MAP 202/223(f):

Proposed Sayre Christian Village Apts. II – Lexington, KY
Woodland Homes – Lexington, TN
South Haven Woods – Bedford, OH
Bishop CO-OP – Wyandotte, MI
Epworth Arms – Pittsfield, MA
Kingston House & Cloverfield Apartments – York, PA
South Central Village of Clarksville – Clarksville, TN
Westminster Square - San Antonio, TX
Stevens Woods – North Haven, CT

DRAFT

Jen W. Friend
Senior Project Manager
Environmental Professional

HUD MAP 223f:

Country Place – Killeen ,TX
West Virginian Manor – Bluefield, WV
Friendship House and Chase Ridge Townhomes – Greenville, MI
Laurel Park – Livonia, MI

HUD MAP 232/223f:

Pearl City Nursing Home – Pearl City, HI
Morris Park Nursing Home – Bronx, NY
Oak Park Place – Albert Lea - MN
Magnolia Place – Greenville, SC
Magnolia Manor – Greenville, SC
Vermillion Place – Anderson, IN
Atrium at Wayne – Wayne, NJ
Donna Kay Rest Home – Worcester, MA
Rolling Hills Care Center – Lebanon, NJ

Lead-Based Paint and Asbestos

Noelle Apartments – Richmond, VA
Glenwood Farms Apartments – Richmond, VA
West Virginian Manor – Bluefield, WV
Residential house – Knoxville, TN
Kensington Place Apartments – Richmond, VA
Harbour Pointe – Indianapolis, IN
Wellington Court – Charlottesville, VA
Proposed The Collonade at Rocktown – Harrisonburg, VA

HUD MAP 221 (d)(4) NC:

Proposed White Oak Apartments – Chester, VA
Proposed Bay View Village – Johnson City, TN
Proposed Apartments – Mooresville, NC
Proposed Apartments – Asheville, NC
Proposed Knollwood Apartments Phase II – Blacksburg, VA

Indoor Air Quality

Brandy Hill Apartments, Mechanicsville, Virginia
Crowne Plaza Hotel, Virginia Beach, Virginia
Highwoods Buildings, Glen Allen, Virginia
London Oaks Apartments, Portsmouth, Virginia
Villages at Stoney Run, Newport News, Virginia
Woodcroft Village Apartments, Richmond, Virginia
North Hills Apartments – Danville, VA

Freddie Mac

Chelsea Village – Indianapolis, IN
Williamsburg North – Indianapolis, IN
Foxridge Apartments – Blacksburg, VA

HUD MAP 242

Mercer Campus – Trenton, NJ
Hamilton Campus – Trenton, NJ
Fuld Campus – Trenton, NJ

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Appendix I

Certificate of Liability Insurance

OP ID: RH

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 10/26/10

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

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PRODUCER		CONTACT NAME:	
Virginia Commonwealth Corp. 2570-B Gaskins Rd Richmond, VA 23238 Raymond K. Taylor	804-282-6723 804-282-2286	PHONE (A/C, No, Ext):	FAX (A/C, No):
		E-MAIL ADDRESS:	
		PRODUCER CUSTOMER ID #: DOMIN-2	

INSURED	INSURER(S) AFFORDING COVERAGE	NAIC #
Dominion Environmental Group, Inc.dba Dominion Due Diligence 4121 Cox Road, Ste. 200 Glen Allen, VA 23060-3316	INSURER A : Nautilus Insurance Co	
	INSURER B : The Travelers Indemnity Co.	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS		
	GENERAL LIABILITY						EACH OCCURRENCE	$	3,000,000
A	X COMMERCIAL GENERAL LIABILITY			ECPO1520541	09/01/10	09/01/11	DAMAGE TO RENTED PREMISES (Ea occurrence)	$	100,000
	CLAIMS-MADE X OCCUR						MED EXP (Any one person)	$	5,000
A	X Prof. Liab			ECPO1520541	09/01/10	09/01/11	PERSONAL & ADV INJURY	$	3,000,000
A	X Pollution Liab.			ECPO1520541	09/01/10	09/01/11	GENERAL AGGREGATE	$	3,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG	$	3,000,000
	POLICY PRO-JECT LOC							$	
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$	1,000,000
B	X ANY AUTO			BA-501Y6030-10-SEL	02/03/10	02/03/11	BODILY INJURY (Per person)	$	
	ALL OWNED AUTOS						BODILY INJURY (Per accident)	$	
	SCHEDULED AUTOS						PROPERTY DAMAGE (Per accident)	$	
	HIRED AUTOS							$	
	NON-OWNED AUTOS							$	
	UMBRELLA LIAB OCCUR						EACH OCCURRENCE	$	2,000,000
B	X EXCESS LIAB CLAIMS-MADE			IFS-EX-1721B406-IND-10	02/03/10	02/03/11	AGGREGATE	$	2,000,000
	DEDUCTIBLE							$	
	X RETENTION $							$	
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						X WC STATU-TORY LIMITS OTH-ER		
B	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? **(Mandatory in NH)**	N / A		IKUB-6588B74-5-10	02/03/10	02/03/11	E.L. EACH ACCIDENT	$	1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$	1,000,000
							E.L. DISEASE - POLICY LIMIT	$	1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER

FOR--01

FOR INFORMATION PURPOSES ONLY

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
Raymond K. Taylor

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Appendix J

The National Register of Historic Places

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National Register of Historic Places



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From: NPS Digital Library
Term(s) Searched: California and Redwood City
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Appendix K

The U.S. Department of the Interior Threatened and Endangered Species System

California – 309 species

Animal – 129 species

Status	Species
E	Abalone, White North America (West Coast from Point Conception, CA, U.S.A., to Punta Abreojos, Baja California, Mexico) (*Haliotis sorenseni*)
E	Albatross, short-tailed (*Phoebastria (=Diomedea) albatrus*)
T	Beetle, delta green ground (*Elaphrus viridis*)
E	Beetle, Mount Hermon June (*Polyphylla barbata*)
T	Beetle, valley elderberry longhorn (*Desmocerus californicus dimorphus*)
T	Butterfly, bay checkerspot (*Euphydryas editha bayensis*)
E	Butterfly, Behren's silverspot (*Speyeria zerene behrensii*)
E	Butterfly, callippe silverspot (*Speyeria callippe callippe*)
E	Butterfly, El Segundo blue (*Euphilotes battoides allyni*)
E	Butterfly, Lange's metalmark (*Apodemia mormo langei*)
E	Butterfly, lotis blue (*Lycaeides argyrognomon lotis*)
E	Butterfly, mission blue (*Icaricia icarioides missionensis*)
E	Butterfly, Myrtle's silverspot (*Speyeria zerene myrtleae*)
T	Butterfly, Oregon silverspot (*Speyeria zerene hippolyta*)
E	Butterfly, Palos Verdes blue (*Glaucopsyche lygdamus palosverdesensis*)
E	Butterfly, Quino checkerspot (*Euphydryas editha quino (=E. e. wrighti)*)
E	Butterfly, San Bruno elfin (*Callophrys mossii bayensis*)
E	Butterfly, Smith's blue (*Euphilotes enoptes smithi*)
E	Chub, bonytail entire (*Gila elegans*)
E	Chub, Mohave tui (*Gila bicolor mohavensis*)
E	Chub, Owens tui (*Gila bicolor snyderi*)
E	Condor, California U.S.A. only (*Gymnogyps californianus*)
E	Crayfish, Shasta (*Pacifastacus fortis*)
E	Fairy shrimp, Conservancy (*Branchinecta conservatio*)
E	Fairy shrimp, longhorn (*Branchinecta longiantenna*)
E	Fairy shrimp, Riverside (*Streptocephalus woottoni*)
E	Fairy shrimp, San Diego (*Branchinecta sandiegonensis*)
T	Fairy shrimp, vernal pool (*Branchinecta lynchi*)
E	Fly, Delhi Sands flower-loving (*Rhaphiomidas terminatus abdominalis*)
E	Flycatcher, southwestern willow (*Empidonax traillii extimus*)
E	Fox, San Joaquin kit (*Vulpes macrotis mutica*)
E	Fox, San Miguel Island (*Urocyon littoralis littoralis*)
E	Fox, Santa Catalina Island (*Urocyon littoralis catalinae*)
E	Fox, Santa Cruz Island (*Urocyon littoralis santacruzae*)

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Status	Species
E	Fox, Santa Rosa Island (*Urocyon littoralis santarosae*)
T	Frog, California red-legged Entire (*Rana draytonii*)
E	Frog, mountain yellow-legged southern California DPS (*Rana muscosa*)
T	Gnatcatcher, coastal California (*Polioptila californica californica*)
E	Goby, tidewater Entire (*Eucyclogobius newberryi*)
E	Grasshopper, Zayante band-winged (*Trimerotropis infantilis*)
E	Kangaroo rat, Fresno (*Dipodomys nitratoides exilis*)
E	Kangaroo rat, giant (*Dipodomys ingens*)
E	Kangaroo rat, Morro Bay (*Dipodomys heermanni morroensis*)
E	Kangaroo rat, San Bernardino Merriam's (*Dipodomys merriami parvus*)
E	Kangaroo rat, Stephens' (*Dipodomys stephensi (incl. D. cascus)*)
E	Kangaroo rat, Tipton (*Dipodomys nitratoides nitratoides*)
E	Lizard, blunt-nosed leopard (*Gambelia silus*)
T	Lizard, Coachella Valley fringe-toed (*Uma inornata*)
T	Lizard, Island night (*Xantusia riversiana*)
T	Moth, Kern primrose sphinx (*Euproserpinus euterpe*)
E	Mountain beaver, Point Arena (*Aplodontia rufa nigra*)
E	Mouse, Pacific pocket (*Perognathus longimembris pacificus*)
E	Mouse, salt marsh harvest (*Reithrodontomys raviventris*)
T	Murrelet, marbled CA, OR, WA (*Brachyramphus marmoratus*)
T	Otter, southern sea except where EXPN (*Enhydra lutris nereis*)
T	Owl, northern spotted (*Strix occidentalis caurina*)
E	Pikeminnow (=squawfish), Colorado except Salt and Verde R. drainages, AZ (*Ptychocheilus lucius*)
T	Plover, western snowy Pacific coastal pop. (*Charadrius alexandrinus nivosus*)
E	Pupfish, desert (*Cyprinodon macularius*)
E	Pupfish, Owens (*Cyprinodon radiosus*)
E	Rabbit, riparian brush (*Sylvilagus bachmani riparius*)
E	Rail, California clapper (*Rallus longirostris obsoletus*)
E	Rail, light-footed clapper U.S.A. only (*Rallus longirostris levipes*)
E	Rail, Yuma clapper U.S.A. only (*Rallus longirostris yumanensis*)
E	Salamander, California tiger U.S.A. (CA - Santa Barbara County) (*Ambystoma californiense*)
E	Salamander, California tiger U.S.A. (CA - Sonoma County) (*Ambystoma californiense*)
T	Salamander, California tiger U.S.A. (Central CA DPS) (*Ambystoma californiense*)
E	Salamander, desert slender (*Batrachoseps aridus*)
E	Salamander, Santa Cruz long-toed (*Ambystoma macrodactylum croceum*)

Status	Species
T	Salmon, chinook CA Central Valley spring-run (*Oncorhynchus (=Salmo) tshawytscha*)
T	Salmon, chinook CA coastal (*Oncorhynchus (=Salmo) tshawytscha*)
E	Salmon, chinook winter Sacramento R. (*Oncorhynchus (=Salmo) tshawytscha*)
T	Salmon, coho OR, CA pop. (*Oncorhynchus (=Salmo) kisutch*)
E	Salmon, coho central CA coast (*Oncorhynchus (=Salmo) kisutch*)
T	Sea turtle, green except where endangered (*Chelonia mydas*)
E	Sea turtle, leatherback (*Dermochelys coriacea*)
T	Sea turtle, loggerhead (*Caretta caretta*)
T	Sea turtle, olive ridley except where endangered (*Lepidochelys olivacea*)
T	Sea-lion, Steller eastern pop. (*Eumetopias jubatus*)
T	Seal, Guadalupe fur (*Arctocephalus townsendi*)
E	Sheep, Peninsular bighorn Peninsular CA pop. (*Ovis canadensis nelsoni*)
E	Sheep, Sierra Nevada bighorn Sierra Nevada (*Ovis canadensis sierrae*)
E	Shrew, Buena Vista Lake ornate (*Sorex ornatus relictus*)
E	Shrike, San Clemente loggerhead (*Lanius ludovicianus mearnsi*)
E	Shrimp, California freshwater (*Syncaris pacifica*)
E	Skipper, Carson wandering (*Pseudocopaeodes eunus obscurus*)
E	Skipper, Laguna Mountains (*Pyrgus ruralis lagunae*)
T	Smelt, delta (*Hypomesus transpacificus*)
E	Snail, Morro shoulderband (=Banded dune) (*Helminthoglypta walkeriana*)
T	Snake, giant garter (*Thamnophis gigas*)
E	Snake, San Francisco garter (*Thamnophis sirtalis tetrataenia*)
T	Sparrow, San Clemente sage (*Amphispiza belli clementeae*)
T	Steelhead Central Valley CA (*Oncorhynchus (=Salmo) mykiss*)
T	Steelhead central CA coast (*Oncorhynchus (=Salmo) mykiss*)
T	Steelhead northern CA (*Oncorhynchus (=Salmo) mykiss*)
T	Steelhead south central CA coast (*Oncorhynchus (=Salmo) mykiss*)
E	Steelhead southern CA coast (*Oncorhynchus (=Salmo) mykiss*)
E	Stickleback, unarmored threespine (*Gasterosteus aculeatus williamsoni*)
T	Sturgeon, North American green U.S.A. (CA) Southern Distinct Population Segment (*Acipenser medirostris*)
E	Sucker, Lost River (*Deltistes luxatus*)
E	Sucker, Modoc (*Catostomus microps*)
E	Sucker, razorback entire (*Xyrauchen texanus*)
T	Sucker, Santa Ana 3 CA river basins (*Catostomus santaanae*)
E	Sucker, shortnose (*Chasmistes brevirostris*)
E	Tadpole shrimp, vernal pool (*Lepidurus packardi*)
E	Tern, California least (*Sterna antillarum browni*)

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Status	Species
E	Tiger beetle, Ohlone (*Cicindela ohlone*)
E	Toad, arroyo (=arroyo southwestern) (*Bufo californicus (=microscaphus)*)
T	Tortoise, desert U.S.A., except in Sonoran Desert (*Gopherus agassizii*)
T	Towhee, Inyo California (*Pipilo crissalis eremophilus*)
T	Trout, Lahontan cutthroat (*Oncorhynchus clarki henshawi*)
T	Trout, Little Kern golden (*Oncorhynchus aguabonita whitei*)
T	Trout, Paiute cutthroat (*Oncorhynchus clarki seleniris*)
E	Vireo, least Bell's (*Vireo bellii pusillus*)
E	Vole, Amargosa (*Microtus californicus scirpensis*)
E	Whale, blue (*Balaenoptera musculus*)
E	Whale, finback (*Balaenoptera physalus*)
E	Whale, humpback (*Megaptera novaeangliae*)
E	Whale, killer Southern Resident DPS (*Orcinus orca*)
E	Whale, Sei (*Balaenoptera borealis*)
E	Whale, sperm (*Physeter catodon (=macrocephalus)*)
T	Whipsnake (=striped racer), Alameda (*Masticophis lateralis euryxanthus*)
E	Woodrat, riparian (=San Joaquin Valley) (*Neotoma fuscipes riparia*)
T	Bear, grizzly lower 48 States, except where listed as an experimental population or delisted (Ursus arctos horribilis)
E	Jaguar (Panthera onca)
E	Sea-lion, Steller western pop. (Eumetopias jubatus)
T	Trout, bull U.S.A., conterminous, lower 48 states (Salvelinus confluentus)
E	Wolf, gray Lower 48 States, except MN and where EXPN. Mexico. (Canis lupus)
T	Lynx, Canada (Contiguous U.S. DPS) (Lynx canadensis)

Plant- 180 species

Status	Species
E	Allocarya, Calistoga (*Plagiobothrys strictus*)
E	Alopecurus, Sonoma (*Alopecurus aequalis var. sonomensis*)
E	Ambrosia, San Diego (*Ambrosia pumila*)
T	Amole, purple (*Chlorogalum purpureum*)
T	Baccharis, Encinitas (*Baccharis vanessae*)
E	Barberry, island (*Berberis pinnata ssp. insularis*)
E	Barberry, Nevin's (*Berberis nevinii*)
E	Bedstraw, El Dorado (*Galium californicum ssp. sierrae*)
E	Bedstraw, island (*Galium buxifolium*)
E	Bird's beak, palmate-bracted (*Cordylanthus palmatus*)

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Status	Species
E	Bird's-beak, Pennell's (*Cordylanthus tenuis ssp. capillaris*)
E	Bird's-beak, salt marsh (*Cordylanthus maritimus ssp. maritimus*)
E	Bird's-beak, soft (*Cordylanthus mollis ssp. mollis*)
E	Bladderpod, San Bernardino Mountains (*Lesquerella kingii ssp. bernardina*)
T	Bluecurls, Hidden Lake (*Trichostema austromontanum ssp. compactum*)
E	Bluegrass, Napa (*Poa napensis*)
E	Bluegrass, San Bernardino (*Poa atropurpurea*)
T	Brodiaea, Chinese Camp (*Brodiaea pallida*)
T	Brodiaea, thread-leaved (*Brodiaea filifolia*)
E	Broom, San Clemente Island (*Lotus dendroideus ssp. traskiae*)
E	Buckwheat, cushenbury (*Eriogonum ovalifolium var. vineum*)
E	Buckwheat, Ione (incl. Irish Hill) (*Eriogonum apricum (incl. var. prostratum)*)
E	Bush-mallow, San Clemente Island (*Malacothamnus clementinus*)
E	Bush-mallow, Santa Cruz Island (*Malacothamnus fasciculatus var. nesioticus*)
T	Butterweed, Layne's (*Senecio layneae*)
E	Button-celery, San Diego (*Eryngium aristulatum var. parishii*)
E	Cactus, Bakersfield (*Opuntia treleasei*)
E	Ceanothus, coyote (*Ceanothus ferrisae*)
E	Ceanothus, Pine Hill (*Ceanothus roderickii*)
T	Ceanothus, Vail Lake (*Ceanothus ophiochilus*)
E	Checker-mallow, Keck's (*Sidalcea keckii*)
E	Checker-mallow, Kenwood Marsh (*Sidalcea oregana ssp. valida*)
E	Checker-mallow, pedate (*Sidalcea pedata*)
E	Clarkia, Pismo (*Clarkia speciosa ssp. immaculata*)
E	Clarkia, Presidio (*Clarkia franciscana*)
T	Clarkia, Springville (*Clarkia springvillensis*)
E	Clarkia, Vine Hill (*Clarkia imbricata*)
E	Clover, Monterey (*Trifolium trichocalyx*)
E	Clover, showy Indian (*Trifolium amoenum*)
T	Crownbeard, big-leaved (*Verbesina dissita*)
E	Crownscale, San Jacinto Valley (*Atriplex coronata var. notatior*)
T	Cypress, Gowen (*Cupressus goveniana ssp. goveniana*)
E	Cypress, Santa Cruz (*Cupressus abramsiana*)
T	Daisy, Parish's (*Erigeron parishii*)
T	Dudleya, Conejo (*Dudleya abramsii ssp. parva*)
T	Dudleya, marcescent (*Dudleya cymosa ssp. marcescens*)
E	Dudleya, Santa Clara Valley (*Dudleya setchellii*)
T	Dudleya, Santa Cruz Island (*Dudleya nesiotica*)
T	Dudleya, Verity's (*Dudleya verityi*)

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Status	Species
T	Dudleyea, Santa Monica Mountains (*Dudleya cymosa ssp. ovatifolia*)
T	Dwarf-flax, Marin (*Hesperolinon congestum*)
E	Evening-primrose, Antioch Dunes (*Oenothera deltoides ssp. howellii*)
E	Evening-primrose, Eureka Valley (*Oenothera avita ssp. eurekensis*)
T	Evening-primrose, San Benito (*Camissonia benitensis*)
E	Fiddleneck, large-flowered (*Amsinckia grandiflora*)
E	Flannelbush, Mexican (*Fremontodendron mexicanum*)
E	Flannelbush, Pine Hill (*Fremontodendron californicum ssp. decumbens*)
E	Fringepod, Santa Cruz Island (*Thysanocarpus conchuliferus*)
E	Gilia, Hoffmann's slender-flowered (*Gilia tenuiflora ssp. hoffmannii*)
E	Gilia, Monterey (*Gilia tenuiflora ssp. arenaria*)
E	Goldfields, Burke's (*Lasthenia burkei*)
E	Goldfields, Contra Costa (*Lasthenia conjugens*)
T	Grass, Colusa (*Neostapfia colusana*)
E	Grass, Eureka Dune (*Swallenia alexandrae*)
E	Grass, Solano (*Tuctoria mucronata*)
T	Gumplant, Ash Meadows (*Grindelia fraxino-pratensis*)
T	Howellia, water (*Howellia aquatilis*)
E	Indian paintbrush, San Clemente Island (*Castilleja grisea*)
E	Jewelflower, California (*Caulanthus californicus*)
E	Jewelflower, Metcalf Canyon (*Streptanthus albidus ssp. albidus*)
E	Jewelflower, Tiburon (*Streptanthus niger*)
E	Larkspur, Baker's (*Delphinium bakeri*)
E	Larkspur, San Clemente Island (*Delphinium variegatum ssp. kinkiense*)
E	Larkspur, yellow (*Delphinium luteum*)
E	Layia, beach (*Layia carnosa*)
E	Lessingia, San Francisco (*Lessingia germanorum (=L.g. var. germanorum)*)
E	Lily, Pitkin Marsh (*Lilium pardalinum ssp. pitkinense*)
E	Lily, Western (*Lilium occidentale*)
T	Liveforever, Laguna Beach (*Dudleya stolonifera*)
E	Liveforever, Santa Barbara Island (*Dudleya traskiae*)
E	Lupine, clover (*Lupinus tidestromii*)
E	Lupine, Nipomo Mesa (*Lupinus nipomensis*)
E	Malacothrix, island (*Malacothrix squalida*)
E	Malacothrix, Santa Cruz Island (*Malacothrix indecora*)
E	Mallow, Kern (*Eremalche kernensis*)
E	Manzanita, Del Mar (*Arctostaphylos glandulosa ssp. crassifolia*)
T	Manzanita, Ione (*Arctostaphylos myrtifolia*)
T	Manzanita, Morro (*Arctostaphylos morroensis*)

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Status	Species
T	Manzanita, pallid (*Arctostaphylos pallida*)
E	Manzanita, Presidio (*Arctostaphylos hookeri var. ravenii*)
E	Manzanita, Santa Rosa Island (*Arctostaphylos confertiflora*)
T	Mariposa lily, Tiburon (*Calochortus tiburonensis*)
E	Meadowfoam, Butte County (*Limnanthes floccosa ssp. californica*)
E	Meadowfoam, Sebastopol (*Limnanthes vinculans*)
E	Mesa-mint, Otay (*Pogogyne nudiuscula*)
E	Mesa-mint, San Diego (*Pogogyne abramsii*)
E	Milk-vetch, Braunton's (*Astragalus brauntonii*)
E	Milk-vetch, Clara Hunt's (*Astragalus clarianus*)
E	Milk-vetch, Coachella Valley (*Astragalus lentiginosus var. coachellae*)
E	Milk-vetch, coastal dunes (*Astragalus tener var. titi*)
E	Milk-vetch, Cushenbury (*Astragalus albens*)
T	Milk-vetch, Fish Slough (*Astragalus lentiginosus var. piscinensis*)
E	Milk-vetch, Lane Mountain (*Astragalus jaegerianus*)
T	Milk-vetch, Peirson's (*Astragalus magdalenae var. peirsonii*)
E	Milk-vetch, triple-ribbed (*Astragalus tricarinatus*)
E	Milk-vetch, Ventura Marsh (*Astragalus pycnostachyus var. lanosissimus*)
E	Monardella, willowy (*Monardella linoides ssp. viminea*)
E	Morning-glory, Stebbins' (*Calystegia stebbinsii*)
E	Mountain balm, Indian Knob (*Eriodictyon altissimum*)
E	Mountain-mahogany, Catalina Island (*Cercocarpus traskiae*)
E	Mustard, slender-petaled (*Thelypodium stenopetalum*)
E	Navarretia, few-flowered (*Navarretia leucocephala ssp. pauciflora (=N. pauciflora)*)
E	Navarretia, many-flowered (*Navarretia leucocephala ssp. plieantha*)
T	Navarretia, spreading (*Navarretia fossalis*)
E	Niterwort, Amargosa (*Nitrophila mohavensis*)
E	Onion, Munz's (*Allium munzii*)
E	Orcutt grass, California (*Orcuttia californica*)
E	Orcutt grass, hairy (*Orcuttia pilosa*)
E	Orcutt grass, Sacramento (*Orcuttia viscida*)
T	Orcutt grass, San Joaquin (*Orcuttia inaequalis*)
T	Orcutt grass, slender (*Orcuttia tenuis*)
T	Owl's-clover, fleshy (*Castilleja campestris ssp. succulenta*)
E	Oxytheca, cushenbury (*Oxytheca parishii var. goodmaniana*)
T	Paintbrush, ash-grey (*Castilleja cinerea*)
E	Paintbrush, soft-leaved (*Castilleja mollis*)
E	Paintbrush, Tiburon (*Castilleja affinis ssp. neglecta*)

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Status	Species
E	Penny-cress, Kneeland Prairie (*Thlaspi californicum*)
E	Pentachaeta, Lyon's (*Pentachaeta lyonii*)
E	Pentachaeta, white-rayed (*Pentachaeta bellidiflora*)
E	Phacelia, island (*Phacelia insularis ssp. insularis*)
E	Phlox, Yreka (*Phlox hirsuta*)
E	Piperia, Yadon's (*Piperia yadonii*)
E	Polygonum, Scotts Valley (*Polygonum hickmanii*)
E	Potentilla, Hickman's (*Potentilla hickmanii*)
T	Pussypaws, Mariposa (*Calyptridium pulchellum*)
E	Rock-cress, Hoffmann's (*Arabis hoffmannii*)
E	Rock-cress, McDonald's (*Arabis macdonaldiana*)
E	Rockcress, Santa Cruz Island (*Sibara filifolia*)
T	Rush-rose, island (*Helianthemum greenei*)
T	Sandwort, Bear Valley (*Arenaria ursina*)
E	Sandwort, Marsh (*Arenaria paludicola*)
E	Seablite, California (*Suaeda californica*)
E	Sedge, white (*Carex albida*)
E	Spineflower, Ben Lomond (*Chorizanthe pungens var. hartwegiana*)
E	Spineflower, Howell's (*Chorizanthe howellii*)
T	Spineflower, Monterey (*Chorizanthe pungens var. pungens*)
E	Spineflower, Orcutt's (*Chorizanthe orcuttiana*)
E	Spineflower, Robust (incl. Scotts Valley) (*Chorizanthe robusta (incl. vars. robusta and hartwegii)*)
E	Spineflower, slender-horned (*Dodecahema leptoceras*)
E	Spineflower, Sonoma (*Chorizanthe valida*)
T	Spurge, Hoover's (*Chamaesyce hooveri*)
E	Stonecrop, Lake County (*Parvisedum leiocarpum*)
E	Sunburst, Hartweg's golden (*Pseudobahia bahiifolia*)
T	Sunburst, San Joaquin adobe (*Pseudobahia peirsonii*)
E	Sunflower, San Mateo woolly (*Eriophyllum latilobum*)
E	Sunshine, Sonoma (*Blennosperma bakeri*)
E	Taraxacum, California (*Taraxacum californicum*)
E	Tarplant, Gaviota (*Deinandra increscens ssp. villosa*)
T	Tarplant, Otay (*Deinandra (=Hemizonia) conjugens*)
T	Tarplant, Santa Cruz (*Holocarpha macradenia*)
E	Thistle, Chorro Creek bog (*Cirsium fontinale var. obispoense*)
E	Thistle, fountain (*Cirsium fontinale var. fontinale*)
E	Thistle, La Graciosa (*Cirsium loncholepis*)
E	Thistle, Loch Lomond coyote (*Eryngium constancei*)

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Status	Species
E	Thistle, Suisun (*Cirsium hydrophilum var. hydrophilum*)
T	Thornmint, San Diego (*Acanthomintha ilicifolia*)
E	Thornmint, San Mateo (*Acanthomintha obovata ssp. duttonii*)
E	Tuctoria, Greene's (*Tuctoria greenei*)
T	Vervain, Red Hills (*Verbena californica*)
E	Wallflower, Ben Lomond (*Erysimum teretifolium*)
E	Wallflower, Contra Costa (*Erysimum capitatum var. angustatum*)
E	Wallflower, Menzies' (*Erysimum menziesii*)
E	Watercress, Gambel's (*Rorippa gambellii*)
T	Wild-buckwheat, southern mountain (*Eriogonum kennedyi var. austromontanum*)
E	Woodland-star, San Clemente Island (*Lithophragma maximum*)
E	Woolly-star, Santa Ana River (*Eriastrum densifolium ssp. sanctorum*)
E	Wooly-threads, San Joaquin (*Monolopia (=Lembertia) congdonii*)
E	Yerba santa, Lompoc (*Eriodictyon capitatum*)
T	Centaury, spring-loving (Centaurium namophilum)
E	Fritillary, Gentner's (Fritillaria gentneri)

Updated **November 17, 2010**

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Appendix L

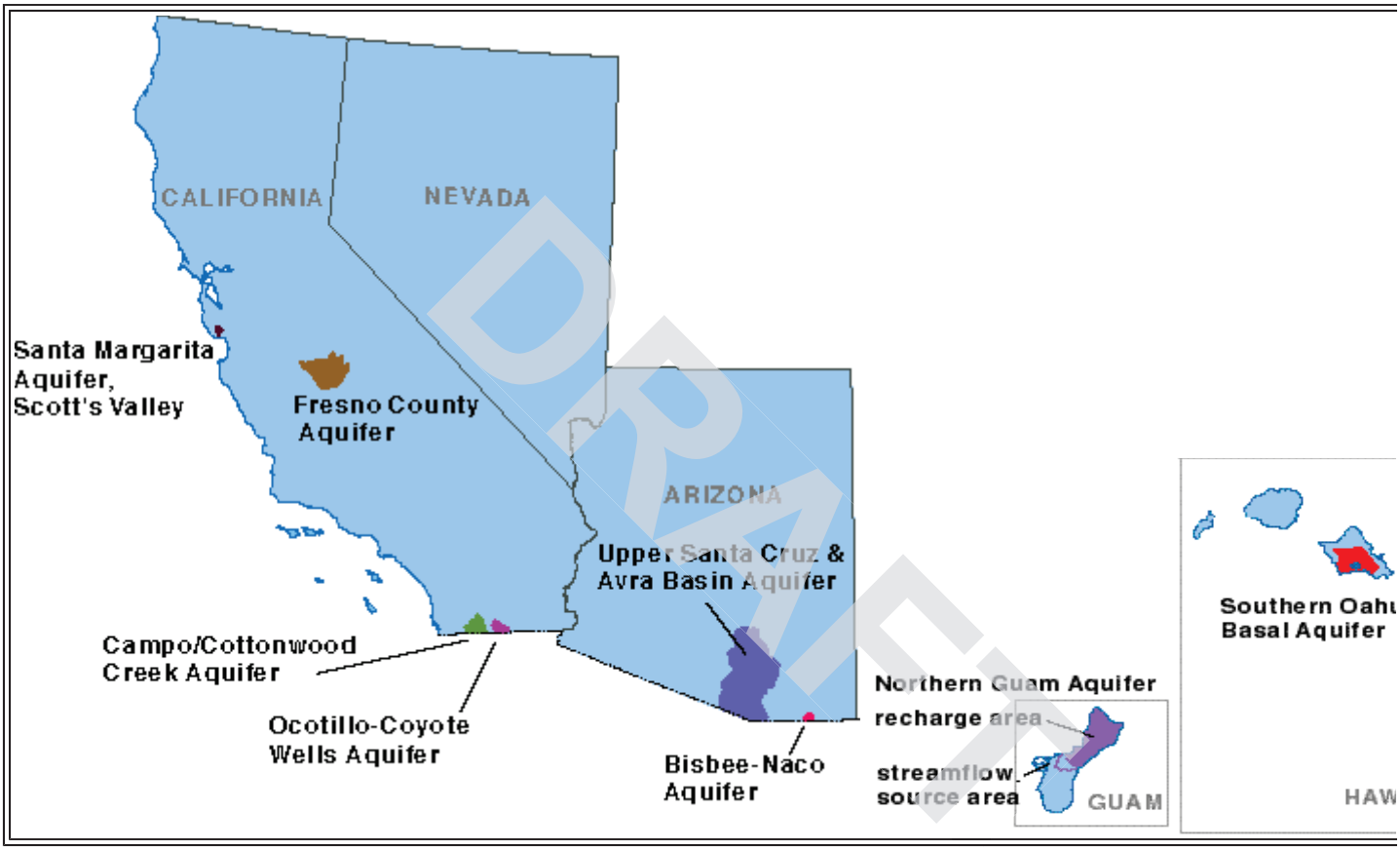
Environmental Protection Agency Office of Water,
Office of Groundwater and Drinking Water
National Summary of Sole Source Aquifer
Designations

U.S. Environmental Protection Agency

Source Water Protection

Designated Sole Source Aquifers in EPA Region IX

Arizona, California, Hawaii, Nevada, Guam, and American Samoa



DESIGNATED SOLE SOURCE AQUIFERS IN REGION IX:

State	Sole Source Aquifer Name	Federal Reg. Cit.
AZ	Upper Santa Cruz & Avra Basin Aquifer	49 FR 2948
AZ	Bisbee-Naco Aquifer	53 FR 38337
CA	Fresno County Aquifer	44 FR 52751
CA	Santa Margarita Aquifer,Scotts Valley	50 FR 2023
CA	Campo/Cottonwood Creek	58 FR 31024
CA	Ocotillo-Coyote Wells Aquifer	61 FR 47752
GU	Northern Guam Aquifer System	43 FR 17867
HI	Southern Oahu Basal Aquifer	52 FR 45496
HI	Molokai Aquifer	59 FR 23063

Return to: Sole Source Aquifer program home page

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APPENDIX M

HUD Environmental Questionnaire

HUD Environmental Questionnaire

	Yes	No
1. Is the subject property located within a designated coastal barrier resource area?		✓
2. Is the subject property located within the 100- or 500-year floodplain?	✓	
3. Are there any known historic preservation issues related to the subject?		✓
4. Is the subject property located within 5 miles of a civil airport or within 15 miles of a military airfield?	✓	
5. Is the project located within 1,000 feet of major highways or busy roads?		✓
6. Is the project located within 3,000 feet of a railroad?	✓	
7. Are industrial facilities handling explosive or fire-prone materials such as liquid propane, gasoline or other storage tanks adjacent to or visible from the project site?		✓
8. Are there any wetlands on the subject site?		✓
9. Are any repairs or modifications to the project likely to affect any listed or proposed endangered or threatened species or critical habitats?		✓
10. Is the subject property located on a sole source aquifer?		✓
11. Are there any known landfills within ½-mile of the site?		✓
12. Are any buildings located in the fall zone of any high voltage power transmission or other towers?		✓
13. Do any of the required or proposed repairs change the foot print of the building(s)?	✓	

	Yes	No
Does the community participate in the National Flood Insurance Program (NFIP)?	✓	
Is Flood Insurance required for this property?	✓	

NFIP Map Panel #: 060325-0011B Date: 5/17/1982

Flood Zone: Zone A and Zone B

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Appendix N

HUD Form 4128 and Environmental Field Data Sheets

Environmental Assessment and Compliance Findings for the Related Laws

U.S. Department of Housing and Urban Development

1. Project Number
HUD Program **LEAN 232 NC**
2. Date Received

RMS: HI-00487R

Findings and Recommendations are to be prepared **after** the environmental analysis is completed. Complete items 1 through 15 as appropriate for all projects. For projects requiring an environmental assessment, also complete Parts A and B. For projects categorically excluded under 24 CFR 50.20, complete Part A. Attach notes and source documentation that support the findings.

3. Project Name and Location (Street, City, County, State)

Proposed Lathrop Post-Acute Recovery Center
134 Maple Street
Redwood City, San Mateo County, California

4. Applicant Name and Address (Street, City, State, Zip Code), and Phone

Wells Fargo Bank, N.A.
13115 NE 4th Street, Suite 250
Vancouver, WA 98684 360-253-5275

5. ☐ Multifamily ☑ Elderly ☐ Other
If Other, explain:
Skilled nursing facility

6. Number of
114 beds Dwelling Units **1+1** Buildings
5+1 Stories **1.313** Acres

7. Displacement ☑ No ☐ Yes
If Yes, explain:

8. ☑ New Construction ☐ Rehabilitation ☐ Refinance ☐ Other
If Other, explain:

9. Has an environmental report (Federal, State, or local) been used in completing this form? ☐ No ☑ Yes
If Yes, identify: **A Phase 1 ESA was completed by Dominion Due Diligence Group and Federal and State databases were compiled by Environmental FirstSearch.**

10. Planning Findings. Is the project in compliance or conformance with the following plans?

Local Zoning	☑ Yes	☐ No	☐ Not Applicable
Coastal Zone	☐ Yes	☐ No	☑ Not Applicable
Air Quality (SIP)	☑ Yes	☐ No	☐ Not Applicable

Explain any "No" answer:

11. Environmental Finding (check one)
☐ Categorical exclusion is made in accordance with § 50.20 **or**
☐ Environmental Assessment and a **Finding of No Significant Impact** (FONSI) is made in accordance with § 50.33 or
☐ Environmental Assessment and a **Finding of Significant Impact** is made, and an Environmental Impact Statement is required in accordance with §§ 50.33(d) and 50.41.

Are there any unresolved conflicts concerning the use of the site?
☐ No ☑ Yes (explain): **On-site FEMA 100- and 500-year floodplain**
Unacceptable noise

☐ Project is recommended for approval (List any conditions and requirements) ☐ Project is recommended for rejection (State reasons)

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12. Preparer (signature)	Date	13. Supervisor (signature)	Date

14. Comments by Environmental Clearance Officer (ECO) (required for projects over 200 lots/units)

ECO (signature)	Date
X	

15. Comments (if any) by HUD Approving Official

HUD Approving Official (signature)	Date
X	

Part A. Compliance Findings for §50.4 Related Laws and Authorities

§ 50.4 Laws and Authorities	Project is in Compliance Yes	Project is in Compliance No	Source Documentation and Requirements for Approval
16. Coastal Barrier Resources	✓		According to information accessed at http://www.fema.gov/business/nfip/cbrs/cbrs.shtm the subject property is not located within a coastal barrier.
17. Floodplain Management (24 CFR Part 55)		✓	According to FEMA Flood Insurance Rate Map (FIRM) #060325-0011B, dated May 17, 1982, the subject property drainage ditch is located within in Zone A, designated as an area within the 100-year flood zone and the remaining portion of the subject property is located in Zone B, designated as an area within the 500-year flood zone. Continued on page 8 of 8.
18. Historic Preservation (36 CFR Part 800)	✓		See Appendix J regarding correspondence with the State Historic Preservation Office.
19. Noise Abatement (24 CFR Part 51 Subpart B)		✓	See Appendix O for the completed HUD Noise Worksheets.
20. Hazardous Operations (24 CFR Part 51 Subpart C)	✓		Site observations and the Environmental FirstSearch Report of state and federally regulated properties.
21. Airport Hazards (24 CFR Part 51 Subpart D)	✓		There are no military airports within 2 ½ miles of the subject property or civil airports within 3,000 feet of the subject property.
22. Protection of Wetlands (E. O. 11990)	✓		A wetland delineation/determination has not been performed at the subject property; however, according to the National Wetlands Inventory map accessed at http://www.fws.gov/wetlands/Data/Mapper.html and visual observations, there are not suspected to be any wetland areas on the subject property.
23. Toxic Chemicals & Radioactive Materials(§ 50.3(i))	✓		Site observations and the Environmental FirstSearch Report of state and federally regulated properties.
24. Other § 50.4 authorities (e.g., endangered species, sole source aquifers, farmlands protection, flood, insurance, environmental justice)	✓		See HUD Worksheets

Part B. Environmental/Program Factors

Factors	Anticipated Impact/Deficiencies None	Minor	Major	Source Documentation and Requirements for Approval
25 Unique Natural Features and Areas	✓			Visual Observations - See HUD worksheets
26. Site Suitability, Access, and Compatibility with Surrounding Development	✓			Visual Observations - See HUD worksheets
27. Soil Stability, Erosion, and Drainage	✓			Visual Observations - See HUD worksheets
28. Nuisances and Hazards (natural and built)	✓			Visual Observations - See HUD worksheets
29. Water Supply / Sanitary Sewers	✓			The current site structures are connected to municipally supplied water and sewer.
30. Solid Waste Disposal	✓			Based on visual observations of vicinity properties, the subject property will be sufficiently serviced in regards to solid waste disposal.
31. Schools, Parks, Recreation, and Social Services	✓			According to Beverly Johnson, Director at the San Mateo County Human Services Agency, social services will be available for future residents.
32. Emergency Health Care, Fire and Police Services	✓			According to Chief Louis A. Cavarruviaz at the Redwood City Police Department, police services will be available for future residents. According to Susan Nemes at the Redwood City Fire Department, fire and emergency services will be available for future residents.
33. Commercial / Retail and Transportation	✓			Visual Observations - See HUD worksheets
34. Other	✓			No other property concerns were identified during the site inspection.

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Sample Field Notes Checklist

Project Number	HUD Program
	LEAN 232 - New Construction

Project Name: **Proposed Lathrop Post-Acute Recovery Center**

Location (street, city, county/State, & zip code)

134 Maple Street, Redwood City, San Mateo County, California 94063

Number of Dwelling Units	Project site is in a location described as
114 beds	☑ Central city ☐ Suburban ☐ Infill urban development
☐ Refinance ☑ New construction ☐ Rehabilitation	☐ In developing rural area ☐ In undeveloped area

Note to Reader: An Environmental Assessment (EA) is a concise public document that a Federal agency must prepare in order to comply with the National Environmental Policy Act (NEPA) and the related Federal environmental laws and authorities. The EA must support decision making process and provide a clear rationale, justification, and documentation for ratings assigned.

Instructions

It is recommended that this checklist be used by HUD staff who prepare the Environmental Assessment (EA; form HUD-4128). It will constitute full documentation for many factors on the EA, and partial documentation for others. It will avoid narrative reports and expedite the environmental review process. This checklist, which is a slightly revised version of Appendix C of Handbook 1390.2, should be used pending revision of Handbook 1390.2.

The number for each checksheet topic is the number that appears on form HUD-4128. Also, each checklist title/heading is followed by a reference to where the topic appears in the current Handbook 1390.2.

Before the site visit, review the Phase I and all background information submitted with the application (if applicable). During the site visit, the preparers of form HUD-4128 are to: (i) answer all relevant questions on this checklist; (ii) use the spaces provided for comments to include supplemental information as well as to record any recommended mitigation measures or requirements for project approval; (iii) key your answers to the relevant questions (using additional sheets of paper to provide more detailed information); and (iv) use the spaces provided for source documentation to cite the information source used (e.g., title of a technical report, map, or special study; site inspection/field observation; name and location of the qualified data source(s) that provided the information, for example, the local planning agency, the local housing and/or community development agency, the State environmental protection agency, the State Historic Preservation Officer, or other qualified data source.)

Preparers are to obtain and use, as appropriate, any environmental report (Federal, State, or local) that may have already been prepared for the property or area in which the property is located.

Several different types of maps will be useful in completing the review, such as the project plan or plot map, a location map showing major features and facilities in the vicinity, the USGS topographic map and FEMA flood map for the site area, and zoning/land use maps. ***Many of the conditions can and should be recorded directly on the project plan.*** Distances to major features and facilities (e.g., schools and fire stations) and a description of the surrounding area are examples. The plan can then be referenced as "source documentation" on form HUD-4128.

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9. Environmental Report

List the Federal, State, or local agencies contacted to obtain their existing environmental reports and other data for the HUD environmental review for the proposed project.

A database of Federal and State agencies was compiled by Environmental FirstSearch for this investigation. The federal listings searched included NPL, NPL De-listed, RCRA-TSD, RCRA, CERCLIS, CORRACTS, Brownfields and ERNS. The state listings searched included UST, LUST, SHWS, Brownfields, VCP, and SWL.

List the major reports obtained. (attach the report(s) or otherwise list the title, author, publication date)

The Environmental FirstSearch Report is included as Appendix E.

10. Planning Findings

Is the project in compliance or conformance with the local zoning?

☑ Yes ☐ No ☐ Not Applicable If No or Not Applicable, explain.

According to the San Mateo County Planning and Building Department, the subject property is zoned IBT (Industrial Business Transition) District and the proposed structure will be in compliance with the local zoning ordinance.

Is the project located within a coastal management zone (CZM)?

☐ Yes ☑ No ☐ Not Applicable

If your answer is Yes, the State Coastal Zone Management (CZM) Agency must make a finding that the project is consistent with the approved State CZM program.

Is the State's finding attached to this checksheet?

☐ Yes ☐ No ☑ Not Applicable

Is the project in compliance with the air quality State Implementation Plan (SIP)?

☑ Yes ☐ No ☐ Not Applicable

Comments:
According to the California Coastal Commission, San Mateo County is not located within a Coastal Management Zone. Based on the nature of the proposed development at the subject property, the site is not suspected to affect the air quality of the surrounding areas.

Source documentation:
Visual observations and http://www.coastal.ca.gov/

Are there any unresolved conflicts concerning the use of the site?
☐ Yes ☑ No If your answer is Yes, briefly explain:

16. Coastal Barrier Resources
Is the project located within a coastal barrier designated on a current FEMA flood map or Department of Interior coastal barrier resources map?
☐ Yes ☑ No If your answer is Yes, the law prohibits Federal funding of projects in designated coastal barriers.

17. Flood Management (24 CFR Part 55) (see CF 3 and 4 of Handbook 1390.2)
Is the project located within a floodplain designated on a current FEMA flood map?
☑ Yes ☐ No Identify FEMA flood map used to make this finding:
Community Name and Number: **City of Redwood, #060325**
Map Panel Number and Date of Map Panel: **0011B, dated May 17, 1982**
If your answer is Yes, use § 55.12 and the floodplain management decisionmaking process (§ 55.20) to comply with 24 CFR Part 55.
Comments:
According to FEMA Flood Insurance Rate Map (FIRM) #060325-0011B, dated May 17, 1982, the subject property drainage ditch is located within in Zone A, designated as an area within the 100-year flood zone and the remaining portion of the subject property is located in Zone B, designated as an area within the 500-year flood zone. Continued on page 8 of 8.
Source documentation: (attach § 55.20 analysis)
FEMA Flood Insurance Rate Maps (FIRM) #060325-0011B, dated May 17, 1982

18. Historic Preservation (see CF 2 of Handbook 1390.2)
Has the SHPO been notified of the project and requested to provide comments?
☐ Yes ☑ No ☐ Not Applicable
Is the property listed on or eligible for listing on the National Register of Historic Places?
☐ Yes ☑ No
Is the property located within or directly adjacent to an historic district?
☐ Yes ☑ No
Does the property's area of potential effects include an historic district or property?
☐ Yes ☑ No
If your answer is Yes to any of the above questions, consult with the State Historic Preservation Officer (SHPO) and comply with 36 CFR part 800.
Has the SHPO been or is being advised of HUD's finding?
☐ Yes ☑ No ☐ Not Applicable
Comments:
The structures were constructed in approximately 1955, 1950-1962 and 1974 and are not suspected to qualify as historic properties. The subject property is not listed, and is not suspected to be eligible to be listed, in the National Register of Historic Places. In addition, the subject property is not located within a historic district of the City of Redwood City or San Mateo County. The State of California Office of Historic Preservation requires that SHPO determination correspondence originate from the local HUD office.

Source documentation:
The National Register of Historic Places for Redwood City, California are located in Appendix J.

19. Noise Abatement (see CF 1 of Handbook 1390.2)
Is the project located near a major noise source, i.e., civil airports (within 5 miles), military airfields (15 miles), major highways or busy roads (within 1000 feet), or railroads (within 3000 feet)?
☑ Yes ☐ No If your answer is Yes, comply with 24 CFR 51, Subpart B which requires a noise assessment for proposed new construction. Use adopted DNL contours if the noise source is an airport.
Comments:
The subject property is located in the vicinity of the Caltrain and Union Pacific railroad and the San Carlos Airport and Moffett Field. There are no major roadways within 1,000 feet of the subject property. The projected DNL value for all noise sources is 87.8 dB, which is considered "unacceptable." Continued on page 8 of 8.

Source documentation: (attach NAG worksheets)
See Appendix O for the completed HUD Noise Worksheets

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20. Hazardous Industrial Operations (see CF 5 of Handbook 1390.2)

Are industrial facilities handling explosive or fire-prone materials such as liquid propane, gasoline or other storage tanks adjacent to or visible from the project site?

☐ Yes ☑ No If your answer is Yes, use HUD Hazards Guide and comply with 24 CFR Part 51, Subpart C.

Comments:

21. Airport Hazards (see CF 5 of Handbook 1390.2)

Is the project within 3,000 feet from the end of a runway at a civil airport?

☐ Yes ☑ No

Is the project within 2-1/2 miles from the end of a runway at a military airfield?

☐ Yes ☑ No If your answer is Yes to either of the above questions, comply with 24 CFR Part 51, Subpart D.

Comments: **There are no military airports within 2 ½ miles of the subject property or civil airports within 3,000 feet of the subject property.**

Source documentation:
www.aeroplanner.com was accessed for information on vicinity airports.

22. Protection of Wetlands (E.O. 11990) (see CF 3 and 4 of Handbook 1390.2)

Are there drainage ways, streams, rivers, or coastlines on or near the site?

☐ Yes ☑ No

Are there ponds, marshes, bogs, swamps or other wetlands on or near the site?

☐ Yes ☑ No

For projects proposing new construction and/or filling, the following applies:

Is the project located within a wetland designated on a National Wetlands Inventory map of the Department of the Interior (DOI)?

☐ Yes ☑ No If your answer is Yes, E.O. 11990, Protection of Wetlands, discourages Federal funding of new construction or filling in wetlands and compliance is required with the wetlands decisionmaking process (§ 55.20 of 24 CFR Part 55. Use proposed Part 55 published in the Federal Register on January 1, 1990 for wetland procedures).

Comments: **A wetland delineation/determination has not been performed at the subject property; however, according to the National Wetlands Inventory map accessed at http://www.fws.gov/wetlands/Data/Mapper.html and visual observations, there are not suspected to be any wetland areas on the subject property.**

Source documentation: (attach § 55.20 analysis for new construction and/or filling)
USFWS National Wetlands Inventory (NWI) map accessed at http://www.fws.gov/wetlands/Data/Mapper.html and visual observations

23. Toxic Chemicals and Radioactive Materials (see CF 5 of Handbook 1390.2)

Has a Phase I (ASTM) Report been submitted and reviewed?

☑ Yes ☐ No If your answer is No, is a Phase I (ASTM) report needed? ☐ Yes ☐ No ☑ Not Applicable

Are there issues that require a special/specific Phase II report before completing the environmental assessment?

☐ Yes ☑ No

Is the project site near an industry disposing of chemicals or hazardous wastes?

☐ Yes ☑ No

Is the site listed on an EPA Superfund National Priorities or CERCLA, or equivalent State list?

☐ Yes ☑ No

Is the site located within 3,000 feet of a toxic or solid waste landfill site?

☐ Yes ☑ No

Does the site have an underground storage tank?

☐ Yes ☑ No

If your answer is Yes to any of the above questions, use current techniques by qualified professionals to undertake investigations determined necessary and comply with § 50.3(i).

Are there any unresolved concerns that could lead to HUD being determined to be a Potential Responsible Party (PRP)?

☐ Yes ☑ No

Comments:
The subject property, identified as Chub's Auto Repair, is listed in the Environmental FirstSearch Report twice (a duplicate record) as a Closed LUST facility and once as a UST facility. D3G reviewed the Hydraulic Lift Sampling Results produced by ASE on December 21, 1994. ASE stated that a hydraulic lift was removed from the automobile repair shop in August 1994 because the cylinder was leaking. D3G reviewed a previous Phase I ESA produced by TRC on July 23, 2007 for the western portion of the subject property located at APN 053147010. TRC reviewed reports associated with two (2) previous underground storage tanks (USTs). Chub's Auto Report is further discussed in Sections 5.1.1 and 5.6, the ASE Hydraulic Lift Sampling Result Report is further discussed in Section 5.6 and the previously removed USTs are further discussed in Sections 4.8, 5.1.1 and 5.6.

Source documentation: (attach Phase I (ASTM) Report)
The Phase 1 Environmental Site Assessment was completed by D3G in accordance with ASTM E 1527-05 guidelines and HUD protocols.

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24. Other

a. Endangered Species (see EF 3.4 of Handbook 1390.2)

Has the Department of Interior list of Endangered Species and Critical Habitats been reviewed?

☑ Yes ☐ No

Is the project likely to affect any listed or proposed endangered or threatened species or critical habitats?

☐ Yes ☑ No ☐ Not Applicable If your answer is Yes, compliance is required with Section 7 of the Endangered Species Act, which mandates consultation with the Fish and Wildlife Service in order to preserve the species.

Comments:

The U.S. Department of the Interior Endangered Species list was reviewed. Based on the developed nature of the subject property, none of the listed species are suspected to inhabit the subject property.

Source documentation:

The U.S. Department of the Interior Threatened and Endangered Species System for California is located in Appendix K of this report.

b. Sole Source aquifers

Will the proposed project affect a sole source or other aquifer?

☐ Yes ☑ No

Comments

According to an EPA Groundwater and Drinking Water publication, the subject property is not serviced or supplied by a protected aquifer system. A copy of the EPA Groundwater and Drinking Water publication is provided in Appendix L.

Source documentation:

Environmental Protection Agency Office of Water, Office of Groundwater and Drinking Water National Summary of Sole Source Aquifer Designations. This document is accessible at http://www.epa.gov.

c. Farmlands Protection (see EF 3.3 of Handbook 1390.2)

If the site or area is presently being farmed, does the project conform with the Farmland Protection Policy Act and HUD policy memo?

☐ Yes ☑ No If your answer is Yes, compliance is required with 7 CFR Part 658, Department of Agriculture regulations implementing the Act.

Comments:

The subject property consists of commercially developed land.

Source documentation:

According to visual observations

d. Flood Insurance

Is the building located or to be located within a Special Flood Hazard Area identified on a current Flood Insurance Rate Map (FIRM)?

☑ Yes ☐ No If your answer is Yes, flood insurance protection is required for buildings located or to be located within a Special Flood Hazard Area as a condition of approval of the project. In addition, compliance with § 55.12 and the floodplain management decisionmaking process (§ 55.20) is required (refer to item #17 above). Document the map used to determine Special Flood Hazard Area in above item #17 pertaining to community name and number, map panel number and date of map panel.

e. Environmental Justice

Is the project located in a predominantly minority and low-income neighborhood?

☐ Yes ☑ No

Does the project site or neighborhood suffer from disproportionately adverse environmental effects on minority and low-income populations relative to the community-at-large?

☐ Yes ☑ No If your answer is Yes, compliance is required with E.O. 12898, Federal Actions to Address Environmental Justice.

Comments:

Based on visual observations, the subject property is not located in a minority or low-income neighborhood.

Source documentation: **Visual observations**

25. Unique Natural Features and Areas (see EF 3.2 of Handbook 1390.2)

Is the site near natural features (i.e., bluffs or cliffs) or near public or private scenic areas?

☐ Yes ☑ No

Are other natural resources visible on site or in vicinity? Will any such resources be adversely affected or will they adversely affect the project?

☐ Yes ☑ No

Comments:

The subject property is not located near natural features or near public or private scenic areas. In addition, no other natural resources are visible on-site or in the vicinity.

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26. Site Suitability, Access, and Compatibility with Surrounding Development (see EF 1.1 and 1.3 of Handbook 1390.2)

Has the site been used as a dump, sanitary landfill or mine waste disposal area? ☐ Yes ☑ No
Is there paved access to the site? ☑ Yes ☐ No
Are there other unusual conditions on site? ☐ Yes ☑ No

Is there indication of:	Yes	No		Yes	No
distressed vegetation	☐	☑	oil/chemical spills	☐	☑
waste material/containers	☐	☑	abandoned machinery, cars, refrigerators, etc.	☐	☑
soil staining, pools of liquid	☐	☑	transformers, fill/vent pipes, pipelines, drainage structures	☐	☑
loose/empty drums, barrels	☐	☑			

Is the project compatible with surrounding area in terms of:

	Yes	No		Yes	No
Land use	☑	☐	Building type (low/high-rise)	☑	☐
Height, bulk, mass	☑	☐	Building density	☑	☐

Will the project be unduly influenced by:

	Yes	No		Yes	No
Building deterioration	☐	☑	Transition of land uses	☐	☑
Postponed maintenance	☐	☑	Incompatible land uses	☐	☑
Obsolete public facilities	☐	☑	Inadequate off-street parking	☐	☑

Are there air pollution generators nearby which would adversely affect the site:

	Yes	No		Yes	No
Heavy industry	☐	☑	Large parking facilities (1000 or more cars)	☐	☑
Incinerators	☐	☑	Heavy travelled highway (6 or more lanes)	☐	☑
Power generating plants	☐	☑	Oil refineries	☐	☑
Cement plants	☐	☑	Other(specify)	☐	☑

Comments:

Source documentation:
Visual observations

27. Soil Stability, Erosion, and Drainage (see EF 1.2 of Handbook 1390.2)

Slopes: ☐ Not Applicable ☐ Steep ☐ Moderate ☑ Slight

	Yes	No	
Is there evidence of slope erosion or unstable slope conditions on or near the site?	☐	☑	
Is there evidence of ground subsidence, high water table, or other unusual conditions on the site?	☐	☑	
Is there any visible evidence of soil problems (foundations cracking or settling, basement flooding, etc.) in the neighborhood of the site?	☐	☑	
Have soil studies or borings been made for the project site or the area?	☐	☐	☑ Unknown
Do the soil studies or borings indicate marginal or unsatisfactory soil conditions?	☐	☐	☑ Unknown
Is there indication of cross-lot runoff, swales, drainage flows on the property?	☐	☑	
Are there visual indications of filled ground?	☐	☑	
If your answer is Yes, was a 79(g) report/analysis submitted?	☐	☐	☑ Not Applicable
Are there active rills and gullies on site?	☐	☑	
If the site is not to be served by a municipal waste water disposal system, has a report of the soil conditions suitable for on-site septic systems been submitted?	☐	☐	☑ Not Applicable
Is a soils report (other than structural) needed?	☐	☑	
Are structural borings or a dynamic soil analysis/geological study needed?	☐	☑	

Comments:
There is no evidence of soil problems or unstable conditions on the subject property. The topography of the site slopes to the north.

Source documentation:
Visual observations

DRAFT

28. Nuisances and Hazards (see EF 1.3 and 1.4 of Handbook 1390.2)

Will the project be affected by natural hazards:

	Yes	No		Yes	No
Faults, fracture	☐	☑	Fire hazard materials	☐	☑
Cliffs, bluffs, crevices	☐	☑	Wind/sand storm concerns	☐	☑
Slope-failures from rains	☐	☑	Poisonous plants, insects, animals	☐	☑
Unprotected water bodies	☐	☑	Hazardous terrain features	☐	☑

Will the project be affected by built hazards and nuisances:

	Yes	No		Yes	No
Hazardous street	☐	☑	Inadequate screened drainage catchments	☐	☑
Dangerous intersection	☐	☑	Hazards in vacant lots	☐	☑
Through traffic	☐	☑	Chemical tank-car terminals	☐	☑
Inadequate separation of pedestrian/vehicle traffic	☐	☑	Other hazardous chemical storage	☐	☑
Children's play areas located next to freeway or other high traffic way	☐	☑	High-pressure gas or liquid petroleum transmission lines on site	☐	☑
Inadequate street lighting	☐	☑	Overhead transmission lines	☐	☑
Quarries or other excavations	☐	☑	Hazardous cargo transportation routes	☐	☑
Dumps/sanitary landfills or mining	☐	☑	Oil or gas wells	☐	☑
Railroad crossing	☐	☑	Industrial operations	☐	☑

Will the project be affected by nuisances:

	Yes	No		Yes	No
Gas, smoke, fumes	☐	☑	Unsightly land uses	☐	☑
Odors	☐	☑	Front-lawn parking	☐	☑
Vibration	☐	☑	Abandoned vehicle	☐	☑
Glare from parking area	☐	☑	Vermin infestation	☐	☑
Vacant/boarded-up buildings	☐	☑	Industrial nuisances	☐	☑
			Other (specify)	☐	☑

Comments:
No "nuisances" or "hazards" were observed at the subject property or surrounding properties during the subject property inspection.

Source documentation:
Visual observations

29. Water, Supply, Sanitary Sewers, and Solid Waste Disposal (see EF 2.1, 2.2, and 2.4 of Handbook 1390.2)

Is the site served by an adequate and acceptable:

water supply
☑ Yes ☐ No ☑ Municipal ☐ Private

sanitary sewers and waste water disposal systems
☑ Yes ☐ No ☑ Municipal ☐ Private

trash collection and solid waste disposal
☑ Yes ☐ No ☐ Municipal ☑ Private

If the water supply is non-municipal, has an acceptable "system" been approved by appropriate authorities and agencies?
☐ Yes ☐ No ☑ Not Applicable

If the sanitary sewers and waste water disposal systems are non-municipal, has an acceptable "system" been approved by appropriate authorities and agencies?
☐ Yes ☐ No ☑ Not Applicable

Comments:
The current site structures are connected to municipally supplied water and sewer. In addition, the subject property is sufficiently serviced in regards to solid waste disposal.

Source documentation:
Visual observations

DRAFT

31. Schools, Parks, Recreation, and Social Services (see U/EF 4, 5, and 6 of Handbook 1390.2)

Will the local school system have the capability to service the potential school age children from the project?

☑ Yes ☐ No

Are parks and play spaces available on site or nearby?

☑ Yes ☐ No

Will social services be available on site or nearby for residents of the proposed project?

☑ Yes ☐ No

Comments:

According to Beverly Johnson, Director at the San Mateo County Human Services Agency, social services will be available for future residents.

Source documentation:

Beverly Johnson, Director at the San Mateo County Human Services Agency - 650-802-7555

32. Emergency Health Care, Fire and Police Services (see U/EF 7, 8, and 9 of Handbook 1390.2)

Are emergency health care providers located within reasonable proximity to the proposed project?

☑ Yes ☐ No Approximate response time: **< 10 minutes**

Are police services located within reasonable proximity to the proposed project?

☑ Yes ☐ No Approximate response time: **< 10 minutes**

Is fire fighting protection ☑ municipal ☐ volunteer adequate and equipped to service the project?

☑ Yes ☐ No Approximate/estimated response time: **4 minutes**

Comments:

According to Chief Louis A. Cavarruviaz at the Redwood City Police Department, police services will be available for future residents.
According to Susan Nemes at the Redwood City Fire Department, fire and emergency services will be available for future residents.

Source documentation:

Chief Louis A. Cavarruviaz at the Redwood City Police Department - 650-780-7122
Susan Nemes at the Redwood City Fire Department - 650-780-7402

33. Commercial/Retail and Transportation (see U/EF 10 and 11 of Handbook 1390.2)

Are commercial/retail shopping services nearby?

☑ Yes ☐ No

Is the project accessible to employment, shopping and services by

☑ public transportation or ☐ private vehicle?

Is adequate public transportation available from the project to these facilities?

☑ Yes ☐ No

Are the approaches to the project convenient, safe and attractive?

☑ Yes ☐ No

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11. Conditions and Requirements for Approval

Are mitigation measures required?

☑ Yes ☐ No

If your answer is Yes, list and describe:

#17 Continued From Page 2 of 8:

If the proposed development directly or indirectly impacts the identified floodplain areas, compliance with Executive Order 11988, "Floodplain Management," is required by either obtaining a Conditional Letter of Map Amendment (CLOMA) or Conditional Letter of Map Revision (CLOMR) or by implementing procedures contained in 24 CFR Part 55.20 (8-step Process). This 8-Step Process is intended to address the requirements of Executive Order (EO) 11988, Floodplain Management, as well as the requirements of Federal Register 24 CFR Parts 50, 55 and 58.

In addition, per HUD Chapter 9 Guidelines, all "critical actions" as defined in 24 CFR 55.2(b)(2), must comply with the requirements of 24 CFR 55.20(e) – "…All critical actions in the 500-year floodplain shall be designed and built at or above the 100-year floodplain (in the case of new construction) and modified to include: 1. Preparation of and participation in an early warning system; 2. An emergency evacuation and relo

#19 Continued From Page 2 of 8:

The projected DNL value for all noise sources is 87.8 dB. Pursuant to 24 CFR 51.101(a)(3), the composite DNL 87.8 dB is "unacceptable". The requirements set out in Section 51.104(a) are designated to ensure that interior levels do not exceed the established 45 dB level. D3G recommends that appropriate noise mitigation measures be undertaken.

DRAFT

Brief Description of the Project:

The subject property consists of three (3) parcels totaling approximately 1.313 acres of land. The subject property is currently developed with one (1) two-story vacant office/showroom/warehouse building (formerly Marcelli Lighting) constructed circa 1974, one (1) one-story auto repair building (formerly Chubs Auto Repair) constructed circa 1955, and one (1) one-story vacant office building constructed circa 1950-1962. In addition, the subject property is improved upon by the Redwood Creek (a concrete-lined culvert), an exterior storage yard, landscaped regions and asphalt parking areas. The vacant two-story office/showroom/warehouse building and auto repair building will be demolished and a five-story, 114-bed skilled nursing facility will be constructed. The vacant office building will remain at the subject property (the building's future use has not been determined). The subject property is serviced by electricity, natural gas, and municipally supplied water and sewer.

Field Inspection on (date) **December 21, 2010** By (signature) Chad M. Mueller

DRAFT

Appendix O

HUD Noise Worksheets

RE: Noise Issues at the Proposed Lathrop Post-Acute Recovery Center
134 Maple Street
Redwood City, San Mateo County, California

Dominion Due Diligence Group has calculated the estimated noise characteristics of the Proposed Lathrop Post-Acute Recovery Center located at 134 Maple Street in Redwood City, San Mateo County, California.

The San Carlos Airport and Moffett Field are located 2.2 and 10.0 miles, respectively, from the subject site. The subject property is located well outside of the noise contour lines for these airports. Therefore, these airports are not suspected to significantly affect the noise characteristics of the subject property.

There are no major roads (4 lanes or more) within 1,000 feet of the subject property.

Caltrain and Union Pacific railroad lines are located within 3,000 feet of the subject property. The noise value was calculated for the railroads and the DNL value for railroads is 87.8 decibels (dB).

The projected DNL value for all noise sources is 87.8 dB. Pursuant to 24 CFR 51.101(a)(3), the composite DNL 87.8 dB is "unacceptable". The requirements set out in Section 51.104(a) are designated to ensure that interior levels do not exceed the established 45 dB level. D3G recommends that appropriate noise mitigation measures be undertaken.

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Worksheet A
Site Evaluation

Noise Assessment Guidelines

Site Location
134 Maple Street

Program
HUD LEAN 232 **New Construction**

Project Name
Proposed Lathrop Post-Acute Recovery Center

Locality
Redwood City, San Mateo County, California

Date of Construction/Property Description
proposed 114-bed skilled nursing facility

File Number

Sponsors Name	Phone
Wells Fargo Bank, N.A.	360-253-5275
Street Address	**City, State**
201 NE Park Plaza Drive, Suite 274	Vancouver, Washington

	Acceptability Category	DNL	Predicted for Operations in Year	10 Year Projections
1. Roadway Noise	< 65	< 65	N/A	N/A
2. Aircraft Noise	< 65	< 65	2007/2010	
3. Railway Noise	> 75	87.8	2011	
Value of DNL for all noise sources: (see page 3 for combination procedure)		87.8		87.8

Final Site Evaluation (circle one)

Acceptable

Normally Unacceptable

Unacceptable

Signature Katie Carle Date 12/28/2010

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Worksheet B
Aircraft Noise

Noise Assessment Guidelines

List all civil airports within 5 miles and military airports within 15 miles of the subject property:

1 San Carlos Airport (located approximately 2.2 miles from the subject property)
2 Moffet Field NAS (located approximately 10.0 miles from the subject property)
3
4

Necessary Information:	Airport 1	Airport 2	Airport 3	Airport 4
1. Are DNL, NEF, or CNR contours available? (Yes/No)	Yes	Yes		
2. Any supersonic aircraft operations? (Yes/No)	No	Yes		
3. Estimating approximate contours from Figure 3				
a. number of nighttime jet operations	*	*		
b. number of daytime jet operations	*	*		
c. effective number of operations (10 times a + b)	*	*		
d. distance A for 65 dB	*	*		
70 dB	*	*		
75 dB	*	*		
e. distance B for 65 dB	*	*		
70 dB	*	*		
75 dB	*	*		
4. Estimating DNL from table 2:				
a. distance from 65 dB contour to flight path, D^1	*	*		
b. distance from NAL to flight path, D^2	*	*		
c. D^2 divided by D^1	*	*		
d. DNL	< 65	< 60		
5. Operations projected for what year?	2007	2010		
6. Total DNL from all airports			< 65	

Signature Katie Carle Date 12/28/2010

*According to Christopher St. Peter (650-573-3717), Airport Business Manager of San Carlos Airport, the subject property is located well outside the 65 DNL contour line for the airport.
*According to the noise contour map for the Moffett Field NAS, the subject property is located well outside of the 60 DNL contour line for the airport.

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Roadway Noise

List all major roads (4 lanes or more) within 1,000 feet of the subject property:

There are no major roads (4 lanes or more) within 1,000 feet of the subject property.

1 _____

2 _____

3 _____

4 _____

Necessary Information:

	Road 1	Road 2	Road 3	Road 4
1. Distance in feet from the NAL to the edge of the road				
a. nearest lane				
b. farthest lane				
c. average (effective distance)				
2. Distance to stop sign				
3. Road gradient in percent				
4. Average speed in mph				
a. Automobiles				
b. Heavy trucks - uphill				
c. Heavy trucks - downhill				
5. 24 hour average number of automobiles and medium trucks in both directions (ADT)				
a. Automobiles				
b. Medium trucks				
c. Effective (a + (10xb)				
6. 24 hour average number of heavy trucks				
a. uphill				
b. downhill				
c. total				
7. Fraction of nighttime traffic (10 p.m. to 7 a.m.)				
8. Traffic projected for what year?				

DRAFT

Adjustments for Automobile Traffic

	9 Stop and go Table 3		10 Average Speed Table 4		11 Night time Table 5		12 Auto ADT (line 5c)		13 Adjusted Auto ADT		14 DNL Wrkchrt 1		15 Barrier Attenuation		16 Partial DNL
Road No. 1		X		X		X		=				-		=	
Road No. 2		X		X		X		=				-		=	
Road No. 3		X		X		X		=				-		=	
Road No. 4		X		X		X		=				-		=	

Adjustments for Heavy Truck Traffic

	17 Gradient Table 6		18 Average Speed Table 7		19 Truck ADT 2		20		21		22 Stop and go Table 8		23 Night time Table 5		24 Adjusted Truck ADT		25 DNL Wrkchrt 2		26 Barrier Attenuation		27 Partial DNL
Uphill		X		X		=															
Road 1										X		X		=				-		=	
Downhill		X		X		=															
Uphill		X		X		=															
Road 2										X		X		=				-		=	
Downhill		X		X		=															
Uphill		X		X		=															
Road 3										X		X		=				-		=	
Downhill		X		X		=															
Uphill		X		X		=															
Road 4										X		X		=				-		=	
Downhill		X		X		=															

Combined Automobile & Heavy Truck DNL

Road 1		Road 2		Road 3		Road 4		Total DNL for All Roads	
								< 65	

Signature Katie Carle

Date 12/28/2010

DRAFT

Roadway Noise - 10 Year Projection

List all major roads (4 lanes or more) within 1,000 feet of the subject property:

There are no major roads (4 lanes or more) within 1,000 feet of the subject property.

1 _____

2 _____

3 _____

4 _____

Necessary Information:

	Road 1	Road 2	Road 3	Road 4
1. Distance in feet from the NAL to the edge of the road				
a. nearest lane				
b. farthest lane				
c. average (effective distance)				
2. Distance to stop sign				
3. Road gradient in percent				
4. Average speed in mph				
a. Automobiles				
b. Heavy trucks - uphill				
c. Heavy trucks - downhill				
5. 24 hour average number of automobiles and medium trucks in both directions (ADT)				
a. Automobiles				
b. Medium trucks				
c. Effective (a + (10xb)				
6. 24 hour average number of heavy trucks				
a. uphill				
b. downhill				
c. total				
7. Fraction of nighttime traffic (10 p.m. to 7 a.m.)				
8. Traffic projected for what year?				

DRAFT

Roadway Noise - 10 Year Projection

Adjustments for Automobile Traffic

	9 Stop and go Table 3		10 Average Speed Table 4		11 Night time Table 5		12 Auto ADT (line 5c)		13 Adjusted Auto ADT		14 DNL Wrkchrt 1		15 Barrier Attenuation		16 Partial DNL
Road No. 1		X		X		X		=				-		=	
Road No. 2		X		X		X		=				-		=	
Road No. 3		X		X		X		=				-		=	
Road No. 4		X		X		X		=				-		=	

Adjustments for Heavy Truck Traffic

	17 Gradient Table 6		18 Average Speed Table 7		19 Truck ADT 2		20		21		22 Stop and go Table 8		23 Night time Table 5		24 Adjusted Truck ADT		25 DNL Wrkchrt 2		26 Barrier Attenuation		27 Partial DNL
Uphill		X		X		=															
Road 1										X		X		=		-		=			
Downhill		X		X		=															
Uphill		X		X		=															
Road 2										X		X		=		-		=			
Downhill		X		X		=															
Uphill		X		X		=															
Road 3										X		X		=		-		=			
Downhill		X		X		=															
Uphill		X		X		=															
Road 4										X		X		=		-		=			
Downhill		X		X		=															

Combined Automobile & Heavy Truck DNL

Road 1		Road 2		Road 3		Road 4		Total DNL for All Roads	
								< 65	

Signature Katie Carle

Date 12/28/2010

DRAFT

List all railways within 3,000 feet of the subject property:

1 Caltrain
2 Union Pacific
3 Union Pacific
4

Necessary Information:

	Railway 1	Railway 2	Railway 3	Railway 4
1. Distance in feet from the NAL to the railway track	40	40	1000	
2. Number of trains in 24 hours				
a. diesel	90	4	6	
b. electrified				
3. Fraction of operations occurring at night (10 p.m. - 7 a.m.)	20%	100%	100%	
4. Number of diesel locomotives per train	1	2	2	
5. Number of rail cars per train:				
a. diesel trains	5	50	50	
b. electrified trains				
6. Average train speed	30	30	10	
7. Is track welded or bolted?	Welded	Welded	Welded	
8. Is the site opposite a section of tracks between whistle stops?	Yes	Yes	Yes	

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**Train count information for Caltrain and Union Pacific were obtained from Rick Degman, Manager of Rail Operations for Caltrain (degmanr@samtrans.com, 650-508-7722) and Stephen Coleman with Caltrain Engineering (colemans@samtrans.com). According to Mr. Degman, Amtrak operates Caltrain service on their behalf and Union Pacific operates freight trains at variable times during the night. Train speeds ranged from 5-79 miles per hour (mph), so a speed of 30 mph was utilized.
*Train counts for Union Pacific were obtained from the Federal Railroad Administration's Office of Safety Analysis website accessed at http://safetydata.fra.dot.gov/officeofsafety/. Distances were obtained using Google Earth and site plan provided by Fong and Chan Architects dated April 16, 2010.

Adjustments for Diesel Locomotives

	9 No. of locomotives 2		10 Average Speed Table 9		11 Horns (enter 10)		12 Night time Table 5		13 No. of Trains (line 2a)		14 Adjusted No. of Operations		15 DNL Workchart 3		16 Barrier Attenuation		17 Partial DNL
Rail No. 1	0.5	X	1.00	X	10.0	X	1.19	X	90	=	536		87.0	-	0	=	87.0
Rail No. 2	1.0	X	1.00	X	10.0	X	2.34	X	4	=	94		79.5	-	0	=	79.5
Rail No. 3	1.0	X	3.00	X	10.0	X	2.34	X	6	=	421		65.5	-	0	=	65.5
Rail No. 4		X		X		X		X		=				-		=	

Adjustments for Railway Cars or Rapid Transit Trains

	18 Horns on electric trains (enter 100)		19 No. of cars 50		20 Average Speed Table 10		21 Bolted Rails (enter 4)		22 Night time Table 5		23 No. of Trains (line 2a or 2b)		24 Adjusted No. of Operations		25 DNL Workchart		26 Barrier Attenuation		Partial DNL
Rail No. 1	1.0	X	0.10	X	1.00	X	1.0	X	1.19	X	90	=	10.7		58.5	-	0	=	58.5
Rail No. 2	1.0	X	1.00	X	1.00	X	1.0	X	2.34	X	4	=	9.4		57.5	-	0	=	57.5
Rail No. 3	1.0	X	1.00	X	0.11	X	1.0	X	2.34	X	6	=	1.5		33.0	-	0	=	33.0
Rail No. 4		X		X		X		X		X		=				-		=	

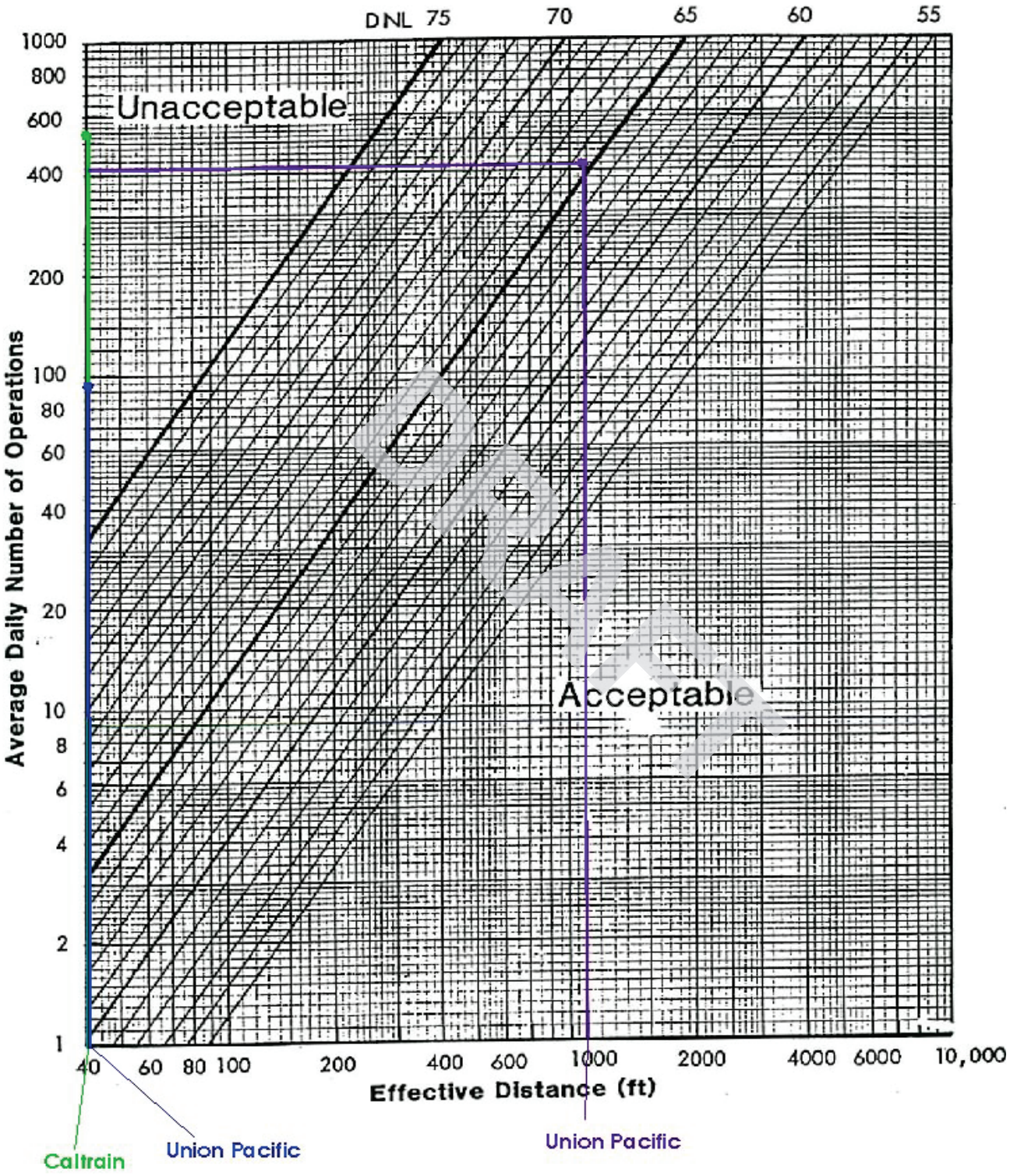
Combined Locomotive & Railway Car DNL

Railway 1	87.0	Railway 2	79.5	Railway 3	65.5	Railway 4		Total DNL for All Railways	87.8

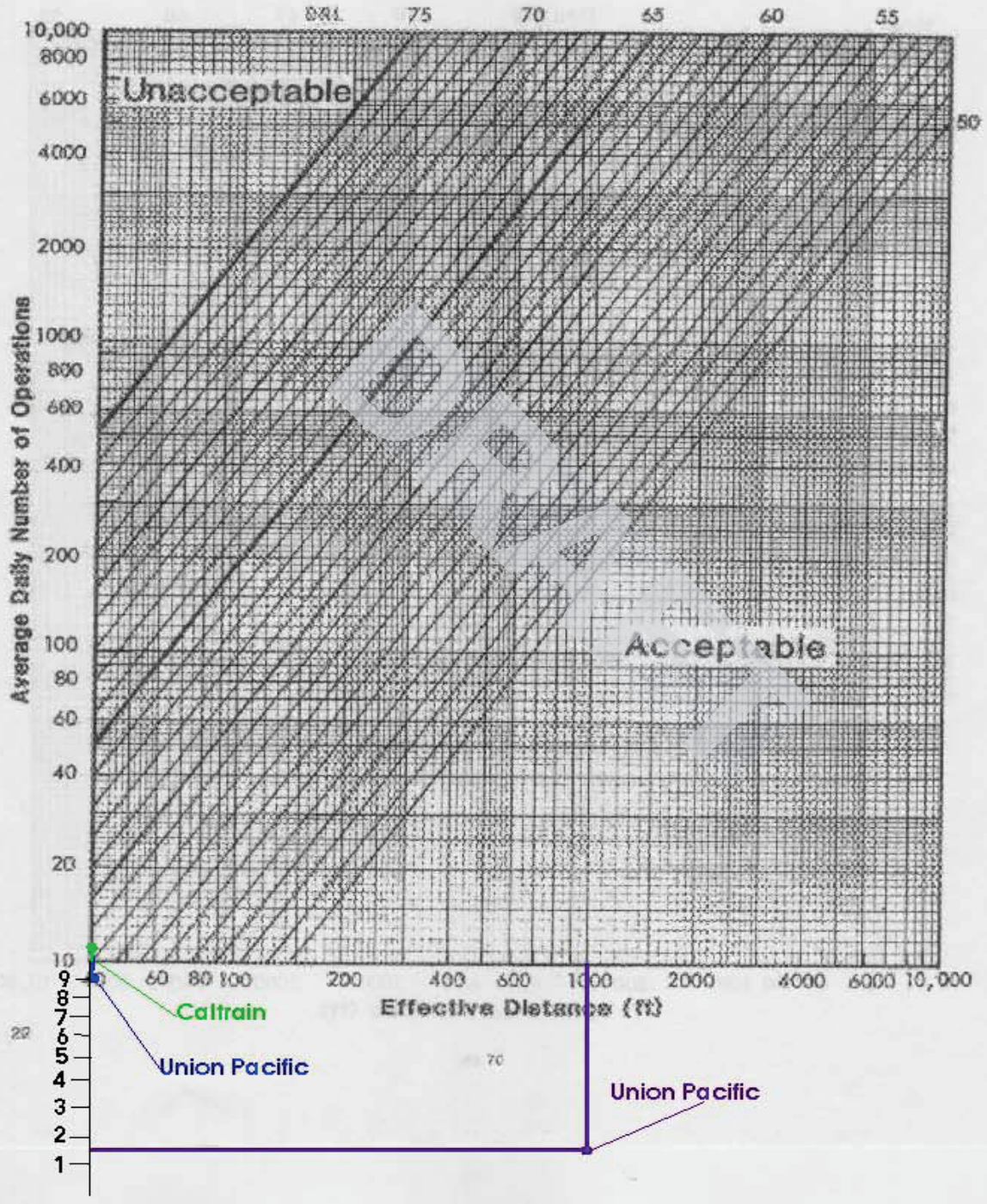
Signature Katia Carle Date 12/28/2010

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Workchart 3
Railroads - Diesel Locomotives



Workchart 4
Railroads - Cars and Rapid Transit



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Appendix P

Previous Phase I ESA produced by TRC

TRC

Phase I Environmental Site Assessment

134 Maple Street

Redwood City, California

This report has been prepared for:

Mr. Louis Deziel

101 Seminary Drive, Menlo Park, California 94025

July 23, 2007
Project No. 1819-2A/152253

for

Stason I. Foster, P.E.
Senior Project Engineer

Leonardo Alvarez, P.G., C.E.G.
Senior Principal Geologist
Quality Assurance Reviewer

REGISTERED GEOLOGIST
L. ALVAREZ
No. 595
Certified Engineering
GEOLOGIST
EXP 4/30/08
STATE OF CALIFORNIA

405 Clyde Avenue, Mountain View, California 94043-2209
Main: 650.967.2365 Fax: 650.967.2785
E-mail: www.trcsolutions.com

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FIGURE 1 — VICINITY MAP
FIGURE 2 — SITE PLAN

APPENDIX A — TERMS AND CONDITIONS
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PHASE I ENVIRONMENTAL SITE ASSESSMENT

134 MAPLE STREET

REDWOOD CITY, CALIFORNIA

1.0 INTRODUCTION

1.1 Purpose

This Phase I environmental site assessment was performed for Mr. Louis Deziel, who we understand is considering the purchase and redevelopment of the site shown on Figures 1 and 2. The development of a 5-story, skilled nursing facility is planned.

The purpose of this study was to strive to document recognized environmental conditions at the site related to current and historic use of hazardous substances and petroleum products. The term "recognized environmental conditions" means the presence or likely presence of hazardous substances or petroleum products on a property under conditions that indicate a significant release or significant threat of a release into the ground, ground water, or surface water.

1.2 Scope of Work

As requested, the scope of work for this study was performed in general accordance with the American Society for Testing and Materials (ASTM) Designation E 1527-05 as outlined in our agreement dated January 10, 2007. The scope of work included the following tasks.

- Reconnaissance of the site and limited drive-by survey of adjacent properties for readily observable indications of current or historic activities that have or could significantly impact the site.
- Review of readily available topographic maps and reports to evaluate local hydrogeologic conditions including anticipated ground water depth and flow direction.
- Review of readily available documents, maps, and aerial photographs, and interviews with knowledgeable persons to evaluate past land uses.
- Acquisition and review of a regulatory agency database report to evaluate potential impacts to the site from reported contamination incidents at nearby facilities.
- Review of available regulatory agency files to obtain information about the use and storage of hazardous materials at the site.

Our scope of services did not include sampling or analysis of on-site building materials, air, soil, or ground water. The limitations of this Phase I environmental site assessment are presented in Section 7; the terms and conditions of our agreement are presented in Appendix A. This work was performed under the oversight of Leonardo Alvarez, P.G., C.E.G., who meets the ASTM E 1527-05 qualifications.

2.0 SITE RECONNAISSANCE

2.1 Site Location and Ownership

The site is located at 134 Maple Street in Redwood City, in a mixed commercial and residential area. It is bounded by Maple Street to the west, railroad tracks and commercial businesses to the northeast, and a commercial property to the southeast. Redwood Creek, an open concrete-lined channel, bisects the southwestern portion of the site. The site location and ownership information is shown in Table 1.

Table 1. Site Information

Site Address	APN	Approximate Parcel Size	Site Owner	Approximate Square Footage of Building (s)
134 Maple Street	053-147-010	29,000 sq. ft.	Nicholas Marcelli	3,000

2.2 Topographic Features and Hydrogeology

Based on U.S. Geological Survey (USGS) topographic maps, the site's elevation is approximately 15 feet above mean sea level. Topography in the vicinity of the site slopes gently to the north toward the San Francisco Bay. Although we have not reviewed site-specific ground water data, based on our experience in the area, the shallow water-bearing zone likely is encountered at depths of approximately 10 to 15 feet; ground water beneath the site likely flows to the north.

2.3 Site Visit

To observe current site conditions, our representative, environmental engineer Stason I. Foster, P.E., visited the site on July 17, 2007 and was accompanied by Mr. Louis Deziel, who plans to purchase the site.

At the time of our visit, the site was developed with an unoccupied, single-story commercial building. Based on a conversation with Mr. Deziel, as well as signs on the building, the building was most recently occupied by Marcelli Lighting. The interior was mostly vacant and consisted of a former lighting fixture showroom and sales counter, an office area, a restroom and a warehouse area with a loft. An automobile was stored in the warehouse. Empty shelving was present within the warehouse and loft areas.

Exterior areas of the site consisted of an asphalt paved parking area on the northern portion of the site and a mostly unpaved, fenced storage yard on the southern portion of the site. A semi-truck trailer and steel shipping container (both empty), a truck and car, and a few pieces of miscellaneous equipment were present within the storage yard. Small stockpiles of gravel, soil, and brick (a few cubic yards in size) also were present.

Redwood Creek (an open, concrete-lined channel) was observed to bisect the southwestern portion of the site. The portion of the site on the southwestern side of the creek was observed to be landscaped with small shrubs and trees.

Additional observed site features are listed in Table 2.

Table 2. Additional Readily Observable Site Features

Site Features			Comments
Heating/Ventilation/Air Conditioning System	☒ Natural Gas and/or Electrical ☐ Fuel Oil		
Potable Water Supply	☒ Municipal	☐ On-Site Well	
Sewage Disposal Syst.	☒ POTW	☐ On-Site Septic	
Transformers	☐ Present ☒ PG&E	☐ Not Observed ☐ Privately Owned	Pad Mounted. No indications of leakage noted.
Other Features	☐ Aboveground Storage Tanks ☐ Agricultural Wells ☐ Air Emission Control Systems ☐ Boilers ☐ Burning Areas ☐ Chemical Mixing Areas ☐ Chemical/HazMat Storage Areas ☐ Clean Rooms ☐ Drainage Ditches ☐ Dry Wells ☐ Elevators ☐ Emergency Generators ☐ Equipment Maintenance Areas ☐ Garbage Disposal Areas ☐ High Power Transmission Lines ☐ Hoods and Ducting ☐ Hydraulic Lifts ☐ Odors ☐ Petroleum Pipelines ☐ Petroleum Wells ☐ Pits, Ponds or Lagoons ☐ Pools of Liquid ☐ Railroad Lines ☐ Row Crops or Orchards ☐ Stains or Corrosion ☒ Stockpiles of Soil or Debris ☐ Stressed Vegetation ☐ Sumps, Floor Drains or Clarifiers ☐ Surface Water Features ☐ Underground Storage Tanks ☐ Vehicle Maintenance Areas ☐ Vehicle Wash Areas ☐ Waste Water Generation or Treatment Systems ☐ Other Wells		As discussed above

Note: An unchecked box does not warrant that these features are not present on-site; it only states that these features were not readily observed during our site visit.

2.4 Site Vicinity Drive-By Survey

To evaluate adjacent land use, we performed a limited drive-by survey. Our observations are presented in Table 3.

Table 3. Adjacent Properties

Property Use	Direction from Site	Observations
Commercial	Northeast	Cook's Auto Repair and Rountree Plumbing and Heating (RPH)
Commercial	Southeast	Chub's Auto Repair (unoccupied)
Residential	West/Northwest	Franklin Street Apartments

2.5 Interviews with Site Owner and Occupants

During our study, we contacted Mr. Don Wright, the site owner's representative and real estate broker. To obtain general information regarding past and current site usage, an environmental questionnaire was provided to Mr. Wright and he was asked to forward it to the site owner for completion. The questionnaire was not returned to us, as of the date of this report.

3.0 USER PROVIDED INFORMATION

3.1 Environmental Liens, Specialized Knowledge, Commonly Known Information and Purchase Price

The ASTM standard defines the User as the party seeking to use a Phase I environmental site assessment to evaluate the environmental condition of the site. For the purpose of this Phase I environmental site assessment, the User is Mr. Louis Deziel. Per the ASTM standard, it is the User's responsibility to communicate certain information to the environmental professional (TRC). This information consists of the following:

- Specialized knowledge or experience that is material to recognized environmental conditions in connection with the site.
- Commonly known or reasonably ascertainable information within the local community about the property that is material to recognized environmental conditions in connection with the property.
- Knowledge of any environmental liens or activity and use limitations (AULs) filed under federal, tribal, state, or local law.
- In a transaction involving the purchase of real estate, the User must consider the relationship of the purchase price of the property to the fair market value of the property if the property were not affected by hazardous substances. If there is a discrepancy between the purchase price and fair market value, this information should be provided.

It is our understanding that Mr. Louis Deziel is not aware of any of the above items.

3.2 Previous Environmental Reports

To further evaluate the site history, we reviewed and relied upon the information presented in the following reports that were obtained from Mr. Louis Deziel. Copies of the reports are attached in Appendix E.

Applied Science and Engineering, Inc. September 28, 1994. *Laboratory Results, Soil Sampling, 134 Maple Street, Redwood City California.*

Applied Science and Engineering, Inc. November 21, 1994. *Laboratory Results, Stockpile Re-Sampling, 134 Maple Street, Redwood City California.*

The above reports document activities and present laboratory results associated with the removal of two underground storage tanks (USTs) from the site. In September 1994, a 580-gallon gasoline UST and a 1,000-gallon diesel UST, as well as a fuel dispense and below ground piping, were removed from a location near the southern corner of the on-site building. The USTs were reported to be in good condition. Soil samples were collected from beneath the USTs and dispenser, and from stockpiled soil. The samples were analyzed for total gasoline and diesel range petroleum hydrocarbons (TPHg and TPHd, respectively), and benzene, toluene, ethylbenzene and xylenes (BTEX). TPHd at 30 parts per million [ppm] was detected in the sample collected beneath the dispenser. Toluene, ethylbenzene and xylenes were additionally detected in the stockpile soil samples at up to 0.0088, 0.0058 and 0.027 ppm, respectively. The stockpiled soil was subsequently aerated on-site and re-sampled; no BTEX compounds were detected in the samples collected after aeration. The soil was subsequently used on-site to backfill the excavation. The reports indicate that the work was performed under oversight from the County of San Mateo Department of Health Services (CSMDHS) and that the CSMDHS closed the site after reviewing the laboratory results.

4.0 HISTORICAL REVIEW

The ASTM standard requires that all obvious uses of the subject property be identified from the present, back to the property's obvious first developed use, or back to 1940, whichever is earlier. Review of historical sources at less than approximately 5-year intervals is not required by this standard.

4.1 Photograph and Map Review

To evaluate the site history, we reviewed:

- Aaerial photographs (dated 1946, 1956, 1965, 1974, 1982, 1993 and 1998) from Environmental Data Resources, Inc. (EDR) in Milford, Connecticut.
- USGS 15-minute and 7.5-minute topographic maps (dated 1899, 1902, 1943, 1947, 1948, 1953 and 1961).
- Historic Sanborn fire insurance maps (dated 1884, 1888, 1891, 1897, 1907, 1919, 1950, 1962 and 1968) obtained from EDR

The above maps and photographs commonly provide historical information regarding a site including land uses and changes in development over time. Copies of these maps and photographs are presented in Appendix B. The following is a summary of our observations for the site and site vicinity. Note that each of the topographic maps show the site to be located within a developed area of Redwood City. No specific on-site features are depicted; thus, these maps are not discussed below.

4.1.1 Site

1884 though 1907: The 1884 Sanborn map shows the site to be developed with a commercial building occupied by the Redwood City Flour Mill. The 1888, 1891 and 1897 Sanborn maps show the building to be occupied by the W.J. Bunns Feed Mill; office and grain warehouse uses are depicted. Cullen Company Grain Warehouse is depicted as the building occupant on the 1907 Sanborn map. A steam boiler is shown within the building on each of the maps.

1919 though 1965: On the 1919 Sanborn map, the on-site building is noted to be used for feed and fuel storage. The 1950 Sanborn map shows the building to have been expanded to include wood, coal and hay storage areas and a store; Ridgeway Feed & Fuel is noted as the building occupant. Similar site use is depicted on the 1962 Sanborn map; Palmer Supply Company is noted as the occupant. The aerial photographs dated from 1943 to 1965 appear to show similar on-site development.

1968 through 1974: On the 1968 Sanborn map, the site is shown to be vacant. The 1974 aerial photograph appears to show a portion of the original flour mill/grain warehouse building (or its foundation) to remain on-site; the wood, coal and hay storage structures appear to have been removed.

1982 through 1998: On the aerial photographs dated from 1982 to 1998, the current on-site building appears to be present. Miscellaneous, unidentifiable objects appear to be present within the storage yard area on the southern portion of the site.

4.1.2 Site Vicinity

Based on the Sanborn maps and aerial photographs, the immediate site vicinity appears to have consisted mainly of widely spaced dwellings and undeveloped land during the late 1800s and early 1900s. Railroad tracks are shown to border the site to the northeast and a few commercial buildings are shown to the north. An increase in commercial development and corresponding decrease in residential and undeveloped property are apparent by the 1940s. Subsequent maps and photographs show further increases in mainly commercial development.

4.2 City Directories

To provide additional information pertaining to past site occupants, a city directory search report was obtained from Environmental Data Resources, Inc. City directories dated between 1981 and 2000 were reviewed and indicate that Marcelli Lighting occupied the site during that period. A copy of the city directory report is attached in Appendix C.

5.0 REGULATORY RECORDS

5.1 City and County Agencies File Review

To obtain information regarding past site uses and hazardous materials usage and storage, we reviewed readily available information at the Redwood City Building Department (RCBD) and the County of San Mateo Health Services Agency (CSMHSA) pertaining to the site address. Some of the information reviewed for the site (APN 053-147-010) at the RCBD was listed under the address of 160 Maple Street, which appears to have been a former site address. The information made available to us is summarized in Table 4.

Table 4. Available File Review Information

Agency	Date	Entity	Remarks
RCBD	1966	Owner: J.M. Ridgeway	Letter from fire marshal noting dilapidated condition of on-site building. Demolition was recommended.
RCBD	1966	Owner: J.M. Ridgeway	Permit to demolish a warehouse building.
RCBD	1978 and 1979	Marcelli Electric	Building plans, permits and other correspondence associated with the construction of a showroom and warehouse building for Marcelli Electric. The current site use was listed as being a vacant lot.
RCBD	1986	Marcelli Electric	Plans and other documents associated with a proposed wall along the adjacent railroad tracks. General construction yard and storage of equipment and materials is noted. A site plan shows the current on-site building as being occupied by the Marcelli Lighting store. The UST area and dispenser (as discussed in Section 3.2) also are depicted.
CSMHSA	1994	Nick Marcelli/Marcelli Lighting	Permit and other documents associated with the removal of two USTs that were reportedly installed in 1979.
CSMHSA	1994	Nick Marcelli	Closure letter from the CSMHSA indicating that no further action associated with the USTs is required.
CSMHSA	1996 and 1997	Five Star Development	Hazardous waste generator inspection reports indicating the generation of waste oil (~2 gal/month) and "small amounts" of thinner and sludge. The business type is listed as "construction".
CSMHSA	1996 and 2004	Nick Marcelli dba Five Star Development	Facility information sheets indicating occupancy by Five Star Development. A 2004 inspection report indicates that the facility closed.

In addition to the items listed above, Building Department files contained various documents, applications and correspondence dated between 1973 and 1974 associated with a proposal by Robert Pierce of Waterproof Chemicals, Inc., to construct a building on-site. The building was to be used by Waterproof Chemicals for blending and bottling of solvents and detergents. Based on the information reviewed, the Planning Department application was withdrawn and the building does not appear to have been constructed.

5.2 Regulatory Agency Database Report

During this study, a regulatory agency database report was obtained and reviewed to help establish whether contamination incidents have been reported in the site vicinity. A list of the database sources reviewed, a detailed description of the sources, and a radius map indicating the location of the reported facilities relative to the project site are presented in Appendix D. Nick Marcelli is listed at the site address on the HAZNET and San Mateo County Business Inventory databases. The HAZNET data is extracted from the copies of hazardous waste

manifests received each year by the Department of Toxic Substances Control; this listing indicates that empty containers and unspecified oil-containing wastes were disposed from the site. The San Mateo County Business Inventory database lists the site as an underground storage tank (UST) facility and indicates that less than 27 gallons per year of hazardous waste is generated.

There were no reported nearby hazardous materials spills or releases with a potential to significantly impact the site. The potential for site impact was evaluated based on information in the database records regarding the type of release, current case status, and distance and direction from the site.

6.0 CONCLUSIONS

6.1 Historical Summary

Based on the information reviewed during this study, the site was developed by 1884 with a flour mill. Historic Sanborn maps noted feed mill and grain warehouse uses between 1888 and 1907. From about 1919 to the mid-1960s, the site was used as a feed and fuel supply facility; storage areas for wood, coal and hay were present. The on-site structures appear to have been demolished in 1966. During the late 1970s, the current on-site building was constructed and occupied by Marcelli Electric until about 2004. Marcelli Electric (aka Marcelli Lighting) used the building for lighting showroom and warehouse purposes. The fenced area on the southern portion of the site appears to have been used as contractor (Nick Marcelli dba Five Star Development) storage yard for equipment and materials. The building is currently unoccupied.

6.2 Chemical Storage and Use

Except for gasoline and diesel fuel, no information was found indicating that significant quantities of hazardous materials historically have been used or stored at the site. Information from the CSMHSA noted that hazardous wastes generated at the site included waste oil (approximately 2 gallons per month) and "small amounts" of thinner and sludge. No indication of spills was noted.

As discussed in Section 3.2, gasoline and diesel were previously stored in two USTs that were removed in 1994. A low concentration of TPHd (30 ppm) was detected in soil beneath the fuel dispenser. This concentration does not appear to pose a significant threat to human health or the environment. A closure letter dated October 4, 1994 was issued by CSMHSA indicating that no further action associated with the USTs is required.

The historic Sanborn maps dated from 1884 to 1907 depict a steam boiler within an on-site building. More modern boilers were sometimes powered by fuel oil stored in USTs; however, during the late-1800/early-1900 time period, coal was the most likely fuel source.

6.3 Rail Lines

Railroad tracks are present adjacent to the site. Assorted chemicals historically have been used for dust suppression and weed control along rail lines, and impacted soil near railroad tracks is sometimes present. The tracks are not located on-site; thus, the potential for on-site soil to have been significantly impacted appears low. If a higher degree of confidence is desired, consideration should be given to evaluating on-site soil quality.

6.4 Asbestos

Due to the age of the on-site building, asbestos-containing materials (ACMs) may be present. If demolition, renovation, or re-roofing of the building is under consideration, an asbestos survey must be conducted under National Emissions Standards for Hazardous Air Pollutants (NESHAP) guidelines. In addition, NESHAP guidelines require that all potentially friable ACM be removed prior to building demolition or renovation that may disturb the ACM.

6.5 Lead-Based Paint

In 1978, the Consumer Product Safety Commission banned the use of lead as an additive in paint. Currently, the U.S. EPA and U.S. Department of Housing and Urban Development are proposing additional lead-based paint regulations. Based on the age of the building, lead-based paint may be present. If lead-based paint is still bonded to the building materials, its removal is not required prior to demolition. It will be necessary, however, to follow the requirements outlined by Cal/OSHA Lead in Construction Standard, Title 8, California Code of Regulations (CCR) 1532.1 during demolition activities; these requirements include employee training, employee air monitoring, and dust control. If lead based paint is peeling, flaking or blistered, it should be removed prior to demolition. It is assumed that such paint will become separated from the building components during demolition activities; thus, it must be managed and disposed as a separate waste steam. Any debris or soil containing lead paint or coating must be disposed at landfills that are permitted to accept the waste being disposed.

6.6 Potential Environmental Concerns Within the Site Vicinity

Based on the information obtained during this study, no hazardous material incidents have been reported in the site vicinity that would be likely to significantly impact the site. As is typical to many commercial areas, several facilities in the vicinity, however, were reported as hazardous materials users. If leaks or spills occur at these facilities, contamination could impact the site, depending upon the effectiveness of cleanup efforts.

6.7 Data Failures and Gaps

Data failure occurs when the readily available standard historical sources that are likely to be useful have been reviewed and yet the objectives have not been met. For example, data failure is not uncommon in trying to identify the use of a property back to the first developed use or 1940 (whichever is earlier). The following data failures were identified:

- The historical information reviewed did not include information dating back prior to 1884. Based on our experience in this area, the site likely was undeveloped prior to construction of the flour mill depicted on the 1884 Sanborn map. This data failure does not appear significant.

A data gap is the lack of or inability to obtain information regarding the site that adversely impacts the ability of an environmental professional to identify recognized environmental conditions. The following data gaps were identified:

- The environmental questionnaire sent to the owner was not returned to us. Based on the reasonably ascertainable information reviewed during this assessment, the lack of a completed questionnaire does not appear significant.

- Contact information for former property owners and occupants was not provided to us. We understand that this information is not reasonably ascertainable.

6.8 General Conclusions

We understand that Mr. Louis Deziel is considering purchasing the site for development of a skilled nursing facility. Based on the information obtained during this survey, the planned use appears compatible with the known on-site environmental conditions. No further work appears required.

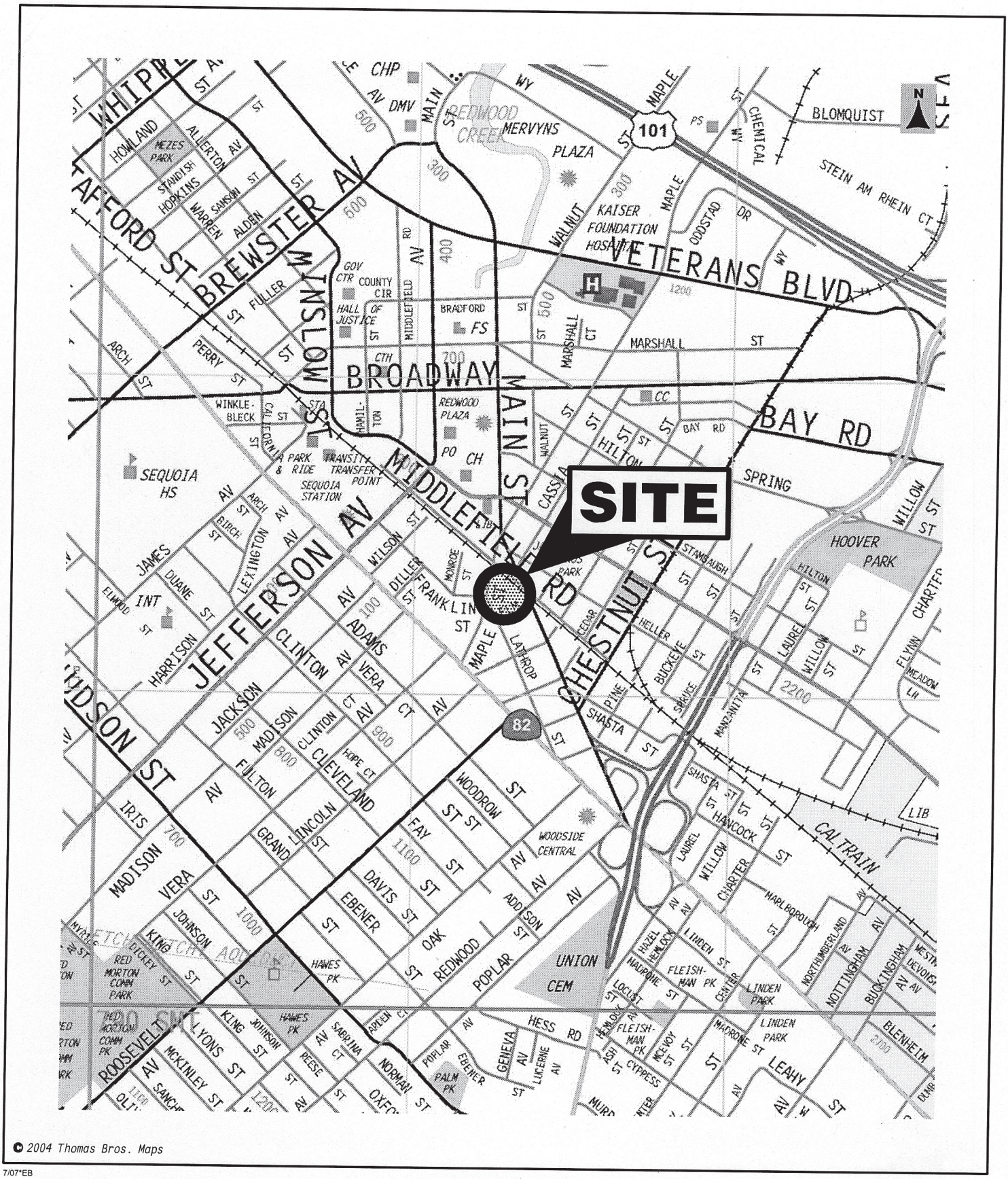
7.0 LIMITATIONS

As with all site assessments, the extent of information obtained is a function of client demands, time limitations, and budgetary constraints. Our conclusions and recommendations regarding the site are based on readily observable site conditions, review of readily available documents, maps, aerial photographs, and data collected and/or reported by others. Due to poor or inadequate address information, the regulatory agency database report listed several sites that may be inaccurately mapped or could not be mapped; leaks or spills from these or other facilities, if nearby, could impact the site. As directed by you, we are relying on information presented in reports provided to us by you or your representative. We are not responsible for the accuracy of information or data presented by others.

Because publicly available information often cannot affirm the presence of recognized environmental conditions, there is the possibility that such conditions exist. Our conclusions and recommendations in this site assessment are qualified in that no soil, ground water, air, or building material analyses were performed. Sampling and analysis lead to a more reliable assessment of environmental conditions, conditions that often cannot be noted from typical Phase I activities. Should you desire a greater degree of confidence, these samples should be obtained and analyzed to further evaluate environmental conditions. Our recommendation that no further work appears required is not a guarantee of site cleanliness; it is only a statement that there is no affirmative representation that the site has been significantly impacted.

This report was prepared for the sole use of Mr. Louis Deziel. It is valid for 180 days. We make no warranty, expressed or implied, except that our services have been performed in accordance with environmental principles generally accepted at this time and location.

* * * * * * * * * * * *



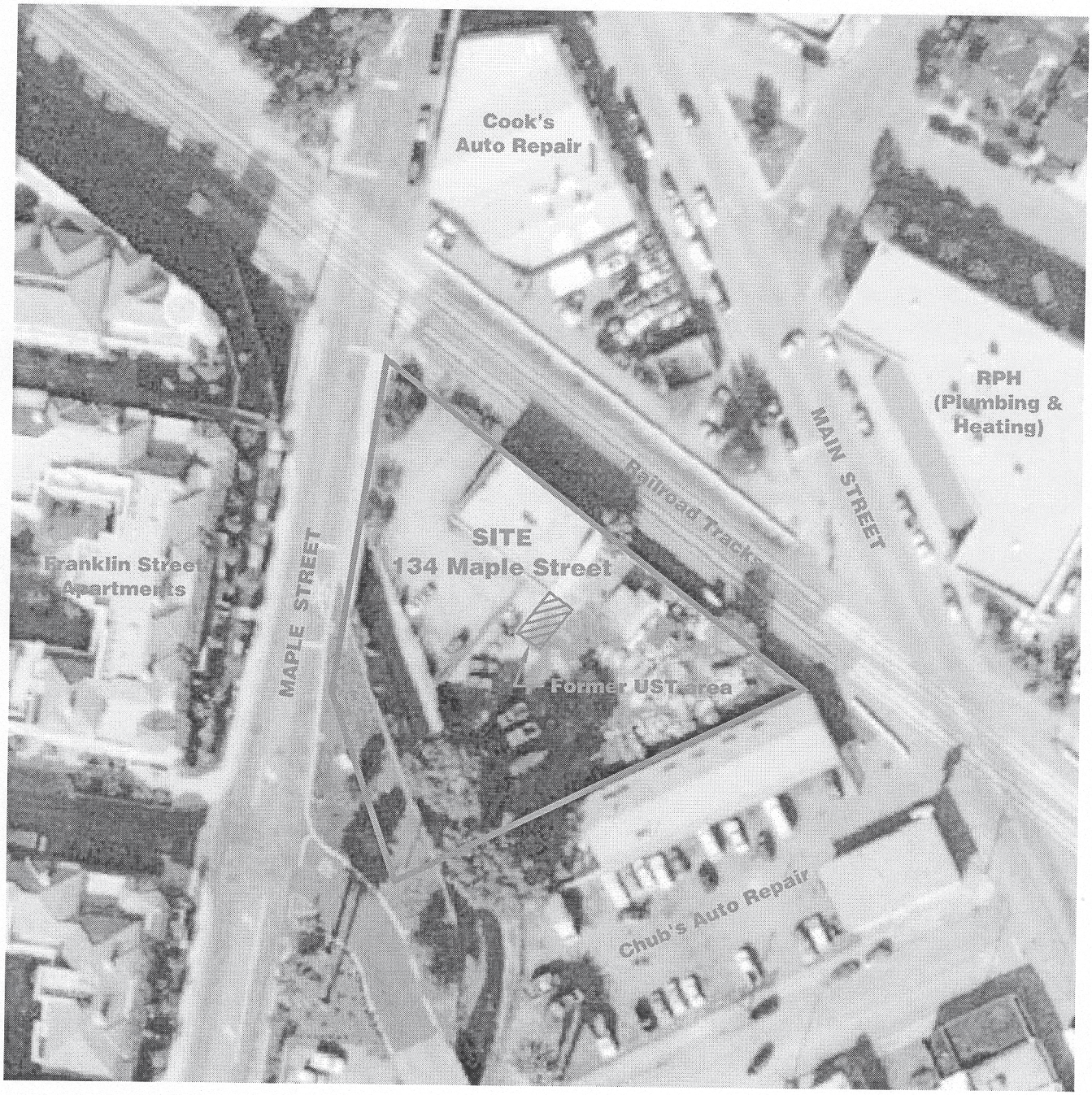
7/07*EB

VICINITY MAP

134 MAPLE STREET
Redwood City, California

TRC

FIGURE 1
1819-2A



Base by USGS TerraServer, dated 2/04.

7/07*EB

SITE PLAN

134 MAPLE STREET
Redwood City, California

TRC

FIGURE 2
1819-2A

DRAFT

Appendix Q

Laboratory Results Soil Sampling Report by ASE

ASE
APPLIED SCIENCE AND ENGINEERING INC.

September 28, 1994

Mr. Nick Marcelli
Five Star Development
9 Cerritos Place
Redwood City, CA 94061

TRANSMITTAL: Laboratory Results
Soil Sampling
134 Maple Street
Redwood City, California

Dear Mr. Marcelli,

Applied Science and Engineering, Inc. (ASE) respectfully submits the enclosed laboratory results for soil sampling conducted at 134 Maple Street in Redwood City, California on September 9, 1994 as part of removal of two underground storage tanks (USTs). Also attached are a copy of my field notes which include a sketch of the site, a table summarizing the laboratory reports, and a copy of the chain of custody form.

DRAFT

Observations

ASE was present during removal of both the approximately 1,088 gallon diesel UST and the approximately 580 gallon gasoline UST. Both USTs appeared to be in good condition. A shallow trench was also excavated along the route of the pipeline which led to the dispenser location.

Soils excavated from above the USTs and along the pipeline trench were placed in a stockpile and covered with plastic. Soils excavated from beneath the USTs were stockpiled separately and covered with plastic. A total of about 30 cubic yards of soil were stockpiled.

Soil Samples

Soil samples were collected from the backhoe bucket in the presence of Ms. Teresa Belasco of the San Mateo County Department of Health Services (SMCDHS). Soil samples were collected by scraping away about 3 inches of soil from the backhoe bucket, then driving a 2-inch diameter, six inch long brass liner into the exposed soil surface. The ends of the liner were covered with teflon tape, followed by plastic caps, and then a label was attached to the liner for identification purposes. The liner was placed into an ice chest containing blue ice for preservation during shipment to the laboratory.

One soil sample was collected from beneath the fill end of the gasoline UST. Two soil samples were collected from beneath former diesel UST, one from beneath each end. These samples were collected at depths of approximately 8 feet, one foot below the bottom of the UST pits.

A soil sample was also collected from the location of the fuel dispenser at a depth of about 3 feet. Finally, ASE collected two soil samples, one from each stockpile, for laboratory analysis. Ms. Teresa Belasco of SMCDHS was present during this sampling.

Laboratory Analyses

The soil samples were transported under chain of custody (see attached) to Priority Environmental Laboratories (PEL), a state certified laboratory, for analysis. The laboratory report is attached. Laboratory methods used are listed on the reports.

No petroleum hydrocarbons were detected in the three soil samples collected from beneath the USTs.

The soil sample from beneath the dispenser was found to contain 30 ppm of total petroleum hydrocarbons (TPH) as diesel but no detectable TPH as gasoline, benzene, toluene, ethylbenzene, or xylenes (BTEX).

The soil sample from stockpile #1 was found to contain 8.8 ppb of toluene, 5.8 ppb of ethylbenzene, and 27 ppb of xylenes. No TPH as gasoline, TPH as diesel, or benzene were detected in the sample.

The soil sample from stockpile #2 was found to contain 5.6 ppb of xylenes. No TPH as gasoline, TPH as diesel, benzene, toluene, or ethylbenzene were detected in the sample.

Conclusion

On September 15, 1994 the laboratory data was FAXed to Ms. Teresa Belasco at SMCDHS. Subsequently, ASE called her by telephone to discuss the results.

When asked if the excavation could be backfilled with the stockpiled soil Ms. Belasco stated that the lab results must be no petroleum hydrocarbons detected prior to backfilling. Therefore, the stockpiled soils must be aerated and resampled (with results showing no hydrocarbons) prior to re-use in backfilling the excavation.

When asked about the need for further excavation at the fuel dispenser, Ms. Belasco stated that no additional excavation was required because the concentrations were relatively low and the piping and USTs looked in good shape.

DRAFT

Please call me at (415) 363-2445 if you have any questions or require additional information. Thank you for the opportunity to work on this project.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

Enclosures

cc: Ms. Teresa Belasco, SMCDHS

DRAFT

1

Marcelli 9.7-94 RM

10:55 Arrive site - Interstate @ site
Teresa on site. run all samples for
"unleaded & diesel in put - TPH-gas, diesel & BTEX"
larger tank out of ground = diesel
46.5" ø, L = 148" ⇒ V ≅ 1,088 gals.
in good condition for coatings, steel,
load diesel VT on H/H truck
11:10 pull gasoline VT
48" ø, L = 6'-2" V ≅ 580 gals
tar wrapped, steel, good condition
11:45 collect samples from bottom.

stockpile V = $\frac{16 \times 13 \times 6}{2}$ = 624 ft³ = 23 yds³

cut @ dispenser ~ 1'
sample @ 3'

gas readings - stockpile @ 2 ppm
gas dispenser ~ 0 ppm

12:00 break for lunch
~~Sal runs leave.~~
Teresa leave.
12:20 RM leave site for lunch
12:40 RM return

DRAFT

2

9.7.94 Ry

Subsurface ~ 0 to 0.5: 3" asphalt & 3" AB

fill – bricks

3.5

tan-syC mottled grey

8'

13:00 start cleaning/excavation of backfill – create stockpile #2

Teresa return

13:25 finish cleaning/

sample stockpiles – #1 N end

#2 E end

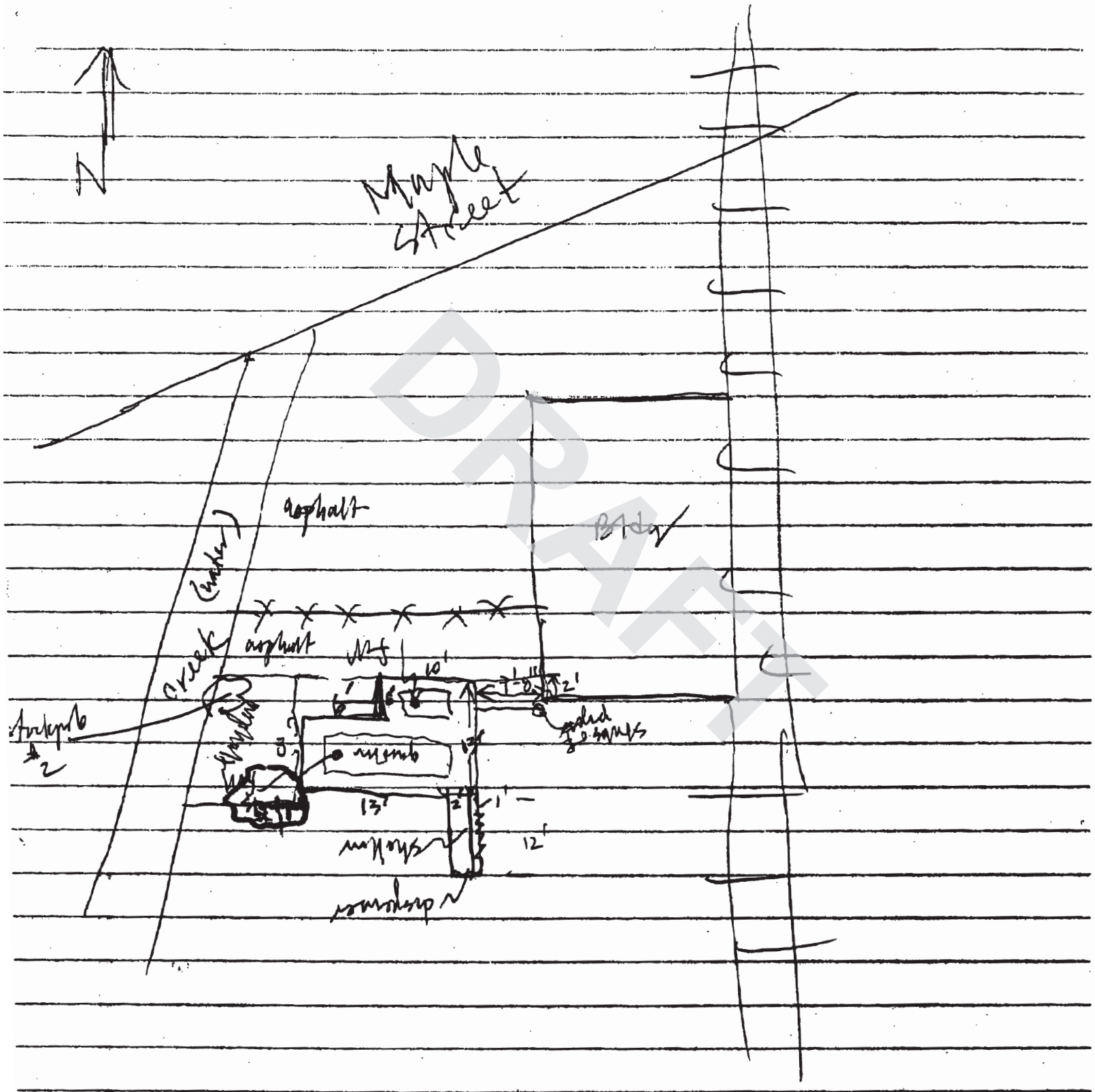
13:30

remove pocket from E. wall

13:48 End of digging

14:00 Fly leave site

DRAFT



DRAFT

dispenser trench ~ 2' deep
excavation ~ 7' deep

PRIORITY ENVIRONMENTAL LABS

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 9/07/94 PAGE: 1 OF 1

PROJECT MGR: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
SAN CARLOS, CA 94070
PHONE: 415-363-2495 FAX: 415-363-8499
SIGNATURE: FAYukic

ANALYSIS REPORT

PEL # 9409020
INV # 25201

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)	NUMBER OF CONTAINERS
10049	9.7.94	11:45	SOIL		X	X						1
10050		11:50			X	X						1
10051		11:55			X	X						1
10052		12:00			X	X						1
10053		13:33			X	X						1
10054		13:37			X	X						1

DRAFT

PROJECT INFORMATION		SAMPLE RECEIPT	
PROJECT NAME: MARCELLI		TOTAL # OF CONTAINERS	6
PROJECT NUMBER:		RECD. GOOD COND./COLD	

INSTRUCTIONS & COMMENTS:
1 week turnaround

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
SIGNATURE: FA Yukic	SIGNATURE: DAVID OLKOWSKI	SIGNATURE: DAVID OLKOWSKI	SIGNATURE: JONATHAN LAM
Date: 9.7.94 Time: 16:00	Date: 9/7/94 Time: 16:00	Date: 9/8/94 Time: 10:27	Date: 9/8/94 Time: 10:28
COMPANY: ASE	COMPANY: ASE	COMPANY: ASE	COMPANY: PEL

Jan 16 2007 4:02PM DAVIS CO REALTORS 6509416746 P.4

ASE
APPLIED SCIENCE AND ENGINEERING INC.

Table 1
Soil Analytical Results (mg/kg)
134 Maple Street
Redwood City, California

Location	ID	TPH-g	TPH-d	B	T	E	X
Excavation							
Gas-fill	10049	ND	ND	ND	ND	ND	ND
Diesel-opp.	10050	ND	ND	ND	ND	ND	ND
Diesel-fill	10051	ND	ND	ND	ND	ND	ND
Dispenser	10052	ND	30	ND	ND	ND	ND
Stockpiles							
Stockpile #1	10053	ND	ND	ND	0.0088	0.0058	0.027
Stockpile #2	10054	ND	ND	ND	ND	ND	0.0056

Note: TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
B = benzene
T = toluene
E = ethylbenzene
X = xylene

DRAFT

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

September 15, 1994 PEL # 9409020

APPLIED SCIENCE EINGINEERING, INC.

Attn: Fred Yukic
Re: Six soil samples for Gasoline/BTEX and Diesel analyses.

Project name: Marcelli

Date sampled: Sep 07, 1994 Date submitted: Sep 08, 1994
Date extracted: Sep 12-15, 1994 Date analyzed: Sep 12-15, 1994

RESULTS:

SAMPLE I.D.	Gasoline (mg/kg)	Diesel (mg/Kg)	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylenes (ug/Kg)
10049	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
10050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
10051	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
10052	N.D.	30	N.D.	N.D.	N.D.	N.D.
10053	N.D.	N.D.	N.D.	8.8	5.8	27
10054	N.D.	N.D.	N.D.	N.D.	N.D.	5.6
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	96.0%	84.1%	94.5%	106.6%	89.9%	100.1%
Detection limit	1.0	1.0	5.0	5.0	5.0	5.0
Method of Analysis	5030 / 8015	3550 / 8015	8020	8020	8020	8020

DRAFT

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

ASE
APPLIED SCIENCE AND ENGINEERING INC.

November 21, 1994

Mr. Nick Marcelli
Five Star Development
9 Cerritos Place
Redwood City, CA 94061

TRANSMITTAL: Laboratory Results
Stockpile Re-Sampling
134 Maple Street
Redwood City, California

Dear Mr. Marcelli,

Applied Science and Engineering, Inc. (ASE) respectfully submits the enclosed laboratory results for stockpile re-sampling conducted at 134 Maple Street in Redwood City, California on November 9, 1994. The stockpile was generated during removal of two underground storage tanks (USTs). Also attached are a copy of my field notes which include a sketch of the site, a table summarizing the laboratory reports, and a copy of the chain of custody form.

DRAFT

Introduction

ASE was present during removal of a 1,000 gallon diesel UST and 580 gallon gasoline UST on September 9, 1994. Both USTs appeared to be in good condition. A shallow trench was also excavated along the route of the pipeline which led to the dispenser location. Soils excavated from above the USTs and along the pipeline trench were placed in a stockpile and covered with plastic. Soils excavated from beneath the USTs were stockpiled separately and covered with plastic. A total of about 30 cubic yards of soil were stockpiled.

Soil samples were collected from the bottom of the UST excavation using the backhoe bucket, as previously reported in a September 28, 1994 letter. Ms. Teresa Belasco of the San Mateo County Department of Health Services (SMCDHS) observed the soil sampling. One soil sample was collected from beneath the fill end of the gasoline UST. Two soil samples were collected from beneath former diesel UST, one from beneath each end. These samples were collected at depths of approximately 8 feet, one foot below the bottom of the UST pits. A soil sample was also collected from the location of the fuel dispenser at a depth of about 3 feet. Finally, ASE collected two soil samples, one from each stockpile, for laboratory analysis. Laboratory results for these samples are shown in Table 1. Upon receipt of the laboratory analyses Ms. Belasco closed the site.

Because low concentrations of petroleum hydrocarbons were detected in the stockpile soil samples, the soil could not be used to backfill the excavation according to SMCDHS guidelines (see attached). Thus, you spread out the stockpile soils and passively aerated them at the site for two months. This report transmits the results of re-sampling of the stockpile after aeration.

Soil Sampling

Two soil samples were collected from the approximately 30 cubic yards of stockpile, in accordance with SMCDHS guidelines requiring one discrete sample for every 20 cubic yards. The sample locations were chosen randomly. Soil samples were collected by scraping away about 6 inches of soil from the surface, then pushing a 2-inch diameter, six inch long brass liner into the exposed soil. The ends of the liner were covered with teflon tape, followed by plastic caps, and then a label was attached to the liner for identification purposes. The liner was placed into an ice chest containing blue ice for preservation during shipment to the laboratory.

Laboratory Analyses

The soil samples were transported under chain of custody (see attached) to Priority Environmental Laboratories (PEL), a state certified laboratory, for analysis. The laboratory report is attached. Laboratory methods used are listed on the reports. Analyses were conducted only for compounds that were detected in the initial stockpile samples.

No benzene, toluene, ethylbenzene, or xylenes (BTEX) were detected in the two soil samples collected as re-sampling of the stockpiles.

Conclusion

Laboratory results for two discrete soil samples collected from a stockpile of approximately 30 cubic yards show no detectable BTEX. Based on these results the stockpile soils have been successfully remediated by passive aeration at the site.

In accordance with SMCDHS guidelines which require no detectable hydrocarbons in the stockpile (see attached), the stockpiled soil can now be used as site backfill.

DRAFT

Please call me at (415) 363-2445 if you have any questions or require additional information. Thank you for the opportunity to work on this project.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

Enclosures

cc: Ms. Teresa Belasco, SMCDHS

DRAFT

Date: 11.9.04 By: EW To: _____ Sheet ___

Job Name: Marchi Job No: _____

Main Activity: Sample Stockpile

Equipment Rental	Company	Hours	Rate

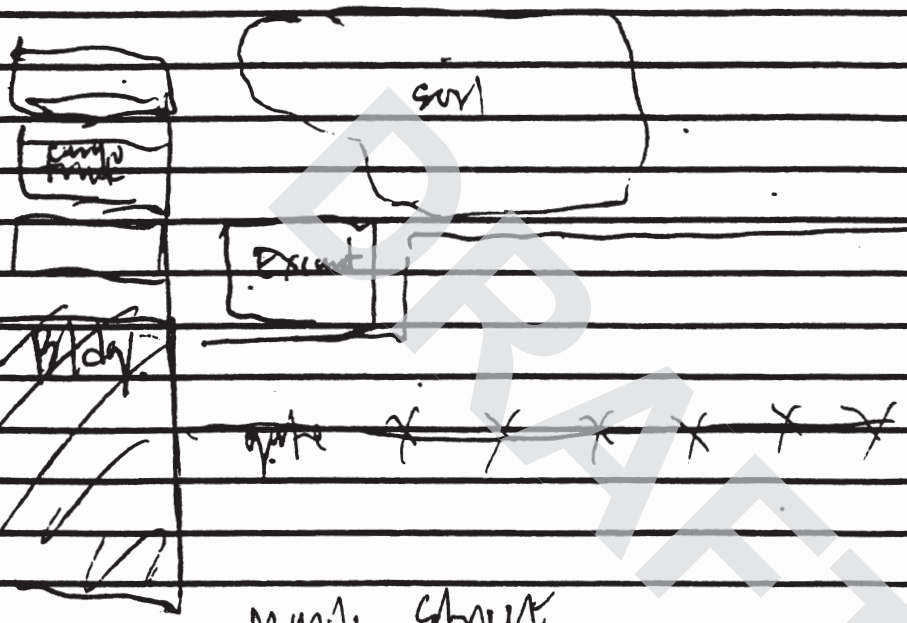
[Attach receipts for all outside expenses]

Odometer In ___

Vehicle Pers. _____ Odometer Out ___

Rent. _____ Mileage ___

Time	Description
10:30	Arrive site



Maple Street

SOIL spread them in Stockpiles ~ 0.5 - 1 deep

Collect 2 samples

Scrape away 6"

push liner into soil

10:45 leave site

DRAFT

PRIORITY ENVIRONMENTAL LABS

PEL # 9411[illegible]

INV # 25421

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 11/9/94 PAGE: 1 OF 1

PROJECT MGR.: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
SAN CARLOS CA 94070
PHONE: 415-363-2495 FAX: 415-363-8449
SIGNATURE:

ANALYSIS REPORT

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)	NUMBER OF CONTAINERS
10100	11-9-94	10:35	SOIL				X					1
10101	11-9-94	10:45	SOIL				X					1

DRAFT

PROJECT INFORMATION
PROJECT NAME:: Marelli
PROJECT NUMBER: —

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 1 WEEK TURNAROUND

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
SIGNATURE: [illegible] FAYUK	SIGNATURE: DAVID OLKOWSKI	SIGNATURE:	SIGNATURE:
Date: 11.9.94 Time: 13:00	Date: 11/9/94 Time: 13:00	Date: Time:	Date: 11/9/94 Time: 15:57
COMPANY: ASE	COMPANY: ASE	COMPANY:	COMPANY: PEL

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

November 16, 1994

PEL # 9411029

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: Two soil samples for BTEX analysis.

Project name: Marcelli

Date sampled: Nov 09, 1994
Date extracted: Nov 10-11, 1994

Date submitted: Nov 09, 1994
Date analyzed: Nov 10-11, 1994

RESULTS:

DRAFT

SAMPLE I.D.	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylenes (ug/Kg)
10100	N.D.	N.D.	N.D.	N.D.
10101	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	81.6%	106.0%	101.3%	104.7%
Detection limit	5.0	5.0	5.0	5.0
Method of Analysis	8020	8020	8020	8020

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636

E[illegible]rtment of Health Services
PUBLIC HEALTH DIVISION — Environmental Health

BOARD OF SUPERVISORS
ANNA G. ESHOO
MARY GRIFFIN
TOM HUENING
TOM NOLAN
WILLIAM J. SCHUMACHER

COUNTY OF SAN MATEO

MARGARET TAYLOR
DIRECTOR OF HEALTH SERVICES

590 HAMILTON STREET • REDWOOD CITY • CALIFORNIA 94063 363-4305

SAN MATEO COUNTY POLICY STATEMENT: HANDLING AND DISPOSAL OF REMEDIATED SOIL

APRIL, 1990

BACKGROUND The San Francisco Bay Regional Water Quality Control Board (RWQCB) has recently created policy addressing the fate of soils being excavated at underground tank sites. The RWQCB's policy reads to the effect that soils being tested below detection levels of all contaminants may be used for general fill needs. Any soils tested with levels above the detection limit must be either 1) remediated to below detection limits, 2) disposed of at a properly rated landfill or 3) obtain a variance from the RWQCB to place the soil back into the excavation.

GOAL The goal of this policy statement is to clarify the options available of disposing of soils and to establish a protocol for sampling the soils.

DISCUSSION As discussed in the Tri-regional Guidelines of June 1988, the 100 ppm level is not a cleanup level but is merely used as a tool to prioritize sites and indicate the severity of the original release. Whenever soil contaminated at any level is introduced to the ground the risk of groundwater degradation exists. Such degradation would require additional remedial activities. Offered below is a list of concentration levels and the handling option associated with each concentration.

TPH and BTXE

All Contaminants Non-Detectable	-Reuse for general site fill needs -Dispose of at Class III
10-100 ppm	-Remediate to N.D. -Dispose of at Class III -Obtain variance from RWQCB
100-1000 ppm	-Remediate further -Dispose of at Class II or I
1000 or greater	-Remediate further -Dispose of at Class I

LICY It shall be the policy of San Mateo County to allow reuse of remediated soils only when laboratory analysis show that the soils contain a nondetectable amount of contaminant. All other soils shall be handled as outlined above.

To characterize the soil in order to determine the levels of contamination present the sampling protocol below has been established. This protocol must be followed whenever the responsible party is attempting to dispose of the soils within San Mateo County.

TLC = 1000
STLC = 5

* In addition to site specific contaminants, i.e. TPH-G, TPH-D and BTXE etc., all soils being hauled to Ox Mountain Landfill must include testing for total and soluble lead (TTLC/STLC). Approval to haul the soils to Ox Mountain must first be received from San Mateo County.

* Any nonhazardous soils being disposed of outside of San Mateo County must be documented with a Bill of Laden submitted to this office within fifteen (15) days of disposal

All sampling techniques, handling procedures and analytical methodologies as described in both the LUFT guidance and the Tri-regional guidelines shall apply.

A representative of San Mateo County must be notified a minimum of forty-eight (48) hours prior to sampling and shall be present at the time of sampling.

One discrete sample for every 20 cubic yards of soil must be collected and analyzed via the appropriate methods. Composite sampling will no longer be accepted for disposal of soils. The Bay Area Air Quality Management District still requires that their sampling protocol be followed before any aeration begins.

Piles of soil should be spread out to a maximum thickness of two (2) feet and the requisite number of samples are to be obtained one (1) foot into the soil.

If the pile cannot be spread, then the appropriate number of samples shall be taken with a hand auger in a way to best characterize the pile. A grid system should be utilized in conjunction with a random sampling protocol.

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DRAFT

Appendix R

Body of the previous Phase I ESA produced by Odic Environmental

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Subject Property Address

1180 Main St.

Redwood City, CA 94063

Odic Project Number

6343476ESAI

Report Date

1/17/2007

Prepared for

StanCorp Mortgage Investors LLC or Its Assigns

19225 NW Tanasbourne Dr.

Hillsboro, OR 97124

Odic Environmental

Environmental Consulting and Real Estate Due Diligence
3255 Wilshire Blvd. Suite 1510, Los Angeles, CA 90010
888.634.2368, 888.ODICENV, Fax 213-380-0505

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1/17/2007

StanCorp Mortgage Investors, LLC or Its Assigns StanCorp Mortgage Investors, LLC or Its Assigns

StanCorp Mortgage Investors LLC or Its Assigns

19225 NW Tanasbourne Dr.

Hillsboro, OR 97124

Phone: 650-342-6755 ext. 212

Fax:

Attached please find our PHASE I ENVIRONMENTAL SITE ASSESSMENT, ("the Report") for the above-mentioned Subject Property. This report has been prepared by Odic for the Client under the professional supervision of the principal and/or senior staff whose seal(s) and signatures appear hereon. Neither Odic, nor any staff member assigned to this investigation has any interest or contemplated interest, financial or otherwise, in the subject or surrounding properties, or in any entity which owns, leases, or occupies the subject or surrounding properties or which may be responsible for environmental issues identified during the course of this investigation, and has no personal bias with respect to the parties involved. The purpose of this Report is to assist Client, in its underwriting of a proposed mortgage loan on the Subject Property described herein.

The assessment was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession, and in accordance with generally accepted practices of other consultants currently practicing in the same locality under similar conditions. No other representation, expressed or implied, and no warranty or guarantee is included or intended. The Report speaks only as of its date, in the absence of a specific written update of the Report, signed and delivered by Odic.

There are no intended or unintended third party beneficiaries to this Report, unless specifically named. Odic is an independent contractor, not an employee of either the issuer or the borrower, and its compensation was not based on the findings or recommendations made in the Report or on the closing of any business transaction. Thank you for the opportunity to prepare this Report, and assist you with this project. Please call us if you have any questions or if we may be of further assistance.

Respectfully Submitted,

Assessment conducted by:

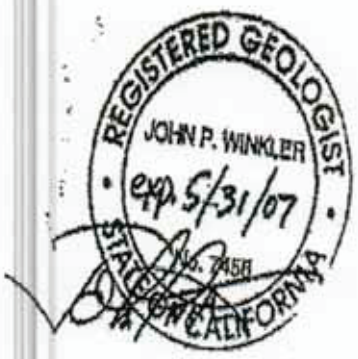
Jonathan Maraccini

Regional Sales

Reviewed by:

John Winkler

CA REA, California Professional Geologist No. 7456



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DRAFT

EXECUTIVE SUMMARY

ODIC performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-05 of the Subject Property. Any exceptions to, or deletions from, this practice are described in Section 1.0 of this Report.

REPORT COMPONENT	SUMMARY OF CONCLUSION
Subject Property Characteristics (Current Tenant or Property Use Concerns)	The subject property is situated on the northwest corner of Main St. and Elm St. in the City of Redwood City, CA. The property is an irregularly-shaped parcel of commercially-zoned land improved with two rectangular single-story buildings, with one building situated in the northwest portion and the other in the southeast portion of the property. A parking lot occupying the remainder of the property. Access to the property is achieved via Main Street to the northeast and Elm Street to the northwest.
Subject Property Reconnaissance	No RECs (Recognized Environmental Conditions) were found during site reconnaissance.
Historical Use of Subject Property and Vicinity	According to Sanborn Fire Insurance Maps the property appeared improved with dwellings in 1891, 1907, 1919. In 1950 no structures were depicted on site, while in 1968 the property was occupied by several buildings labeled as spray painting and auto repair. According to building records obtained from the City of Redwood City, permits for a garage building in 1952 with an addition to the office building in 1955 and various other permits through 1986. Mr. Steve Brugman, owner, stated that he has occupied and operated an auto repair facility on the property since 1995 and that the property was previously used as an auto repair facility. City directories showed listings as Chub's Auto repair from 1996 through 2006. Aerial photographs showed improvements on the property as early as 1943 with buildings similar to the current buildings in 1974.
Federal, State and Local Agency Concerns	The subject property is not listed on the following environmental regulatory database record research: NPL, CORRACTS, RCRA-TSD, CALSITES, and SWF. The property is listed as RCRA-SQG, FINDS, HAZNET, LUST, CORTESE, SWEEPS UST and San Mateo County BI. According to the EDR Radius Map report, the RCRA-SQG listing show no violations found. The HAZNET listing shows various chemical disposed of off-site by manifest and a closure letter was issued by SMCDHS for the LUST and UST related listings.
Potential Off-site Sources	No RECs (Recognized Environmental Conditions) were found during site reconnaissance.
Non-CERCLA Items	No RECs (Recognized Environmental Conditions) were found during site reconnaissance. Due to the age the building (constructed prior to 1978), interior/exterior portions of the building may contain asbestos and lead base paints. Those areas suspected of having any asbestos containing materials and lead base paints appeared to be in good condition with no fraying or deterioration. It should be noted that this assessment did not include any sampling and testing to determine if any asbestos containing materials and lead base paints are present.
Other RECs	Historic RECs were found. The subject site had a release of petroleum hydrocarbons to soil and groundwater, with case closure achieved.
Inaccessible or Un-surveyed Portions of Subject Property	Full access to the entire property was provided to ODIC, and there were no notable portions of the Subject Property excluded from the survey and field inspection.

REPORT COMPONENT	SUMMARY OF CONCLUSION
Data Gap	The User failed to provide any information requested in the AUL environmental questionnaire. Such is considered a data gap. The absence of this information may not be considered enough to warrant further investigation due to a low risk of environmental contamination at the site, however absence of research into any existing environmental liens recorded for the subject property may disqualify the user for CERCLA landowner liability protection. The largest data gap in this research was from 1919 to 1943. Other gaps ranged from two to sixteen years. However, ODIC does not believe that any gaps in the information reviewed would affect our ability to identify recognized environmental concerns.

Historic RECs were found. The subject site had a release of petroleum hydrocarbons to soil and groundwater, with case closure achieved. While closure was granted for the release from the former UST, impact to groundwater from petroleum hydrocarbons has been documented. However, the reported levels are low, such that there is a low risk for impact to the groundwater beyond the property boundaries, and is not expected to affect any nearby sensitive receptors.

ODIC hereby recommends no further action based on the current site condition and available public records due to a minimal risk of regulatory action related to the existing contamination at the subject property.

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1.0 SCOPE OF WORK & LIMITATIONS

The primary purpose of this *Phase I Environmental Site Assessment Report* (the *Report*) is to assist *Client,* in its underwriting of a proposed mortgage loan on the Subject Property, and to identify *recognized environmental conditions* in connection with the Subject Property described in this *Report*. The investigation is prepared in accordance with the Client's Environmental Site Assessment scope of work for the use and benefit of the Client, it's successors, and assignees and US SBA if financing is to be authorized by US SBA. It is based, in part, upon documents, writings, and information owned, possessed, or secured by the Client. Neither this report, nor any information contained herein shall be used or relied upon for any purpose by any other person or entity without the express written permission of the Client.

This report has been prepared by ODIC for the Client under the professional supervision of the principal and/or senior staff whose seal(s) and signatures appear hereon. Neither ODIC, nor any staff member assigned to this investigation has any interest or contemplated interest, financial or otherwise, in the subject or surrounding properties, or in any entity which owns, leases, or occupies the subject or surrounding properties or which may be responsible for environmental issues identified during the course of this investigation, and has no personal bias with respect to the parties involved.

The purpose of this practice is to define good commercial and customary practice for conducting an *environmental site assessment*2 of a parcel(s) of *commercial real estate* with respect to the range of contaminants within the scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) and *petroleum products*. As such, this practice is intended to permit a *user (Client, Purchaser, Lender, Owner)* to satisfy one of the requirements to qualify for the *innocent landowner, contiguous property owner,* or *bona fide prospective purchaser* limitations on CERCLA liability (hereinafter, the "*landowner liability protections*," or "*LLPs*"): that is, the practice that constitutes "*all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35)(B).

Controlled substances are not included within the scope of this standard. Persons conducting an *environmental site assessment* as part of an EPA Brownfields Assessment and Characterization Grant awarded under CERCLA 42 U.S.C. §9604(k)(2)(B) must include controlled substances as defined in the Controlled Substances Act (21 U.S.C. §802) within the scope of the assessment investigations to the extent directed in the terms and conditions of the specific grant or cooperative agreement. Additionally, an evaluation of *business environmental risk* associated with a parcel of *commercial real estate* may necessitate investigation beyond that identified in this practice.

In defining a standard of good commercial and customary practice for conducting an *environmental site assessment* of a parcel of *property*, the goal of the processes established by this practice is to identify *recognized environmental conditions*. The term *recognized environmental conditions (RECs)* means the presence or likely presence of any *hazardous substances* or *petroleum products* on a *property* under conditions that indicate an existing release, a past release, or a material threat of a release of any *hazardous substances* or *petroleum products* into structures on the *property* or into the ground, ground water, or surface water of the *property*. The term includes *hazardous substances* or *petroleum products* even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis* are not *RECs*.

ODIC has performed this *Phase I Environmental Site Assessment* in conformance with the scope and limitations of ASTM Practice E 1527-05.

SCOPE OF WORK

This *Report* was prepared for the exclusive use of *Client*. This *Report* has been prepared in accordance with our *Standard Conditions For Engagement* and *Authorization Letter* and *Agreement for Environmental Services* approved and signed by *Client*, and with the limitations described below, all of which are integral parts of this *Report*. A copy of the signed *Standard Conditions For Engagement* and *Authorization Letter* and *Agreement for Environmental Services* is maintained at the Odic Environmental, Los Angeles, California office.

The information reported was obtained through sources deemed reasonably ascertainable, as defined in ASTM E1527-05; a visual site survey of areas readily observable, easily accessible or made accessible by the property contact and interviews with owners, agents, occupants, or other appropriate persons involved with the Subject Property. Municipal information was obtained through file reviews of reasonably ascertainable standard government record sources, and interviews with the authorities having jurisdiction over the property. Findings, conclusions and recommendations included in the *Report* are based on our visual observations in the field, the municipal information reasonably obtained, information provided by the Client, and/or a review of readily available and supplied documents.

ODIC renders no opinion as to the property condition at un-surveyed and/or inaccessible portions of the Subject Property, which are described below. ODIC relies completely on the information, whether written, graphic or verbal, provided by the property contact or as shown on any documents reviewed or received from the property contact, owner or agent, or municipal source, and assumes that information to be true and correct. The observations in this *Report* are valid on the date of the survey. Where access to portions of the Subject Property or to structures on the Subject Property was unavailable or limited, ODIC renders no opinion as to the presence of petroleum products or hazardous substances in that portion of the Subject Property or structure. In addition, ODIC renders no opinion as to the presence of, or indirect evidence relating to, petroleum products or hazardous substances where direct observation of the interior walls, floor, or ceiling of a structure was obstructed by objects or coverings on or over these surfaces.

The conclusions provided by ODIC are based on the information obtained by visual survey of the Subject Property, and information provided by agents representing the Subject Property, or agents of the owner. In addition, ODIC has relied on certain information provided by state and other referenced parties, and on information contained in the files of federal, state and/or local agencies available to ODIC at the time of the assessment. Although there may have been some degree of overlap in the information provided by these various sources, ODIC did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of these *Environmental Services*.

CERCLA Requirements Other Than Appropriate Inquiry (ASTM E1527-05 1.1.3) - This practice does not address whether requirements in addition to *all appropriate inquiry* have been met in order to qualify for the *LLPs* (specified in 42 U.S.C. §9607(b)(3)(a) and (b) including the continuing obligation not to impede the integrity and effectiveness of *activity and use limitations* (AULs), or the duty to take reasonable steps to prevent releases, or the duty to comply with legally required release reporting obligations).

It is acknowledged that ODIC judgments shall not be based on scientific or technical tests or procedures beyond the scope of the Services or beyond the time and budgetary constraints imposed by the Client. It is acknowledged further that ODIC conclusions shall not rest on pure science but on such considerations as economic feasibility and available alternatives. Client also acknowledges that, because geologic and soil formations are inherently random, variable, and indeterminate in nature, the Services and opinions provided under this Agreement with respect to such Services, are not guaranteed to be a representation of actual conditions on the Subject Property, which are also subject to change with time as a result of natural or man-made processes, including water permeation. In performing the Services, ODIC shall use that degree of care and skill ordinarily exercised by environmental consultants or engineers performing similar services in the same or similar locality. The standard of care shall be determined solely at the time the Services are rendered and not according to standards utilized at a later date. The Services shall be rendered without any other warranty, expressed or implied, including, without limitation, the warranty of merchantability and the warranty of fitness for a particular purpose.

The ASTM Standard E1527-05 does not encompass analytical testing to evaluate Asbestos Containing Materials (ACM), radon, lead-based paint (LBP), drinking water quality, lead in drinking water, wetlands, regulatory compliance, cultural and historical resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, biological agents, mold, stored chemicals, debris, fill materials, surface water, or subsurface samples (soil and groundwater) as part of a Phase I ESA. Such additional information of non-ASTM 1527 is merely extra contents, and cannot be used to bind this report as a whole to the compliance and conformance to ASTM guideline. *No disassembly of systems or building components or physical or invasive testing is to be performed unless Contract Engagement specifically called for such testing as an additional scope of work.* ODIC has performed this *Phase I Environmental Site Assessment* in conformance with the scope and limitations of ASTM

Practice E 1527-05. *This Report* may not include all environmental conditions which can materially impact the subject property other than those defined as REC in ASTM E1527-05.

As our standard procedure and scope of work defined by ASTM E1527-05, ODIC is not contracted to perform AUL and environmental lien search via title records, since such is beyond the scope of the service included in this report.

The assessment was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession, and in accordance with generally accepted practices of other consultants currently practicing in the same locality under similar conditions. No other representation, expressed or implied, and no warranty or guarantee is included or intended. The *Report* speaks only as of its date, in the absence of a specific written update of the Report, signed and delivered by ODIC.

Additional information that becomes available after our survey and draft submission concerning the Subject Property should be provided to ODIC so that our conclusions may be revised and modified if necessary, at additional cost. This *Report* has been prepared in accordance with our *Standard Conditions for Engagement*, which is an integral part of this *Report.*

Adjoining sites, neighboring sites or surrounding properties mentioned in this report are defined only up to one parcel immediately next to the subject property, and ODIC will only check immediately adjoining properties to identify historical use of the surrounding areas via historical source or data on such adjoining properties, and/or walk-through along subject property's perimeters to find obvious signs of environmental concerns.

It is often not possible (under "reasonably ascertainable" clause of ASTM guideline) to identify every single historical business tenants or occupants on the subject property. ODIC cannot be liable for not identifying all such past tenants or occupants of the project site.

INDEPENDANT CONTRACTOR STATUS / PROFESSIONAL RESPONSIBILITY

In performing Services under the mutually agreed contractual agreement and verbal engagement, ODIC operates as, and have the status of, an independent contractor. Subject to any limitations established by the Client as to the degree of care and amount of time and expenses to be incurred and any other limitations contained in the mutually agreed contractual agreement and verbal engagement, ODIC performs the Services consistent with that level of care and skill ordinarily exercised by other professional consultants under similar circumstances at the time the Services are performed. Client hereby acknowledges that whenever a Project involves hazardous or toxic materials there are certain inherent risk factors involved (such as limitations on laboratory analytical methods, variations in subsurface conditions, economic loss to Client or property owner, a potential obligation for disclosure to regulatory agencies, a potential for a decrease in market value of real property, and the like) that may adversely affect the results of the Project, even though the Services are performed with such skill and care. No other representation, warranty, or guarantee, express or implied, is included or intended by the mutually agreed contractual agreement and verbal engagement.

QUALIFICATION STATEMENT OF ENVIRONMENTAL PROFESSIONAL

Odic states that this Phase I Environmental Assessment was performed under Environmental Professional (EP)'s direct supervision, that he/she has prepared and/or reviewed and approved the report, and that the methods and procedures utilized in the development of this report conforms to minimum industry standards using both the American Society for Testing Methods (ASTM) Standard E1527-05 and the United States – Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (40 CFR Part 312) as guidelines. Odic certifies that Odic's Environmental Professionals and Subcontractors are properly licensed and/or certified to conduct Phase I Environmental Site Assessments.

Odic's EP declares that, to the best of his/her professional knowledge and belief, he/she meets the definition of Environmental Professional as defined in 40 CFR Part 312. Odic's EP who prepared this assessment possesses the specific qualifications based upon education, training and experience to assess a property of the nature, history, and

setting of the subject site. Odic Environmental has developed and performed the "All Appropriate Inquiries" in accordance with the standards and practices as defined in 40 CFR Part 312.

ABBREVIATIONS

ODIC may use various abbreviations to describe various site, building or system components or legal descriptions. Not all abbreviations may be applicable to all reports. The abbreviations most often utilized are defined below.

ACM	Asbestos-containing material
ACT	Acoustic Ceiling Tile
ADA	Americans with Disabilities Act
AHU	Air Handling Unit
APA	American Plywood Association
APCD	Air Pollution Control District
AQMD	Air Quality Management District
AS	Air Sparging
AST	Aboveground storage tank
ASTM	American Society for Testing and Materials
bgs	Below Ground Surface
BOD	Biochemical oxygen demand
BTEX	Benzene-toluene-ethylbenzene-xylene
BTU	British Thermal Unit (a measurement of heat)
BTUH	British Thermal Units per Hour
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
CMU	Concrete Masonry Unit
COCs	Chemicals of Concern
DEP	Department for Environmental Protection
DEQ	Department of Environmental Quality
DOE	Department of Ecology (WA)
DTSC	Department of Toxic Substance Control (CA)
EIFS	Exterior Insulating Finishing System
EP	Extraction procedure
EPA	Environmental Protection Agency
EPDM	Ethylene Propylene Diene Monomer (rubber membrane roof)
EUL	Expected Useful Life, Effective Useful Life
FCU	Fan Coil Unit
FEMA	Federal Emergency Management Agency
FHA	Forced Hot Air
FHW	Forced Hot Water
FID	Flame ionization detector
FIRM	Flood Insurance Rate Map
FOIA	Freedom Of Information Act
FRT	Fire retardant treated plywood
GC/MS	Gas chromatography/mass spectrometry
GFI	Ground Fault Interrupt (circuit)
GPR	Ground-penetrating radar
GWB	Gypsum Wall Board
HCP	Handicapped Person
HID	High Intensity Discharge (lighting)
HVAC	Heating, Ventilating and Air Conditioning
HWH	Hot Water heater
LBP	Lead-based paint
LDL	Laboratory Detection Limit
LEL	Lower explosive limit
LUST	Leaking underground storage tank
MCL	Maximum contaminant level
MDP	Main Distribution Panel
mg/L	Milligrams per Liter
MSDS	Material safety data sheet
MSSL	Maximum Soil Concentration Limit
MTBE	Methyl Tertiary Butyl Ether
NFA	No Further Action (letter)
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operating and maintenance
OVA	Organic vapor analyzer
PCB	Polychlorinated biphenyl
PEL	Permissible airborne exposure level
PID	Photoionization detector
POTW	Publicly owned treatment works
ppb	Parts per Billion
ppm	Parts per Million
PRG	Preliminary Remedial Goal
PRP	Potentially responsible parties
PTAC	Packaged Through-wall Air Conditioning (Unit)
QAQC	Quality assurance Quality control
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
REC	Recognized environmental condition
RI/FS	Remedial Investigation & Feasibility Study
RQ	Reportable quantity
RTU	Roof Top Unit
RWQCB	Regional Water Quality Control Board (CA)
SPCC	Spill Prevention Control and Countermeasure Plan
SQG	Small quantity generator
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile organic compound
SWRCB	State Water Resource Control Board (CA)
TAT	Turn-around time
TCEQ	Texas Commission of Environmental Quality (TX)
TCLP	Toxicity characteristic leaching procedure
TOC	Total organic carbon
UBC	Uniform Building Code
UEL	Upper explosive limit
ug/L	Micrograms per Liter
USGS	United States Geological Survey
UST	Underground storage tank
VAV	Variable Air Volume box
VCT	Vinyl Composition Tile
VOC	Volatile organic compound
VWC	Vinyl Wall Covering

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1.1 AUL SEARCH AND REVIEW OF LAND TITLE RECORDS

The information reported herein was obtained through sources deemed reliable, a visual site survey of areas readily observable, easily accessible or made accessible by the property contact and interviews with owners, agents, occupants, or other appropriate persons involved with the Subject Property.

Under ASTM E1527-05, Section 6 – User Responsibilities – User ("Client, Lender, Purchaser, Owner") has to search for environmental liens in the Land Title Records. This is a mandatory requirement in order to get the CERLCA protections under ASTM E1527-05 and All Appropriate Inquiries.

According to ASTM E1527-05, search for environmental liens and AULs from review of Land Title Records shall be performed by the *user ("Client, Lender, Purchaser")* that will help identify the possibility of *recognized environmental conditions* in connection with the *property*. These tasks do not require the technical expertise of an *environmental professional* and are generally not performed by *environmental professionals* performing a *Phase I Environmental Site Assessment*. We understand that as our standard procedure, customer has completed *User* Questionnaire to assist the *user* and Odic Environmental in gathering information from the *user* that may be material to identifying *recognized environmental conditions*.

Review Title and Judicial Records for Environmental Liens or Activity and Use Limitations (AULs)—Reasonably ascertainable recorded land title records and lien records that are filed under federal, tribal, state, or local law should be reviewed to identify *environmental liens* or *activity and use limitations*, if any, that are currently recorded against the *property*. *Environmental liens* and *activity and use limitations* that are imposed by judicial authorities may be recorded or filed in judicial records, and, where applicable, such records should be reviewed. Any *environmental liens* or *activity and use limitations* so identified shall be reported to Odic Environmental conducting a *Phase I Environmental Site Assessment*.

Unless added by a change in the scope of work to be performed by Odic Environmental, this practice does not impose on Odic the responsibility to undertake a review of *recorded land title records* and judicial records for *environmental liens* or *activity and use limitations*. The *user* should either *(1)* engage a title company or title professional to undertake a review of *reasonably ascertainable recorded land title records* and lien records for *environmental liens* or *activity and use limitations* currently recorded against or relating to the *property*, or *(2)* negotiate such an engagement of a title company or title professional as an addition to the scope of work to be performed by Odic.

CLIENT-PROVIDED INFORMATION

According to ASTM Standards E-1527-05 and the USEAP AAIs, in order to qualify for the Land-owner Liability Protection (LLPs) offered by the Small Business Liability Relief and Brownfield's Revitalizations Act of 2001, User must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete.

USER QUESTIONNAIRE for AUL

In order to qualify for one of the *Landowner Liability Protections (Landowner Liability Protections*, or *LLPs*, is the term used to describe the three types of potential defenses to Superfund liability in EPA's *Interim Guidance Regarding Criteria Landowners Must Meet in Order to Qualify for Bona Fide Prospective Purchaser, Contiguous Property Owner, or Innocent Landowner Limitations on CERCLA Liability* ("*Common Elements*" Guide) issued on March 6, 2003.) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "*Brownfields Amendments*"), the *user* must provide the following information (if available) to the *environmental professional*. Failure to provide this information could result in a determination that "*all appropriate inquiry*" is not complete.

USER/CUSTOMER QUESTIONNAIRE	
QUESTION	CUSTOMER TO ANSWER
(1.) Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25). Are you aware of any environmental cleanup liens against the *property* that are filed or recorded under federal, tribal, state or local law?	No response
(2.) Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26). Are you aware of any AULs, such as *engineering controls*, land use restrictions or *institutional controls* that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?	No response
(3.) Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28). As the *user* of this *ESA* do you have any specialized knowledge or experience related to the *property* or nearby properties? For example, are you involved in the same line of business as the current or former *occupants* of the *property* or an adjoining *property* so that you would have specialized knowledge of the chemicals and processes used by this type of business?	No response
(4.) Relationship of the purchase price to the fair market value of the *property* if it were not contaminated (40 CFR 312.29). Does the purchase price being paid for this *property* reasonably reflect the fair market value of the *property*? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the *property*?	No response
(5.) Commonly known or *reasonably ascertainable* information about the *property* (40 CFR 312.30). Are you aware of commonly known or *reasonably ascertainable* information about the *property* that would help the *environmental professional* to identify conditions indicative of releases or threatened releases? For example, as *user*, (a.) Do you know the past uses of the *property*? (b.) Do you know of specific chemicals that are present or once were present at the *property*? (c.) Do you know of spills or other chemical releases that have taken place at the *property*? (d.) Do you know of any environmental cleanups that have taken place at the *property*?	No response
(6.) The degree of obviousness of the presence of likely presence of contamination at the *property*, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31). As the *user* of this *ESA*, based on your knowledge and experience related to the *property* are there any *obvious* indicators that point to the presence or likely presence of contamination at the *property*?	No response

The User failed to provide any information requested in the AUL environmental questionnaire. Such is considered a data gap. The absence of this information may not be considered enough to warrant further investigation due to a low risk of environmental contamination at the site, however absence of research into any existing environmental liens recorded for the subject property may disqualify the user for CERCLA landowner liability protection.

ADDITIONAL USER QUESTIONNAIRE

In addition, certain information should be collected by the User, if available, and provided to the *environmental professional* selected to conduct the Phase I. This information is intended to assist the *environmental professional* but is not necessarily required to qualify for one of the *LLPs*. The information includes:

USER QUESTIONNAIRE	
QUESTION	ANSWER
(a) the reason why the Phase I is required	No response
(b) the type of *property* and type of *property* transaction	No response
(c) the complete and correct address for the *property* (a map or other documentation showing *property* location and boundaries is helpful)	No response
(d) the scope of services desired for the Phase I (including whether any parties to the *property* transaction may have a required standard scope of services on whether any considerations beyond the requirements of Practice E 1527 are to be considered)	No response
(e) identification of all parties who will rely on the Phase I *report*	No response
(f) identification of the site contact and how the contact can be reached	No response
(g) any special terms and conditions which must be agreed upon by the *environmental professional*	No response
(h) any other knowledge or experience with the *property* that may be pertinent to the *environmental professional* (for example, copies of any available prior *environmental site assessment reports*, documents, correspondence, etc., concerning the *property* and its environmental condition)	No response

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2.0 SUBJECT PROPERTY CHARACTERISTICS

2.1 PROJECT INFORMATION & PROPERTY LOCATION

Project Information	
ITEM	
ODIC Project Number	6343476-ESAI
Client Project Number	N/A
Subject Property Address	1180 Main St., Redwood City, CA
Subject Property Name	Chubs Auto Repair
Property Inspection Date	December 23, 2006
Weather Condition	Fair
ODIC's Field Assessor	Jonathan Maraccini, Field Assessor
ODIC's Environmental Consultant / QAQC Officer	Hyung Kim, Principal Consultant, REA, CHMM, M.S. John Winkler, CA Professional Geologist, REA
Property Location	The subject property is situated on the northwest corner of Main St. and Elm St. in the City of Redwood City, CA.

2.2 PROPERTY IMPROVEMENT & BUILDING/LAND DESCRIPTION

Property Improvement & Building/Land Description	
ITEM	
General Layout of Property	The property is an irregularly-shaped parcel of commercially-zoned land improved with two rectangular single-story buildings, with one building situated in the northwest portion and the other in the southeast portion of the property. A parking lot occupies the remainder of the property.
Access to Property	Access to the property is achieved via Main Street to the northeast and Elm Street to the northwest.
Lot Size & Shape	Irregularly-shaped, exact size not measured (according to property profile)
Building Size & Shape	Rectangular, exact sizes not measured
Number of Buildings	Two
Year of Construction	Circa 1974 for the present buildings (according to aerial photographs)
Percent Coverage by Building	Approximately 45%
Number of Stories	One
Foundation	Concrete slab-on-grade
Frames/Exterior Walls	Concrete tilt-up
Roof Type	Not inspected
Interior Description	The interior of the northwest building consists of an office area followed by multiple auto body repair bays, with each bay occupied by multiple work related equipment, supplies and multiple vehicles, some of which were situated on electric vehicle lifts. The north portion of the southwest building consisted of multiple vehicles, body parts and auto repair related equipment. The interior materials of the subject buildings consisted of exposed concrete, painted walls, beams and exposed ceiling.
Other Improvements & Features	N/A
Description of Unimproved Areas	The subject property is 100% improved.

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2.3 CURRENT OCCUPANTS & USE OF THE PROPERTY

Current Occupants & Use of the Property	
ITEM	
Present Occupant/Business Operation	Chubs Auto Repair/ Auto repair facility
Number of Occupants/Units	One occupant, two units

2.4 MUNICIPAL SERVICES & UTILITIES

Municipal Service & Utilities	
ITEM	
Portable Water	City of Redwood City
Gas/Oil Source for Heating	PG&E
Electrical	PG&E
Sewage Disposal System	City of Redwood City
Solid Waste Disposal	Allied Waste

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3.0 SUBJECT PROPERTY RECONNAISSANCE

3.1 LIMITING CONDITIONS

The information reported herein was obtained through sources deemed reliable, a visual site survey of areas readily observable, easily accessible or made accessible by the property contact and interviews with owners, agents, occupants, or other appropriate persons involved with the Subject Property.

No disassembly of systems or building components or physical or invasive testing was performed. ODIC renders no opinion as to the property condition at un-surveyed and/or inaccessible portions of the Subject Property. ODIC relies completely on the information, whether written, graphic or verbal, provided by the property contact or as shown on any documents reviewed or received from the property contact, owner or agent, or municipal source, and assumes that information to be true and correct. The observations in this Report are valid on the date of the survey.

3.2 SUBJECT PROPERTY RECONNAISSANCE

Subject property reconnaissance	
ITEM	LOCATION AND DESCRIPTION
Processes that generate or handle Petroleum Products or Hazardous Substances	Yes
Underground Storage Tank	Yes
Aboveground Storage Tank	None observed
Fuel Islands / Dispensers	None observed
Any type of fueling systems	None observed
Containers of Hazardous Material & Petroleum Products related to subject operation/process	Yes
Other containers of suspicious hazardous materials in drums, barrels, or other storage or unlabeled/unidentified containers on site	None observed
Containers not attributed to current use of the Subject Property	None observed
Surface staining either on unpaved or paved land	Yes
Areas of asphalt patch or surface depressions	None observed
Stockpiled Soils with visual contamination	None observed
Fill material of questionable origin/ Piles	None observed
Stressed vegetation	None observed
Any type of heavy equipments or machinery of environmental concern on site	None observed
Hydraulic equipment or machine of environmental concern (potential PCB-oil / hydraulic oil) such as hydraulic lift, compactor, etc.	Yes
Drains for Machinery/Equipment Cleaning or Flushing	None observed
Wastewater Treatment Units & Clarifiers	None observed
Pools of liquid	None observed
Other Drains and Sumps	None observed
Any regulated surface wastewater discharges	None observed

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Subject property reconnaissance	
ITEM	LOCATION AND DESCRIPTION
Storm water or surface-water drainage system having any abnormal accumulation of petroleum or chemical run-off or foreign materials, any unusual blockage of the storm-water control system	None observed
Any stained catch basins, drip pads, or sumps	None observed
Visual indication of Herbicides & Pesticides use to pose environmental concern	None observed
Visual evidence of leak or contamination from septic systems or Cesspools	None observed
Wells (any irrigation wells, injection wells, abandoned wells, groundwater-monitoring wells, dry wells, septic wells, oil wells, gas wells, domestic water wells, vapor wells or other-monitoring wells)	Yes
Railroad tracks or spurs	None observed
Visual evidence of improper handling/disposal or solid wastes	None observed
Other visual evidence of spills, leakage, staining, corrosion, soil/groundwater contamination	None observed
Dry-cleaning operation on site	None observed

3.3 *Detailed Description of Any Reconnaissance Items of Concern*

The subject property operates an auto repair facility which was found to have containers of new motor oil and coolant. The subject site also generates used motor oil and coolant. Located on the southwest corner of the subject property was evidence of a previous underground storage tank (UST). The site has historically had two USTs in the subsurface (see Section 5.4, Local Agency Records for further explanation). During the site inspection the property owner indicated multiple groundwater monitoring wells were advanced during a previous Phase II investigation. After extensive field reconnaissance, ODIC did not observe any previous monitoring wells.

Aboveground automotive waste fluids (waste oil, lubricants, motor oil) containers were observed inside the subject building's service area. Secondary containments were not present. Additionally, minor oil staining was observed on the concrete surfaces but the staining appeared to be limited to the surfaces in nature. Overall, housekeeping practices appeared to be sound and no direct conduits to the surface were observed in the vicinity of the containers. Most of the area is paved with asphalt and concrete surfaces, and there is visual evidence of minor staining sporadically, and historical use of auto body-work on the subject property was found according to historical records.

There are five hydraulic hoists and three hoists presently inside the service garage and associated underground holding containers for hydraulic fluid. ODIC observed no significant cracks or deterioration on the floor around the lift cylinders, and there was no evidence of spill or release of suspected hydraulic oil.

No RECs (Recognized Environmental Conditions) were found during site reconnaissance.

3.4 BUSINESS ENVIRONMENTAL RISK

Business Environmental Risk is defined as a risk, which can have material environmental impact, or environmentally driven impact on the business associated with the current or planned use of a parcel of commercial real estate, not necessarily limited to the issues requiring investigation. Activity and Use Restriction arising from Business Environmental Risk or Compliance Violation is defined as restrictions on the use of, or access to, a site/facility to (1) reduce or eliminate exposure to hazardous substance onsite, or (2) prevent activities that could interfere with a response action either as Engineering Controls or Institutional Controls. ODIC also searched for compliance records, permits and plans, etc. in relation to the subject business operation in the past and presence, which includes but not limited to, Environmental Permits, Equipment Operation Permits, NPDES, Hazardous Material/Waste Inventory or Management Plans, etc., Non-Compliance, Violation, Notices, Correspondences, Community Right-to-Know Plan, Health & Safety Plan, IIPP, SPCC, MSDS, Waste Ticket, Generator ID, etc.

Waste manifests, waste recycling receipts and business licenses were observed and reviewed at the subject property. All documents appear to be up to date and accurate.

3.5 NON-CERCLA ITEMS

The following table summarizes issues on which the survey of interior areas of the Subject Property focused:

NON-CERCLA ITEMS	
ITEM	LOCATION AND DESCRIPTION
Suspicious asbestos-containing materials in damaged condition if the structure is built prior to 1978	Given the age of the subject building (pre-1978), it is possible that asbestos-containing construction materials exist on-site. While none of these materials were observed in damaged condition, any renovation or demolition activities on-site should be accompanied by an asbestos abatement program by a licensed contractor to reduce the risks posed by exposure to asbestos.
Suspicious lead-based paint in damaged condition if the structure is built prior to 1978	Given the age of the subject building (pre-1978), it is possible that lead-based paint exists on-site. However, no flaking or peeling of paint was observed during site reconnaissance.
Lead in drinking water	Not applicable
Radon gas concern	Not applicable
Visual evidence of Urea Formaldehyde	Not applicable
Suspicious potential PCB-oil concern with hydraulic equipment, ballasts, transformers, etc.	N/A
Wetland, creeks, swale, pits, ponds, lagoons, or any other water bodies	Not applicable
Visual evidence of mold problems from wet areas, roof leaks, moisture around air conditioning or plumbing units	No staining or obvious indications of mold or significant water intrusion were noted.
Air quality problems (unusual smells, obnoxious odors, or visual emissions, air emission stacks)	Not applicable
Is the property under flood zone (Federal Emergency Management Agency Flood Insurance Rate Map)	Not applicable

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NON-CERCLA ITEMS	
ITEM	LOCATION AND DESCRIPTION
Regulatory compliance, Cultural and historical resources, Industrial hygiene, Health and safety, Ecological resources, Endangered species,	Not applicable No implication is intended as to the relative importance of inquiry into such non-scope considerations, and this list of non-scope considerations is not intended to be all-inclusive.

3.5.1 Asbestos-Containing Material (ACM)

The use of asbestos in many building products was banned by the U.S. Environmental Protection Agency (EPA) by the late 1970s. In 1989, EPA issued a ruling prohibiting the manufacturing, importation, processing, and distribution of most asbestos containing products. This rule, known as the Ban & Phase-Out Rule, would have effectively banned the use of nearly 95% of all asbestos products used in the United States. However, the U.S. 5th Circuit Court of Appeals vacated and remanded most of the Ban and Phase Out Rule in October 1991. Due to this court decision, many asbestos containing product categories not previously banned (prior to 1989) may still be in use today.

Asbestos-containing material (ACM) represents a concern when it is subject to damage that results in the release of fibers. Friable ACM, which can be crumbled by hand pressure and is therefore susceptible to damage, is of particular concern. Non-friable ACM is a potential concern if it is damaged by maintenance work, demolition or other activities.

Asbestos for commercial use was banned by federal government in 1978. In general, although asbestos-containing materials may be present in the building materials, so long as they would be in an undisturbed state without disturbances or dismantlement, such ACM's do not pose an immediate health risk to building occupants. Local Building & Safety Department and appropriate Air Quality Management District (AQMD) require all possible asbestos-containing materials (ACM's) to be identified and removed in the case of renovation or construction of existing structure which might disturb or dismantle the suspicious ACM's.

If it is found that asbestos is contained within subject building materials through comprehensive asbestos survey, the implementation of an Asbestos Operations and Maintenance Program shall be developed, in order to ensure the safety of occupants who may be exposed to potential asbestos hazards.

An AHERA Certified Inspector or a State Certified Asbestos Consultant can perform the asbestos survey involving bulk sampling and analysis at NIST/NVLAP accredited laboratory using Polarized Light Microscopy with Dispersion Station (PLM/DS) in accordance with the Environmental Protection Agency (EPA) "Interim Method of the Determination of Asbestos in Bulk Insulation Samples" (EPA-600-M4-82-020).

Asbestos-containing material (ACM) represents a concern when it is subject to damage that results in the release of fibers. Friable ACM, which can be crumbled by hand pressure and is therefore susceptible to damage, is of particular concern. Non-friable ACM is a potential concern if it is damaged by maintenance work, demolition or other activities.

Prior to demolition of the subject building, asbestos survey and abatement of identified ACMs prior to demolition shall be conducted in accordance with AQMD Rule 1403 and demolition codes of regulation.

Based upon non-residential use of the Subject Property, ODIC is not contracted to perform ACM survey at the subject property, thus it is beyond the scope of the service included in this report

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3.5.2 Lead-Based Paint (LBP)

In 1978, the federal government banned the use of lead-based paint in residential applications; however, usage in general industry continued at a decreased rate to the present. Due to the dangers of lead poisoning, the Consumer Product Safety Commission banned the sale of lead-based paint (LBP), defined as containing more than 0.06% lead by weight, to consumers, and the use of LBP in residences and other areas where consumers have direct access to painted surfaces. Effective June 3, 1993, the Lead in Construction Standard codified in 29 CFR (Code of Federal Regulations) 1926.62 applies to sources or potential sources of lead exposure present in an "employment-related" context. Federal regulations specify that lead paint hazards must be abated in residential buildings occupied by children under the age six.

The trigger mechanism for application of the standard is an activity that, by its inherent nature, may cause exposure to lead. Therefore, within the context of regulatory compliance for OSHA (Occupation Safety and Health Agency), the subject property did not appear to require further response to suspect lead-based paint as no on-site activity by its inherent nature would cause exposure to lead.

Lead-based paint presents a hazard through inhalation or ingestion of paint chips or vapor fumes. The greatest cumulative health threat is to young children, and for this reason the Department of Housing and Urban Development (HUD) has promulgated lead standards and survey requirements for buildings affected by HUD funding. This HUD regulation represents the only federal requirement for lead-based paint, hazard management applicable to privately owned structures. Based upon non-residential use of the Subject Property, ODIC is not contracted to perform LBP survey at the subject property, thus it is beyond the scope of the service included in this report

3.5.3 Lead in Drinking Water

Lead has historically been used in pipes, solder, and brass fixtures used in water distribution systems and plumbing material. In 1986, EPA banned the use of lead at concentrations exceeding 0.2% lead in solder and 8% lead in other plumbing material. Based upon non-residential use of the Subject Property, ODIC is not contracted to perform the testing of lead content in water at the subject property, this it is beyond the scope of the service included in this report.

3.5.4 Radon

Radon is a naturally occurring, colorless and odorless radioactive gas that is generated primarily in granitic rocks. The United States Surgeon General has published information that radon is a major cause of lung cancer. Radon usually enters a building through openings in the foundation, and therefore is a potential health concern to occupants of the lowest level of a building with inadequate ventilation. Radon sources can be found from earth and rock beneath building structures, well water, and building materials themselves. Though there is no immediate health effect, it is believed to account for approximately 10% of lung cancer deaths in the United States. Estimated national average is 1.5 picocuries per liter of air, however, levels as high as 200 picocuries per liter in some commercial buildings can be found. USEPA and State Department of Health Services' Radon Survey Interim Results report shows different U.S. regions according to general geological and climate information.

If a property region reportedly has radon concentration below 4 picocuries per liter of air in 99.5% of homes within the region, then, it is not likely impacted by the presence of radon gas, considering EPA action limit of 4 picocuries per liter of air volume. However, when your premises are tested for radon level and have high level of radon reading, seek proper measures such as increase in ventilation, installation of heat exchanger or heat recovery ventilator, or sealing of cracks and other openings in basement floor. Usual methods of radon testing involve charcoal canisters at HVAC systems or lowest livable level of the subject buildings. Based upon non-residential use of the Subject Property, ODIC is not contracted to perform Radon testing at the subject property, this it is beyond the scope of the service included in this report.

3.5.5 Potential Impact of Urea Formaldehyde

Formaldehyde, by itself, or in combination with other chemicals, serves a number of purposes in manufactured products. It had been widely used to add permanent press qualities to clothing and draperies, as a component of glues and adhesives, and as a preservative in some paints and coating products. In commercial buildings, the most significant sources of formaldehyde are pressed wood products made using adhesives that contain urea-formaldehyde (UF) resins, such as particleboard, hardwood plywood paneling, medium density fiberboard. As a colorless, pungent-smelling gas, Formaldehydes can cause sensations in the mucous membrane and difficulty in breathing which could lead to asthmatic attack.

Newly installed UF foam insulation often releases the gas-phase UF for six to twelve months. Such volatilized gases can concentrate in the internal air of a building. No evidence of UF foam insulation was observed during the subject property reconnaissance. The potential for UF on the site is presumed low. ODIC is not contracted to perform the testing of formaldehyde level on the subject property, thus the delineation of its level is beyond the scope of the service included in this report.

3.5.6 Polychlorinated Biphenyls (PCBs) Equipment

Prior to 1978, PCBs were commonly used in dielectric fluids in transformers, capacitors, and light ballasts due to their desirable thermal characteristics, and hydraulic fluid compactor. Due to their demonstrated toxicity and persistence in the environment, PCB manufacturing in the United States was discontinued. By 1985, the US EPA required that commercial property owners with transformers containing more than 500 ppm PCBs must register the transformer with the local fire department, provide exterior labeling, and remove combustible materials within 5 meters (40 CFR 760.30). The US EPA has three different categories for PCB-containing transformers such as non-PCB containing transformer, if less than 50 ppm PCB, PCB-contaminated transformer, if between 50 and 499 ppm of PCB, and it must conform to the US EPA Fire Rule for disposal, and PCB-transformer, if greater than 500 ppm of PCB.

No PCB-containing light ballasts were inspected, which operate fluorescent light fixtures. Separate survey of PCB's on existing light ballasts can only determine the content, unless such ballasts contained in the fluorescent light fixtures are labeled with "no PCB". Prior to construction or any disturbances to the existing light fixtures, PCB-ballasts survey has to be performed for any building structure constructed prior to 1978, and identified PCB-ballasts shall properly be disposed of by incineration or recycled within authorized facilities. ODIC is not contracted to perform the testing of PCB contents in suspicious fixtures and equipments on the subject property, thus the delineation of its level is beyond the scope of the service included in this report.

3.5.7 Pits, Ponds, Lagoons

No visible evidence of wetlands such as pits, ponds, lagoons, or any other water bodies were observed within the subject property's boundary lines.

Wetlands identification of the property is not part of an ASTM 1527-05 Phase I. ODIC is not contracted to perform the identification of wetlands on the subject property, thus the delineation of its level is beyond the scope of the service included in this report. However, wetlands on the property may reduce the allowable footprint that could be developed, which significantly changes the economics of the project. Wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plants and animal communities living in the soil and on its surface. Wetlands can be further defined through classification according to the length of time that an area is inundated or saturated by water, and the type of plants and animals an area supports. There are five major wetland classifications: marine, estuarine, lacustrine, riverine, and plaustrine. Marine and estuarine wetlands are associated with the ocean and include coastal wetlands, such as tidal marshes. Lacustrine wetlands are associated with lakes, while riverine wetlands are found along rivers and streams. Plaustrine wetlands may be isolated or connected wet areas and include marshes, swamps, vernal pools, and bogs.

Pits, ponds and lagoons are often associated with the disposal of solid and liquid wastes, which may include hazardous materials. The Clean Water Act (1972), Section 404, establishes federal authority to regulate activities in

wetlands, and US Department of Fish and Game mapping resources are often used for geographic wetland identification.

3.5.8 Mold (Fungi, Bacteria)

The presence of mold and mildew in residential and commercial buildings is causing a surge of interest amongst building owners, architects, engineers and contractors regarding its source and consequences. In general, mold is a subset of the fungi family. Fungi are common and found in most ecosystems. Fungi is needed to help recycle organic material to sustain plant and animal life. In order to reproduce, mold release tiny spores into the air, which eventually attach onto surfaces favorable for growth. A class of fungi, molds have been found to cause a variety of health problems in humans, including allergic, toxicological, and infectious responses. Molds are decomposers of organic materials, and thrive in humid environments, and produce spores to reproduce as plants produce seeds. When mold spores land on a damp spot indoor, they may begin growing and digesting whatever they are growing on in order to survive. When excessive moisture or water accumulates indoors, mold growth will often occur, particularly if the moisture problems remain undiscovered or not addressed.

Interior areas of buildings characterized by poor ventilation and high humidity are the most common locations of mold growth. Building materials including drywall, wallpaper, baseboards, wood framing, insulation and carpeting often play host to such growth. Moisture control is often the key to mold control, since molds need both food and water to survive.

Molds need three things to grow and thrive: Organic materials (food) such as wood, cloth, leather, carpets, or dust, Temperatures between 40 degrees and 100 degrees F. Moisture. If any of these three conditions are not present, a mold colony will become dormant. A dormant colony will become reactivated if favorable conditions return. Often molds release compound gases that create the common "musty" smell associated with mold.

Moisture is the one criterion that must be controlled in order to prevent, or stop, mold growth in interior or living environments. Aside from roof and drainage leaks, and leaky plumbing, there are numerous sources of moisture related to water vapor already in the air (relative humidity). Tubs/showers, cooking, plants, dishwashing, humidifiers and outdoor humid air all contribute moisture that can lead to condensation on, or within, wall surfaces, at windows or at air supply registers. If a must door exists within an area, there is a good chance that mold is present.

As mold becomes a more prevalent issue, building owners will need to stay informed on the subject. There are dozens of Internet websites geared to the topic, and increased litigation in this area is also fueling increased interest. With any new trend there often is misinformation, incorrect conclusions, and conflicting information. Those involved in the building industry should consider the source and weight of information carefully before drawing conclusions and making decisions.

Laboratory test and sampling by qualified industrial hygienist for air & wipe testing can only determine the environmental site conditions for various species of fungi such as Aspergillus, Cladosporium, Stachybotris and other mycotoxyns, and bacteria families such as Legionella, etc. Mold assessment or sampling of the property is not part of an ASTM 1527-05 Phase I. ODIC is not contracted to perform the identification of mold hazards on the subject property, thus the delineation of its level is beyond the scope of the service included in this report.

3.5.9 Flood Zone

ODIC is not contracted to search flood map to identify whether the subject property is located within 50-year, 100-year flood zone, within the scope of this environmental assessment.

3.5.10 Other Non-Scope Considerations

ODIC is not contracted to research the following non-scope considerations, within the scope of this environmental assessment. No implication is intended as to the relative importance of inquiry into such non-scope considerations, and this list of non-scope considerations is not intended to be all-inclusive:

Regulatory compliance, Cultural and historical resources, Industrial hygiene, Health and safety, Ecological resources, Endangered species.

3.6 ADJACENT PROPERTIES

For the scope of this assessment, properties are defined and categorized based upon their physical proximity to the subject property. An adjoining property is any real estate property whose border is contiguous or partially contiguous with the subject properties, or that would be if the properties were not separated by a roadway, street, public thoroughfare, river, or stream.

Adjacent Properties	
ITEM	
Northwest	Commercial building, followed by Pennsylvania Ave.
Southwest	Immediately by Lathrop St., followed by parking lot and commercial building
Northeast	Immediately by Main St., followed by residential
Southeast	Immediately by Elm St., followed by auto repair facility

Visual reconnaissance of the adjacent properties did not reveal evidence of Recognized Environmental Conditions (RECs). No large quantities of hazardous materials were observed being stored in an improper manner or otherwise impacting the ground surface. No equipment or machinery of environmental concern, i.e. wastewater treatment units/systems or underground storage tanks were observed in a dysfunctional state and no heavy manufacturing processes were taking place. Beyond visual reconnaissance, ODIC relies on a search of governmental agency files and databases for warning of any potential concerns related to adjoining and semi-adjoining properties. Please see Section 5.0, Regulatory Agency Search, for further information.

3.7 PHYSICAL SETTING

TOPOGRAPHY & HYDROGEOLOGY

The subject property's physical location was researched employing a United States Geological Survey (USGS) 7.5 Minute Topographic Quadrangle (Quad) Map relevant to the subject property. The USGS 7.5 Minute Quad Map has an approximate scale of 1 inch to 2,000 feet, and shows physical features with environmental significance such as wetlands, water bodies, roadways, mines, and buildings.

The physical and natural features illustrated on the Quad Map served as areas of visual emphasis when conducting the site inspection of the subject property. The USGS 7.5 Minute Quad Map was used as the only Standard Physical Setting Source, and is sufficient as a single reference.

The Subject Quad Map shows no physical features that may have environmentally impacted the subject property. The subject property and general area are identified as urban developed. No mines, wells, wetlands, or aboveground tanks were mapped in the general area of the subject property. The elevation of the site is approximately 16 feet above mean sea level with a gradual down-slope toward the north north-east.

Dominant soil composition in the general area of the subject property is characterized as soil component name Urban Land with a variable soil surface texture, Class D, very slow infiltration rates.

According to records reviewed from SMCDHS, groundwater on site was measured at depths of 7.74 to 10.37 feet bgs during subsurface investigation activities conducted at the site in 1994 and 1995. Groundwater flow direction data was not available for the subject site, however, is suspected to flow to the north. A site located at 1700 Middlefield (approximately xx feet to the northwest, reports groundwater flow direction to the northeast.

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While groundwater flow direction at the subject property cannot be confirmed without survey measurement of static groundwater level at triangular points, it is expected to flow in the direction of surface topographical contour, or toward the wetland or nearest water body or discharge basin (percolation channel). It is important to note that groundwater flow direction can be influenced locally and regionally by the present of local wetland features, surface topography, recharge and discharge areas, horizontal and vertical inconsistencies in the types and location of subsurface soils, and proximity to water pumping wells. Depth and gradient of the water table can change seasonally in response to variation in precipitation and recharge, and over time, in response to urban development such as storm water controls, impervious surfaces, pumping wells, cleanup activities, dewatering, seawater intrusion barrier projects near the coast, etc.

SOURCE OF DATA
Current USGS 7.5 Minute Topographical Map
EDR Radius Map with GeoCheck
Secor, Groundwater Monitoring Report, 1700 Middlefield, August 2006

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4.0 SUBJECT PROPERTY AND VICINITY HISTORY

4.1 HISTORICAL RECORD SEARCH RESOURCES

Historical Records Search in conformance with the scope and limitations of ASTM Standard Practice E 1527-05 was conducted for the Property. All *obvious* uses of the *property* shall be identified from the present, back to the *property's* first developed use, or back to 1940, whichever is earlier.

HISTORICAL RECORD SEARCH RESOURCES	
ITEM	REFERENCE SOURCE
Previous Environmental Reports	Various reports from SEMCO Environmental Contractors & General Engineering with dates ranging from 2/2/94 through 6/10/94, several reports from Applied Science & Engineering with dates ranging from March 30, 1994 through June 2, 1995, Superior Precision Analytical on 2/24/94 and Priority Environmental Labs on 4/12/95.
Sanborn Fire Insurance Maps	1884 through 1968
Historical Aerial Photographs	The EDR Aerial Photo Decade Package
Historical City Directories	1991 through 2006
Building/Planning Department Zoning/Land Use Records	Redwood City Building and Safety Department
Recorded Land Title Records	N/A
Historical Topographical Maps	TerraServer via USGS
Oil & Gas Maps	Department of Conservation, Oil, Gas & Geothermal Resources, corresponding Wildcat and District Maps for the subject and immediate vicinity
Interviews	Mr. Steve Brugman, Owner/Operator, December 23, 2006
Property Tax Files	N/A
Other Historical Records	N/A

4.2 PREVIOUS ENVIRONMENTAL REPORTS

ODIC review of records obtained from the County of San Mateo Department of Health Services (SMCDHS) indicated that on January 14, 1994, a 1,000-gallon waste oil UST was removed from the site. During the excavation process, a second 1,000-gallon UST was discovered and determined to have contained gasoline. Both tanks were single walled with the waste oil tank exhibiting holes. A solvent odor was noted in the air and the soil beneath the tank was stained. The gasoline tank did not have any holes, odors or staining. The two tanks were in separate excavations and one soil sample was taken from each end of the tank in both excavations. Samples were returned as non detect for THP-g, O&G and BTEX with the exception of one sample from the waste oil UST returning with a result of 810 ppm of TPH-d.

In February of 1994, the waste oil tank pit was over excavated to approximately 10 feet bgs. One soil sample was taken at 8 feet bgs on the west wall with results of less than 1 ppm of TPH-g, less than 10 ppm of TPH-g, less than 50 ppm of oil & grease (O&G), non-detect for halogenated volatile organic compounds and less than 0.005ppm for BTEX. Groundwater was encountered at 9.5 feet bgs; the pit was partially pumped and a water sample was obtained. Due to contractor error, the pit water sample was only analyzed for oil & grease with a concentration of 9,000 ppb. The pump was repaired, and the pit was pumped at least two more times prior to sampling the re-charge with results of less than 50 ppb TPH-g, less than 0.5 ppb BTEX, 530 ppb TPH-d , less than 5,000 ppb O&G, and non-detect for halogenated volatile organic compounds. The diesel was noted by the lab as non-typical diesel.

In May of 1994, a groundwater monitoring well (MW-1) was installed in the area of the former waste oil UST, and monitored for four consecutive quarters with no contaminants detected.

In August of 1994, a hydraulic lift was removed from the site. The pit was excavated to groundwater at 12 feet bgs. Soil samples were collected and analyzed for O&G by method 418.1, with a grab water sample also taken. A saw-cut PVC pipe was installed in the excavation, backfilled with pea gravel and named as MW-2. O&G were detected at levels ranging from 520 ppm to 12,000 ppm in soils with water samples ranging from 1,500 to 1,700 ppb. An estimated 2.5 cubic yards of excavated soil contaminated with approximately 1 gallon of hydraulic oil remained in place at the site.

In February of 1995, MW-1 was analyzed for kerosene, diesel and motor oil with detection limits of 50, 50, and 0.5 ppb with a non detect result. In May of 1995, MW-1 was sampled for O&G with a non-detect result. The low levels of O&G in MW-2 were deemed not to pose a threat to human health or the environment. As there is not a perceptible gradient between MW-1 and MW-2, and since no O&G was found in MW-1, little potential for lateral migration from MW-2 was noted, and the consultant recommended closure. A letter from SMCDHS, dated June 21, 1995, stating formal closure for the subject property was granted.

4.3 *Fire Insurance Maps*

Historical Sanborn Fire Insurance Maps

Date	Description
1884	The property was not depicted on this map.
1891	The property appeared improved with an irregularly shaped dwelling in the southeastern portion with an unlabeled building to the northwest. A dwelling, wood shed and water tank occupied the adjacent property to the south. Other adjacent parcels were not depicted on this map.
1907	The property appeared divided into four parcels, three of which were rectangular and one L-shaped rectangular parcels. The westerly parcel was improved with a rectangular dwelling and outbuilding, followed by an irregularly-shaped dwelling and outbuilding on the second parcel followed by and outbuilding on the L-shaped parcel and an irregularly-shaped dwelling on the easternmost parcel. The northerly adjacent parcel was occupied by an irregularly-shaped building labeled as Cullen Company Grain Warehouse. Other adjacent parcels were not depicted on this map.
1919	The property was divided into four rectangular parcels. A rectangular dwelling and outbuilding occupied the easterly portion, followed by an irregularly-shaped dwelling and outbuilding, a dwelling on the southerly portion of the westerly parcel with an outbuilding to the north of it. The adjacent parcel to the north was labeled feed and fuel, while the parcels to the south were vacant and occupied by a dwelling with detached garage. Other adjacent parcels were not depicted on this map.
1950	No structures were depicted on the property. The parcels to the south were vacant and improved with a dwelling, detached garage and out building. of a different configuration than the previous map. The northerly adjacent parcel was labeled as Ridgeway Feed and Fuel with a feed and grain warehouse and wood and coal storage area. Redwood Creek was to the west of the site.
1968	The property was occupied by several structures labeled as spray painting, auto repair, parking and store. Several stores occupied the adjacent parcel to the south, while the parcel to the north was unoccupied.

4.4 HISTORIC AERIAL PHOTOGRAPHS

Historical Aerial Photographs		
DATE	SOURCE	DESCRIPTION
1943	EDR	The property appeared improved with several rectangular buildings with a rectangular building to the north, several buildings to the south and vacant land to the east and west. Outlying areas appeared improved with a mix of commercial and residential development.
1956	EDR	Remained unchanged in general.
1965	EDR	The property appeared improved with a large rectangular building in the southeast corner, followed by several other buildings to the west. The northerly and easterly adjacent parcels appeared as vacant and undeveloped. Outlying areas remained unchanged in general.
1974	EDR	The property appeared improved with two rectangular structures similar to the current buildings on-site. Outlying and adjacent parcels remained unchanged in general with the exception of a rectangular building adjacent to the north.
1982	EDR	Remained unchanged in general.
1993	EDR	Remained unchanged in general.
1998	EDR	Remained unchanged in general.

4.5 CITY DIRECTORIES

Business directories including city, cross-reference and telephone directories were reviewed, if available, at approximately five-year intervals for the years spanning 1991 through 2006. These years are not necessarily inclusive. A summary of the information obtained is provided in the text below.

Subject Property		
YEAR	BUSINESS LISTING	SOURCE
1991	No Return	Haines Criss-Cross Directory
1996-2006	Chub's Auto Repair	Haines Criss-Cross Directory

ODIC review of city directory listings for adjoining properties showed no listings likely to have any adverse affect to the environmental subsurface at the subject property.

4.6 BUILDING RECORDS / PROPERTY PROFILE

Building & Planning Department Records		
DATE	DESCRIPTION	OWNER
07/21/52	Garage Building	Russ Denny
03/15/55	Addition to office building	R. Denny
01/06/59	Addition and alteration to existing commercial building	H. H. Wadler
N/A	Application to architectural committee, City of Redwood City	Cambridge Auto Repair & Sales
07/20/73	Letter to Mr. Burke regarding business license application	N/A
07/08/86	Re-roof	Chub's Auto Repair

4.7 CHAIN OF TITLE / PRELIMINARY TITLE REPORT

No Preliminary Title Reports or Historical Chain of Title were reviewed for this assessment. ODIC's scope of investigation as well as contractual agreement between ODIC and the Client excludes obtaining and reviewing a Preliminary Title Reports or Historical Chain of Title.

4.8 HISTORICAL TOPOGRAPHICAL MAPS

ODIC did not use the extensive series of Historical USGS 7.5 Topographical Maps in this site assessment because other records were obtained, which are considered sufficient to meet ASTM E1527-05 standard guidelines. However, the most recently photo-revised USGS Topographical Map (via USGS / Terra Server) for the subject property did not show any features of environmental concern.

4.9 OIL & GAS MAPS

ODIC used California Department of Conservation, Oil, Gas & Geothermal Resources, corresponding Wildcat and District Maps for the subject and immediate vicinity, but found no active or abandoned oil & gas well on the subject property or immediate vicinity.

4.10 INTERVIEWS

Mr. Steve Brugman was interviewed on December 23rd 2006. He stated that he has operated an auto repair facility at the property since approximately 1995, and that it was previously used as an auto repair facility before he purchased it. Additionally, he said that he is aware of a previous Phase II conducted after a standard underground fuel tank removal, however he does not have this report and does not know where it is. Mr. Brugman concluded the interview by stating that he was not aware of any environmental concerns pertaining to the subject property.

4.11 OTHER HISTORICAL RECORDS

No other historical records were used.

4.12 SUMMARY OF HISTORICAL PROPERTY USE AND DATA GAP

Summary of Historical Property Use

According to Sanborn Fire Insurance Maps the property appeared improved with dwellings in 1891, 1907, 1919. In 1950 no structures were depicted on site, while in 1968 the property was occupied by several buildings labeled as spray painting and auto repair. According to building records obtained from the City of Redwood City, permits for a garage building were issued in 1952 with an addition to the office building in 1955 and various other permits through 1986. Mr. Steve Brugman, owner, stated that he has occupied and operated an auto repair facility on the property since 1995 and that the property was previously used as an auto repair facility. City directories showed listings as Chub's Auto repair from 1996 through 2006. Aerial photographs showed improvements on the property as early as 1943 with buildings similar to the current buildings in 1974.

Data Gap

ASTM E1527-05 and the US-EPA AAIs requires that the report identify and comment on significant data gaps that affect the ability of the environmental professional to identify recognized environmental concerns.

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The largest data gap in this research was from 1919 to 1943. Other gaps ranged from two to sixteen years. However, ODIC does not believe that any gaps in the information reviewed would affect our ability to identify recognized environmental concerns.

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5.0 REGULATORY RECORD SEARCH

5.1 PROCEDURE

The most current databases sources maintained by state and federal offices were searched and provided by governmental record search database suppliers. Such databases were searched for properties with reported environmental issues within radii specified by ASTM Standard E 1527-05, either by using geocoding information that identified the coordinates of the properties in the databases or by checking the street addresses of practically reviewable non-geocoded "orphan" properties within the same zip code. The database report is included as an appendix to this *Report*. The database report may identify a certain "orphan sites" which are those facilities that could not be mapped or geocoded due to inadequate address information. We attempted to locate the facilities via various mapping programs, but cannot be held liable for not correctly locating these orphan sites to determine their impact to the subject property.

5.2 FEDERAL AGENCY RECORDS

FEDERAL AGENCY RECORDS		
SOURCE	CRITERIA FOR MAXIMUM SEARCH DISTANCE (MILES)	NO. OF PROPERTIES WITHIN SEARCH DISTANCE
NPL	1.0	0
De-listed NPL	0.5	0
CERCLIS	0.5	1
CERCLIS-NFRAP	0.5	3
RCRA-CORRACTS	1.0	1
RCRA-TSDF	0.5	0
RCRA-Generator	Subject Property and Adjoining Properties	1
ERNS	Subject Property Only	0
Federal IC/EC Registries	Subject Property Only	0
Other Federal List	Subject Property Only	0

National Priority List (NPL) Facilities
The NPL Report, also known as the Superfund List, is an EPA listing of the nation's worst uncontrolled or abandoned hazardous waste facilities. Listing as a Superfund Site is primarily based on a score that the facility receives from the EPA's Hazard Ranking System. These facilities are targeted for possible long-term remedial action under the Superfund Act. Such prioritized sites with significant risk to human health and the environment receive remedial funding under the Comprehensive Environmental Response Conservation and Liability Act (CERCLA). The *NPL* or *National Priorities List* is a list compiled by EPA pursuant to CERCLA, 42 U.S.C. §9605(a)(8)(B), of properties with the highest priority for cleanup pursuant to EPA's Hazard Ranking System. 40 C.F.R. Part 300 can be referenced. (*http://www.epa.gov/superfund/sites/npl/npl.htm*)

De-Listed NPL: The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Comprehensive Environmental Response, Compensation & Liability Information System (CERCLIS) and CERCLIS - No Further Remedial Action Planned (CERCLIS-NFRAP) Sites
The CERCLIS is the EPA compilation of sites for which the EPA has evidence of, or is investigating, a release or threatened release, of hazardous substances which may be subject to review in accordance with the terms and

conditions of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Superfund Act). Sites to be included are identified primarily by the reporting requirements of hazardous substances including degreasing solvents, oily waste, acid solutions, alkaline solutions, and heavy metal solutions, Treatment, Storage and Disposal (TSD) facilities and releases larger than specific Reportable Quantities (RQ), established by EPA. There is one CERCLIS site within 0.5 miles of the subject property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
DUOLITE INTERNATIONAL	*800 CHESTNUT ST*	*1/4 - 1/2ENE*	*AF120*	*151*

There are 3 CERC-NFRAP sites within 0.5 miles of the subject property,

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
PRICE COMPANY	2110 MIDDLEFIELD RD	1/4 - 1/2ESE	122	160
REDWOOD FOOD PACKING CO	2200 MIDDLEFIELD RD	1/4 - 1/2ESE	AI128	169
Lower Elevation	**Address**	**Dist / Dir**	**Map ID**	**Page**
REDWOOD GENERAL TIRE SERVICE	*1630 BROADWAY*	*1/4 - 1/2NE*	*AJ132*	*174*

The property at 800 Chestnut had a release of volatile organic compounds to groundwater, with containment of groundwater under control. None of the sites listed above in researched database are suspected to have an adverse environmental impact on the Subject Property based on one or more of the following rationale: a) their horizontal distance from the Subject Property; b) their down/cross-gradient location with respect to the assumed shallow groundwater flow direction; c) the nature of the reported release (e.g., contamination confined only within soil media, absence of groundwater impact, lack of transporting media such as groundwater); and/or d) their regulatory status (e.g., case closed, remediation action underway).

RCRA-CORRACTS: Corrective Action Tracking System (CORRACTS)
CORRACTS is a list of facilities that are found to have had hazardous waste releases and require Resource Conservation and Recovery Act (RCRA) corrective action activity, which can range from site investigations to remediation. This database is also known as RCRA Violators or Corrective Action Report (CORRACTS). There is 1 CORRACTS site within 1 mile of the subject property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
DUOLITE INTERNATIONAL	*800 CHESTNUT ST*	*1/4 - 1/2ENE*	*AF120*	*151*

The property at 800 Chestnut had a release of volatile organic compounds to groundwater, with containment of groundwater under control. None of the sites listed above in researched database are suspected to have an adverse environmental impact on the Subject Property based on one or more of the following rationale: a) their horizontal distance from the Subject Property; b) their down/cross-gradient location with respect to the assumed shallow groundwater flow direction; c) the nature of the reported release (e.g., contamination confined only within soil media, absence of groundwater impact, lack of transporting media such as groundwater); and/or d) their regulatory status (e.g., case closed, remediation action underway).

RCRA-TSDF: Resource Conservation and Recovery Act (RCRA) Treatment Storage Disposal Facility (TSDF)
The RCRIS report of hazardous waste generators, treatment, storage, and disposal (TSD) facilities contains information pertaining to facilities that are required to register their hazardous waste activity under the Resource Conservation and Recovery Act (RCRA).

Resource Conservation and Recovery Act (RCRA) Generator
RCRA hazardous waste generators are identified as Large Quantity Generators (LQGs), Small Quantity Generators (SQGs), or Conditionally Exempt Small Quantity Generators (CESQG). RCRA LQGs are identified as those facilities, which generate at least 1,000 kilograms (2,200 pounds) of non-acutely hazardous waste (or 1 kilogram of

acutely hazardous waste) monthly. RCRA SQGs are identified as those facilities that generate less than 1,000 kilograms of non-acutely hazardous waste monthly. The subject property is listed as RCRA-SQG.

Site	Database(s)	EPA ID
CHUBS AUTO REPAIR 1180 MAIN ST REDWOOD CITY, CA 94063	RCRA-SQG FINDS HAZNET	CAR000004721

The property is listed as RCRA-SQG, however with no violations found and is therefore unlikely to have any adverse affect to the environmental subsurface at the subject property.

Emergency Response Notification System (ERNS)
The ERNS is a national database used to collect information on reported releases of petroleum products or hazardous substances. The database contains information from spill reports made to federal authorities including the EPA, the U.S. Coast Guard, the National Response Center and the U.S. Department of Transportation. The program is a cooperative effort of the Environmental Protection Agency, the Department of Transportation Research and Special Program Administration's National Transportation System Center and the National Response Center. There are primarily five Federal statues that requires release reporting: CERCLA Section 103; the Superfund Amendments and Reauthorization Act (SARA) Title III Section 304; the Clean Water Act of 1972 (CWA) Section 311(b)(3); and the Hazardous Material Transportation Act of 1974 (HMTA) Section 1808 (b).

US Engineering Controls: Engineering Controls Sites List - A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.
Source: Environmental Protection Agency
Telephone: 703-603-8905

US Institutional Controls: Sites with Institutional Controls - A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.
Source: Environmental Protection Agency

US Brownfields: A Listing of Brownfields Sites - Included in the listing are brownfields properties addresses by Cooperative Agreement recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.
Source: Environmental Protection Agency

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5.3 STATE AGENCY RECORDS

STATE AGENCY RECORDS		
SOURCE	CRITERIA FOR MINIMUM SEARCH DISTANCE (MILES)	NO. OF PROPERTIES WITHIN SEARCH DISTANCE
State/Tribal Equivalent NPL	1.0	0
State/Tribal Equivalent CERCLIS	0.5	35
State/Tribal SWLF	0.5	0
State/Tribal LUST	0.5	60
State/Tribal UST	Subject Property and Adjoining Properties	1
State/Tribal IC/EC Registries	Subject Property Only	0
State/Tribal Voluntary Cleanup Sites	0.5	0
State/Tribal Brownfield Sites	0.5	0
Other State List	Subject Property Only	1

State/Tribal Equivalent NPL
California AWP (Annual Work Plan previously known as Bond Expenditure Plan): The California Health & Safety code requires the California EPA to develop a site-specific expenditure plan as the basis for an appropriation of California Hazardous Substance Cleanup Bond Act of 1984 funds. The Agency is also required to update annually and report any significant adjustments to the Legislature on an ongoing basis. The plan identifies California hazardous waste sites targeted for cleanup by responsible parties, the California and the Federal Environmental Protection Agency over the next coming years.

California Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

State/Tribal Equivalent CERCLIS
State of California Office of Planning and Research (CORTESE) This database is a consolidation of information from various sources. It is maintained by the State Office of Planning and Research and lists potential and confirmed hazardous waste or substances sites. Many of the CORTESE sites are also listed as LUST due to nature of release and jurisdictional overlap of local oversight regulatory agencies. The subject property is listed as CORTESE.

Site	Database(s)	EPA ID
CHUBS AUTO REPAIR 1180 MAIN ST REDWOOD CITY, CA 94063	RCRA-SQG FINDS HAZNET LUST Facility Status: Case Closed Cortese San Mateo Co. BI SWEEPS UST	CAR000004721

See section 5.4, Local Agency Records, for further information.

There are 34 CORTESE sites within 0.5miles of the subject property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
RMC - LONESTAR	25 MAPLE ST	1/8 - 1/4SW	E22	27
TOWN FORD SALES	1601 EL CAMINO REAL	1/8 - 1/4SSW	G31	36
JULES DUC CONSTRUCTION	1451 EL CAMINO REAL	1/8 - 1/4WSW	J41	48
FERIANTE PROPERTY	1612 EL CAMINO REAL	1/8 - 1/4SSW	K47	54
RED CARPET CAR WASH	1436 EL CAMINO REAL	1/8 - 1/4WSW	J48	58
ARCO FAILITY #306	1700 MIDDLEFIELD RD	1/8 - 1/4E	P63	72
ACTERON CORPORATION	851 SHASTA ST	1/8 - 1/4SE	T74	90
PACIFIC BELL	1121 JEFFERSON AVENUE	1/4 - 1/2WNW	99	114
LUCKY STORE #15	1250 JEFFERSON AVE	1/4 - 1/2W	108	129

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
ROYS CLEANERS	1100 EL CAMINO REAL	1/4 - 1/2WNW	AE115	139
RAY'S AUTO	2233 MIDDLEFIELD RD	1/4 - 1/2ESE	AI135	183
U HAUL #708-61	2200 EL CAMINO REAL	1/4 - 1/2SSE	AM145	200

Lower Elevation	Address	Dist / Dir	Map ID	Page
REDWOOD CITY CITY OF	1036 MIDDLEFIELD RD	1/8 - 1/4NW	Q68	80
REDWOOD CITY POLICE DEPT.	1020 MIDDLEFIELD RD	1/8 - 1/4NW	Q79	93
REDWOOD CITY CITY HALL	1017 MIDDLEFIELD RD	1/8 - 1/4NW	V83	99
VANHAM PROPERTY	1015 JEFFERSON	1/8 - 1/4NW	Y90	104
ARCO	1032 JEFFERSON AVE	1/8 - 1/4WNW	Y96	110
CHEVRON	932 MIDDLEFIELD RD	1/4 - 1/2NW	AB103	125
REDWOOD CITY POST OFFICE	855 JEFFERSON AVE	1/4 - 1/2NNW	AA104	126
BROADWAY PRODUCE & FLOWER	1870 BROADWAY	1/4 - 1/2NNE	116	148
GUS'S SERVICE STATION, FORMER	841 HAMILTON	1/4 - 1/2NW	123	161
CITY CENTER PARKING	750 MARSHALL ST	1/4 - 1/2NNW	AG125	165
MID PENINSULA LEASING	1039 EL CAMINO REAL	1/4 - 1/2WNW	AH126	165
SHELL, FORMER/KENNEDY AUTO	1026 EL CAMINO REAL	1/4 - 1/2WNW	AH130	171
REDWOOD GENERAL TIRE SERVICE	1630 BROADWAY	1/4 - 1/2NE	AJ132	174
BRADFORD STREET PARKING LOT	500 BLK BRADFORD ST	1/4 - 1/2NNW	133	180
RITZ CLEANERS	37 JAMES AVE	1/4 - 1/2WNW	134	181
CHARLES SYMES PROPERTY	1011 EL CAMINO REAL	1/4 - 1/2WNW	AK137	186
ALOHA STATE FLOWERS, INC.	1260 MARSHALL	1/4 - 1/2NNE	AL139	188
CHEVRON	1603 BROADWAY	1/4 - 1/2NE	140	190
SEQUOIA STATION PROJECT	1001 EL CAMINO REAL	1/4 - 1/2WNW	AK141	192
SEQUOIA STATION PROJECT	1001 EL CAMINO REAL	1/4 - 1/2WNW	AK142	193
OLD COURTHOUSE-SAN MATEO CNTY	711 HAMILTON	1/4 - 1/2NW	143	196
SMCO MOTOR POOL	590 HAMILTON ST	1/4 - 1/2NNW	AN147	203

Many of the CORTESE sites are also listed as LUST due to nature of release and jurisdictional overlap of local oversight regulatory agencies. Refer to The Leaking Underground Storage Tank section, unless such CORTESE sites are not addressed in LUST sections.

California Historical Abandoned Site Survey Program (CALSITES): The Historical Abandoned Site Survey (HASS) Program, formerly the California Abandoned Sites Program Information System – ASPIS, identified certain potential hazardous waste sites. The identification of these sites were generally not made via sampling and site characterization, but as a result of file searches and windshield surveys. No Further Action sites are also on the CALSITE list which have been marked for no further action by the California Environmental Protection Agency, Department of Toxic Substance Control (DTSC) in accordance with California Health & Safety Code.

State/Tribal SWLF

SWIS (Solid Waste Information System) / SWLF (Solid Waste Landfill): Active, Closed and Inactive Landfills. SWF/LF records typically contain an inventory of solid waste disposal facilities or landfills. These may be active or inactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites. As legislated under Solid Waste Management and Resource Recovery Act of 1972, each state maintains list of

certain facilities, i.e. Active solid waste disposal sites, Inactive or Closed solid waste disposal sites and Transfer facilities.

State/Tribal LUST

LEAKING UNDERGROUND STORAGE TANKS (LUSTS)

The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data comes from the California State Water Resources Control Board Leaking Underground Storage Tank Information System, pursuant to California Health & Safety Code. The subject property is listed as LUST.

Site	Database(s)	EPA ID
CHUBS AUTO REPAIR 1180 MAIN ST REDWOOD CITY, CA 94063	RCRA-SQG FINDS HAZNET LUST Facility Status: Case Closed Cortese San Mateo Co. BI SWEEPS UST	CAR000004721

See section 5.4, Local Agency Records, for further information.

There are 59 LUST sites within 0.5 miles of the subject property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
RMC - LONESTAR *RMC LONESTAR* Facility Status: Case Closed	*25 MAPLE ST* *25 MAPLE*	*1/8 - 1/4 SW* *1/8 - 1/4 SW*	*E22* *E23*	*27* *29*
CHEVRON 9-4256 Facility Status: Case Closed	1501 EL CAMINO REAL	1/8 - 1/4 SW	E25	31
DEMMA PARCEL *TOWNE FORD SALES* Facility Status: Case Closed	112 CEDAR ST *1601 EL CAMINO REAL*	1/8 - 1/4 S *1/8 - 1/4 SSW*	H32 *G38*	36 *43*
JULES DUC CONSTRUCTION Facility Status: Case Closed	*1451 EL CAMINO REAL*	*1/8 - 1/4 WSW*	*J41*	*48*
FIRESTONE STORE #3671 *FERIANTE PROPERTY* Facility Status: Case Closed	*1458 EL CAMINO REAL* *1612 EL CAMINO REAL*	*1/8 - 1/4 WSW* *1/8 - 1/4 SSW*	*I43* *K47*	*52* *54*
ARCO #0306 ARCO #0306 Facility Status: Remedial action (cleanup) Underway	1700 MIDDLEFIELD RD 1700 MIDDLEFIELD	1/8 - 1/4 E 1/8 - 1/4 E	P64 P66	76 77

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Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
ACTERON CORPORATION	*851 SHASTA ST*	*1/8 - 1/4 SE*	*T74*	*90*
PACIFIC BELL	*1121 JEFFERSON AVENUE*	*1/4 - 1/2 WNW*	*99*	*114*
Facility Status: Case Closed				
HUMBLE OIL, FORMER (EXXON#7847	*1201 EL CAMINO REAL*	*1/4 - 1/2 W*	*101*	*121*
Facility Status: Case Closed				
LUCKY STORE #15	*1250 JEFFERSON AVE*	*1/4 - 1/2 W*	*108*	*129*
G R BROWN CO	989 SHASTA ST	1/4 - 1/2 SE	AC109	130
G R BROWN CO	989 SHASTA	1/4 - 1/2 SE	AC110	130
Facility Status: Case Closed				
SHELL, FORMER (HARRY'S HOFBRAU	1909 EL CAMINO REAL	1/4 - 1/2 SSE	111	132
Facility Status: Preliminary site assessment workplan submitted				
NURBURG RING	*1202 SHASTA*	*1/4 - 1/2 SE*	*127*	*168*
OPFER PROPERTY	2233 MIDDLEFIELD	1/4 - 1/2 ESE	AI136	184
Facility Status: Remedial action (cleanup) Underway				
U-HAUL	2200 EL CAMINO REAL	1/4 - 1/2 SSE	AM144	198
Facility Status: Case Closed				
U HAUL #708-61	*2200 EL CAMINO REAL*	*1/4 - 1/2 SSE*	*AM145*	*200*
Facility Status: Case Closed				

Lower Elevation	Address	Dist / Dir	Map ID	Page
HUDSON PROPERTY	135 MAPLE ST	0 - 1/8 WSW	C9	15
COOKS AUTO BODY	*1104 MAIN STREET*	*0 - 1/8 NNW*	*D13*	*16*
Facility Status: Preliminary site assessment underway				
FORMER MOHAWK PETROLEUM STATIO	1001 MAIN ST	1/8 - 1/4 NNW	F27	33
FORMER MOHAWK PETROLEUM STATIO	1001 MAIN	1/8 - 1/4 NNW	F28	34
Facility Status: Leak being confirmed				
FORMER MOBIL 04-FNL	*950 MAIN*	*1/8 - 1/4 NNW*	*M62*	*59*
Facility Status: Case Closed				
CITY OF REDWOOD CITY	1036 MIDDLEFIELD	1/8 - 1/4 NW	Q67	79
Facility Status: Pollution Characterization				
REDWOOD CITY CITY OF	*1036 MIDDLEFIELD RD*	*1/8 - 1/4 NW*	*Q68*	*80*
REDWOOD CITY POLICE DEPT.	*1020 MIDDLEFIELD RD*	*1/8 - 1/4 NW*	*Q79*	*93*
TEMPORARY CITY HALL	1020 MIDDLEFIELD	1/8 - 1/4 NW	Q80	94
Facility Status: Preliminary site assessment underway				
REDWOOD CITY CITY HALL	1017 MIDDLEFIELD	1/8 - 1/4 NW	V82	97
Facility Status: Case Closed				
REDWOOD CITY CITY HALL	*1017 MIDDLEFIELD RD*	*1/8 - 1/4 NW*	*V83*	*99*
VANHAM PROPERTY	*1015 JEFFERSON*	*1/8 - 1/4 NW*	*Y90*	*104*
Facility Status: Case Closed				
GRADE SEPARATION	923 JEFFERSON AVE	1/8 - 1/4 NW	Z91	106
GRADE SEPARATION	923 JEFFERSON	1/8 - 1/4 NW	Z92	106
Facility Status: Pollution Characterization				
ARCO	*1032 JEFFERSON AVE*	*1/8 - 1/4 WNW*	*Y96*	*110*
Facility Status: Case Closed				
CHEVRON 20-6318, FORMER	932 MIDDLEFIELD	1/4 - 1/2 NW	AB102	124
Facility Status: Post remedial action monitoring				
CHEVRON	*932 MIDDLEFIELD RD*	*1/4 - 1/2 NW*	*AB103*	*125*
U.S. POSTAL SERVICE	*855 JEFFERSON*	*1/4 - 1/2 NNW*	*AA105*	*126*
Facility Status: Case Closed				

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Lower Elevation	Address	Dist / Dir	Map ID	Page
U.S. POSTAL SERVICE	855 JEFFERSON AVE	1/4 - 1/2NNW	AA106	128
GRANT YARD, S.M.C.	*752 CHESTNUT*	*1/4 - 1/2ENE*	*AD112*	*133*
Facility Status: Post remedial action monitoring				
GRANT YARD, S.M.C.	752 CHESTNUT ST	1/4 - 1/2ENE	AD113	138
DAVIES CHEVROLET	1101 EL CAMINO REAL	1/4 - 1/2WNW	AE117	149
Facility Status: Pollution Characterization				
GUS'S SERVICE STATION, FORMER	*841 HAMILTON*	*1/4 - 1/2NW*	*123*	*161*
Facility Status: Case Closed				
CITY CENTER PARKING	*750 MARSHALL*	*1/4 - 1/2NNW*	*AG124*	*162*
Facility Status: Case Closed				
CITY CENTER PARKING	*750 MARSHALL ST*	*1/4 - 1/2NNW*	*AG125*	*165*
MID PENINSULA LEASING	*1039 EL CAMINO REAL*	*1/4 - 1/2WNW*	*AH126*	*165*
Facility Status: Case Closed				
SHELL, FORMER/KENNEDY AUTO	*1026 EL CAMINO REAL*	*1/4 - 1/2WNW*	*AH130*	*171*
Facility Status: Preliminary site assessment underway				
REDWOOD GENERAL TIRE SERVICE	*1030 BROADWAY*	*1/4 - 1/2NE*	*AJ132*	*174*
Facility Status: Case Closed				
BRADFORD STREET PARKING LOT	*500 BLK BRADFORD ST*	*1/4 - 1/2NNW*	*133*	*180*
Facility Status: Case Closed				
RITZ CLEANERS	*37 JAMES AVE*	*1/4 - 1/2WNW*	*134*	*181*
Facility Status: Post remedial action monitoring				
CHARLES SYMES PROPERTY	*1011 EL CAMINO REAL*	*1/4 - 1/2WNW*	*AK137*	*186*
Facility Status: Case Closed				
ALOHA STATE FLOWERS, INC.	*1260 MARSHALL ST*	*1/4 - 1/2NNE*	*AL138*	*188*
ALOHA STATE FLOWERS, INC.	*1260 MARSHALL*	*1/4 - 1/2NNE*	*AL139*	*188*
Facility Status: Pollution Characterization				
CHEVRON	*1603 BROADWAY*	*1/4 - 1/2NE*	*140*	*190*
Facility Status: Case Closed				
SEQUOIA STATION PROJECT	*1001 EL CAMINO REAL*	*1/4 - 1/2WNW*	*AK142*	*193*
Facility Status: Case Closed				
OLD COURTHOUSE-SAN MATEO CNTY	*711 HAMILTON*	*1/4 - 1/2NW*	*143*	*196*
Facility Status: Case Closed				
SMCO MOTOR POOL	590 HAMILTON	1/4 - 1/2NNW	AN146	202
Facility Status: Pollution Characterization				
SMCO MOTOR POOL	*590 HAMILTON ST*	*1/4 - 1/2NNW*	*AN147*	*203*

According to Geotracker database research, the Hudson Property LUST site at 135 Maple St., approximately 396 feet to the west southwest of the subject, reported a release of solvents on an unspecified date which affected other groundwater. This site was reviewed by regulatory agencies and granted case closure status in October of 2002. Given this status and its cross-gradient location from the subject property with respect to assumed shallow groundwater flow, it is unlikely to have any adverse affect to the environmental subsurface at the subject property.

According to Geotracker database research, the Cooks Auto Body LUST site at 1104 Main St., approximately 468 feet to the north northwest southwest of the subject, reported a release of gasoline on an unspecified date which affected other groundwater. This site is currently undergoing assessment with regulatory agencies. However, given its cross-gradient location from the subject property with respect to assumed shallow groundwater flow, it is unlikely to have any adverse affect to the environmental subsurface at the subject property.

None of the sites listed above, other than ones described separately if environmental concern is posed, are suspected to have an adverse environmental impact on the Subject Property based on one or more of the following rationale: a) their horizontal distance from the Subject Property; b) their down/cross-gradient location with respect to the

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assumed shallow groundwater flow direction; c) the nature of the reported release (e.g., contamination confined only within soil media, absence of groundwater impact, lack of transporting media such as groundwater); and/or d) their regulatory status (e.g., case closed, remediation action underway).

If sites are listed on the Leaking Underground Storage Tank (LUST) database with a "case closed (no further remedial actions required)" status, it shall be interpreted as "the identified contamination at such sites was mitigated to a degree that the governing agency believed that these sites do not pose apparent concern/threat to the subsurface environment of the neighboring area".

State/Tribal UST
UST: The Underground Storage Tank database contains registered USTs which are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data comes from the California State Water Resources Control Board's Hazardous Substance Storage Container Database. The subject property is listed as SWEEPS UST.

Site	Database(s)	EPA ID
CHUBS AUTO REPAIR 1180 MAIN ST REDWOOD CITY, CA 94063	RCRA-SQG FINDS HAZNET LUST Facility Status: Case Closed Cortese San Mateo Co. BI SWEEPS UST	CAR000004721

See section 5.4, Local Agency Records, for further information.

State/Tribal IC/EC Registries
California Department of Toxic Substance Control (DTSC) Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

State/Tribal Voluntary Cleanup Sites
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that California Department of Toxic Substance Control (DTSC) oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

State/Tribal Brownfield Sites
California Department of Toxic Substance Control (DTSC) Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

California State – Supplementary ASTM Database

CHMIRS (California Hazardous Materials Information Reporting System) contains information on reported hazardous material incidents, i.e., accidental releases or spills. The source is the California Office of Emergency Services.

HAZNET (HAZARDOUS WASTE INFORMATION SYSTEM)
The California Environmental Protection Agency maintains a list of facilities that issue hazardous waste manifests which are submitted without correction, and therefore may contain some invalid values for data elements such as generator ID, TSD ID, waste category, & disposal method. The source of the manifest records is the California Department of Toxic Substance Control (DTSC). This database is a supplemental listing to the current ASTM standards. The subject property is listed as HAZNET.

Site	Database(s)	EPA ID
CHUBS AUTO REPAIR 1180 MAIN ST REDWOOD CITY, CA 94063	RCRA-SQG FINDS HAZNET	CAR000004721

According to EDR Radius Map Report, the subject property is listed as HAZNET for 0.65, 0.85 and 0.81 tons of unspecified organic liquid mixture for disposal by a recycler, 1 ton of other empty containers 30 gallons or more, .4170 tons of unspecified oil-containing waste for disposal by a recycler. Given off-site disposal of the above, it is unlikely to have any adverse affect to the environmental subsurface at the subject property.

CLEANERS
The California Department of Toxic Substance Control (DTSC) maintains a list of dry cleaning facilities in California. A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaners' agents; linen supply; coin-operated laundries and cleaning; dry cleaning plants except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services. This database is a supplemental listing to the current ASTM standards.

NT (Toxic Releases): The California Regional Water Quality Control Boards or local Department of Health & Safety Services keeps track of toxic releases to the environment. These lists are known as Unauthorized Releases, Spill, Leaks, Investigation and Cleanups, Non-Tank Releases, Toxic List or similar, depending on the local agency

TPC (Toxic Pits): The Toxic Pits Cleanup Act places strict limitations on the discharge of liquid hazardous wastes into surface impoundment, toxic ponds, pits and lagoons. Regional Water Quality Control Boards are required to inspect all surface impoundments annually, in addition, every facility was required to file a Hydro-geological Assessment Report. Recent legislation allows the Department of Health Services to exempt facilities that closed on or before December 31, 1985, if no significant environmental risk is shown to remain.

SWAT (Solid Waste Assessment Test): This program requires that disposal sites with more than 50,000 cubic yards of waste provide sufficient information to the regional water quality control board to determine whether or not the site has discharged hazardous substances which will impact the environment. Site operators are required to file Solid Waste Assessment Test reports on a staggered basis. Operators submit water quality tests to the Regional Water Quality Control Board, describing surface and groundwater quality and supply; and the geology within 1 mile of the site. Air quality tests are submitted to the local Air Quality Management District or Air Pollution Control District.

Water Wells: The Groundwater Site Inventory (GWSI) database was provided by the United States Geological Survey (USGS), which contains information on over 1,000,000 wells and other groundwater which the USGS has studied, used or otherwise had reason to document through the course of research.

CA FID: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

COUNTY HMS County Department of Public Works maintains a list of facilities that generate industrial waste or have underground storage tanks (USTs). The data comes from the San Mateo County Environmental Health Services Division. The subject property is listed as San Mateo County BI: Business Inventory

Site	Database(s)	EPA ID
CHUBS AUTO REPAIR 1180 MAIN ST REDWOOD CITY, CA 94063	RCRA-SQG FINDS HAZNET LUST Facility Status: Case Closed Cortese San Mateo Co. BI SWEEPS UST	CAR000004721

According to EDR Radius Map report, the subject property is listed as San Mateo County BI for the storage of less than 500 tires, motor vehicle fuels or waste, generator and recycler of waste oil/solvent, and underground tank – general.

5.4 LOCAL AGENCY RECORDS

ODIC review of records obtained from the County of San Mateo Department of Health Services (SMCDHS) indicated that on January 14, 1994, a 1,000-gallon waste oil UST was removed from the site. During the excavation process, a second 1,000-gallon UST was discovered and determined to have contained gasoline. Both tanks were single walled with the waste oil tank exhibiting holes, a solvent odor was noted in the air and the soil beneath the tank was stained. The gasoline tank did not have any holes, odors or staining. The two tanks were in separate excavations and one soil sample was taken from each end of the tank in both excavations. Samples were returned as non detect for THP-g, O&G and BTEX with the exception of one sample from the waste oil UST returning with a result of 810 ppm of TPH-d.

In February of 1994, the waste oil tank pit was over excavated to approximately 10 feet bgs. One soil sample was taken at 8 feet bgs on the west wall with results of less than 1 ppm of TPH-g, less than 10 ppm of TPH-g, less than 50 ppm of oil & grease (O&G), non detect for halogenated volatile organic compounds and less than 0.005ppm for BTEX. Groundwater was encountered at 9.5 feet bgs; the pit was partially pumped due to pump failure and a water sample was obtained. Due to contractor error, the pit water sample was only analyzed for oil & grease with a concentration of 9,000 ppb. The pump was repaired, and the pit was pumped at least two more times prior to sampling the re-charge with results of less than 50 ppb TPH-g, less than 0.5 ppb BTEX, 530 ppb TPH-d , less than 5,000 ppb O&G, and non-detect for 8010 compounds. The diesel was noted by the lab as non-typical diesel. In May of 1994, a groundwater monitoring well (MW-1) was installed in the area of the former waste oil UST, and monitored for four consecutive quarters with no contaminants detected.

In August of 1994, a hydraulic lift was removed from the site. The pit was excavated to groundwater at 12 feet bgs. Soil samples were collected and analyzed for O&G by method 418.1, with a grab water sample also taken. A saw-cut PVC pipe was installed in the excavation, backfilled with pea gravel and named as MW-2. O&G were detected at levels ranging from 520 ppm to 12,000 ppm in soils with water samples ranging from 1,500 to 1,700 ppb. An estimated 2.5 cubic yards of soil contaminated with approximately 1 gallon of hydraulic oil remains in place at the site.

In February of 1995, MW-1 was analyzed for kerosene, diesel and motor oil with detection limits of 50, 50, and 0.5 ppb with a non detect result. In May of 1995, MW-1 was sampled for O&G with a non-detect result. The low levels

of O&G in MW-2 do not pose a threat to human health or the environment. As there is not a perceptible gradient between MW-1 and MW-2 and since no O&G was found in MW-1, little potential for lateral migration from MW-2 was noted, and the consultant recommended closure. A letter from SMCDHS, dated June 21, 1995, stating formal closure for the subject property was observed.

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6.0 FINDINGS AND CONCLUSIONS

ODIC performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-05 of the Subject Property. Any exceptions to, or deletions from, this practice are described in Section 1.0 of this Report.

REPORT COMPONENT	SUMMARY OF CONCLUSION
Subject Property Characteristics (Current Tenant or Property Use Concerns)	The subject property is situated on the northwest corner of Main St. and Elm St. in the City of Redwood City, CA. The property is an irregularly-shaped parcel of commercially-zoned land improved with two rectangular single-story buildings, with one building situated in the northwest portion and the other in the southeast portion of the property. A parking lot occupying the remainder of the property. Access to the property is achieved via Main Street to the northeast and Elm Street to the northwest.
Subject Property Reconnaissance	No RECs (Recognized Environmental Conditions) were found during site reconnaissance.
Historical Use of Subject Property and Vicinity	According to Sanborn Fire Insurance Maps the property appeared improved with dwellings in 1891, 1907, 1919. In 1950 no structures were depicted on site, while in 1968 the property was occupied by several buildings labeled as spray painting and auto repair. According to building records obtained from the City of Redwood City, permits for a garage building in 1952 with an addition to the office building in 1955 and various other permits through 1986. Mr. Steve Brugman, owner, stated that he has occupied and operated an auto repair facility on the property since 1995 and that the property was previously used as an auto repair facility. City directories showed listings as Chub's Auto repair from 1996 through 2006. Aerial photographs showed improvements on the property as early as 1943 with buildings similar to the current buildings in 1974.
Federal, State and Local Agency Concerns	The subject property is not listed on the following environmental regulatory database record research: NPL, CORRACTS, RCRA-TSD, CALSITES, and SWF. The property is listed as RCRA-SQG, FINDS, HAZNET, LUST, CORTESE, SWEEPS UST and San Mateo County BI. According to the EDR Radius Map report, the RCRA-SQG listing show no violations found. The HAZNET listing shows various chemical disposed of off-site by manifest and a closure letter was issued by SMCDHS for the LUST and UST related listings.
Potential Off-site Sources	No RECs (Recognized Environmental Conditions) were found during site reconnaissance.
Non-CERCLA Items	No RECs (Recognized Environmental Conditions) were found during site reconnaissance. Due to the age the building (constructed prior to 1978), interior/exterior portions of the building may contain asbestos and lead base paints. Those areas suspected of having any asbestos containing materials and lead base paints appeared to be in good condition with no fraying or deterioration. It should be noted that this assessment did not include any sampling and testing to determine if any asbestos containing materials and lead base paints are present.
Other RECs	Historic RECs were found. The subject site had a release of petroleum hydrocarbons to soil and groundwater, with case closure achieved.
Inaccessible or Un-surveyed Portions of Subject Property	Full access to the entire property was provided to ODIC, and there were no notable portions of the Subject Property excluded from the survey and field inspection.

REPORT COMPONENT	SUMMARY OF CONCLUSION
Data Gap	The User failed to provide any information requested in the AUL environmental questionnaire. Such is considered a data gap. The absence of this information may not be considered enough to warrant further investigation due to a low risk of environmental contamination at the site, however absence of research into any existing environmental liens recorded for the subject property may disqualify the user for CERCLA landowner liability protection. The largest data gap in this research was from 1919 to 1943. Other gaps ranged from two to sixteen years. However, ODIC does not believe that any gaps in the information reviewed would affect our ability to identify recognized environmental concerns.

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7.0 RECOMMENDATIONS AND OPINIONS

Historic RECs were found. The subject site had a release of petroleum hydrocarbons to soil and groundwater, with case closure achieved. While closure was granted for the release from the former UST, impact to groundwater from petroleum hydrocarbons has been documented. However, the reported levels are low, such that there is a low risk for impact to the groundwater beyond the property boundaries, and is not expected to affect any nearby sensitive receptors.

ODIC hereby recommends no further action based on the current site condition and available public records due to a minimal risk of regulatory action related to the existing contamination at the subject property.

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8.0 REFERENCES

During the preparation of this Report, a number of sources were contacted, many individuals interviewed, and various state, county or local municipal agencies consulted. Documentation applicable to the Subject Property in those departments and agencies was requested and reviewed when and where reasonably ascertainable, as detailed in ASTM E1527-05. Individuals listed without phone numbers were contacted in person or by e-mail. Reference sources for site-specific information, hydro-geologic setting, technical data, historical research data, environmental reports and other records used are identified throughout this Report in corresponding sections. Any additional reference sources not cited in the preceding sections in this report are to be disclosed in this section.

DRAFT

Appendix S

County of San Mateo Environmental Health UST Closure Information

DRAFT

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

October 4, 1994

Mr. Nick Marcelli
9 Cerrito Place
Redwood City, CA 94063

SUBJECT: Closure of Underground Storage Tank, 134 Maple Street, Redwood City, CA

Dear Mr. Marcelli:

This letter confirms the closure of two underground storage tanks under San Mateo County permit number HM 063 94 at the subject site. With the provision that the information provided to this agency was accurate and representative of existing conditions, it is our position that no further action is required at this time.

Please be advised that this letter does not relieve you of any liability under the California Health and Safety Code or Water Code for past, present, or future operations at the site. Nor does it relieve you of the responsibility to clean up existing, additional, or previously unidentified conditions at the site which cause or threaten to cause pollution or nuisance or otherwise pose a threat to water quality or public health.

Additionally, be advised that changes in the present or proposed use of the site may require further site characterization and mitigation activity. It is the property owner's responsibility to notify this agency of any changes in report content, future contamination findings, or site usage.

Thank you for your cooperation in this matter. I may be reached at (415) 363-4565.

Sincerely,

Teresa Belasco, REHS, MPH
Hazardous Materials Specialist IV

cc: Dean Peterson, Hazardous Materials Program Manager

DRAFT

SAN MATEO COUNTY BOARD OF SUPERVISORS
RUBEN BARRALES • MARY GRIFFIN • TOM HUENING • TED LEMPERT • MICHAEL D. NEVIN

HEALTH SERVICES AGENCY DIRECTOR
MARGARET TAYLOR

ENVIRONMENTAL HEALTH SERVICES DIVISION DIRECTOR
BRIAN ZAMORA, MPH, REHS

590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX (415) 363-7882

Fee 780.00
Date Paid _____
Receipt # _____

San Mateo County Division of Environmental Health
590 Hamilton St., Redwood City, CA 94063

NOTE: Proof of Financial Responsibility must be provided at time of application submittal.

SAN MATEO COUNTY ENVIRONMENTAL HEALTH

2 tks
330211

APPLICATION FOR PERMIT TO CLOSE UNDERGROUND HAZARDOUS MATERIAL STORAGE TANK

VALID FOR 90 DAYS AFTER APPROVED

MAY 26 1994
RECEIVED

1. Facility Information

16991

Name of Facility	Type of Business	
MARCELLI LIGHTING		
Street Address	**City**	**Zip Code**
134 Maple Street	Redwood City	94063
Contact Person	**Title**	**Telephone**
Nick Marcelli	Owner	364-9835
Owner Name (Corporation, Agency, or Individual)		**Telephone**
Nick Marcelli		364-9835
Street Address	**City**	**Zip Code**
9 Cerrito Place	Redwood City	94063
Generator EPA ID #		

2. Contractor Removing Tank

Company Name and State License #	Contact Person	Telephone
Interstate	Mike Parjani	952-7333
Street Address	**City**	**Zip Code**
128 S. Maple ST.	S. San Francisco	94080

3. Soil/Water Analysis Laboratory and Sampler

Company Name (LAB), State Certified #	Contact Person	Telephone
Applied Science Engineering Inc.	Fred Yokie	363-2445
Street Address	**City**	**Zip Code**
P.O. Box 1166	San Carlos	94070
Company Name (SAMPLER)	**Contact Person**	**Telephone**
Applied Science Engineering Inc.	Fred Yokie	363-2445
Street Address	**City**	**Zip Code**
P.O. Box 1166	San Carlos	94070

4. Hazardous Waste Hauler (Tank and/or Rinsate)

Company Name	Contact Person	Telephone
H & H Ship Service	S. Parson	543-9835
Street Address	**City**	**Zip Code**
220 China Basin ST.	San Francisco	94107

DRAFT

1. Will tank(s) be cleaned on site? (yes or no) NO .

If "yes", the effluent is classified as a hazardous waste and must be transported by a registered hazardous waste hauler to a licensed treatment, storage, or disposal (TSD) Facility. Transporter EPA ID # _____

Please explain cleaning procedure (refer to item 8 on page 4). _____

If "no", the tank is classified as a hazardous waste and must be transported by a registered hazardous waste hauler to a licensed treatment, storage, and disposal (TSD) Facility. Transporter EPA ID # _____

Destination of Tank(s)		
H+H Ship Service 220 China Basin ST. S.F 94107		
Company Name, EPA ID # ~~200 China~~ H+H Ship Service CAD004771168	Contact Person J. Parsons	Telephone 543-4535
Street Address 200 China Basin	City S.F.	Zip Code 94107

6. Tank Identification & Construction

Tank #	Year Tank Installed	Volume of Tank (Gallons)	☒ Cathodic Protection?
Unknown 1	1979	500 Gallons	

☒ Single-wall or ☐ Double-wall?
Primary Containment — ☒ Steel ☐ Fiberglass ☐ Concrete ☐ Other? _____

7. Chemical Composition of Materials Currently or Previously Stored in Tank.

☒ Unleaded ☐ Super Unleaded ☐ Regular ☐ Premium ☐ Diesel ☐ Waste Oil
☐ Other? _____

8. Reason for Removal

☐ Tank leak ☐ System Upgrade ☑ Discontinued use ☐ Other? _____

9. Certification by Applicant

I hereby certify that I have read and will follow the "Procedure for the Removal of Underground Storage Tanks" printed on the attached page.

10. Name of Applicant (Owner or Owner's Representative)

Signature [signature] Date 5-26-94

11. Approved Permit # _____ **Returned for Correction** _____

Inspector [signature] Date 6/1/94

DRAFT

1. Will tank(s) be cleaned on site? (yes or no) NO .

If "yes", the effluent is classified as a hazardous waste and must be transported by a registered hazardous waste hauler to a licensed treatment, storage, or disposal (TSD) Facility. Transporter EPA ID # _____

Please explain cleaning procedure (refer to item 8 on page 4). _____

If "no", the tank is classified as a hazardous waste and must be transported by a registered hazardous waste hauler to a licensed treatment, storage, and disposal (TSD) Facility. Transporter EPA ID # _____

Destination of Tank(s)		94107
H H ship SERVICE 220 CHINA BASIN ST. SF		
Company Name, EPA ID #	Contact Person	Telephone
H+H shipSERVICE CAD047716	S PARSON	543-4835
Street Address	City	Zip Code
220 CHINA BASIN	SAN FRANCISCO	94107

6. Tank Identification & Construction

Tank #	Year Tank Installed	Volume of Tank (Gallons)	
1	79	1000	☒ Cathodic Protection?

☒ Single-wall or ☐ Double-wall?

Primary Containment — ☒ Steel ☐ Fiberglass ☐ Concrete ☐ Other? _____

7. Chemical Composition of Materials Currently or Previously Stored in Tank.

☒ Unleaded ☐ Super Unleaded ☐ Regular ☐ Premium ☒ Diesel ☐ Waste Oil

☐ Other? _____

8. Reason for Removal

☐ Tank leak ☐ System Upgrade ☒ Discontinued use ☐ Other? _____

9. Certification by Applicant

I hereby certify that I have read and will follow the "Procedure for the Removal of Underground Storage Tanks" printed on the attached page.

10. Name of Applicant (Owner or Owner's Representative)

Signature _____ Date 4-26-94

11. Approved Permit # _____ **Returned for Correction** _____

Inspector Luisa Blasco Date 6/1/94

DRAFT

PROCEDURE FOR THE REMOVAL OF UNDERGROUND STORAGE TANKS

1. Complete the "Application for Permit to Close Underground Hazardous Materials Storage Tank" (pages 1&2). Please complete one application per tank.

2. Contact the Local Fire and Building Agency for their policy regarding closure of underground storage tanks.

3. Submit the completed application, designated fee, written workmen's compensation insurance verification and plot plan drawing to the San Mateo County Environmental Health Services Division. The drawing should consist of an aerial view of the facility at which the tank(s) are located and should include the following information:

    a. Scale
    b. North arrow
    c. Property line
    d. Location of structures near the tank(s)
    e. Location of relevant existing equipment, including the tank(s) to be removed, associated piping, and fuel dispensers.
    f. Area roadways

    Also, submit State Water resources Control Board Part A form for the facility, and Part B form for each tank closed. These forms are available from the Environmental Health Services Division.

4. In order to determine the extent of any contamination, soil and/or water samples must be taken from the excavation pit after the tank(s) are removed. Soil samples must also be taken every twenty (20) feet along piping runs at the interface of backfill material and native soil. Soil samples will be required to be taken from the excavation spoils pile (approximately one discrete sample per 20 cubic yards). The samples must be collected by a qualified, independent third party. All samples shall be protected against contamination and/or degradation during their collection, transport, and analysis. A written analysis report, including chain of custody documentation, and sample location map with measurements including depth, must be submitted to the Environmental Health Services Division within twenty (20) working days following removal of the tank(s). This report is subject to review and must be approved in order to be recognized as valid.

5. A groundwater investigation will be required if any of the following conditions exist or if a representative of the Environmental Health Services Division deems one necessary to assure that the public health and safety is protected:

    a. Soil contamination concentrations exceeding 100 ppm total petroleum hydrocarbons (TPH) or total oil and grease (TOG) within two feet of native soil beneath the tank.

    b. Detectable concentrations of petroleum hydrocarbon are found in soil at or below the seasonable high groundwater level.

    c. Detectable levels of any petroleum hydrocarbon in soil below the tank and the soil contains layers of sand, gravel and/or other high permeability material.

    d. Ground water in excavation pit has detectable levels of any petroleum hydrocarbon. (Pit may be pumped and allowed to recharge).

    e. Site has history of leaks or tanks are in poor condition upon removal.

DRAFT

6. It must be demonstrated to a representative of the Environmental Health Services Division that residual product and any associated waste (i.e.sludge) have been removed from the interior of the tank(s) prior to purging. Documentation of proper disposal of residual product and associated waste using an Uniform Hazardous Waste Manifest (UHWM) must be submitted to the Environmental Health Services Division within twenty (20) working days following removal of the tank(s).

7. It must be demonstrated to a representative of the Environmental Health Services Division that tank(s) have been adequately pruged and that no explosive hazard exists at the time of tank(s) removal i.e. 10% of lower Explosive Limit (% LEL) or 5% oxygen.

8. Underground tank(s) and associated piping removed from excavations must be shipped under UHWM to a permitted treatment, storage and disposal (TSD) facility or Class I landfill Underground tanks may be cleaned using a high-pressure washer to reduce the % LEL. This process does not render these tank(s) non-hazardous and these tank(s) must be hauled under a hazardous waste manifest. Only tank(s) cleaned by a State Department of Health Services (DOHS) permitted tank cleaner may be disposed of as non-hazardous waste. Copies of all UHWM must be submitted to the Environmental Health Services Division within twenty (20) working days following removal of the tank(s).

9. Any piping associated with the tank(s) which is to remain underground must be flushed of all residual product and capped or sealed to the satisfaction of the Environemental Health Services Division.

10. Transported tanks must have all opening sealed, except for opening atop the tank fitted for ventilation with "T" or other device which will preclude rain entering a stored tank.

11. The Environmental Health Services Division must be notified a minimum of seven days(7) prior to commencement of work to schedule an inspection. Please note that the inspection must be confirmed with the district inspector. A representative of this office must be present at the time of removal.

12. An additional hourly fee will be charged for inspection time exceeding three hours.

13. Site safety plan must be available for review at job site.

THE ABOVE ARE GENERAL PROCEDURES-MODIFICATIONS MAY BE NECESSARY IN CERTAIN CASES. IF YOU HAVE ANY QUESTIONS, OR OTHERWISE NEED ASSISTANCE, PLEASE CALL THE SAN MATEO COUNTY ENVIRONMENTAL HEALTH SERVICES DIVISION AT (415) 363-4305.

I hereby certify that I have read and will follow the "Procedures for the Removal of Underground Storage Tanks"

M A Mueller 5-26-94

Signature Date

DRAFT

4232

FIVE STAR DEVELOPMENT
LICENSE NO. C-10-B284300
9 CERRITO PLACE 364-9835
REDWOOD CITY, CA 94061

11-2929/4
1210

May 26 19 94

PAY TO THE ORDER OF County of San Mateo $ 780.00

Seven Hundred Eighty 00/100 DOLLARS

Redwood Bank Member FDIC
885 South El Camino Real
San Mateo, California 94402

FOR _____ Barbara Wanelli

⑈004232⑈ ⑆121029290⑆ 04⑈012644⑈

NO 01790

DATE Nov 2nd, 19 94

RECEIVED FROM Five Star Development

Facility Assessment Mapleton, PUC DOLLARS $ 180.00

FOR Jesse Nash Remodel

AMOUNT OF ACCOUNT	180	00
THIS PAYMENT	180	00
BALANCE DUE	-0-	

CASH ☐
CHECK ☑ 4232
MONEY OR. ☐
CRED. CD. ☐

Thank You

BY _____

DRAFT

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM A

COMPLETE THIS FORM FOR EACH FACILITY/SITE

MARK ONLY ONE ITEM: [X] 1 NEW PERMIT [ ] 2 INTERIM PERMIT [ ] 3 RENEWAL PERMIT [ ] 4 AMENDED PERMIT [ ] 5 CHANGE OF INFORMATION [ ] 6 TEMPORARY SITE CLOSURE [X] 7 PERMANENTLY CLOSED SITE

I. FACILITY/SITE INFORMATION & ADDRESS - (MUST BE COMPLETED)

DBA OR FACILITY NAME	NAME OF OPERATOR	
MARCELLI LIGHTING	NICK MARCELLI	
ADDRESS: 194 MAPLE ST.	NEAREST CROSS STREET: ELCAMINO	PARCEL # (OPTIONAL)
CITY NAME: REDWOOD city	STATE: CA / ZIP CODE: 94063	SITE PHONE # WITH AREA CODE: NONE

✓ BOX TO INDICATE: [ ] CORPORATION [X] INDIVIDUAL [ ] PARTNERSHIP [ ] LOCAL-AGENCY DISTRICTS [ ] COUNTY-AGENCY [ ] STATE-AGENCY [ ] FEDERAL-AGENCY

TYPE OF BUSINESS	✓ IF INDIAN RESERVATION OR TRUST LANDS	# OF TANKS AT SITE	E. P. A. I. D.# (optional)
[ ] 1 GAS STATION [ ] 2 DISTRIBUTOR [ ] 3 FARM [ ] 4 PROCESSOR [X] 5 OTHER	[ ]	2	

EMERGENCY CONTACT PERSON (PRIMARY)		EMERGENCY CONTACT PERSON (SECONDARY) - optional	
DAYS: NAME (LAST, FIRST): MARCELLI, NICK	PHONE # WITH AREA CODE: 364-9835	DAYS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE
NIGHTS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE	NIGHTS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE

II. PROPERTY OWNER INFORMATION - (MUST BE COMPLETED)

NAME	CARE OF ADDRESS INFORMATION		
Nick MARCELLI	SAME		
MAILING OR STREET ADDRESS: [redacted] 9 CERRITO PL	✓ box to indicate: [ ] INDIVIDUAL [ ] LOCAL-AGENCY [ ] STATE-AGENCY [ ] CORPORATION [ ] PARTNERSHIP [ ] COUNTY-AGENCY [ ] FEDERAL-AGENCY		
CITY NAME: REDWOOD city	STATE: CA	ZIP CODE: 94061	PHONE # WITH AREA CODE: 364-9835

III. TANK OWNER INFORMATION - (MUST BE COMPLETED)

NAME OF OWNER	CARE OF ADDRESS INFORMATION		
SAME AS above			
MAILING OR STREET ADDRESS	✓ box to indicate: [ ] INDIVIDUAL [ ] LOCAL-AGENCY [ ] STATE-AGENCY [ ] CORPORATION [ ] PARTNERSHIP [ ] COUNTY-AGENCY [ ] FEDERAL-AGENCY		
CITY NAME	STATE	ZIP CODE	PHONE # WITH AREA CODE

IV. BOARD OF EQUALIZATION UST STORAGE FEE ACCOUNT NUMBER - Call (916) 739-2582 if questions arise.

TY (TK) HQ 44-[ ][ ][ ][ ][ ].[ ]

V. LEGAL NOTIFICATION AND BILLING ADDRESS

Legal notification and billing will be sent to the tank owner unless box I or II is checked.

CHECK ONE BOX INDICATING WHICH ABOVE ADDRESS SHOULD BE USED FOR LEGAL NOTIFICATIONS AND BILLING: I. [ ] II. [ ] III. [ ]

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	APPLICANT'S TITLE	DATE MONTH/DAY/YEAR
Nick MARCELLI [signature]	owner	5-26-94

LOCAL AGENCY USE ONLY

COUNTY #	JURISDICTION #	FACILITY #
41	000	330211

LOCATION CODE - *OPTIONAL*	CENSUS TRACT # - *OPTIONAL*	SUPVISOR - DISTRICT CODE - *OPTIONAL*
33		604 J. Blasco

THIS FORM MUST BE ACCOMPANIED BY AT LEAST (1) OR MORE PERMIT APPLICATION - FORM B, UNLESS THIS IS A CHANGE OF SITE INFORMATION ONLY.

FORM A (9-90) FOR0033A R2

DRAFT

INSTRUCTIONS FOR COMPLETING FORM "A"

GENERAL INSTRUCTIONS:

1. One FORM "A" shall be completed for all NEW PERMITS, PERMIT CHANGES or any FACILITY/SITE INFORMATION CHANGES.
2. SUBMIT ONLY ONE (1) FORM "A" for a Facility/Site, regardless of the number of tanks located at the site.
3. This form should be completed by either the PERMIT APPLICANT or the LOCAL AGENCY UNDERGROUND TANK INSPECTOR.
4. Please type or print clearly all requested information.
5. Use a hard point writing instrument, you are making 3 copies.

TOP OF FORM: "MARK ONLY ONE ITEM"

1. Mark an (X) in the box next to the item that best describes the reason the form is being completed.

I. FACILITY/SITE INFORMATION & ADDRESS (MUST BE COMPLETED)

1. Record name and address (physical location) of the underground tank(s).
   NOTE: Address MUST have a valid physical location including city, state, and zip code.
   P.O. BOX NUMBER ARE NOT ACCEPTABLE.
   Include nearest cross street and name of the operator.
2. Phone number must have an area code. If the night number is the same, write "SAME" in proper location.
3. Check the appropriate box for TYPE OF BUSINESS OWNERSHIP (ex. CORPORATION, INDIVIDUAL, etc.)
4. Check the appropriate box for TYPE OF BUSINESS.
5. If Facility/Site is located on land within an indian reservation or other indian trust lands, check the box marked "YES".
6. Indicate the NUMBER of TANKS at this SITE.
7. Record the E.P.A. ID # or write "NONE" in the space provided.

II. PROPERTY OWNER INFORMATION & ADDRESS (MUST BE COMPLETED)

1. Complete all items in this section, unless all items are the same as SECTION I; if the same, write "SAME AS SITE" across this section. Be sure to check PROPERTY OWNERSHIP TYPE box.

III. TANK OWNER INFORMATION & ADDRESS (MUST BE COMPLETED)

1. Complete all items in this section, unless all items are the same as SECTION I; If the same, write "SAME AS SITE" across this section. Be sure to check TANK OWNERSHIP TYPE box.

IV BOARD OF EQUALIZATION UST STORAGE FEE ACCOUNT NUMBER (MUST BE COMPLETED)

Enter your Board of Equalization (BOE) UST storage fee account number which is required before your permit application can be processed. Registration with the BOE will ensure that you will receive a quarterly storage fee return requesting the $0.0025 (6 mills) per gallon fee due on the number of gallons placed in your USTs. The BOE will code persons exempt from paying the storage fee so returns will not be sent. If you do not have an account number with the BOE or if you have any questions regarding the fee or exemptions, please call the BOE at 916-739-2582 or write to the BOE at the following address: Board of Equalization, Environmental Fees Unit, P.O. Box 942879, Sacramento, CA 94279-0001.

V. LEGAL NOTIFICATION AND BILLING ADDRESS

1. Check ONE BOX for the address that will be used for BOTH LEGAL AND BILLING NOTIFICATIONS.

APPLICANT MUST SIGN AND DATE THE FORM AS INDICATED.

INSTRUCTION FOR THE LOCAL AGENCIES

The county and jurisdiction numbers are predetermined and can be obtained by calling the State Board (916)739-2421. The facility number may be assigned by the local agency; however, this number must be numerical and cannot contain an alphabet. If the local agency prefers the State Board to assign the facility number, please leave it blank.

IT IS THE RESPONSIBILITY OF THE LOCAL AGENCY THAT INSPECTS THE FACILITY TO VERIFY THE ACCURACY OF THE INFORMATION. THIS APPLICATION CANNOT BE PROCESSED IF THE BOE ACCOUNT NUMBER IS NOT FILLED IN. THE LOCAL AGENCY IS RESPONSIBLE FOR THE COMPLETION OF THE "LOCAL AGENCY USE ONLY" INFORMATION BOX AND FOR FORWARDING ONE FORM "A" AND ASSOCIATED FORM "B"(s) TO THE FOLLOWING ADDRESS.

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
C/O S.W.R.C.B.
DATA PROCESSING CENTER
P.O. BOX 527
PARAMOUNT, CA 90723

DRAFT

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM A

COMPLETE THIS FORM FOR EACH FACILITY/SITE

MARK ONLY ONE ITEM: [ ] 1 NEW PERMIT [ ] 2 INTERIM PERMIT [ ] 3 RENEWAL PERMIT [ ] 4 AMENDED PERMIT [ ] 5 CHANGE OF INFORMATION [X] 7 PERMANENTLY CLOSED SITE [ ] 6 TEMPORARY SITE CLOSURE

I. FACILITY/SITE INFORMATION & ADDRESS - (MUST BE COMPLETED)

DBA OR FACILITY NAME	NAME OF OPERATOR	
MARCELLI LIGHTING	NICK MARCELLI	
ADDRESS: 1294 MAPLE ST	NEAREST CROSS STREET: ELGRANADO	PARCEL # (OPTIONAL)
CITY NAME: REDWOOD city	STATE: CA / ZIP CODE: 94063	SITE PHONE # WITH AREA CODE: 368 [illegible]

✓ BOX TO INDICATE: [ ] CORPORATION [✓] INDIVIDUAL [ ] PARTNERSHIP [ ] LOCAL-AGENCY DISTRICTS [ ] COUNTY-AGENCY [ ] STATE-AGENCY [ ] FEDERAL-AGENCY

TYPE OF BUSINESS: [ ] 1 GAS STATION [ ] 2 DISTRIBUTOR [ ] 3 FARM [ ] 4 PROCESSOR [ ] 5 OTHER

[ ] ✓ IF INDIAN RESERVATION OR TRUST LANDS | # OF TANKS AT SITE: 2 | E. P. A. I. D.# (optional):

EMERGENCY CONTACT PERSON (PRIMARY)

DAYS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE
MARCELLI NICK	364-4835
NIGHTS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE

EMERGENCY CONTACT PERSON (SECONDARY) - optional

DAYS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE
NIGHTS: NAME (LAST, FIRST)	PHONE # WITH AREA CODE

II. PROPERTY OWNER INFORMATION - (MUST BE COMPLETED)

NAME	CARE OF ADDRESS INFORMATION		
Nick MARCELLI	SAME		
MAILING OR STREET ADDRESS: [illegible] ACERRO Ct. PL	✓ box to indicate [ ] INDIVIDUAL [ ] LOCAL-AGENCY [ ] STATE-AGENCY [ ] CORPORATION [ ] PARTNERSHIP [ ] COUNTY-AGENCY [ ] FEDERAL-AGENCY		
CITY NAME: REDWOOD city	STATE: CA / ZIP CODE: 94061	PHONE # WITH AREA CODE: 364-4835	

III. TANK OWNER INFORMATION - (MUST BE COMPLETED)

NAME OF OWNER	CARE OF ADDRESS INFORMATION		
SAME AS above			
MAILING OR STREET ADDRESS	✓ box to indicate [ ] INDIVIDUAL [ ] LOCAL-AGENCY [ ] STATE-AGENCY [ ] CORPORATION [ ] PARTNERSHIP [ ] COUNTY-AGENCY [ ] FEDERAL-AGENCY		
CITY NAME	STATE	ZIP CODE	PHONE # WITH AREA CODE

IV. BOARD OF EQUALIZATION UST STORAGE FEE ACCOUNT NUMBER - Call (916) 739-2582 if questions arise.

TY (TK) HQ [4][4] - [ ][ ][ ][ ][ ][ ]

V. LEGAL NOTIFICATION AND BILLING ADDRESS

Legal notification and billing will be sent to the tank owner unless box I or II is checked.

CHECK ONE BOX INDICATING WHICH ABOVE ADDRESS SHOULD BE USED FOR LEGAL NOTIFICATIONS AND BILLING: I. [ ] II. [ ] III. [ ]

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	APPLICANT'S TITLE	DATE MONTH/DAY/YEAR
Nick MARCELLI [illegible]	owner	5-26-94

LOCAL AGENCY USE ONLY

COUNTY #	JURISDICTION #	FACILITY #
41	000	330211

LOCATION CODE - *OPTIONAL*	CENSUS TRACT # - *OPTIONAL*	SUPVISOR - DISTRICT CODE - *OPTIONAL*
55		6051 J Bonner

THIS FORM MUST BE ACCOMPANIED BY AT LEAST (1) OR MORE PERMIT APPLICATION - **FORM B**, UNLESS THIS IS A CHANGE OF SITE INFORMATION ONLY.

FORM A (9-90) FOR0033A-R2

DRAFT

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM B

COMPLETE A SEPARATE FORM FOR EACH TANK SYSTEM.

MARK ONLY ONE ITEM: ☐ 1 NEW PERMIT ☐ 2 INTERIM PERMIT ☐ 3 RENEWAL PERMIT ☐ 4 AMENDED PERMIT ☐ 5 CHANGE OF INFORMATION ☐ 6 TEMPORARY TANK CLOSURE ☐ 7 PERMANENTLY CLOSED ON SITE ☒ 8 TANK REMOVED

DBA OR FACILITY NAME WHERE TANK IS INSTALLED: MARCELLI LIGHTING / 34 Knuppe Rd RC

I. TANK DESCRIPTION

COMPLETE ALL ITEMS -- SPECIFY IF UNKNOWN

A. OWNER'S TANK I. D. # UNKNOWN	B. MANUFACTURED BY:
C. DATE INSTALLED (MO/DAY/YEAR) 79	D. TANK CAPACITY IN GALLONS: 10000

II. TANK CONTENTS

IF A-1 IS MARKED, COMPLETE ITEM C.

A. ☒ 1 MOTOR VEHICLE FUEL ☐ 2 PETROLEUM ☐ 3 CHEMICAL PRODUCT ☐ 4 OIL ☐ 80 EMPTY ☐ 95 UNKNOWN

B. ☒ 1 PRODUCT ☐ 2 WASTE

C. ☐ 1a REGULAR UNLEADED ☐ 1b PREMIUM UNLEADED ☐ 2 LEADED ☒ 3 DIESEL ☐ 4 GASAHOL ☐ 5 JET FUEL ☐ 6 AVIATION GAS ☐ 7 METHANOL ☐ 99 OTHER (DESCRIBE IN ITEM D. BELOW)

D. IF (A.1) IS NOT MARKED, ENTER NAME OF SUBSTANCE STORED C. A. S. # :

III. TANK CONSTRUCTION

MARK ONE ITEM ONLY IN BOXES A, B, AND C, AND ALL THAT APPLIES IN BOX D AND E

A. TYPE OF SYSTEM: ☐ 1 DOUBLE WALL ☐ 2 SINGLE WALL ☐ 3 SINGLE WALL WITH EXTERIOR LINER ☐ 4 SECONDARY CONTAINMENT (VAULTED TANK) ☐ 95 UNKNOWN ☐ 99 OTHER

B. TANK MATERIAL (Primary Tank): ☐ 1 BARE STEEL ☐ 2 STAINLESS STEEL ☐ 3 FIBERGLASS ☐ 4 STEEL CLAD W/ FIBERGLASS REINFORCED PLASTIC ☐ 5 CONCRETE ☐ 6 POLYVINYL CHLORIDE ☐ 7 ALUMINUM ☐ 8 100% METHANOL COMPATIBLE W/FRP ☐ 9 BRONZE ☐ 10 GALVANIZED STEEL ☒ 95 UNKNOWN ☐ 99 OTHER

C. INTERIOR LINING: ☐ 1 RUBBER LINED ☐ 2 ALKYD LINING ☐ 3 EPOXY LINING ☐ 4 PHENOLIC LINING ☐ 5 GLASS LINING ☐ 6 UNLINED ☒ 95 UNKNOWN ☐ 99 OTHER

IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? YES ___ NO ___

D. CORROSION PROTECTION: ☐ 1 POLYETHYLENE WRAP ☐ 2 COATING ☐ 3 VINYL WRAP ☐ 4 FIBERGLASS REINFORCED PLASTIC ☒ 5 CATHODIC PROTECTION ☐ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

E. SPILL AND OVERFILL: SPILL CONTAINMENT INSTALLED (YEAR) NONE OVERFILL PREVENTION EQUIPMENT INSTALLED (YEAR) NONE

IV. PIPING INFORMATION

CIRCLE A IF ABOVE GROUND OR U IF UNDERGROUND, BOTH IF APPLICABLE

A. SYSTEM TYPE: (A) (U) SUCTION — A U 2 PRESSURE — A U 3 GRAVITY — A U 99 OTHER

B. CONSTRUCTION: A (U) 1 SINGLE WALL — A U 2 DOUBLE WALL — A U 3 LINED TRENCH — A U 95 UNKNOWN — A U 99 OTHER

C. MATERIAL AND CORROSION PROTECTION: A (U) 1 BARE STEEL — A U 2 STAINLESS STEEL — A U 3 POLYVINYL CHLORIDE (PVC) — A U 4 FIBERGLASS PIPE — A U 5 ALUMINUM — A U 6 CONCRETE — A (U) 7 STEEL W/ COATING — A U 8 100% METHANOL COMPATIBLE W/FRP — A U 9 GALVANIZED STEEL — A (U) 10 CATHODIC PROTECTION — A U 95 UNKNOWN — A U 99 OTHER

D. LEAK DETECTION: ☐ 1 AUTOMATIC LINE LEAK DETECTOR ☐ 2 LINE TIGHTNESS TESTING ☐ 3 INTERSTITIAL MONITORING ☐ 99 OTHER NONE

V. TANK LEAK DETECTION

☐ 1 VISUAL CHECK ☐ 2 INVENTORY RECONCILIATION ☐ 3 VADOZE MONITORING ☐ 4 AUTOMATIC TANK GAUGING ☐ 5 GROUND WATER MONITORING ☐ 6 TANK TESTING ☐ 7 INTERSTITIAL MONITORING ☒ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

VI. TANK CLOSURE INFORMATION

1. ESTIMATED DATE LAST USED (MO/DAY/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING	3. WAS TANK FILLED WITH INERT MATERIAL?
94	NONE GALLONS	YES ☐ NO ☒

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE
Nick MARCELLI	5-26-94

LOCAL AGENCY USE ONLY

THE STATE I.D. NUMBER IS COMPOSED OF THE FOUR NUMBERS BELOW

STATE I.D.#	COUNTY #	JURISDICTION #	FACILITY #	TANK #
	41	0100	330211	1

PERMIT NUMBER	PERMIT APPROVED BY/DATE	PERMIT EXPIRATION DATE

THIS FORM MUST BE ACCOMPANIED BY A PERMIT APPLICATION - FORM A, UNLESS A CURRENT FORM A HAS BEEN FILED.
FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

DRAFT

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM B

COMPLETE A SEPARATE FORM FOR EACH TANK SYSTEM.

MARK ONLY ONE ITEM: ☐ 1 NEW PERMIT ☐ 2 INTERIM PERMIT ☐ 3 RENEWAL PERMIT ☐ 4 AMENDED PERMIT ☐ 5 CHANGE OF INFORMATION ☐ 6 TEMPORARY TANK CLOSURE ☐ 7 PERMANENTLY CLOSED ON SITE ☒ 8 TANK REMOVED

DBA OR FACILITY NAME WHERE TANK IS INSTALLED: MARCELLI LIGHTING / 4 Knight ave DC

I. TANK DESCRIPTION

COMPLETE ALL ITEMS -- SPECIFY IF UNKNOWN

A. OWNER'S TANK I. D. # UNKNOWN	B. MANUFACTURED BY:
C. DATE INSTALLED (MO/DAY/YEAR) 79	D. TANK CAPACITY IN GALLONS: 1000

II. TANK CONTENTS

IF A-1 IS MARKED, COMPLETE ITEM C.

A. ☒ 1 MOTOR VEHICLE FUEL ☐ 2 PETROLEUM ☐ 3 CHEMICAL PRODUCT ☐ 4 OIL ☐ 80 EMPTY ☐ 95 UNKNOWN

B. ☒ 1 PRODUCT ☐ 2 WASTE

C. ☐ 1a REGULAR UNLEADED ☐ 1b PREMIUM UNLEADED ☐ 2 LEADED ☒ 3 DIESEL ☐ 4 GASAHOL ☐ 5 JET FUEL ☐ 6 AVIATION GAS ☐ 7 METHANOL ☐ 99 OTHER (DESCRIBE IN ITEM D. BELOW)

D. IF (A.1) IS NOT MARKED, ENTER NAME OF SUBSTANCE STORED C. A. S. # :

III. TANK CONSTRUCTION

MARK ONE ITEM ONLY IN BOXES A, B, AND C, AND ALL THAT APPLIES IN BOX D AND E

A. TYPE OF SYSTEM: ☐ 1 DOUBLE WALL ☐ 2 SINGLE WALL ☐ 3 SINGLE WALL WITH EXTERIOR LINER ☐ 4 SECONDARY CONTAINMENT (VAULTED TANK) ☐ 95 UNKNOWN ☐ 99 OTHER

B. TANK MATERIAL (Primary Tank): ☐ 1 BARE STEEL ☐ 2 STAINLESS STEEL ☐ 3 FIBERGLASS ☐ 4 STEEL CLAD W/ FIBERGLASS REINFORCED PLASTIC ☐ 5 CONCRETE ☐ 6 POLYVINYL CHLORIDE ☐ 7 ALUMINUM ☐ 8 100% METHANOL COMPATIBLE W/FRP ☐ 9 BRONZE ☐ 10 GALVANIZED STEEL ☒ 95 UNKNOWN ☐ 99 OTHER

C. INTERIOR LINING: ☐ 1 RUBBER LINED ☐ 2 ALKYD LINING ☐ 3 EPOXY LINING ☐ 4 PHENOLIC LINING ☐ 5 GLASS LINING ☐ 6 UNLINED ☒ 95 UNKNOWN ☐ 99 OTHER

IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? YES ___ NO ___

D. CORROSION PROTECTION: ☐ 1 POLYETHYLENE WRAP ☐ 2 COATING ☐ 3 VINYL WRAP ☐ 4 FIBERGLASS REINFORCED PLASTIC ☒ 5 CATHODIC PROTECTION ☐ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

E. SPILL AND OVERFILL: SPILL CONTAINMENT INSTALLED (YEAR) NONE OVERFILL PREVENTION EQUIPMENT INSTALLED (YEAR) NONE

IV. PIPING INFORMATION

CIRCLE A IF ABOVE GROUND OR U IF UNDERGROUND, BOTH IF APPLICABLE

A. SYSTEM TYPE: (A U) (SUCTION) A U 2 PRESSURE A U 3 GRAVITY A U 99 OTHER

B. CONSTRUCTION: A (U) 1 SINGLE WALL A U 2 DOUBLE WALL A U 3 LINED TRENCH A U 95 UNKNOWN A U 99 OTHER

C. MATERIAL AND CORROSION PROTECTION: A (U) 1 BARE STEEL A U 2 STAINLESS STEEL A U 3 POLYVINYL CHLORIDE (PVC) A U 4 FIBERGLASS PIPE A U 5 ALUMINUM A U 6 CONCRETE A (U) 7 STEEL W/ COATING A U 8 100% METHANOL COMPATIBLE W/FRP A U 9 GALVANIZED STEEL A (U) 10 CATHODIC PROTECTION A U 95 UNKNOWN A U 99 OTHER

D. LEAK DETECTION: ☐ 1 AUTOMATIC LINE LEAK DETECTOR ☐ 2 LINE TIGHTNESS TESTING ☐ 3 INTERSTITIAL MONITORING ☐ 99 OTHER NONE

V. TANK LEAK DETECTION

☐ 1 VISUAL CHECK ☐ 2 INVENTORY RECONCILIATION ☐ 3 VADOZE MONITORING ☐ 4 AUTOMATIC TANK GAUGING ☐ 5 GROUND WATER MONITORING ☐ 6 TANK TESTING ☐ 7 INTERSTITIAL MONITORING ☒ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

VI. TANK CLOSURE INFORMATION

1. ESTIMATED DATE LAST USED (MO/DAY/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING	3. WAS TANK FILLED WITH INERT MATERIAL?
7/91	NONE GALLONS	YES ☐ NO ☒

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE
Nick MARCELLI	5-26-94

LOCAL AGENCY USE ONLY

THE STATE I.D. NUMBER IS COMPOSED OF THE FOUR NUMBERS BELOW

STATE I.D.#	COUNTY #	JURISDICTION #	FACILITY #	TANK #
	44	000	33021	1

PERMIT NUMBER	PERMIT APPROVED BY/DATE	PERMIT EXPIRATION DATE

THIS FORM MUST BE ACCOMPANIED BY A PERMIT APPLICATION - FORM A, UNLESS A CURRENT FORM A HAS BEEN FILED.
FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

DRAFT

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM B

COMPLETE A SEPARATE FORM FOR EACH TANK SYSTEM.

MARK ONLY ONE ITEM: ☐ 1 NEW PERMIT ☐ 2 INTERIM PERMIT ☐ 3 RENEWAL PERMIT ☐ 4 AMENDED PERMIT ☐ 5 CHANGE OF INFORMATION ☐ 6 TEMPORARY TANK CLOSURE ☐ 7 PERMANENTLY CLOSED ON SITE ☒ 8 TANK REMOVED

DBA OR FACILITY NAME WHERE TANK IS INSTALLED: 134 Maple ST. R.C. 94063

I. TANK DESCRIPTION

COMPLETE ALL ITEMS -- SPECIFY IF UNKNOWN

A. OWNER'S TANK I. D. # Oh Knowa
B. MANUFACTURED BY:
C. DATE INSTALLED (MO/DAY/YEAR) 1979
D. TANK CAPACITY IN GALLONS: 500 Gallons

II. TANK CONTENTS

IF A-1 IS MARKED, COMPLETE ITEM C.

A. ☒ 1 MOTOR VEHICLE FUEL ☐ 2 PETROLEUM ☐ 3 CHEMICAL PRODUCT ☐ 4 OIL ☐ 80 EMPTY ☐ 95 UNKNOWN

B. ☒ 1 PRODUCT ☐ 2 WASTE

C. ☒ 1a REGULAR UNLEADED ☐ 1b PREMIUM UNLEADED ☐ 2 LEADED ☐ 3 DIESEL ☐ 4 GASAHOL ☐ 5 JET FUEL ☐ 6 AVIATION GAS ☐ 7 METHANOL ☐ 99 OTHER (DESCRIBE IN ITEM D. BELOW)

D. IF (A.1) IS NOT MARKED, ENTER NAME OF SUBSTANCE STORED
C. A. S. # :

III. TANK CONSTRUCTION

MARK ONE ITEM ONLY IN BOXES A, B, AND C, AND ALL THAT APPLIES IN BOX D AND E

A. TYPE OF SYSTEM: ☐ 1 DOUBLE WALL ☒ 2 SINGLE WALL ☐ 3 SINGLE WALL WITH EXTERIOR LINER ☐ 4 SECONDARY CONTAINMENT (VAULTED TANK) ☐ 95 UNKNOWN ☐ 99 OTHER

B. TANK MATERIAL (Primary Tank): ☐ 1 BARE STEEL ☐ 2 STAINLESS STEEL ☐ 3 FIBERGLASS ☐ 4 STEEL CLAD W/ FIBERGLASS REINFORCED PLASTIC ☐ 5 CONCRETE ☐ 6 POLYVINYL CHLORIDE ☐ 7 ALUMINUM ☐ 8 100% METHANOL COMPATIBLE W/FRP ☐ 9 BRONZE ☐ 10 GALVANIZED STEEL ☒ 95 UNKNOWN ☐ 99 OTHER

C. INTERIOR LINING: ☐ 1 RUBBER LINED ☐ 2 ALKYD LINING ☐ 3 EPOXY LINING ☐ 4 PHENOLIC LINING ☐ 5 GLASS LINING ☐ 6 UNLINED ☒ 95 UNKNOWN ☐ 99 OTHER
IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? YES ___ NO ___

D. CORROSION PROTECTION: ☐ 1 POLYETHYLENE WRAP ☐ 2 COATING ☐ 3 VINYL WRAP ☐ 4 FIBERGLASS REINFORCED PLASTIC ☒ 5 CATHODIC PROTECTION ☐ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

E. SPILL AND OVERFILL: SPILL CONTAINMENT INSTALLED (YEAR) None OVERFILL PREVENTION EQUIPMENT INSTALLED (YEAR) None

IV. PIPING INFORMATION

CIRCLE A IF ABOVE GROUND OR U IF UNDERGROUND, BOTH IF APPLICABLE

A. SYSTEM TYPE: (A) (U) 1 SUCTION; A U 2 PRESSURE; A U 3 GRAVITY; A U 99 OTHER
B. CONSTRUCTION: A (U) 1 SINGLE WALL; A U 2 DOUBLE WALL; A U 3 LINED TRENCH; A U 95 UNKNOWN; A U 99 OTHER
C. MATERIAL AND CORROSION PROTECTION: A U 1 BARE STEEL; A U 2 STAINLESS STEEL; A U 3 POLYVINYL CHLORIDE (PVC); A U 4 FIBERGLASS PIPE; A U 5 ALUMINUM; A U 6 CONCRETE; A (U) 7 STEEL W/ COATING; A U 8 100% METHANOL COMPATIBLE W/FRP; A (U) 9 GALVANIZED STEEL; A (U) 10 CATHODIC PROTECTION; A U 95 UNKNOWN; A U 99 OTHER
D. LEAK DETECTION: ☐ 1 AUTOMATIC LINE LEAK DETECTOR ☐ 2 LINE TIGHTNESS TESTING ☐ 3 INTERSTITIAL MONITORING ☐ 99 OTHER None

V. TANK LEAK DETECTION

☐ 1 VISUAL CHECK ☐ 2 INVENTORY RECONCILIATION ☐ 3 VADOZE MONITORING ☐ 4 AUTOMATIC TANK GAUGING ☐ 5 GROUND WATER MONITORING ☐ 6 TANK TESTING ☐ 7 INTERSTITIAL MONITORING ☒ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

VI. TANK CLOSURE INFORMATION

1. ESTIMATED DATE LAST USED (MO/DAY/YR) 1990
2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING None GALLONS
3. WAS TANK FILLED WITH INERT MATERIAL? YES ☐ NO ☒

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE): Nick Marcello
DATE: 5-26-94

LOCAL AGENCY USE ONLY

THE STATE I.D. NUMBER IS COMPOSED OF THE FOUR NUMBERS BELOW

STATE I.D.#	COUNTY #	JURISDICTION #	FACILITY #	TANK #
	41	000	330211	2

PERMIT NUMBER | PERMIT APPROVED BY/DATE | PERMIT EXPIRATION DATE

THIS FORM MUST BE ACCOMPANIED BY A PERMIT APPLICATION - FORM A, UNLESS A CURRENT FORM A HAS BEEN FILED.
FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

DRAFT

INSTRUCTIONS FOR COMPLETING FORM "B"

GENERAL INSTRUCTIONS:

1. One FORM "B" shall be completed for each tank for all NEW PERMITS, PERMIT CHANGES, REMOVALS and/or any other TANK INFORMATION CHANGE.
2. This form should be completed by either the PERMIT APPLICANT or the LOCAL AGENCY UNDERGROUND TANK INSPECTOR.
3. Please type or print clearly all requested information.
4. Use a hard point writing instrument, you are making 3 copies.

TOP OF FORM: "MARK ONLY ONE ITEM"

1. Mark an (X) in the box next to the item that best describes the reason the form is being completed.
2. Indicate the DBA or Facility name where the tank is installed.

I. TANK DESCRIPTION - COMPLETE ALL ITEMS - IF UNKNOWN - SO SPECIFY

A. Indicate owners tank ID # - If there is a tank number that is used by the owner to identify the tank (ex. AB70789).
B. Indicate the name of the company that manufactured the tank (ex. ACME TANK MFG.).
C. Indicate the year the tank was installed (ex. 1987).
D. Indicate the tank capacity in gallons (ex. 25,000 or 10,000 etc.).

II. TANK CONTENTS

A. 1. If MOTOR VEHICLE FUEL, check box 1 and complete items B & C.
2. If not MOTOR VEHICLE FUEL, check the appropriate box in section A and complete items B & D.
B. Check the appropriate box.
C. Check the type of MOTOR VEHICLE FUEL (if box 1 is checked in A).
D. Print the chemical name of the hazardous substance stored in the tank and the C.A.S.#. (Chemical Abstract Service number), if box 1 is NOT checked in A.

III. TANK CONSTRUCTION - MARK ONE ITEM ONLY IN BOX A, B, C & D

1. Check only one item in TYPE OF SYSTEM, TANK MATERIAL, INTERIOR LINING and CORROSION PROTECTION.
2. If OTHER, print in the space provided.

IV. PIPING INFORMATION

1. Circle A if above ground; circle U if underground; and circle both if applicable.
2. If UNKNOWN, circle; or if OTHER, print in space provided.
3. . Indicate the LEAK DETECTION system(s) used to comply with the monitoring requirement for the piping.

V. TANK LEAK DETECTION

1. Indicate the LEAK DETECTION system(s) used to comply with the monitoring requirements for the tank.

VI. INFORMATION ON TANK PERMANENTLY CLOSED IN PLACE

1. ESTIMATED DATE LAST USED - MONTH/YEAR (January, 1988 or 01/88).
2. ESTIMATED QUANTITY of HAZARDOUS SUBSTANCE remaining in the tank (in Gallons).
3. WAS TANK FILLED WITH INERT MATERIAL? Check 'Yes' or 'NO'.

APPLICANT MUST SIGN AND DATE THE FORM AS INDICATED.

INSTRUCTION FOR THE LOCAL AGENCIES

The state underground storage tank identification number is composed of the two digit county number, the three digit jurisdiction number, the six digit facility number and the six digit tank number. The county and jurisdiction numbers are predetermined and can be obtained by calling the State Board (916)739-2421. The facility number must be the same as shown in form "A". The tank number may be assigned by the local agency; however, this number must be numerical and cannot contain an alphabet. If the local agency prefers the State Board to assign the tank number, please leave it blank.

IT IS THE RESPONSIBILITY OF THE LOCAL AGENCY THAT INSPECTS THE FACILITY TO VERIFY THE ACCURACY OF THE INFORMATION. THE LOCAL AGENCY IS RESPONSIBLE FOR THE COMPLETION OF THE "LOCAL AGENCY USE ONLY" INFORMATION BOX AND FOR FORWARDING ONE FORM "A" AND ASSOCIATED FORM "B"(s) TO THE FOLLOWING ADDRESS.

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
C/O S.W.E.E.P.S.
DATA PROCESSING CENTER
P.O. BOX 527
PARAMOUNT, CA 90723

DRAFT

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM B

COMPLETE A SEPARATE FORM FOR EACH TANK SYSTEM.

MARK ONLY ONE ITEM: ☐ 1 NEW PERMIT ☐ 2 INTERIM PERMIT ☐ 3 RENEWAL PERMIT ☐ 4 AMENDED PERMIT ☐ 5 CHANGE OF INFORMATION ☐ 6 TEMPORARY TANK CLOSURE ☐ 7 PERMANENTLY CLOSED ON SITE ☒ 8 TANK REMOVED

DBA OR FACILITY NAME WHERE TANK IS INSTALLED: 134 Main St. R.C. 94063

I. TANK DESCRIPTION

COMPLETE ALL ITEMS -- SPECIFY IF UNKNOWN

A. OWNER'S TANK I. D. # Un Known	B. MANUFACTURED BY:
C. DATE INSTALLED (MO/DAY/YEAR) 1979	D. TANK CAPACITY IN GALLONS: 500 Gallons

II. TANK CONTENTS

IF A-1 IS MARKED, COMPLETE ITEM C.

A. ☒ 1 MOTOR VEHICLE FUEL ☐ 2 PETROLEUM ☐ 3 CHEMICAL PRODUCT ☐ 4 OIL ☐ 80 EMPTY ☐ 95 UNKNOWN

B. ☒ 1 PRODUCT ☐ 2 WASTE

C. ☐ 1a REGULAR UNLEADED ☐ 1b PREMIUM UNLEADED ☐ 2 LEADED ☐ 3 DIESEL ☐ 4 GASAHOL ☐ 5 JET FUEL ☐ 6 AVIATION GAS ☐ 7 METHANOL ☐ 99 OTHER (DESCRIBE IN ITEM D. BELOW)

D. IF (A.1) IS NOT MARKED, ENTER NAME OF SUBSTANCE STORED C. A. S. # :

III. TANK CONSTRUCTION

MARK ONE ITEM ONLY IN BOXES A, B, AND C, AND ALL THAT APPLIES IN BOX D AND E

A. TYPE OF SYSTEM: ☐ 1 DOUBLE WALL ☒ 2 SINGLE WALL ☐ 3 SINGLE WALL WITH EXTERIOR LINER ☐ 4 SECONDARY CONTAINMENT (VAULTED TANK) ☐ 95 UNKNOWN ☐ 99 OTHER

B. TANK MATERIAL (Primary Tank): ☐ 1 BARE STEEL ☐ 2 STAINLESS STEEL ☐ 3 FIBERGLASS ☐ 4 STEEL CLAD W/ FIBERGLASS REINFORCED PLASTIC ☐ 5 CONCRETE ☐ 6 POLYVINYL CHLORIDE ☐ 7 ALUMINUM ☐ 8 100% METHANOL COMPATIBLE W/FRP ☐ 9 BRONZE ☐ 10 GALVANIZED STEEL ☒ 95 UNKNOWN ☐ 99 OTHER

C. INTERIOR LINING: ☐ 1 RUBBER LINED ☐ 2 ALKYD LINING ☐ 3 EPOXY LINING ☐ 4 PHENOLIC LINING ☐ 5 GLASS LINING ☐ 6 UNLINED ☒ 95 UNKNOWN ☐ 99 OTHER
IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? YES ___ NO ___

D. CORROSION PROTECTION: ☐ 1 POLYETHYLENE WRAP ☐ 2 COATING ☐ 3 VINYL WRAP ☐ 4 FIBERGLASS REINFORCED PLASTIC ☒ 5 CATHODIC PROTECTION ☐ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

E. SPILL AND OVERFILL: SPILL CONTAINMENT INSTALLED (YEAR) None OVERFILL PREVENTION EQUIPMENT INSTALLED (YEAR) None

IV. PIPING INFORMATION

CIRCLE A IF ABOVE GROUND OR U IF UNDERGROUND, BOTH IF APPLICABLE

A. SYSTEM TYPE: (A) (U) 1 SUCTION; A U 2 PRESSURE; A U 3 GRAVITY; A U 99 OTHER

B. CONSTRUCTION: A (U) 1 SINGLE WALL; A U 2 DOUBLE WALL; A U 3 LINED TRENCH; A U 95 UNKNOWN; A U 99 OTHER

C. MATERIAL AND CORROSION PROTECTION: A (U) 1 BARE STEEL; A U 2 STAINLESS STEEL; A U 3 POLYVINYL CHLORIDE (PVC); A U 4 FIBERGLASS PIPE; A U 5 ALUMINUM; A U 6 CONCRETE; A (U) 7 STEEL W/ COATING; A U 8 100% METHANOL COMPATIBLE W/FRP; A (U) 9 GALVANIZED STEEL; A (U) 10 CATHODIC PROTECTION; A U 95 UNKNOWN; A U 99 OTHER

D. LEAK DETECTION: ☐ 1 AUTOMATIC LINE LEAK DETECTOR ☐ 2 LINE TIGHTNESS TESTING ☐ 3 INTERSTITIAL MONITORING ☐ 99 OTHER None

V. TANK LEAK DETECTION

☐ 1 VISUAL CHECK ☐ 2 INVENTORY RECONCILIATION ☐ 3 VADOZE MONITORING ☐ 4 AUTOMATIC TANK GAUGING ☐ 5 GROUND WATER MONITORING ☐ 6 TANK TESTING ☐ 7 INTERSTITIAL MONITORING ☒ 91 NONE ☐ 95 UNKNOWN ☐ 99 OTHER

VI. TANK CLOSURE INFORMATION

1. ESTIMATED DATE LAST USED (MO/DAY/YR)	2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING	3. WAS TANK FILLED WITH INERT MATERIAL?
1990	None GALLONS	YES ☐ NO ☒

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE)	DATE
Nicki Marcelli Nicki Marcelli	5-26-94

LOCAL AGENCY USE ONLY

THE STATE I.D. NUMBER IS COMPOSED OF THE FOUR NUMBERS BELOW

STATE I.D.#	COUNTY #	JURISDICTION #	FACILITY #	TANK #
	41	000	33621	2

PERMIT NUMBER	PERMIT APPROVED BY/DATE	PERMIT EXPIRATION DATE

THIS FORM MUST BE ACCOMPANIED BY A PERMIT APPLICATION - FORM A, UNLESS A CURRENT FORM A HAS BEEN FILED.
FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

Appendix T

County of San Mateo Environmental Health Hazardous Waste Information

DRAFT

New Accounts / Change of Information Form

INSPECTORS NAME: PETE

DATE: 7-6-04

PROGRAM ELEMENTS

* Indicate program elements below

☐ ADD *1._____ 3._____

2._____ 4._____

☒ DELETE *1. 2225 3._____

2._____ 4._____

NEW ACCOUNTS

☐ RECORD ID #

☐ DATA SHEET

☐ NEW FOLDER/LABEL

☐ OTHER:

TANKS (ONLY)

☐ DELETE ENTIRE TANK PROGRAM (ALL TANKS)

☐ DELETE SPECIFIC TANK (PARTIAL)
*Indicate tank(s) to be deleted

1. 3.

2. 4.

☐ RCRA LOG (2202-2203)

☐ CHANGE OF OWNERS

NEW OWNERS NAME:_____

NEW OWNERS ADDRESS: _____

☐ NAME CHANGE (FACILITY)

NEW FACILITY NAME: _____

☐ ADDRESS CHANGE (FACILITY)

NEW FACILITY ADDRESS: _____

OTHER: DELETE FILE

RETURN TO INSPECTOR: Yes (No)

DRAFT

Date run : 7/8/2004 10:47:12AM
Run by :

San Mateo County, Environmental Health
Facility Information as of 7/8/2004

Report #: 9302
Page #: 1

Record Selection Criteria: Facility ID FA0022926

permit expiration date

Make changes/corrections in RED ink or pencil.
INFORMATION CHANGE (date) : _____
OWNERSHIP CHANGE (date) : _____

OWNER FILE INFORMATION

Owner ID: OW0023003
Permit & Owner Name: **MARCELLI, NICK**
Owner DBA: FIVE STAR DEVELOPMENT
Owner Address: 1275 HAWES ST
REDWOOD CITY, CA 94061
Home Phone: 650-364-9835
Work/Business Phone: Not Specified

Mailing Address: 4100 STAGE ROAD
SAN GREGORIO, CA 94074
Care of: NICK MARCELLI

New Owner ID : _____

FACILITY FILE INFORMATION

Facility ID: FA0022926
Facility Name: FIVE STAR DEVELOPMENT
Location: 134 MAPLE ST
REDWOOD CITY, CA 94063
Phone: 650-364-9835

Mailing Address: 4100 STAGE ROAD
SAN GREGORIO, CA 94074
Care of: NICK MARCELLI

ACCOUNTS RECEIVABLE FILE INFORMATION

Account ID: AR0023522
Invoice c/o Name: NICK MARCELLI
Permit and Invoice Mail to: **4100 STAGE ROAD**
SAN GREGORIO CA 94074
Anniversary Date: 12/1/1996
Permit Expiration: No Permit Issued

New Account ID: _____
Mail Invoices to: Owner / Facility / Account
(Circle One)

Program/Element and Description	Record ID	Employee ID and Name	Status	UST(s) Linked	Transfer to New Owner?		(Circle One) Active/Inactve Delete		
2300 - UNDERGROUND TANK - GENERAL	PR0025820	EE0003310 - PETE SMITH	Inactive	0	Y	N	A	I	D
2225 - GENERATES <27 GAL/YEAR	PR0028691	EE0003365 - LINDSAY GIPE	Inactive	0	Y	N	A	I	D
6000 - CUPA OVERSIGHT/STATE SURCHARGE	PR0033320	EE0003365 - LINDSAY GIPE	Inactive	0	Y	N	A	I	D
6097 - 1997 RETROACTIVE STATE CUPA SURCHA	PR0037328	EE0003310 - PETE SMITH	Inactive	0	Y	N	A	I	D
3090 - STORMWATER ANNUAL INSPECTION FEE	PR0040953	EE0003365 - LINDSAY GIPE	Inactive	0	Y	N	A	I	D

DRAFT

DRAFT

11/14/96

KO

NEW

1/2 DAO 1

F PREMISE FACILITY

Facility ID 022926 Cross-Ref 000016971
Facility Owner ID 023003 Name MARCELLI, NICK
Property Owner ID _____ Name _____

Facility Name FIVE STAR DEVELOPMENT # of Emps. _____
Trust Lands?(Y/N) N

Street Number	Direction	Street Name	Type	Unit
134		MAPLE	ST	

2nd Address _____
Cross Street MAPLE
City REDWOOD CITY State CA Zip 94063-
Phone 415-364-9835 Ext _____

Census _____ District ___ Location 33 City code RC

Mail Ad 1275 HAWES ST
2nd Ad _____
Care Of NICK MARCELLI Accts Rec Address Update? Y
City REDWOOD CITY Addr M
State CA Zip 94061-
AP# _____ SIC Code _____
F=Find E=Enter U=Update D=Delete L=Look-up Page 1 12:16:25p

F PROGRAM GENERAL HEALTH PROGRAM

Facility ID 022926 Record ID 028691
Facility Name FIVE STAR DEVELOPMENT State Site ID _____
Transaction Code N Local_Site_ID _____

Emergency Notification -
Contact 1 Name NICK MARCELLI
Title OWNER
Day Phone 415-364-9835 Ext ____
Night Phone ___-___-_____ Ext ____
Contact 2 Name _____
Title _____
Day Phone ___-___-_____ Ext ____
Night Phone ___-___-_____ Ext ____
Manager Name _____

Description -
Designated employee 3400 BOE# _____
Program element number 2225 Number of Units _____
Current Status 01 EPA ID # _____
Mail Correspondence To 01 Inspection Code __

Number of TANKS linked to this PROGRAM record 000
F=Find E=Enter U=Update D=Delete S=Switch Page 1 12:16:29p

NOV 18 1996

DRAFT

SAN MATEO COUNTY

DEPARTMENT OF HEALTH SERVICES - ENVIRONMENTAL HEALTH
455 County Center, Redwood City, CA 94063
(650) 363-4305

OFFICIAL INSPECTION REPORT / FIELD OBSERVATIONS

Site Name: S-STOR DEVELOPMENT

Site Address: 134 MAPLE ST.

Page 1 of 1
Date: 6-8-04
Program: VSRG
Site Computer #
APN:

FACILITY CLOSED WITHOUT NOTIFYING SMCEH

DRAFT

Inspector: [signature]

Received By:

Hazardous Waste Generator Inspection Report

San Mateo County Division of Environmental Health
590 Hamilton Street, 4th Floor, Redwood City, CA 94063
Telephone: (415) 363-4305

Record ID#: _____ P/E: 22_____ Inspected By: BLOWIN Date: 10/1/97

Business Contact: NICK MARSELLI Work Phone: _____

Facility Name: FIVE STAR DEVELOPMENT EPA ID#: _____

Facility Street Address: 134 MAPLE City: RWC Zip: _____

Mailing Address: _____ City: _____ State: _____ Zip: _____

Business Description: _____

Business Owner Name: _____ Owner Phone: _____

Owner Address: _____

Driver's License #: _____ Expiration Date: _____ Reinspection Date: _____

DRAFT

ITEM	SECTION #	RECORDKEEPING	IN COMPLIANCE
1	22-66262.12(a)	Generator has EPA Identification Number	(N/A) (Yes) (No)
2	22-66263.42(e)	Manifests or waste pickup receipts on file at facility	(N/A) (Yes) (No)
3	22-66262.40(c)	Test results/waste analyses on file	(N/A) (Yes) (No)
4	22-66262.40(b)	Biennial Report on file	(N/A) (Yes) (No)
5	22-66265.16	Personnel training documented	(N/A) (Yes) (No)
		MANIFEST	
6	22-66262.20	Applicable sections completed	(N/A) (Yes) (No)
7	22-66262.23(a)(4)	Manifest copies submitted to Cal/EPA within 30 days	(N/A) (Yes) (No)
8	22-66262.12(c)	Hazardous waste hauled by a registered transporter	(N/A) (Yes) (No)
9	22-66262.12(c)	Hazardous waste shipped to a permitted facility	(N/A) (Yes) (No)
10	22-66262.42(a)	Signed TSDF manifest copies received	(N/A) (Yes) (No)
11	22-66262.40(b)	Exception Report on file	(N/A) (Yes) (No)
12	22-67430.1	Extremely hazardous waste disposed of with permit	(N/A) (Yes) (No)
13	22-66268.7(a)(6)	Land Disposal Restriction notification on file	(N/A) (Yes) (No)

ITEM	SECTION #	WASTE DETERMINATION	IN COMPLIANCE
14	22-66262.11	Hazardous waste determination made for all waste	(N/A) (Yes) (No)
		EMERGENCY PREPAREDNESS/CONTINGENCY PLAN	
15	22-66265.31	Facility operated to minimize possibility of fire, explosion, or unplanned release of hazardous waste to air, soil or surface water which could threaten human health or the environment	(N/A) (Yes) (No)
16	22-66265.32	Facility has adequate emergency response equipment; internal communication, fire extinguisher(s) and spill control	(N/A) (Yes) (No)
17	22-66265.33/.34	Emergency equipment is adequately maintained and accessible	(N/A) (Yes) (No)
18	22-66265.35	Aisle space is adequately maintained for emergency response	(N/A) (Yes) (No)
19	22-66265.51/.53	Facility has a copy of a written hazardous waste contingency plan or Hazardous Material Business Plan on-site	(N/A) (Yes) (No)
		HAZARDOUS WASTE STORAGE	
20	HSC 25189.5 HSC 25201	Generator does not accept, treat or dispose of hazardous waste on-site without a permit	(N/A) (Yes) (No)
21	22-66262.34(a)	Generator does not store more than 100 kg (27 gal) on-site for longer than 90 days without a permit	(N/A) (Yes) (No)
22	22-66262.34(e)(1)	Generator uses "Satellite Accumulation" exemption for storage	(N/A) (Yes) (No)
23	22-66262.34(f)(3)	Each container is labeled with: "Hazardous Waste", waste composition, hazardous properties and generator information	(N/A) (Yes) (No)
24	22-66262.34(f)(1)	Accumulation start date clearly marked and visible on each container	(N/A) (Yes) (No)
		CONTAINER MANAGEMENT	
25	22-66265.171	Hazardous waste containers in good condition	(N/A) (Yes) (No)
26	22-66265.172	Hazardous waste compatible with holding containers	(N/A) (Yes) (No)
27	22-66265.173	Hazardous waste containers closed when not in use	(N/A) (Yes) (No)
28	22-66265.174	Hazardous waste storage area inspected weekly	(N/A) (Yes) (No)

DRAFT

ITEM	SECTION #	CONTAINER MANAGEMENT (Con't)	IN COMPLIANCE
29	22-66265.177(a)	No mixing of incompatible wastes	(N/A) (Yes) (No)
30	22-66265.177(c)	Storage of waste is in a secure area which minimizes the possibility of spills, mixing of incompatible and escape of materials from the area	(N/A) (Yes) (No)
31	22-66261.7	Empty containers are managed properly	(N/A) (Yes) (No)
		TANK MANAGEMENT	
32	22-66265.190-199	Waste stored in tank(s) in compliance with Article 10	(N/A) (Yes) (No)

WASTE GENERATED: **QUANTITY/MONTH**

WASTE OIL ~ 2 GAL/MONTH
THINNER - RECYCLED/SETTLED FOR REUSE
SLUDGE ~ SMALL AMOUNT

COMMENTS:

(1) KEEP LOG WHICH VERIFIES WASTE OIL DISPOSAL
(2) DOCUMENT SPILL + FIRE RESPONSE TRAINING
(3) DECREASE CHEMICAL STACKING WHERE POSSIBLE
(4) INSURE SPILL RESPONSE MATERIALS ARE ALWAYS AVAILABLE.
(5) LABEL WASTE OIL CONTAINER.

Kelly Morelli — Kelly Morelli — 10-1-97
NAME — SIGNATURE — DATE

DRAFT

San Mateo Countywide
Stormwater Pollution Prevention Program
10 Twin Dolphin Dr., Suite C-200, Redwood City, CA 94065

Municipality: RWC
Date: 10/1/97
Inspector: BARNWELL
E.H. Record ID #:

Standard Stormwater Facility Inspection Report Form

Inspection conducted by: San Mateo County, Environmental Health Division, 590 Hamilton St., Redwood City, CA 94063

Reason for Inspection: ☐ First Inspection ☑ Routine Inspection ☐ Complaint ☐ Other | Facility location: Incorporated ☑ Unincorporated ☐

NAME OF FACILITY: FIVE STAR DEVELOPMENT | SITE ADDRESS: 134 MAPLE

CONTACT NAME	PHONE	BUSINESS TYPE/ACTIVITY	SIC

Is the facility covered under any other programs or permits?

☐ None ☐ Sanitary sewer
☐ Air quality ☐ Hazmat business plan ☐ Underground storage tanks ☐ Aboveground storage tanks
☐ Fire department(hazmat storage) ☐ Hazmat waste generator ☐ Retail food facility ☐ Other

Is the facility covered under a storm water permit? ☐ Does not need Coverage ☐ No, but may need to be (Refer to Regional Board)
☐ Individual ☐ General: Does the facility have a SWPPP? ☐ yes ☐ no

N/A = Not Applicable; POTENTIAL for Pollutant Exposure without BMPs: 1 = low potential, 2 = medium potential, 3 = high potential
ACTUAL Type of Discharge: BMP: 0 = BMPs are effective, 1 = BMPs are fairly/almost effective, 2 = BMPs are not effective, 3 = No BMPs are implemented
PEX = Pollutant Exposure, NSW = Non-Stormwater Discharge

AREAS OF ACTIVITY	N/A	POTENTIAL	ACTUAL BMP	ACTUAL PEX	ACTUAL NSW	REMARKS: Describe recommendations, requirements, and time to implement. Check box if remark is a *requirement.*
A. Outdoor Process/Manufacturing Areas	/					☐
B. Outdoor Material Storage Areas	/					☐
C. Outdoor Waste Storage/Disposal Areas	/					☐
D. Outdoor Vehicle and Heavy Equipment Storage, Maintenance Areas	/					☐
E. Outdoor Parking Areas and Access Roads	/					☐
F. Outdoor Wash Areas	/					☐
G. Rooftop Equipment	/					☐
H. Outdoor Drainage from Indoor Areas	/					☐
I. Other (describe):						☐

Outreach material distributed: STOPPP Brochure ☑ Industrial Brochure ☐ BMP Information ☐

The existing operational practices of the facility ☑ Do / ☐ Do Not reduce pollutant discharge to the storm drain system to the maximum extent practicable.

ADDITIONAL COMMENTS/REMARKS

☐ Facility map available ☐ See attached for more comments

PRIORITY FOR RE-INSPECTION: ☐ First ☐ Second ☐ Third

ENFORCEMENT: ☐ None ☐ Verbal Notice ☐ Warning Notice ☐ Informal Violation ☐ Formal Violation ☐ Legal Action

Received by - Facility Representative Signature: _____

Print Name & Title of Facility Representative: _____

DRAFT

DRAFT



FIVE STAR DEVELOPMENT

CA LICENSE #C10B284300

NICK MARCELLI

1275 HAWES ST

~~9 CERRITO PLACE~~

REDWOOD CITY, CA 94061

PHONE (415) 364-9835
PAGER (415) 406-0191
MOBIL (415) 265-8274

Hazardous Waste Generator Inspection Report

San Mateo County Division of Environmental Health
590 Hamilton Street, 4th Floor, Redwood City, CA 94063
Telephone: (415) 363-4305

Record ID#: _____ P/E: 22____ Inspected By: BROWN Date: 11/13/96

Business Contact: Nick MARCELLI Work Phone: 364-9835

Facility Name: 2134 MAPLE EPA ID#: _____

Facility Street Address: FIVE STAR DEVEL. City: RWC Zip: _____

Mailing Address: 1275 HAWES City: RWC State: _____ Zip: _____

Street: _____ City: _____ Zip: _____

Business Description: CONSTRUCTION

Business Owner Name: _____ Owner Phone: _____

Owner Address: _____

Driver's License #: _____ Expiration Date: _____ Reinspection Date: _____

DRAFT

ITEM	SECTION #	RECORDKEEPING	IN COMPLIANCE
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		MANIFEST	
6	22-66262.20	Applicable sections completed	(N/A) (Yes) (No)
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13	22-66268.7(a)(6)	Land Disposal Restriction notification on file	(N/A) (Yes) (No)

Rev Aug. 1994

* HASN'T HAD PICK UP YET

ITEM	SECTION #	WASTE DETERMINATION	IN COMPLIANCE
14	22-66262.11	Hazardous waste determination made for all waste	(N/A) (Yes) (No)
		EMERGENCY PREPAREDNESS/CONTINGENCY PLAN	
15	22-66265.31	Facility operated to minimize possibility of fire; explosion, or unplanned release of hazardous waste to air, soil or surface water which could threaten human health or the environment	(N/A) (Yes) (No)
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18	22-66265.35	Aisle space is adequately maintained for emergency response	(N/A) (Yes) (No)
19	22-66265.51/.53	Facility has a copy of a written hazardous waste contingency plan or Hazardous Material Business Plan on-site	(N/A) (Yes) (No)
		HAZARDOUS WASTE STORAGE	
20	HSC 25189.5 HSC 25201	Generator does not accept, treat or dispose of hazardous waste on-site without a permit	(N/A) (Yes) (No)
21	22-66262.34(a)	Generator does not store more than 100 kg (27 gal) on-site for longer than 90 days without a permit	(N/A) (Yes) (No)
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		CONTAINER MANAGEMENT	
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27	22-66265.173	Hazardous waste containers closed when not in use	(N/A) (Yes) (No)
28	22-66265.174	Hazardous waste storage area inspected weekly	(N/A) (Yes) (No)

DRAFT

ITEM	SECTION #	CONTAINER MANAGEMENT (Con't)	IN COMPLIANCE
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31	22-66261.7	Empty containers are managed properly	(N/A) (Yes) (No)
		TANK MANAGEMENT	
32	22-66265.190-199	Waste stored in tank(s) in compliance with Article 10	(N/A) (Yes) (No)

WASTE GENERATED: **QUANTITY/MONTH**

WASTE THINNER / SLUDGE ?

OIL ?

COMMENTS:

(1) WASTE PAINT, WHETHER OIL OR WATER BASED PAINT, MUST BE COLLECTED FOR PROPER RECYCLING

(2) RECOMMEND REDUCED STORAGE (DECREASED STACKING) OF ANY CHEMICALS

(3) KEEP A LOG OF WASTE OIL DISPOSAL FOR COMPANY TRUCKS

(4) CARBE SEPERATE THINNER APPROPRIATELY, COLLECT & LABEL SLUDGE AS HAZARDS WASTE

NAME SIGNATURE DATE

DRAFT

PERMIT EXPIRES 9/8/94

ENVIRONMENTAL HEALTH PERMIT

San Mateo County Department of Health Services
590 Hamilton Street, Redwood City, CA 94063

Permit to REMOVE UNDERGROUND HAZARDOUS MATERIAL
2TKS

~~CONDITIONAL: CALL INSPECTOR TO SCHEDULE REMOVAL~~
AND PAY REGISTRATION FEES $294.00 AND $46.00 ST SURCHARGE
TOTAL $340.00

At 134 MAPLE ST RWC

No.	HM-063-94
Date	6/8/94
Fee paid	$780.00
APN	539021 1
Ordinance No.	02865

ISSUED BY T.BELASCO

This permit has been granted to:

OWNER

NICK MARCELLI
9 CERRITO PLACE
REDWOOD CITY, CA 94063

Contractor:

INTERSTATE
MIKE PARIANI
128 S MAPLE ST
SO SAN FRANCISCO, CA 94080

PREPARED BY KCHAVEZ

For the Director of
Environmental Health

THIS PERMIT IS NONTRANSFERABLE AND MUST BE ON JOB SITE
Permit shall be void if construction is not started
within 90 days of date of this permit.

CC: FIRE — BUILDING DEPT RWC

DRAFT

recycled paper

DRAFT

Kathy,
Please delete
and return
to me. Thanks
Teresa

SEP 07 1994

Kathy
Please issue
removal permit.
Thanks
Teresa

JUN 14 1994

APPENDIX U

Revised Tank Removal Report produced by SEMCO

DRAFT

6

S E M C O
ENVIRONMENTAL CONTRACTORS & GENERAL ENGINEERING
1741 LESLIE STREET
SAN MATEO, CALIFORNIA 94402

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
JUN 10 1994
RECEIVED

June 8, 1994

Michele Shoemaker
San Mateo County
Environmental Health Deparment
590 Hamilton Street
Redwood City, California 94063

Re: Revised Tank Removal Report, Chubs Auto Repair

Dear Michele:

Please find enclosed, a revised copy of the tank removal report for the above mentioned address.

If you have any questions, please give me a call.

Respectfully,

Rhonda Reames-Kiper

Rhonda Reames-Kiper
SEMCO-SAN MATEO

cc: Larry Chubick
File

DRAFT

1.0 INTRODUCTION

In this report, we are presenting a detailed account of the tank removal activities at Chub's Auto Repair, located at 1180 Main Street, Redwood City, California. All work was performed by SEMCO, San Mateo and was done in compliance with the County of San Mateo and the Redwood City Fire Department. Tank preparation, excavation and removal occurred on January 14, 1994. Re-excavation activities occurred on February 9, 1994.

2.0 EXCAVATION AND TANK REMOVAL

On January 14, 1994, SEMCO excavated the site for the removal of one 1000 gallon Waste Oil tank. Upon arrival to the site and preparation for the removal, another tank was discovered, which was determined to be a 1000 gallon gasoline tank.

Both tanks were voided of their residual product, which was placed into barrels for disposal. It was later disposed of by Allied Petroleum on Manifest # 93267128. The tanks were then inerted by washing them with a hot water detergent wash, followed by solid carbon dioxide (dry Ice) until acceptable levels of oxygen and lower explosive limits were reached..

The tanks condition were noted as follows:

1) 1000 gallon waste oil was unwrapped steel with several 1/8" holes in surface and 2-3 1/4" holes at the East end. The piping had many holes.
2) 1000 gallon gasoline tank was unwrapped steel with pitting, but no holes were observed.

The inerted tanks were hauled by Rich Hamilton Trucking on Manifest # 92885656.

After the tanks were removed, it was noted that the soil beneath the waste oil tank was discolored, with a slight solvent odor. The soil in both excavations had a clayey/sandy consistency. The soil beneath the gas tank had no discoloration or odor.
At this time, soil samples were collected.

3.0 SOIL SAMPLING

Soil samples were retrieved out of the excavation by use of the backhoe bucket. Clean brass sample tubes were used by pushing them into the soil until a full sample was obtained. All samples were sealed with teflon tape, plastic end caps and sealed with masking tape, labeled and entered onto a chain of custody form. Samples taken to Superior Precision Analytical, a State certified laboratory.
Samples were collected from the waste oil excavation from the East end of the excavation at 8 feet and the West end at 8.5 feet. A four tube composite sample was collected from the excavated waste oil soil.

These samples were to be analyzed for TPH as Gasoline, Diesel, BTXE, Oil and Grease, 8010, 8240 and ICAP 5 Metals.

Samples were collected from the gasoline tank excavation from the North end at 8 feet and the South end at 9.5 feet. A four tube composite was also collected from the excavated soil. These samples were to be analyzed for TPH as Gas, BTXE and Total Lead.

Analytical results demonstrated that the gasoline excavation had no detectable traces of the analyzed constituents, except for 8ppm lead in the North sample, 7ppm lead in the South sample and 30 ppm Lead in the Excavated spoils. The analytical for the waste oil tank demonstrated Non detectable levels in the East end of the excavation. The West end however, had 810 ppm Diesel with non detectable levels in Gasoline, BTXE and Oil and Grease. The excavated soil had 4 ppm TPH as gas, 1100 ppm Diesel, No Benzene, 0.048 ppm Toluene, 0.036 ppm Ethyl Benzene, 0.28 ppm Xylenes and no Oil and Grease.

Based on the analytical, it was determined that additional excavation work would be necessary for the Waste Oil tank excavation.

5.0 RE-EXCAVATION ACTIVITIES

After assessing the analytical results, it was decided in conjunction with the various lead agencies to re-excavate the site down to a level in which there would be no detectable traces of contaminants.

A workplan was submitted to San Mateo County on February 2, 1994, to over excavate the West end (fill end) by approximately 10 cubic yards. Upon approval of the workplan, the job was scheduled for February 9, 1994 with San Mateo County Environmental Health inspector Michelle Shomarker.

SEMCO arrived on site and excavated the West end laterally approximately 5 feet and removed the soil to the 8 foot level. The water table was reached at the 9 foot level. The water in the excavation was pumped and allowed to recharge. (This water was placed in barrels to be disposed of at a later date) A soil sample was collected at the 8 foot level, and a water sample was collected. The soil sample was analyzed for TPH as gas and diesel, BTXE and TOG. A water sample was also collected with analysis request for TPH as gas and diesel, BTEX, TOG and 8010. However only one liter and three VOA's were collected on this date. Superior Precision Analytical informed SEMCO only one analysis could be run due to the inadequate amount. (please see enclosed correspondence from Superior).

DRAFT

Conversations on site was to request this sample not be analyzed, and allowing the pit water to be pumped and allowed to recharge. San Mateo County later requested this sample to be analyzed. SEMCO requested Superior to run TOG analysis only, due to the inadequate amount. Analytical results indicated levels of 9 ppm Oil and Grease. SEMCO at this time requested that the pit be allowed to be pumped and recharge. Permission was given for this task, so an appointment was scheduled for February 17, 1994 with San Mateo County Environmental Health Department.

A water storage tank (swing tank) was delivered to the site for the receiving of water from the excavation. The water was pumped and allowed to recharge. Three (3) amber liters and three (3) voas of water were collected and analyzed for TPH as gasoline, diesel, BTXE, TOG and 8240.

Analytical results demonstrated non detected levels in TPH as gas, BTXE, TOG and 8240. The analysis for TPH as Diesel had a level of 530 ppb, but was noted as not matching the typical diesel pattern.

The excavation was backfilled and compacted to prepare for resurfacing. The water from the original pumping of the excavation, was pumped from the barrels and was placed into the holding tank for disposal.

The water in the holding tank was then sampled on March 9, 1994 for TPH as gasoline, Diesel,BTXE, TOG and 8240, to determine how the disposal would be handled. The analysis demonstrated only 110 ppb diesel, while all other analysis were non detected.

Based on this information, the analytical was presented to South Bay Sewer Authority for pumping the water into the Sewer. On March 16, 1994, SBSA approved the discharge of the water into the sewer. (see attached permit) On March 17, 1994, the water was pumped from the tank into sewer.

The concrete was replaced on March 28, 1994

This report is for your files. If you have any questions, please give me a call.

Rhonda Reames-Kiper

Rhonda Reames-Kiper
SEMCO-SAN MATEO

SEMCO\CHUB'S\93-3496\APRIL 1994

DRAFT

Superior Precision Analytical, Inc.
1555 Burke, Unit I ▪ San Francisco, California 94124 ▪ (415) 647-2081 / fax (415) 821-7123

SEMCO

JUN - 2 1994

Received

MAY 31, 1994

Chuck Kiper
SEMCO
1741 Leslie St.
San Mateo, CA 94402

Dear Chuck,

This letter is in regards to our conversation about SEMCO's project 93-3496 (Chub's Auto). As reflected by Superior Precision Analytical's records, only one container (one liter amber glass bottle) was received for SEMCO's sample #1 Pit Water on Febuary 10, 1994.

Chuck, if you have any questions please give me a call at (415) 647-2081.

Best Regards,

5/31/94

Richard Phaler
Senior Chemist
Account Manager

DRAFT

CHAIN OF CUSTODY AND ANALYSIS REQUEST

LAB NO. 7107

Section I

Consultant Name: SEMCO
Office Location: 1741 Lasso Rd. San Mateo, CA 94402
Fax No.: (415) 572-3734
Project Manager:
Phone: (415) 572 3033

TURN AROUND TIME (Circle One)
Same Day | 72 Hrs
24 Hrs | 5 Day
48 Hrs

SUPERIOR ANALYTICAL, INC.
Martinez 415/229-1512 | San Francisco 415/647-2081

Send Coolers to : Modesto ☐ San Mateo ☒
Project No. / P.O. No.: Chubbs - Auto 93-3496
Sampler: Semco / Jim Nores
Regulatory Agency: San Mateo County

Section II — Analysis Request

Section III — Sample Information

	Sample Identification	Matrix (S=Soil A=Air W=Water)	TPH - G & D	TPH - Low Level D	TPH - G	BTXE	040 (Analyzed)	8010	8240	Metals	Others - Subject to subcontracting	Date	Time	Containers: Quantity	Containers: Pres.	Sampling Remarks
1	#1 Pit Water	W	X			X	X	X				6/9/94	1:40	1	HCl	hold until Notified
2	#2 West Sidewall 8'	S	X			X	X	X				6/9/94	1:54	1	"	
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																

Biorenediation ☐
Contamination ☒

JUN - 2 1994 Received

Relinquished by: Jason Nores	Date/Time: 6/9/94 3:15	Received by: Lisa Hughes
Organization: Semco		Organization: AERA
Relinquished by: Spanivisan	Date/Time: 6/10 11:09	Received by:
Organization: AERA		Organization:
Relinquished by:	Date/Time:	Received by: K. Carlyon

Please Initial: KC
Samples Stored in Ice: 4°C
Appropriate Containers: yes
Samples Preserved: yes
VOA's without Headspace: yes
Comments:

DRAFT

DRAFT

APPENDIX V

Monitoring Well Construction Report produced by Applied Science and Engineering, Inc.

5

ASE
APPLIED SCIENCE AND ENGINEERING INC.

May 24, 1994

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
MAY 26 1994
RECEIVED

SUBJECT: Monitor Well Construction Report
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

Applied Science and Engineering, Inc. (ASE) respectfully submits the following report documenting construction of a monitor well with associated development and groundwater sampling at Chub's Auto Repair, 1180 Main Street in Redwood City, California (Figure 1). The investigation was conducted in accordance with the requirements of the State of California Leaking Underground Fuel Tank (LUFT) Manual, the Tri-Regional Recommendations of the San Francisco Bay Regional Water Quality Control Board (SFRWQCB), and the San Mateo County LUFT Enforcement Program (CLEP) Soil and Groundwater Remediation Guidelines.

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Introduction

Reportedly, the above-referenced site formerly contained two underground storage tanks (USTs) used for waste oil and gasoline (Figure 2). The USTs were removed from the ground on January 14, 1994. The gasoline UST did not have any holes, but the waste oil UST was noted to have several holes at the end seam at the 11:00 position. Verification soil samples collected for the gasoline UST were found to contain no detectable hydrocarbons (Table 1). One of the two soil samples collected for the waste oil UST was found to contain 810 ppm of Total Petroleum Hydrocarbons (TPH) as diesel (Table 1). In addition, the laboratory reported 17 ppb of dichloromethane by EPA Methods 5030/8010, but re-analysis by EPA Method 8240 showed no detectable hydrocarbons.

On February 9, 1994 the waste oil UST pit was over-excavated. A soil sample collected at the end of overexcavation was found to contain no detectable hydrocarbons (Table 1). Water present in the pit was sampled, with analyses showing only 530 ppb of Total Petroleum Hydrocarbons (TPH) as diesel, described by the laboratory as not typical of diesel. No TPH as gasoline,

benzene, toluene, ethylbenzene, xylenes (BTEX), oil and grease (O&G), or chlorinated hydrocarbons were detected in the water sample (Table 2). The pit was pumped dry and no water recharged. Not true * See inspector notes for more details. Basically, pump didn't work well, took sample then re-pumped pit and re-sampled. Contractor over-pumped pit. MJ 5/31/94

Regardless, the San Mateo County Department of Health Services (SMCDHS) requested construction and sampling of a monitor well. This report describes the construction and sampling of the monitor well that was requested.

Drilling and Soil Sampling

Prior to mobilization ASE secured a drilling permit from SMCDHS and notified Underground Service Alert (USA) of the planned drilling. A monitor well, MW-1, was constructed about 9 feet from the former UST in the assumed downgradient direction of the former UST, towards the San Francisco Bay (Figure 2). The gradient direction was also verified by a file review of the nearby RMC Lonestar site.

The approximately 8-inch diameter boring was drilled by HEW Drilling using hollow stem augers on May 4, 1994. The boring was advanced to a total depth of 20 feet, with soil samples collected every 5 feet in a 2-inch diameter modified California sampler outfitted with brass liners. The sampler used to collect soil samples was triple rinsed between uses in tap water containing soap, tap water, and a final rinse of distilled water. Sample tubes were cleaned prior to arrival at the site.

Visual and olfactory observations of the soils, including observations of petroleum hydrocarbons, were made and recorded on the boring log (see attached). No petroleum odors were noted emanating from any of the MW-1 soil samples. In general, the subsurface consisted of black silty clays to a depth of 14 feet underlain by black and grey fine gravel and sand. Groundwater was first encountered at approximately 14 feet below ground surface. Drilling was halted at a depth of 20 feet, about 5 feet below the initial detection of water.

One soil sample from the vadose zone at a depth of 10.5 to 11 feet was retained for subsequent laboratory analyses. This soil sample was preserved for subsequent laboratory analysis by covering the ends of the brass liner with teflon tape followed by plastic caps, labelling, and placing with blue-ice in a cooler. The label was pre-printed with an identifying number that corresponds to a page in a bound sampling booklet. On this page the location, date, and sampler's name were recorded.

Soils from drilling activities were stored on-site in a 55 gallon drum pending laboratory results.

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Monitor Well Construction

A monitor well, MW-1, was constructed in the boring by HEW Drilling, a licenced well driller in the State of California. A sketch of the well construction details is presented in Figure 3. The monitor well was constructed by inserting approximately 20 feet of two-inch diameter, flush threaded, schedule 40 PVC pipe inside the hollow stem auger. The lower 15 feet was comprised of 0.020 inch machine slotted screen with a threaded cap on the bottom, while the upper 5 feet was constructed of blank casing.

A filter pack of #3 sand was placed in the annulus between the well casing and the boring wall using the hollow stem auger as a tremie pipe. The annulus was filled with sand to about 4 feet below ground surface. Then, an approximately 1 foot thick bridge of bentonite pellets was placed in the annulus and hydrated with clean, distilled water. The bentonite was allowed to swell for about 20 minutes prior to placement of a well seal comprised of a cement grout containing approximately 3% bentonite. The grout was placed in the annulus from a depth of 3 feet to the ground surface.

The well was completed with a watertight, circular valve box, set at the grade of the pavement. Excess casing was cut off to bring the top down to an elevation just below existing ground surface. A locking water tight plug was inserted in the well and secured with a padlock.

Monitor Well Development and Sampling

On the May 5, 1994, the day following well construction, MW-1 was developed by bailing and a groundwater sample was collected. Field notes documenting well development are attached.

Prior to development, depth to water (DTW) was measured at 7.74 feet below TOC. A pressure change was noted upon unsealing the well. An initial volume of water was removed from the well using a clean teflon bailer and examined. The water was turbid, with no petroleum odor. No petroleum odor was noted during development. A total of 10.5 gallons were purged from the well, equivalent to greater than 5 casing volumes.

Purge water was discharged into 5-gallon buckets calibrated for volume measurement. Temperature, pH, and electrical conductivity were measured periodically during development (Table 3). Temperature was measured by placing water from the bailer into a 1-liter cylinder containing an alcohol thermometer. pH was measured with 0-11 range Hydrion pH paper. Electrical conductivity was measured using a calibrated Myron L Company

DRAFT

EP11/pH meter.

At the end of development the DTW was measured at 9.85 feet. The well was allowed to recover for four hours at which time DTW was measured at 9.76 feet. With approval from Ms. Michele Shoemaker of SMCDHS, a sample was then collected.

A new clean, polyethylene bailer was used to remove a volume of water from the well. The water in the bailer had no free product or petroleum odor. Three volatile analysis vials (VOAs) containing preservative were filled with groundwater from the bailer using an attachment that allowed the vials to be filled from the bottom so as to minimize exposure to air. The samples were labelled with the time, date, location, and sampler's name prior to storage in a cooler with blue ice.

All purge water was stored in a 55 gallon drum pending analytical results. The well was capped, locked, and covered.

Laboratory Analyses

Both the soil and groundwater samples were transported under chain of custody (attached) to Coast to Coast Analytical Services (CCAS), a state certified laboratory, for analyses.

The soil sample was analyzed for total petroleum hydrocarbons as diesel (TPH-D), benzene, toluene, ethylbenzene, and xylenes (BTEX); extracted by EPA Method 5030 and analyzed by EPA Methods 8020, and 8015 modified.

The water sample was analyzed for TPH as gas (TPH-G), TPH-D, and volatile organics including BTEX; extracted by EPA Method 5030 and analyzed by EPA Method 8240.

Laboratory reports are attached. Table 1 summarizes the laboratory results for soil, and Table 2 for the groundwater. The soil from MW-1 did not contain any detectable TPH or BTEX. The groundwater sample from MW-1 did not contain any TPH-G, TPH-D, BTEX, or volatile organics.

Quality Control

Laboratory quality control for both soil and water, consisting of method blanks and matrix spikes are attached.

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Summary and Conclusions

This report has been prepared to document construction, development, and sampling of a monitor well at Chub's Auto Repair at, 1180 Main Street, Redwood City, California (Figure 1).

A boring was advanced at a location within 10 feet of the former UST (Figure 2). The boring was located in the apparent downgradient direction from the former UST location. No petroleum odors were encountered in the soil from the boring.

A two-inch diameter, 20 feet deep monitor well was constructed in the boring (Figure 3). The monitor well was developed and a groundwater a sample collected on the day after construction. No free product or petroleum odor was noted in the groundwater.

Laboratory analytical results show no detectable TPH-D, or BTEX in the soil (Table 1), and no TPH-D, TPH-G, BTEX, or volatile organics in the groundwater (Table 2) from MW-1.

Recommendations

ASE recommends collection of a groundwater sample from the monitor well, MW-1, at the next regularly scheduled quarterly date, on or about August 5, 1994 to check the veracity of the initial analytical results that show no detectable hydrocarbons in the groundwater. ASE also recommends analysis only for TPH-D and BTEX due to the absence of volatile organics in the initial sample.

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

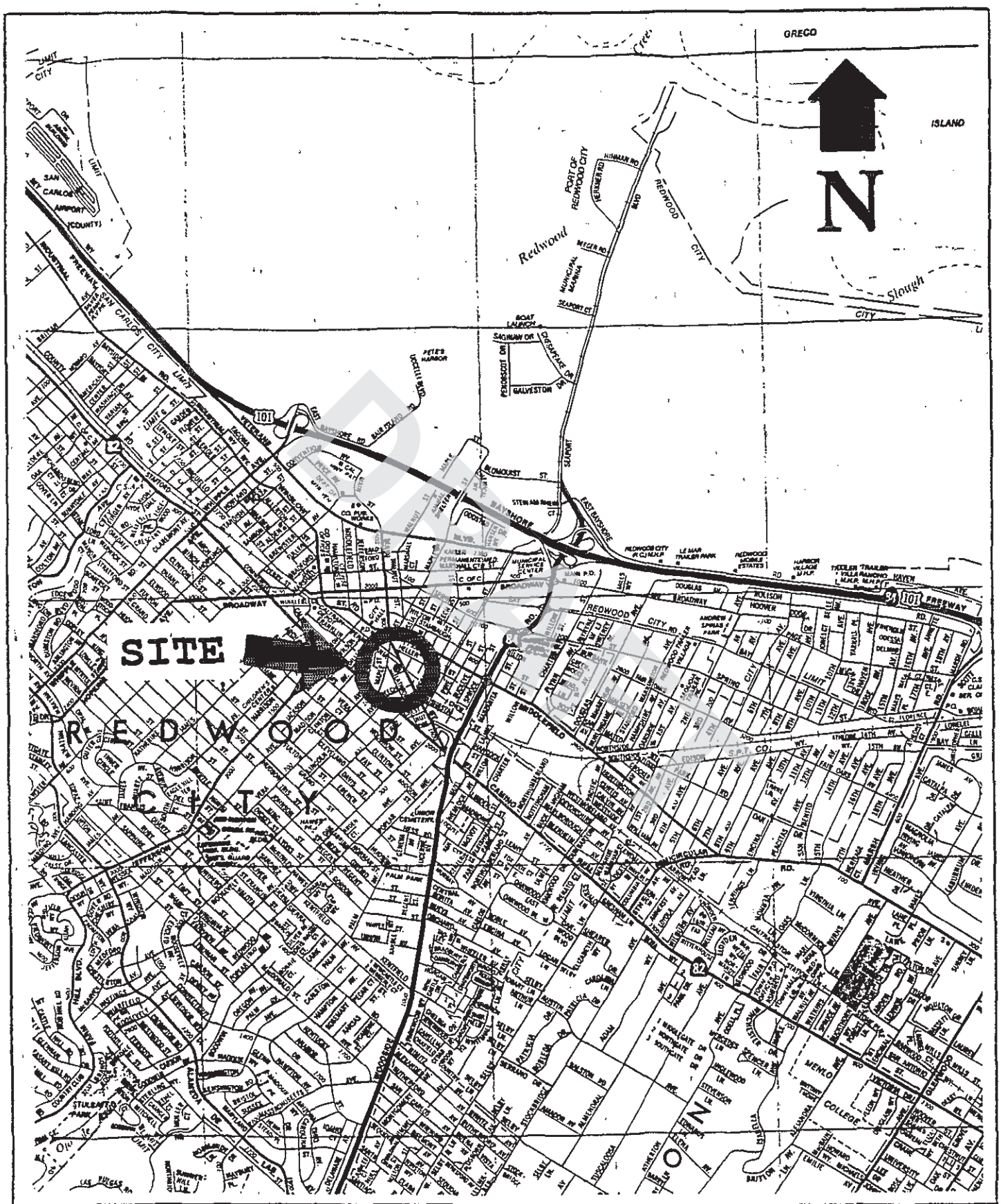
Frederick A. Yukic, MS, PE
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
FREDERICK A. YUKIC
No. 046369
EXP 5/24/94
CIVIL
STATE OF CALIFORNIA

Attachments

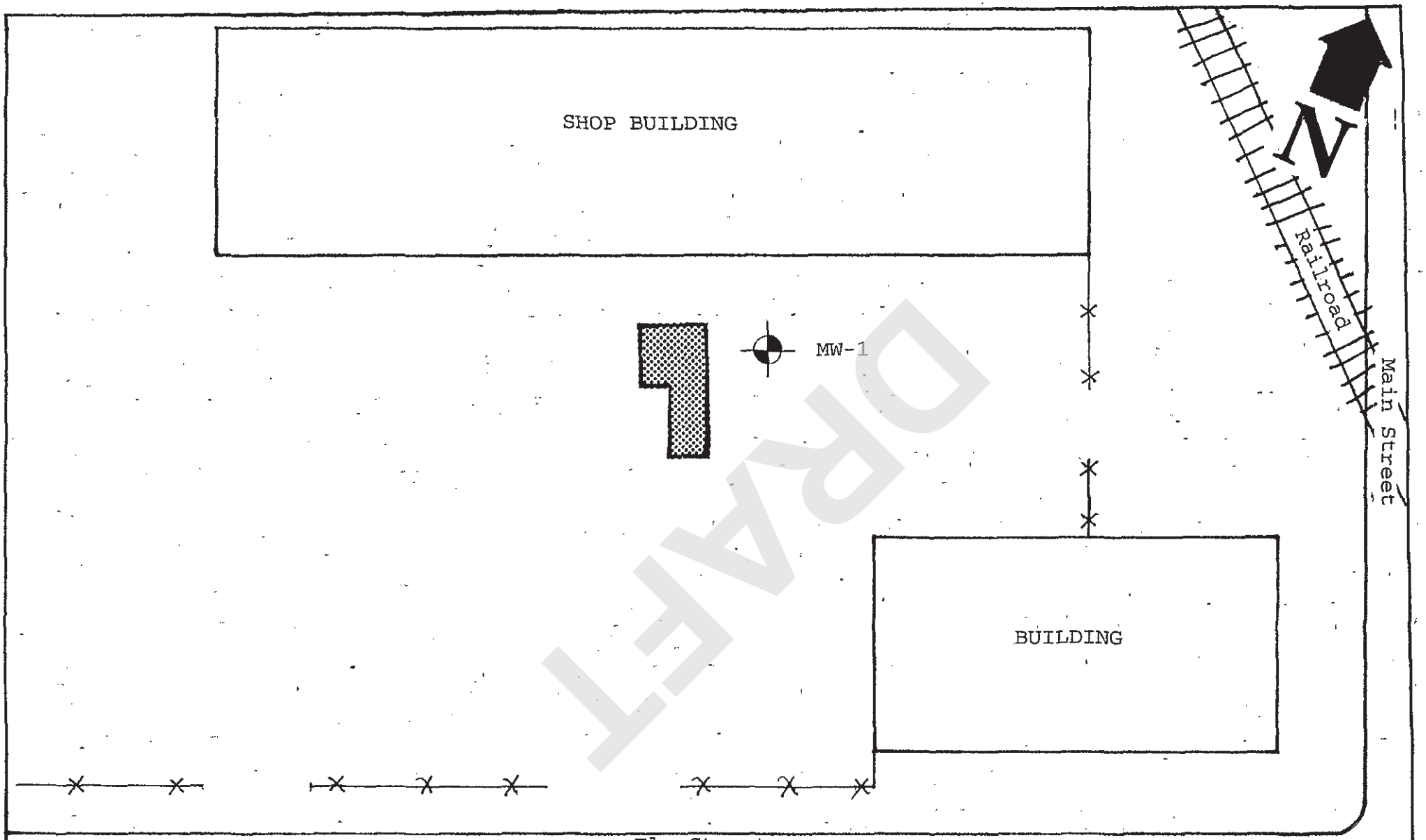
cc: Mr. Larry Chubick, Chub's Auto Repair

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Figure 1: Location Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

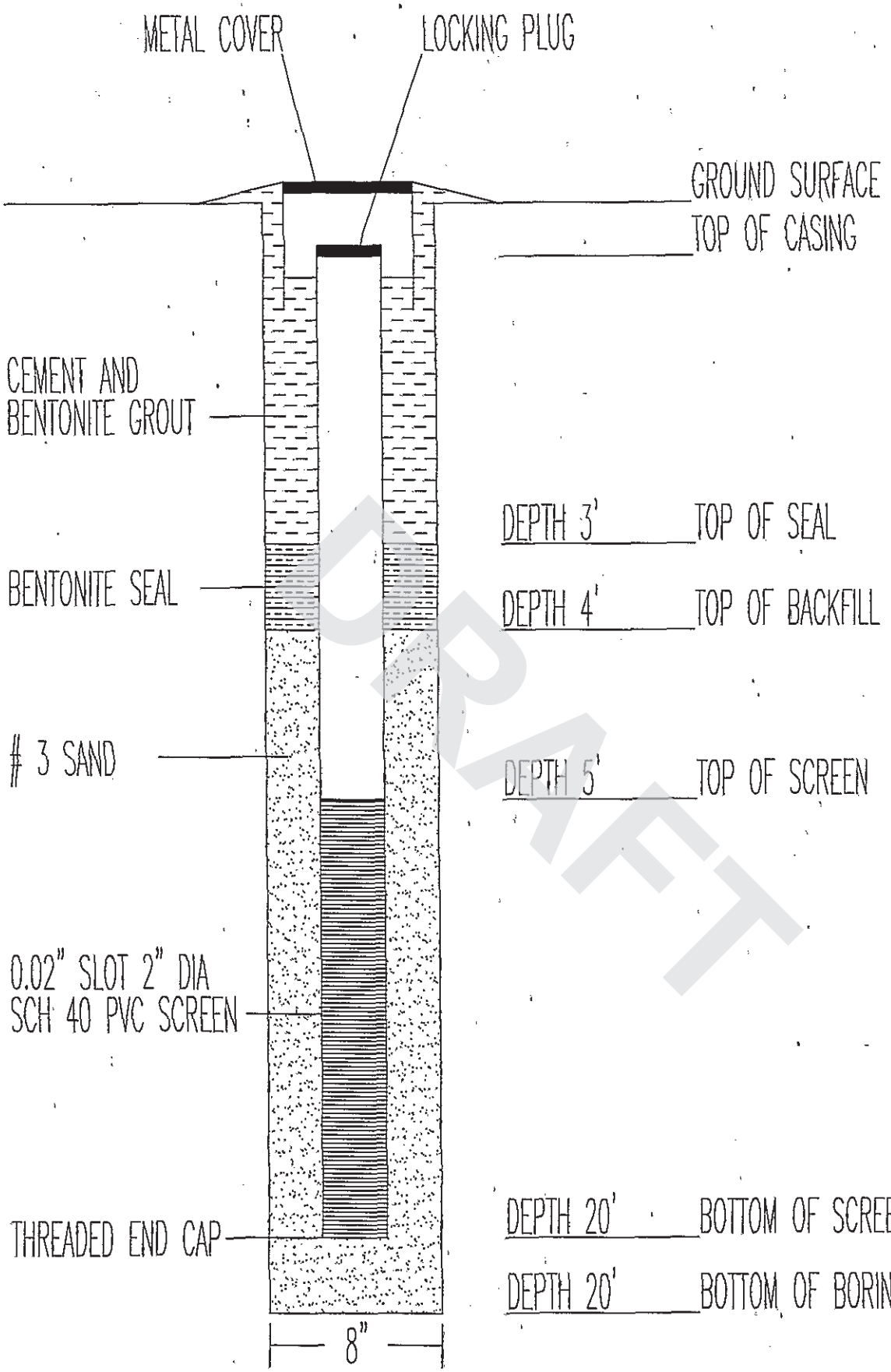


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1" = 20'

PROPOSED MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California



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DATE DRILLED: 5-4-94

Figure: 3. MW-1 CONSTRUCTION DETAILS
LOCATION: 1180 Main Street
Redwood City, CA

Table 1
Soil Analytical Results (ppm)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn
Gasoline UST Excavation														
North @ 8'	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	8	--	--
South @ 9.5	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	7	--	--
Waste Oil UST Excavation														
East @ 8'	1-14-94	ND	ND	ND	ND	ND	ND	ND	ND	0.6	60	7	52	90
West @ 8.5'	1-14-94	ND	810	ND	ND	ND	ND	ND	ND*	0.5	69	7	55	84
West @ 8'	2-09-94	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--
Stockpile Composites														
Gasoline	1-14-94	ND	--	ND	ND	ND	ND	ND	--	--	--	30	--	--
Waste Oil	1-14-94	4	1,100	ND	0.018	0.036	0.28	ND	ND	ND	81	35	79	94
Boring														
MW-1 @ 10'-10.5'	5-04-94	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed
* = 17 ppb of dichloromethane (5030/8010), ND ppb of methylene chloride (8240)

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Table 2
Water Analytical Results (ppb)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn
Excavation	2- 9-94	--	--	--	--	--	--	9,000	--	--	--	--	--	--
Excavation	2-17-94	ND	530	ND	ND	ND	ND	ND	ND	--	--	--	--	--
MW-1	5-05-94	ND	ND	ND	ND	ND	ND	--	ND	--	--	--	--	--

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed

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Table 3
Field Measurements of Groundwater
Chub's Auto Repair

Volume Purged (gallons)	Temperature (centigrade)	pH*	Electrical Conductivity (microsiemens/cm)
0	19.3	>6	2,200
3	19.3	>6	1,750
6	19	>6	1,700
9	19	>6	1,790
10.5	19	>6	1,820

* Redwood City tap water reads a pH of 6.0 with this pH paper on February 19, 1993.

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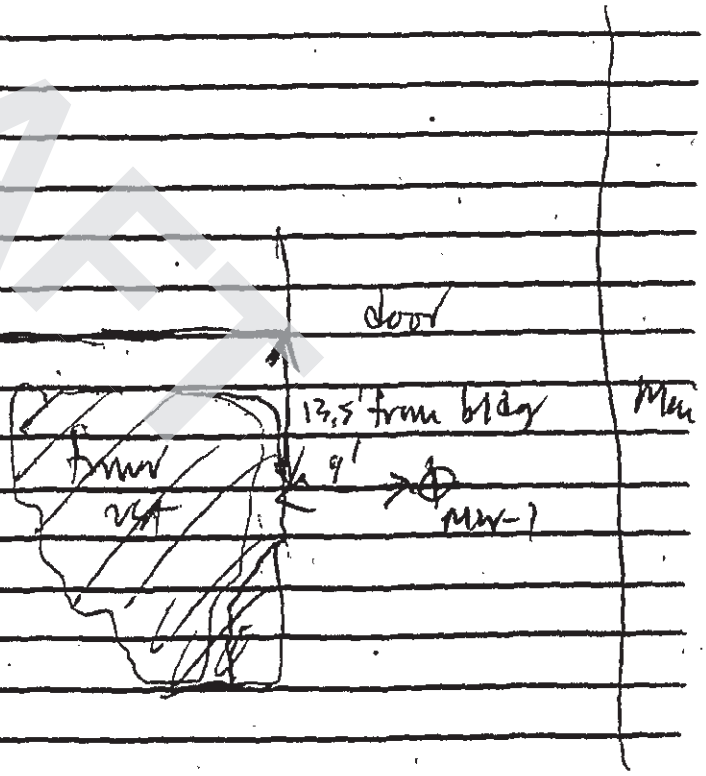
Date: 5.4.94 By: FW To: Sheet
Job Name: CHVB's AVTO Job No:
Main Activity: DPH monitor well

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Odometer In
Vehicle Pers. Odometer Out
Rent. Mileage

Time	Description
7:25	Arrive site - utilities cleared.
7:35	Jamco arrive
7:45	HEW arrive.
8:05	Jamco leave
	HEW move into position
9:05	finish drilling
	build well
9:30	Michell arrive site
	hydrate bentonite.
10:00	finish well
	clean up
10:30	leave site



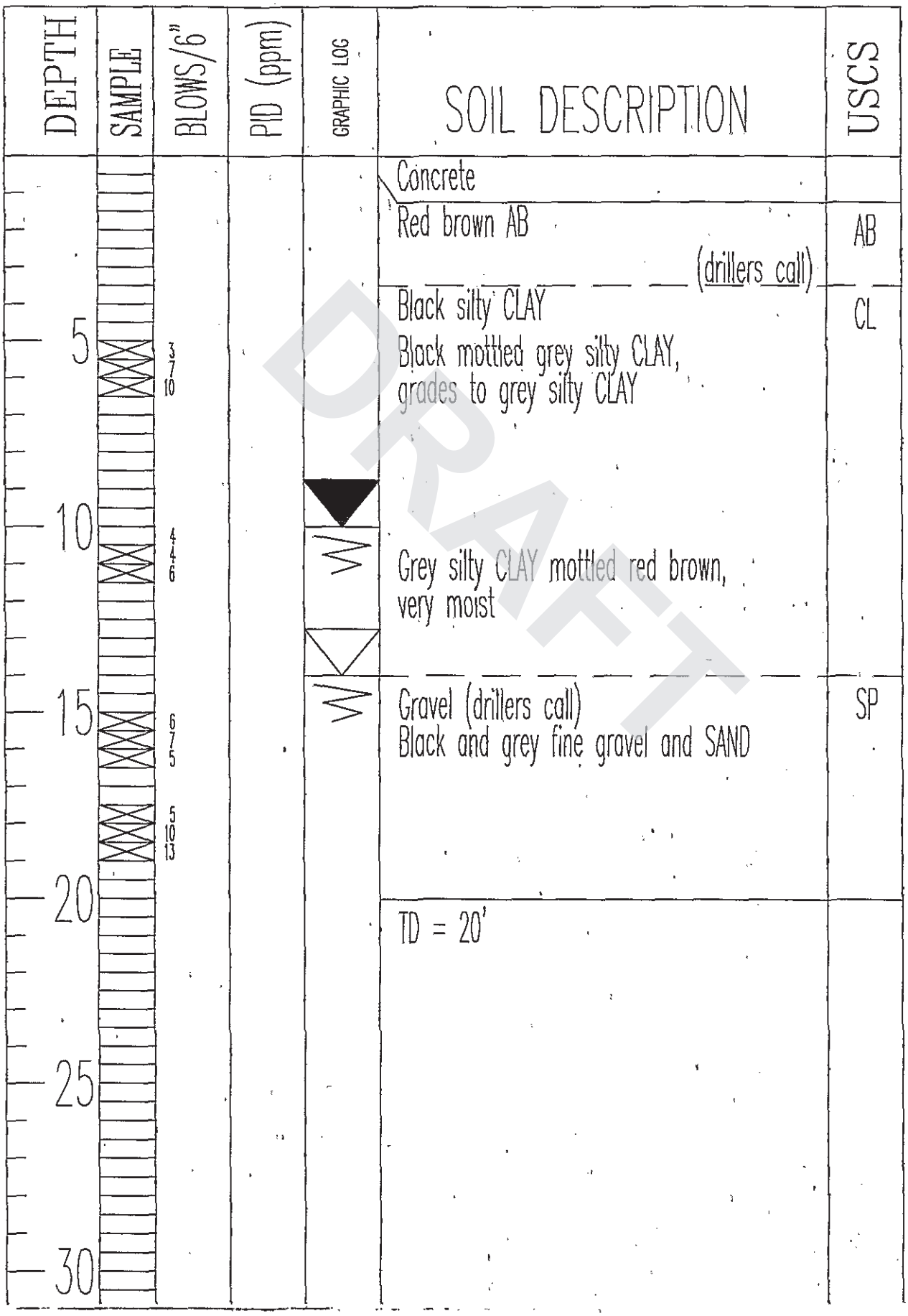
Marshall, Lightning

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PROJECT: CHUB'S AUTO REPAIR LOCATION: 1180 Main St., RWC, CA

BORING NO: MW-1 DRILLING METHOD: HSA

DATE DRILLED: 5-4-94 DRILLER: HEW.



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APPLIED SCIENCE AND ENGINEERING INC.

DATA SHEET FOR SAMPLING WELL MW-1
& DEVELOPING

JOB NAME CHUB
SAMPLED BY DAVID OLKOWSKI

DATE 5/5/1994
SHEET 1 OF 1

USE POSITIVE VALUES
WELL DEPTH (WD) 20 ft
INITIAL DEPTH TO WATER (DTWI) 7.74 ft
(WD - DTWI) (X GAL/FT) = CASING VOLUME (CV)
(20 - 7.74) (0.17 GAL/FT) = 2.08 GALLONS/CV
(3CV) (GAL/CV) = 3 CASING VOLUMES
(5) (2.08) = 10.42 GALLONS NEED TO BE PURGED

DIA.	X
2"	0.17
4"	0.66
6"	1.5

TIME	DTW	GALS	MICR S	pH	TEMP C	NOTES
10:13						ARRIVE SITE
10:19						UNPLUG WELL, UNDER VAC/PRESSURE?
PIT WATER IS ALLEGED TO HAVE BEEN TIDAL.						
10:36	7.74 ft					
10:45		0	2200	7.6	19.3	TURBID, NO ODOR
10:57		3	1750	7.6	19.3°	
11:08		6	1700	7.6	19°	VERY SILTY
11:20		9	1790	7.6	19°	
11:29		10.5	1820	7.6	19°	
11:33	9.85					
11:44	9.83					
11:57	9.80					
12:10	COVER MW-1, PLACE WATER IN DRUM, LEAVE SITE					
15:28	[illegible]					RETURN TO SITE
15:33	9.76 ft					WATER LEVEL IN CREEK STILL [illegible] LOW.
15:43						FILL 3 VOA's
15:57	PLACE WATER IN DRUM; PLUG, LOCK (KEY #3204) & COVER MW-1					
16:00						LEAVE SITE

FINAL DEPTH TO WATER (DTWF) 9.85
0.2(DTWF) + 0.8(DTWI) = DTW FOR 80% RECOVERY (DTW80%R)
0.2(9.85) + 0.8(7.74) = 8.16 FT MAX. BEFORE SAMPLING

DWO\DATAS1D4
1.97
6.19

DRAFT

Chain of Custody

Page 1 of 2

COAST-TO-COAST ANALYTICAL SERVICES

141 Suburban Road	San Luis Obispo, CA 93401	(805) 543-2553	FAX (805) 543-2685
2059 Junction Ave.	San Jose, CA 95131	(408) 955-9077	FAX (408) 955-9078
6006 Egret Ct.	Benicia, CA 94510	(707) 747-2757	FAX (707) 747-2765
2400 Cumberland Dr.	Valparaiso, Indiana 46383	(219) 464-2389	FAX (219) 462-2953
4765 Calle Quetzal	Camarillo, CA 93012	(805) 389-1353	FAX (805) 389-1438
340 County Road No. 5	Westbrook, ME 04092	(207) 874-2400	FAX (207) 775-4029

• PLEASE PRINT IN PEN

Client	Applied Science and Engineering	Contact	Fred Yukic	Phone # (415) 363-2495	FAX # (415) 363-844
Address	PO BOX 1166	City	San Carlos	State CA	Zip 94070
Project Name/Number	Chubs			Project MGR	Fred Yukic
Bill (If different than above)		Address			
Sampler (Print and sign)	Fred Yukic FAYukic	Due Date	Circle for RUSH*	Copies To:	Auth. Init.

Sample Description	Date/Time Coll'd	*Matrix	# of Containers	Pres.	Filt. y/n	* Subject to Availability Analysis	Remarks	Lab ID #
99416	5-4-94 0:21	SL	1	N	N	TPH-diesel + BTEX	JK1490	-1

Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By
FAYukic	5/6/94 13:25			5/6/94 14:29	

FOR LAB USE ONLY

Shipping Method	Shipping #	Received By	Date/Time	Condition (See Remarks) Cold	Sealed	Intact
CAS courier			5/6/94 14:29			

REMARKS Temperature at receipt upon receipt: 35°F

* Matrix:
DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
IM - Impinger
FI - Filter
FP - Free Product
A/G - Air/Gas
SL - Sludge/Soil/Solid
OT - Other

Final

COAST - TO - COAST ANALYTICAL SERVICES

4765 Calle Quetzal • Camarillo, CA 93012 • (805) 389-1353 FAX (805) 389-1438
7726 Moller Rd. • Indianapolis, IN 46268 • (317) 875-5894 FAX (317) 872-6189
2059 Junction Ave. • San Jose, CA 95131 • (408) 955-9077 FAX (408) 955-9078
141 Suburban Road • San Luis Obispo, CA 93401 • (805) 547-3888 FAX (805) 543-2685
2400 Cumberland Dr. • Valparaiso, IN 46383 • (219) 464-2389 FAX (219) 462-2953
340 County Road No. 5 • Westbrook, ME 04092 • (207) 874-2400 FAX (207) 775-4029

Chain of Custody

• PLEASE PRINT IN PEN

Client: APPLIED SCIENCE & ENGINEERING	Contact: TRED YUKIC	Phone # (415) 363 2445	FAX # (415) 363 8449
Address: PO BOX 1166	City: SAN CARLOS	State: CA	Zip: 94070
Project Name/Number: CHUB		Project MGR: TRED YUKIC	
Bill (If different than above)	Address		
Sampler (Print and sign): DAVID OLKOWSKI	Due Date	Circle for RUSH*	Copies To: / Auth. Init.

Sample Description	Date/Time Coll'd	*Matrix	# of Containers	Pres.	Filt. y/n	*Subject to Availability Analysis	Remarks	Lab ID #
MW-1	5/5/94 5:43	GW	3	Y	N	8240 + TPH (CHLORINATED VOLATILE HYDROCARBONS)	JK1491	-1

Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By
David Olkowski	5/6/94 13:25		5/6/94 1:16pm	5/6/94 14:29	

FOR LAB USE ONLY

Shipping Method	Shipping #	Received By	Date/Time	Condition (See Remarks)		
				Cold	Sealed	Intact
CCAS courier		Duff Pure	5/6/94 14:29	✓		✓

REMARKS

Temperature of cooler upon receipt: 35°F

* Matrix:
DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
IM - Impinger
FI - Filter
FP - Free Product
A/G - Air/Gas
SL - Sludge/Soil/Solid
OT - Other

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.
San Jose, CA 95131
(408) 955-9077

CLIENT: Fred Yukic
Applied Science & Engineering
P.O. Box 1166
San Carlos, CA 94070

Lab Number : JK-1490-1
Project : Chubs

Analyzed : 05/10/94
Analyzed by: LD
Method : EPA 8020

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
9946 MW-1 @ 10.5 - 11'	Soil	Fred Yukic	05/04/94 0821	05/06/94

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
PURGEABLE AROMATICS (BTEX)				
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Percent Surrogate Recovery			75.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

DRAFT

05/12/94
GC#2\510B313
DT/mccggp(dw)
S-A-050694

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

CLIENT: Fred Yukic
Applied Science & Engineering
P.O. Box 1166
San Carlos, CA 94070

Lab Number : JK-1490-1
Project : Chubs

Analyzed : 05/12/94
Analyzed by: TN
Method : EPA 8015M

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
9946 MW-1 @ 10.5 - 11'	Soil	Fred Yukic	05/04/94 0821	05/06/94

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
TOTAL EXTRACTABLE PETROLEUM HYDROCARBON				1
Total Petroleum Hydrocarbons (Diesel)		5.	ND	
Total Petroleum Hydrocarbons (Motor Oil)		10.	ND	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 05/11/94 by AG

DRAFT

05/15/94
ECD2-511C022
DT/etet/ttn
DSL051194B

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.
San Jose, CA 95131
(408) 955-9077

CLIENT: Fred Yukic
Applied Science & Engineering
P.O. Box 1166
San Carlos, CA 94070

Lab Number : JK-1491-1
Project : Chubs

Analyzed : 05/17/94
Analyzed by: MM
Method : E624/8240

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW-1	Groundwater	David Olkowski	05/05/94 1543	05/06/94

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
VOLATILE ORGANIC COMPOUNDS				1
Acetone	(67641)	20.	ND	
Benzene	(71432)	1.	ND	
Bromodichloromethane	(75274)	1.	ND	
Bromoform	(75252)	1.	ND	
Bromomethane	(74839)	1.	ND	
2-Butanone (MEK)	(78933)	10.	ND	
Carbon Disulfide	(75150)	2.	ND	
Carbon Tetrachloride	(56235)	1.	ND	
Chlorobenzene	(108907)	1.	ND	
Chloroethane	(75003)	1.	ND	
2-Chloroethyl Vinyl Ether	(110758)	5.	ND	
Chloroform	(67663)	1.	ND	
Chloromethane	(74873)	1.	ND	
Dibromochloromethane	(124481)	1.	ND	
1,2-Dichlorobenzene	(95501)	1.	ND	
1,3-Dichlorobenzene	(541731)	1.	ND	
1,4-Dichlorobenzene	(106467)	1.	ND	
1,1-Dichloroethane	(75343)	1.	ND	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

05/20/94
FIN1/051716A
DT/etet/mtm
FIN1-051794W

DRAFT

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.
San Jose, CA 95131
(408) 955-9077

CLIENT: Fred Yukic
Applied Science & Engineering
P.O. Box 1166
San Carlos, CA 94070

Lab Number : JK-1491-1
Project : Chubs

Analyzed : 05/17/94
Analyzed by: MM
Method : E624/8240

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW-1	Groundwater	David Olkowski	05/05/94 1543	05/06/94

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
1,2-Dichloroethane	(107062)	1.	ND	
1,1-Dichloroethene	(75354)	1.	ND	
cis-1,2-Dichloroethene	(156592)	1.	ND	
trans-1,2-Dichloroethene	(156605)	1.	ND	
1,2-Dichloropropane	(78875)	1.	ND	
cis-1,3-Dichloropropene	(100610105)	1.	ND	
trans-1,3-Dichloropropene	(10061026)	1.	ND	
Ethylbenzene	(100414)	1.	ND	
2-Hexanone	(591786)	5.	ND	
Methyl Isobutyl Ketone (MIBK)	(108101)	5.	ND	
Methylene Chloride	(75092)	5.	ND	
Styrene	(100425)	1.	ND	
1,1,2,2-Tetrachloroethane	(79345)	1.	ND	
Tetrachloroethene	(127184)	1.	ND	
Toluene	(108883)	1.	ND	
1,1,1-Trichloroethane	(71556)	1.	ND	
1,1,2-Trichloroethane	(79005)	1.	ND	
Trichloroethene	(79016)	1.	ND	
Trichlorofluoromethane	(75694)	1.	ND	
Trichlorotrifluoroethane	(76131)	5.	ND	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

05/20/94
FIN1/051716A
DT/etet/mtm
FIN1-051794W

DRAFT

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COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.
San Jose, CA 95131
(408) 955-9077

CLIENT: Fred Yukic
Applied Science & Engineering
P.O. Box 1166
San Carlos, CA 94070

Lab Number : JK-1491-1
Project : Chubs

Analyzed : 05/17/94
Analyzed by: MM
Method : E624/8240

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	RECEIVED
MW-1	Groundwater	David Olkowski	05/05/94 1543	05/06/94

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
Vinyl Acetate	(108054)	5.	ND	
Vinyl Chloride	(75014)	1.	ND	
Xylenes (total)	(1330207)	1.	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	ND	
Total Petroleum Hydrocarbons (Diesel)		50.	ND	
D4-DCA (% Surrogate Recovery #1)			93.	
D8-TOL (% Surrogate Recovery #2)			99.	
BFB (% Surrogate Recovery #3)			85.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

DRAFT

05/20/94
FIN1/051716A
DT/etet/mtm
FIN1-051794W

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-050694

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/07/94
Analyzed by: CB
Method : EPA 8020/8015M

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
METHOD BLANK	Solid			

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
BTEX + TPH (Gasoline)				1
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Percent Surrogate Recovery			82.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

DRAFT

05/19/94
GC2-506B325
DT/etcb/ggp(dw)
JK1488-3

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-050694

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/09/94
Analyzed by: CB
Method : EPA 8020/8015M

QC MATRIX SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
MATRIX SPIKE	Solid			

CONSTITUENT	ORIGINAL RESULT	SPIKE AMOUNT	RESULT mg/Kg	%REC	NOTE
BTEX + TPH (Gasoline)					1
Benzene	ND	0.10	0.10	100.	
Toluene	ND	0.10	0.10	100.	
Ethylbenzene	ND	0.10	0.094	94.	
Xylenes	ND	0.30	0.29	97.	
Total Petroleum Hydrocarbons (Gasoline)	ND	2.5	1.9	76.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

DRAFT

05/19/94
GC2-509B311
DT/etcb/ggp(dw)
JK1488-3

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: S-A-050694

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/09/94
Analyzed by: CB
Method : EPA 8020/8015M

QC MATRIX SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
MATRIX SPIKE DUPLICATE	Solid			

CONSTITUENT	ORIGINAL RESULT	SPIKE AMOUNT	RESULT mg/Kg	%REC	%DIFF	NOTE
BTEX + TPH (Gasoline)						1
Benzene	ND	0.10	0.10	100.	0.	
Toluene	ND	0.10	0.095	95.	5.1	
Ethylbenzene	ND	0.10	0.090	90.	4.3	
Xylenes	ND	0.30	0.28	93.	3.5	
Total Petroleum Hydrocarbons (Gasoline)	ND	2.5	2.1	84.	10.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

DRAFT

05/19/94
GC2-509B313
DT/etcb/ggp(dw)
JK1488-3

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: DSL051194B

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/12/94
Analyzed by: TN
Method : EPA 8015M

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
METHOD BLANK	Solid			

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
TOTAL EXTRACTABLE PETROLEUM HYDROCARBON				1
Total Petroleum Hydrocarbon (Diesel)		5.	ND	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 05/11/94 by AG using EPA 3550

DRAFT

05/19/94
ECD2-511C021
DT/etet/ttn
JK1488-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.
San Jose, CA 95131
(408) 955-9077

QC Batch ID: DSL051194B

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/12/94
Analyzed by: TN
Method : EPA 8015M

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE	Solid			

CONSTITUENT	*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC	NOTE
TOTAL EXTRACTABLE PETROLEUM HYDROCARBON					1
Total Petroleum Hydrocarbon (Diesel)	5.	36.	25.	69.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 05/11/94 by AG using EPA 3550

DRAFT

05/19/94
ECD2-511C023
DT/etet/ttn
JK1488-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: DSL051194B

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/12/94
Analyzed by: TN
Method : EPA 8015M

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE DUPLICATE	Solid			

CONSTITUENT	*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC	%DIFF	NOTE
TOTAL EXTRACTABLE PETROLEUM HYDROCARBON						1
Total Petroleum Hydrocarbon (Diesel)	5.	36.	22.	61.	13.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 05/11/94 by AG using EPA 3550

DRAFT

05/19/94
ECD2-511C024
DT/etet/ttn
JK1488-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: FIN1-051794W

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/17/94
Analyzed by: MM
Method : E624/8240

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
METHOD BLANK	Aqueous			

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
VOLATILE ORGANIC COMPOUNDS				1
Acetone	(67641)	20.	ND	
Benzene	(71432)	1.	ND	
Bromodichloromethane	(75274)	1.	ND	
Bromoform	(75252)	1.	ND	
Bromomethane	(74839)	1.	ND	
2-Butanone (MEK)	(78933)	10.	ND	
Carbon Disulfide	(75150)	2.	ND	
Carbon Tetrachloride	(56235)	1.	ND	
Chlorobenzene	(108907)	1.	ND	
Chloroethane	(75003)	1.	ND	
2-Chloroethyl Vinyl Ether	(110758)	5.	ND	
Chloroform	(67663)	1.	ND	
Chloromethane	(74873)	1.	ND	
Dibromochloromethane	(124481)	1.	ND	
1,2-Dichlorobenzene	(95501)	1.	ND	
1,3-Dichlorobenzene	(541731)	1.	ND	
1,4-Dichlorobenzene	(106467)	1.	ND	
1,1-Dichloroethane	(75343)	1.	ND	
1,2-Dichloroethane	(107062)	1.	ND	
1,1-Dichloroethene	(75354)	1.	ND	
cis-1,2-Dichloroethene	(156592)	1.	ND	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

05/20/94
FIN1/051703A
DT/etet/mtm
JK1491-1

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.
San Jose, CA 95131
(408) 955-9077

QC Batch ID: FIN1-051794W

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/17/94
Analyzed by: MM
Method : E624/8240

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
METHOD BLANK	Aqueous			

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
trans-1,2-Dichloroethene	(156605)	1.	ND	
1,2-Dichloropropane	(78875)	1.	ND	
cis-1,3-Dichloropropene	(100610105)	1.	ND	
trans-1,3-Dichloropropene	(10061026)	1.	ND	
Ethylbenzene	(100414)	1.	ND	
2-Hexanone	(591786)	5.	ND	
Methyl Isobutyl Ketone (MIBK)	(108101)	5.	ND	
Methylene Chloride	(75092)	5.	ND	
Styrene	(100425)	1.	ND	
1,1,2,2-Tetrachloroethane	(79345)	1.	ND	
Tetrachloroethene	(127184)	1.	ND	
Toluene	(108883)	1.	ND	
1,1,1-Trichloroethane	(71556)	1.	ND	
1,1,2-Trichloroethane	(79005)	1.	ND	
Trichloroethene	(79016)	1.	ND	
Trichlorofluoromethane	(75694)	1.	ND	
Trichlorotrifluoroethane	(76131)	5.	ND	
Vinyl Acetate	(108054)	5.	ND	
Vinyl Chloride	(75014)	1.	ND	
Xylenes (total)	(1330207)	1.	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	ND	
Total Petroleum Hydrocarbons (Diesel)		50.	ND	
D4-DCA (% Surrogate Recovery #1)			84.	
D8-TOL (% Surrogate Recovery #2)			92.	
BFB (% Surrogate Recovery #3)			76.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
05/20/94
FIN1/051703A
DT/etet/mtm
JK1491-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: FIN1-051794W

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/17/94
Analyzed by: MM
Method : E624/8240

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED
QC SPIKE	Aqueous		

CONSTITUENT	*PQL µg/L	SPIKE AMOUNT	RESULT µg/L	%REC	NOTE
VOLATILE ORGANIC COMPOUNDS					1
Benzene	1.	50.	49.	98.	
Chlorobenzene	1.	50.	50.	100.	
1,1-Dichloroethene	1.	50.	42.	84.	
Toluene	1.	50.	52.	104.	
Trichloroethene	1.	50.	49.	98.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

DRAFT

05/20/94
FIN1/051722A
DT/etet/mtm
JK1491-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: FIN1-051794W

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/17/94
Analyzed by: MM
Method : E624/8240

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE DUPLICATE	Aqueous			

CONSTITUENT	*PQL µg/L	SPIKE AMOUNT	RESULT µg/L	%REC	%DIFF	NOTE
VOLATILE ORGANIC COMPOUNDS						1
Benzene	1.	50.	48.	96.	2.1	
Chlorobenzene	1.	50.	47.	94.	6.2	
1,1-Dichloroethene	1.	50.	42.	84.	0.	
Toluene	1.	50.	52.	104.	0.	
Trichloroethene	1.	50.	48.	96.	2.1	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

DRAFT

05/20/94
FIN1/051723A
DT/etet/mtm
JK1491-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Dudley Torres
Organics Manager

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APPENDIX W

Monitor Well Sampling Report produced by Applied Science and Engineering, Inc.

DRAFT

10

ASE
APPLIED SCIENCE AND ENGINEERING INC.

February 16, 1995

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
FEB 17 1995
RECEIVED

SUBJECT: Monitor Well Sampling Report
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

Applied Science and Engineering, Inc. (ASE) respectfully submits the fourth quarterly report documenting groundwater sampling at Chub's Auto Repair, 1180 Main Street in Redwood City, California (Figure 1). The sampling was conducted in accordance with the requirements of the State of California Leaking Underground Fuel Tank (LUFT) Manual, the Tri-Regional Recommendations of the San Francisco Bay Regional Water Quality Control Board (SFRWQCB), and the San Mateo County LUFT Enforcement Program (CLEP) Guidelines.

DRAFT

Introduction

~~Reportedly~~, the above-referenced site formerly contained two underground storage tanks (USTs) used for waste oil and gasoline (Figure 2). The USTs were removed from the ground on January 14, 1994. The gasoline UST did not have any holes, but the waste oil UST was noted to have several holes at the end seam at the 11 O'clock position. Verification soil samples collected for the gasoline UST were found to contain no detectable hydrocarbons (Table 1). One of the two soil samples collected for the waste oil UST was found to contain 810 ppm of Total Petroleum Hydrocarbons (TPH) as diesel (Table 1). In addition, the laboratory reported 17 ppb of dichloromethane by EPA Methods 5030/8010, but re-analysis by EPA Method 8240 showed no detectable hydrocarbons.

On February 9, 1994 the waste oil UST pit was over-excavated. A soil sample collected at the end of overexcavation was found to contain no detectable hydrocarbons. Water present in the pit was eventually sampled, with analyses showing only 530 ppb of Total Petroleum Hydrocarbons (TPH) as diesel, described by the laboratory as not typical of diesel. No TPH as gasoline, benzene, toluene, ethylbenzene, xylenes (BTEX), oil and grease (O&G), or chlorinated hydrocarbons were detected in the water sample (Table 2).

Subsequently, the San Mateo County Department of Health Services (SMCDHS) requested construction and sampling of a monitor well. The monitor well was constructed at the site on May 4, 1994 in the assumed downgradient direction from the former UST, towards the San Francisco Bay. This report describes the fourth quarterly sampling of the monitor well.

Observations

On February 2, 1995, one day prior to sampling, water levels were measured in MW-1 and tidal water levels in Redwood Creek were observed. No tidal influence on MW-1 water levels observed on February 2. However, on February 3, water levels were noted to be 0.15 feet lower (see attached field notes).

Monitor Well Development and Sampling

On February 3, 1995, monitor well MW-1 was purged by bailing and a groundwater sample was collected. Field notes documenting the well sampling are attached.

Prior to purging, depth to water (DTW) was measured at 8.56 feet below the top of the well casing (TOC). An initial volume of water was removed from the well using a new clean polyethylene bailer and examined. The water was clear, with no petroleum odor. No petroleum odor was noted during purging. A total of 6 gallons were purged from the well, equivalent to greater than 3 casing volumes. Purge water was discharged into 5-gallon buckets calibrated for volume measurement.

At the end of purging the DTW was measured at 8.57 feet, indicating instant recovery. A sample was then collected in presence of Ms. Michele Shoemaker of SMCDHS.

The same polyethylene bailer was used to remove a volume of water from the well. The water in the bailer had no free product. Three volatile analysis vials (VOAs) containing preservative were filled with groundwater from the bailer using an attachment that allowed the vials to be filled from the bottom so as to minimize exposure to air. Two 1 liter amber bottles with preservative were also filled with ground water. The samples were labelled with the time, date, location, and sampler's name prior to storage in a cooler with blue ice.

All purge water was stored in labeled buckets pending analytical results. The well was capped, locked, and covered.

DRAFT

Laboratory Analyses

The groundwater samples were transported under chain of custody (attached) to Priority Environmental Labs, a state certified laboratory, for analyses.

The groundwater sample was analyzed for total petroleum hydrocarbons as diesel (TPH-D) by EPA methods 3510/8015, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA method 8020.

Laboratory reports are attached. Table 2 summarizes the laboratory results for the groundwater. The groundwater sample from MW-1 did not contain any detectable TPH-D or BTEX.

Quality Control

Laboratory quality control for water, consisting of method blanks and spikes, are attached.

Summary and Conclusions

This report has been prepared to document sampling of a monitor well at Chub's Auto Repair at, 1180 Main Street, Redwood City, California (Figure 1). The monitor well was purged and a groundwater sample collected. No free product or petroleum odor was noted in the groundwater. Laboratory results show no detectable TPH-D or BTEX in the groundwater from MW-1 (Table 2).

Recommendations

Laboratory results for groundwater samples collected from MW-1 for the past four quarters show no detectable TPH-D or BTEX. Based on these results there does not appear to be significant contamination of the site groundwater. Thus, ASE recommends site closure.

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

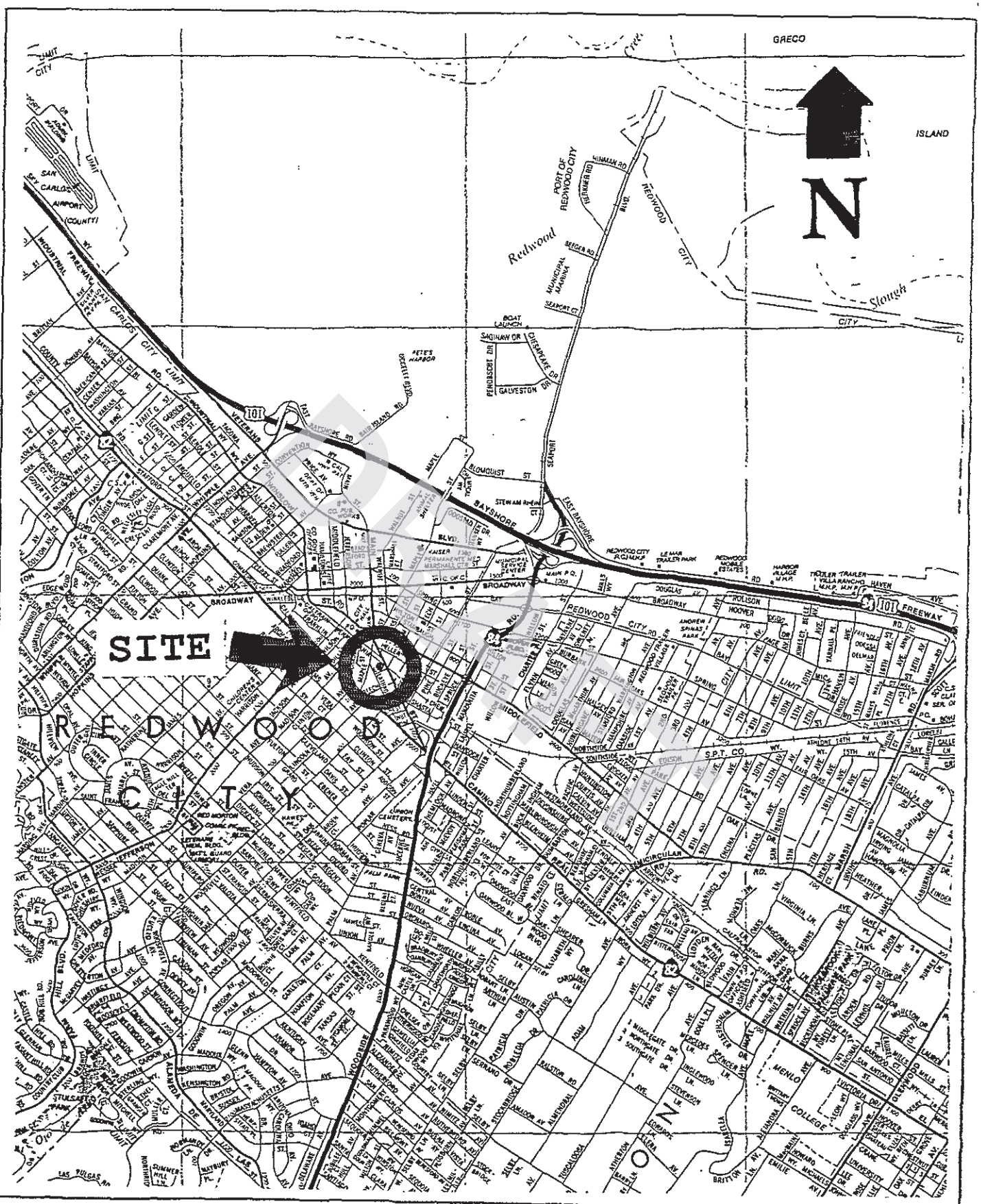
Frederick A. Yukic, MS, PE
Principal Engineer

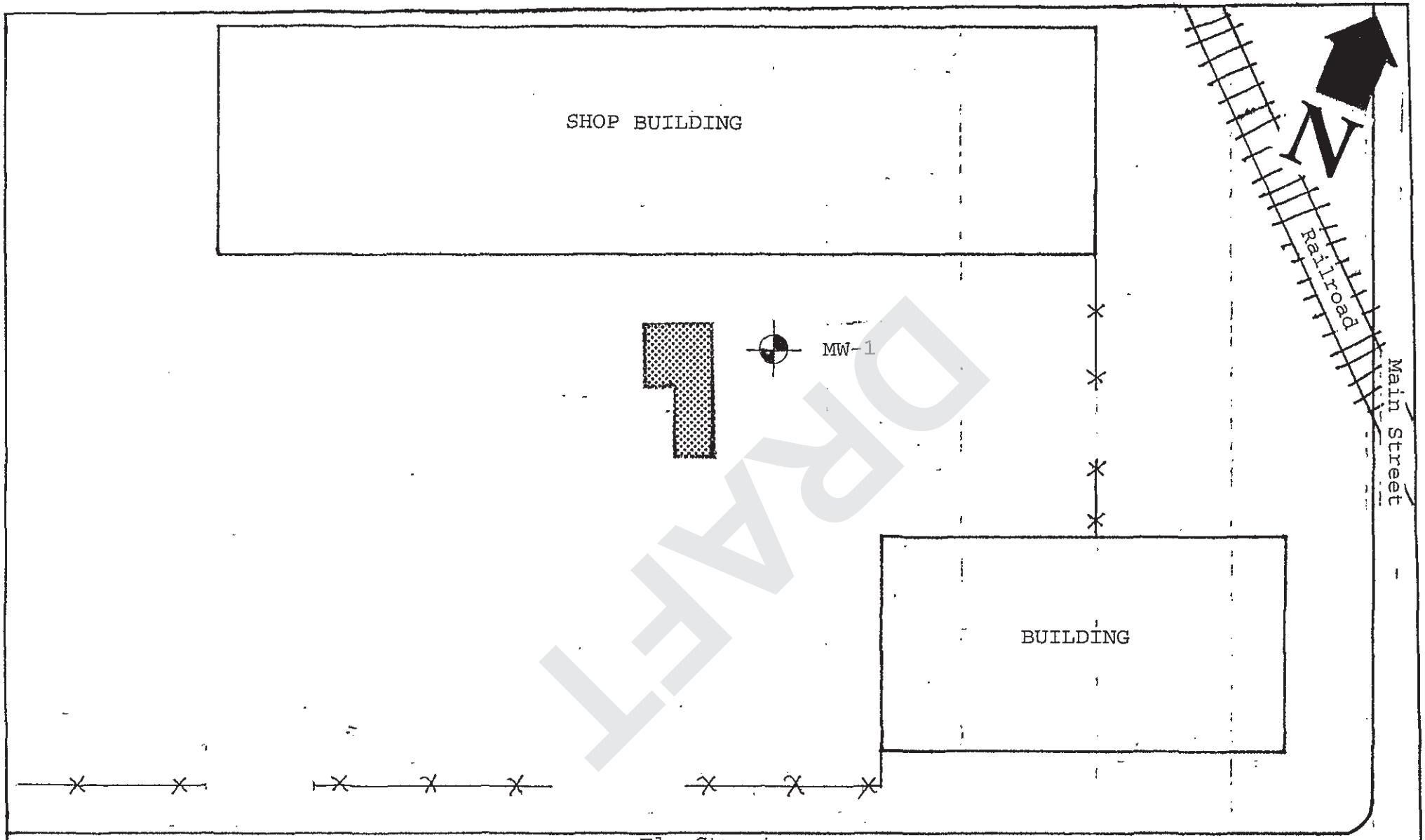
REGISTERED PROFESSIONAL ENGINEER
FREDERICK A. YUKIC
No. 046369
EXP. 12-31-98
CIVIL
STATE OF CALIFORNIA

Attachments

cc: Mr. Larry Chubick, Chub's Auto Repair

DRAFT


SITE
REDWOOD CITY
N
GRECO
ISLAND
Redwood
Slough
CITY
BROADWAY
BAYSHORE
EAST BAYSHORE
SEAPORT
BLOMQUIST ST
STEWART RHEIN
MAIN
BOAT LAUNCH
SAGINAW DR
GALVESTON DR
PENOBSCOT DR
CHESAPEAKE DR
POST OF REDWOOD CITY
MUNICIPAL MARINA
SEAPORT CT
BERGEN RD
HINMAN RD
REDWOOD CITY
FARALLON
PETES HARBOR
VETERANS
MIDDLEFIELD RD
WOODSIDE RD
101
101 FREEWAY
SAN CARLOS AIRPORT (COUNTY)
SAN CARLOS
CITY LIMIT
DOUGLAS AV
HOOVER
ROLISON
REDWOOD CITY RC MHP
LE MAR TRAILER PARK
REDWOOD MOBILE ESTATES
HARBOR VILLAGE MHP
TROLLER TRAILER HAVEN
VILLA RANCHO MHP
MAIN P.O.
CITY HALL
COURT HOUSE
SAN MATEO COUNTY
S.P.T. CO
EDISON
CHARTER
NORTHUMBERLAND
CAMINO
MADISON
JEFFERSON
HAMILTON
WINKLER
MAPLE
ALAMEDA DE LAS PULGAS
LAS PULGAS
MENLO AVE
COLLEGE
ATHERTON
ALAMEDA
CRANE
UNIVERSITY
BRITTON
EMILIE
MICHAELS
HOWARD
LEE
OAK
ELM
FAIR OAKS
WOODSIDE
SELBY
STOCKBRIDGE
AUSTIN
PATRICIA
SERRANO
RALSTON
ALMENDRAL
CAROLINA
CHESTER
CLARENDON
CLAREMONT
CLINTON
CLIFTON
CLOVERDALE
COLUMBIA
CONCORD
CORTEZ
CRESTVIEW
CYPRESS
DARTMOUTH
DEVONSHIRE
DOVER
EDGEWOOD
EDISON
ELDORADO
ELMWOOD
EMERSON
ESSEX
FAIRFIELD
FAIRMONT
FAIRVIEW
FARRELL
FLORENCE
FLORIDA
FOREST
FRANKLIN
GARFIELD
GARNET
GLENWOOD
GRANT
GREENDALE
HAMPTON
HARVARD
HAWES
HEATHER
HERMOSA
HIGHLAND
HILLCREST
HOLLY
HOMER
HOWARD
HUDSON
HUNTER
IMPERIAL
INDIANA
INGLEWOOD
IRVING
JAMES
JANICE
JEFFERSON
JUANITA
KENSINGTON
KENTFIELD
KENTUCKY
KINGSLEY
LAFAYETTE
LAKE
LANCASTER
LARKSPUR
LAUREL
LEXINGTON
LINCOLN
LINDA
LOCUST
LOMITA
LORELEI
MADISON
MAGNOLIA
MANHATTAN
MARGUERITE
MARSH
MAYFLOWER
MCCORMICK
MEADOW
MELLO
MENDOCINO
MERIDIAN
MIDDLEFIELD
MILLS
MONTE
MONTEREY
MONTGOMERY
MORNINGSIDE
MORRIS
MOUNTAIN VIEW
NEVADA
NORFOLK
NORTHGATE
NORTHRIDGE
OAKLAND
OLIVE
OLIVER
ORANGE
ORCHARD
OREGON
PACIFIC
PALM
PARK
PARKSIDE
PARKWOOD
PENINSULA
PERSHING
PIEDMONT
PINE
PLEASANT
PLYMOUTH
POPLAR
PRINCETON
PROSPECT
RAMONA
REDWOOD
ROBLE
ROSEMARY
SAN ANTONIO
SAN BENITO
SAN CARLOS
SAN JUAN
SAN MATEO
SAN PABLO
SANCHEZ
SANTA CRUZ
SEQUOIA
SHERMAN
SHOREVIEW
SIERRA
SIMPSON
SOUTHGATE
SPRING
STAMBAUGH
STANFORD
STAR
STAVENDALE
STEVENSON
SUMMIT
SUNSET
TAMARACK
TAMARACK
TAMARACK



ASE
APPLIED SCIENCE AND ENGINEERING INC.

1" = 20'

MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

Table 1
Soil Analytical Results (ppm)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn
Gasoline UST Excavation														
North @ 8'	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	8	--	--
South @ 9.5	1-14-94	ND	--	ND	ND	ND	ND	--	--	--	--	7	--	--
Waste Oil UST Excavation														
East @ 8'	1-14-94	ND	ND	ND	ND	ND	ND	ND	ND	0.6	60	7	52	90
West @ 8.5'	1-14-94	ND	810	ND	ND	ND	ND	ND	ND*	0.5	69	7	55	84
West @ 8'	2-09-94	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--
Stockpile Composites														
Gasoline	1-14-94	ND	--	ND	ND	ND	ND	ND	--	--	--	30	--	--
Waste Oil	1-14-94	4	1,100	ND	0.018	0.036	0.28	ND	ND	ND	81	35	79	94

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed
* = 17 ppb of dichloromethane (5030/8010), ND ppb of methylene chloride (8240)

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Table 2
Water Analytical Results (ppb)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn	
Excavation	2- 9-94	--	--	--	--	--	--	9,000	--	--	--	--	--	--	
Excavation	2-17-94	ND	530	ND	ND	ND	ND	ND	ND	--	--	--	--	--	
MW-1	5-05-94	ND	ND	ND	ND	ND	ND	--	ND	--	--	--	--	--	PTW 7.74
MW-1	8-04-94	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	10.32
MW-1	11-03-94	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	10.37
MW-1	2-02-95	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	8.42

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed

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ASE APPLIED SCIENCE AND ENGINEERING INC.

Date: 2/2/95 By: DAVID OLKOWSKI / FY To: _____ Sheet: _____

Job Name: CHUB Job No: _____

Main Activity: OBSERVE TIDAL ACTION

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Odometer In _____

Vehicle Pers. _____ Odometer Out _____

Rent. _____ Mileage _____

Time	Description
10:34	DTW = 8.41 ft MW-1
	CREEK LEVEL (TIDE) IS LOW.
	CREEK FLOW IS HIGH.
	MW-1 WAS UNDER PRESSURE.
12:05	DTW = 8.42 ft MW-1 CREEK LEVEL IS LOW.
14:10	TIDE IS HIGH. ~2 ft DEEP? ~0.5 ft ABOVE MOSS? (CREEK)
14:16	DTW = 8.42 ft MW-1
15:57	DTW = 8.44' MW-1
	water in creek below moss ~ 1.5' @ bathtop (downstream)
	Water flowing in creek

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ASE
APPLIED SCIENCE AND ENGINEERING INC.

DATA SHEET FOR SAMPLING WELL MW-1

JOB NAME CHUB
SAMPLED BY DAVID OLKOWSKI

DATE 2/3/1995
SHEET 1 OF 1

USE POSITIVE VALUES
WELL DEPTH (WD) 20 ft
INITIAL DEPTH TO WATER (DTWI) 8.56
(WD - DTWI) (0.17 GAL/FT) = CASING VOLUME (CV)
(20 - 8.56) (~~11.44~~ GAL/FT) = 1.94 GALLONS/CV
(3CV) (GAL/CV) = 3 CASING VOLUMES
(3) (1.94) = 5.83 GALLONS NEED TO BE PURGED

DIA.	X
2"	0.17
4"	0.66
6"	1.5

TIME	DTW	GALS	MICR S	pH	TEMP C	NOTES
10:16						
10:25	8.56ft					
10:37		0				NCLEAR, NO ODOR
10:49		6				TURBID, NO ODOR
10:51	8.57ft					INSTANT RECOVERY MICHELE PRESENT
11:11						FILL 3 VOAs, 2 1L
11:26						PLUG, LOCK & COVER MW-1
						PLACE WATER IN COVERED BUCKETS
11:31						LEAVE SITE

FINAL DEPTH TO WATER (DTWF) _____
0.2(DTWF) + 0.8(DTWI) = DTW FOR 80% RECOVERY (DTW80%R)
0.2(_____) + 0.8(_____) = _____ FT MAX. BEFORE SAMPLING

DWO\DATAS1D4

DRAFT

PRIORITY ENVIR

PEL # 9502015

INV # 25642

ABS

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 2/3/95 PAGE: 1 OF 1

PROJECT MGR.: FRED YUKIC
COMPANY: APPLIED SCIENCE AND E.
ADDRESS: P.O. BOX 1166
: SAN CARLOS, CA 94070
PHONE: 415-363-2495 FAX: 415-363-8449
SIGNATURE:

ANALYSIS REPORT

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)	NUMBER OF CONTAINERS
MW-1	2/3/1995	11:11	GW			X	X					5

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PROJECT INFORMATION		SAMPLE RECEIPT	
PROJECT NAME:	CHUB	TOTAL # OF CONTAINERS	5
PROJECT NUMBER:		RECD. GOOD COND./COLD	

INSTRUCTIONS & COMMENTS: ONE WEEK TURN AROUND

	RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
	DAVID OLKOWSKI	DAVID DUONG		
SIGNATURE:				
Date:	2/3/1995	2/3/95		
Time:	15:07	15:07		
COMPANY:	ASE	PEL		

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

February 10, 1995 PEL # 9502015

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: One water sample for BTEX and Diesel analyses.

Project name: CHUB

Date sampled: Feb 03, 1995 Date submitted: Feb 03, 1995
Date extracted: Feb 03-06, 1995 Date analyzed: Feb 03-06, 1995

RESULTS:

SAMPLE I.D.	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
MW-1	N.D.	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	101.0%	92.3%	105.7%	108.4%	90.9%
Detection limit	50	0.5	0.5	0.5	0.5
Method of Analysis	3510 / 8015	602	602	602	602

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

DRAFT

APPENDIX X

June 21, 1995 San Mateo County Department of Health Services-Environmental Health NFA letter

HEALTH SERVICES AGENCY

ENVIRONMENTAL HEALTH SERVICES DIVISION

June 21, 1995

Mr. Larry Chubbick
1180 Main Street
Redwood City, CA 94063

Dear Mr. Chubbick:

UNDERGROUND STORAGE TANK (UST), CASE CLOSURE FOR A 1,000 GALLON WASTE OIL UST AND A 1,000 GALLON GASOLINE UST AT CHUB'S AUTO REPAIR, 1180 MAIN STREET, REDWOOD CITY, CALIFORNIA

CASE NO. 330120

This letter confirms the completion of site investigation and remedial action for the underground storage tanks formerly located at the above described location.

Based upon the available information and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground storage tank release is required.

This notice is issued pursuant to a regulation contained in the Title 23, Californian Code of Regulations, Division 3, Chapter 16, Section 2721(e).

Please telephone Michele Shoemaker at (415) 599-1679 if you have any questions regarding this matter.

Sincerely,

Brian J. Zamora, MPH, REHS
Director, Environmental Health

cc: RWQCB
SWRCB

DRAFT

SAN MATEO COUNTY BOARD OF SUPERVISORS
RUBEN BARRALES • MARY GRIFFIN • TOM HUENING • TED LEMPERT • MICHAEL D. NEVIN

HEALTH SERVICES AGENCY DIRECTOR
MARGARET TAYLOR

ENVIRONMENTAL HEALTH SERVICES DIVISION DIRECTOR
BRIAN ZAMORA, MPH, REHS

590 HAMILTON STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (415) 363-4305 • TDD (415) 573-3206 • FAX [415] 363-7882

SAN MATEO COUNTY CASE CLOSURE SUMMARY
LEAKING UNDERGROUND FUEL STORAGE TANKS PROGRAM

I. *AGENCY INFORMATION*

590 Hamilton Street, Redwood City, CA 94063
County Project Manager: Michele Shoemaker
Title: Hazardous Material Specialist
Telephone Number: (415) 599-1679

II. CASE INFORMATION

Site Name: Chub's Auto Repair
Site Address: 1180 Main Street, Redwood City, CA

LUSTIS Case #:	Local Case #: 330120	
LOP Case #:	URF Filing Date:	SWEEPS#:

Responsible Party Information

Name	Address	Phone #
Larry Chubbick	1180 Main Street, Redwood City, CA	94063

Tank Information

Tank #	Size in Gallon	Contents	Closed in place/Removed	Date
1	1,000	gasoline	removed	1/14/94
2	1,000	waste oil	removed	1/14/94
3				
4				

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: hole in waste oil tank
Site Characterization Complete? yes
Date Approved by Oversight Agency 05/23/95:
Number of Monitoring wells Installed: two
Proper screened interval? yes
Highest GW depth BGS: 10.37 Lowest Depth: 7.74
Flow Direction: flat gradient, regional is toward the northeast
Most sensitive GW use: None
Are Drinking Water affected? No Aquifer Name:
Is Surface Water Affected? No Nearest/Affected SW Name:
Off-Site Beneficial use Impacts(Location):
Report(s) on File? YES Where is it filed? 590 Hamilton St., Redwood City, CA 94063

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Treatment and Disposal of Affected Material

Material	Amount (Include units)	Treatment or disposal	Date
Tank	2 x1,000 gal	disposed under manifest	1/14/94
Piping		removed	1/94
Free Product		pumped prior to removal	1/94
Soil	10 cu. yds.	disposed	1/94
Groundwater	800 gallons	pumped under permit to sewer	3/95

Maximum Documented Contaminant Concentrations - Before and After cleanup

	SOIL (PPM)		GROUNDWATER (PPB)	
CONTAMINANT	Before	After	Before	After
TPH - G	4	<50	<50	<50
TPH - D	810	<5	530 (non-typ)	<50
Benzene	<0.005	<0.005	<0.5	<0.5
Toulene	<0.005	<0.005	<0.5	<0.5
Ethyl-benzene	<0.005	<0.005	<0.5	<0.5
Xylene	<0.005	<0.005	<0.5	<0.5
Oil&Grease	<50	<10	9000	1600
Heavy metals	see below			
Other	tot Pb = 8 ppm 8240 = nd	<10 motor oil	8240=nd	<50 kerosene, <5000 motor oil

Comments: Cd =0.6, Cr=69, Pb=7, Ni=55, Zn=90

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IV. **CLOSURE**

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? yes	
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? yes	
Does corrective action protect public health for current land use? yes	
Site Management Requirements: none	
Should corrective action be reviewed if land use changes? none	
Monitoring Wells Decommissioned?	Number Decommissioned: Number Retained:
List Enforcement Actions Taken:	
List Enforcement Action Rescinded:	

V. **RWQCB Notification**

Date Submitted to RB:	RB Response:
RB Staff:	Title:

Comments:

DRAFT

Director, Environmental Health _____ Date _____

APPENDIX Y

Hydraulic Lift Sampling Results produced by ASE

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ASE
APPLIED SCIENCE AND ENGINEERING INC.

December 21, 1994

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
DEC 21 1994
RECEIVED

SUBJECT: Hydraulic Lift Sampling Results
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

Applied Science and Engineering, Inc. (ASE) respectfully submits the enclosed hydraulic lift sampling results for Chub's Auto Repair, 1180 Main Street in Redwood City, California (Figure 1). The sampling was conducted by ASE following San Mateo County LUFT Enforcement Program (CLEP) Guidelines. In addition to the sampling results, this report describes activities conducted by contractors at the site related to the hydraulic lift removal.

Introduction

A hydraulic lift was removed from the above-referenced site, an automobile repair shop, in early August 1994. Reportedly, the lift was installed approximately 10 years ago. The lift was removed because the cylinder was leaking by BCM Services and Engineering prior to August 16, 1994.

Soil Sampling

August 16, 1994

At the request of Mr. Larry Chubick, ASE visited the site on August 16, 1994 to collect soil samples from the stockpile and from the bottom of the hydraulic lift excavation (see attached field notes). When ASE arrived at the site an excavation was present inside the building which was approximately 8 feet long by 4 feet wide (Figure 2). The approximately six-inch thick concrete floor had been cut and/or jackhammered to facilitate excavation. The excavation was approximately 7 feet deep at its deepest. The sidewalls were inspected and found to be composed of fill soils to a depth of 2.5 feet, followed by a black silty clay to 7 feet, underlain by a gray, mottled black silty clay which appeared moist. No groundwater was present in the pit.

~~A soil sample was collected from the center of the south end~~

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A soil sample was collected from the center of the south end of the excavation (the reported location of the hoist cylinder) by hand augering to a depth of 8 feet, about 2 feet beneath the reported bottom of the hoist cylinder. At this depth the soil is a moist, grey, mottled black silty clay.

The auger contents were transferred into a clean, six-inch long, two-inch diameter brass liner. The ends of the liner were covered with teflon tape followed by plastic caps. A label with a pre-printed number was attached to the liner prior to placement in an ice chest containing blue ice. The label number corresponds to a page in a booklet on which was written the sampler, date, project, sample location, and sample description.

A second soil sample was collected from the stockpile generated by the excavation using the sample handling procedure described above. The sample was comprised of a brown to black silty clay. Only one sample was collected from the approximately 3 cubic yards of stockpile, in accordance with San Mateo County Department of Health Services (SMCDHS) guidelines for re-use of contaminated soils.

September 12, 1994

After receipt of the laboratory results for the initial soil samples showing the presence of Oil and Grease (O&G), the excavation was deepened by BCM. ASE was not present during excavation.

ASE returned to the site on September 12, 1994 to collect additional bottom samples. At this time the areal extent of the excavation was about the same, but the depth had increased to 8 feet. ASE collected two additional samples, at depth of 9.5 and 10 feet, while hand augering to a total depth of 10 feet. Both samples were tan grey mottled red-orange silty clay. The samples were collected, handled, and preserved as described above for previous samples. The stockpile volume was estimated to have increased to about 7 cubic yards as a result of the additional excavation.

September 26, 1994

After receipt of the laboratory results for the September 12, 1994 soil samples showing the presence of O&G in the 10 foot deep sample, ASE returned to the site on September 26, 1994 to collect additional soil samples. ASE collected three additional samples while hand augering to a total depth of 12 feet. All samples were red brown and grey silty clay. The samples were collected, handled, and preserved as described above for previous samples.

DRAFT

October 4, 1994

After receipt of the laboratory data for the September 26, 1994 soil sample showing O&G as 520 ppm in the sample from 12.5 feet, ASE returned to the site on October 4, 1994 to collect additional soil samples. However, ASE found water in the hand boring at a depth of 11 feet. Thus, no soil samples were collected because of the presence of groundwater.

October 28, 1994

On October 28, 1994 two additional soil samples were collected from the stockpile by ASE for use in characterizing the soil for offsite disposal. The samples were collected according to the procedures described above for previous samples. One sample was a black silty clay, while the other was a tan grey silty clay.

Additional Excavation

On December 12, 1994 the hydraulic lift excavation was deepened using a low overhead backhoe which fit inside the building. ASE observed the excavation which was performed by a contractor employed by Chub's Auto Repair. The maximum depth that could be reached by the backhoe was 12 feet.

Prior to digging the excavation walls were inspected visually. The south wall of the excavation was stained by fluid, a condition that had not been previously noted. The fluid appeared to have originated in the fill soils at 2 feet and had flowed down the southern sidewall to total depth of 8 feet. On explanation for the staining is that rainwater had infiltrated beneath the pavement outside the building, flowed through the shallow backfill into the building, and then into the excavation during rainfall. On the other walls a white powdery deposit was noted (perhaps precipitates of calcium).

As the excavation was deepened groundwater was observed entering the excavation below a depth of about 11 feet. After about one hour the water level rose to a depth of about 10.9 feet.

ASE used a hand auger to bore into the bottom of the middle of the excavation to a depth of approximately 15.5 feet where a silty sand was encountered. The boring was terminated at this depth based on data contained in the boring log for nearby well MW-1 (associated with a former UST) which showed the first water bearing zone at about 15 feet.

As allowed by the LUFT Guidelines, water was pumped from the excavation. A total of about 100 gallons of water was removed

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from the excavation by skimming the surface with a 5-gallon bucket and pumping with a sump pump from the water surface. The 5-gallon bucket was noted to be oily when removed from the excavation. Water pumped was stored in 55-gallon drums pending analytical results. At the end of pumping the water level in the excavation had lowered to 11.3 feet deep.

A 4-inch diameter PVC pipe with a bottom cap attached by screws was placed into the boring to make a backfill well (MW-2). The purpose of this well was to allow the excavation to be backfilled immediately for safety reasons, and to provide for future groundwater extraction and/or monitoring, if necessary. The bottom 6 feet of the pipe was sawcut with 6 rows of vertical slots approximately 6 inches long to allow water to flow into the pipe (Figure 3). This resulted in slots between depths of 9.5 and 15.5 feet, above the reported depth to water of about 10 feet in nearby MW-1. A locking plug was inserted into the top of the pipe.

The excavation was backfilled with clean, washed pea gravel. The pea gravel was placed around the 4-inch diameter well to the ground surface.

Soils excavated were stockpiled onsite on asphalt in the fenced parking area and were covered with plastic. ASE estimated the final volume of stockpile at approximately 11 cubic yards (see attached field notes).

Groundwater Sampling

On December 12, 1994 two days following the additional excavation a groundwater sample was collected from the backfill well (MW-2). ASE did not collect the groundwater sample immediately after pumping because a previously scheduled appointment required the technician to leave the site. ASE waited two days to collect the sample because the additional excavation was conducted on a Saturday, and offices are closed on Sunday, so the following Monday was the first opportunity to sample.

No purging of the backfill well was undertaken at the time of sampling because the excavation had previously been pumped prior to backfilling (see above). A grab groundwater sample was collected by lowering a clean teflon bailer into the backfill well and removing a volume of water. The water was clear, with no free product. The contents of the bailer was emptied into a one-liter amber bottle containing preservative. The bottle was labelled and then placed in an ice chest containing blue ice for preservation during shipment to the analytical laboratory under chain of custody.

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Laboratory Methods

The soil and groundwater samples were transported under chain of custody (attached) to state certified analytical laboratories, either Priority Environmental Labs (PEL) or PACE, Incorporated. Laboratory reports are attached along with quality control. Laboratory results are summarized in Table 1.

The soil and groundwater samples were analyzed for O&G by EPA method 418.1.

To facilitate disposal, two stockpile soil samples collected on October 28, 1994 were composited in the laboratory and analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020. The stockpile composite was also analyzed for soluble cadmium, chromium, lead, nickel, and zinc by EPA Methods 1310/7130/7190/7420/7520/7950. Finally, the stockpile composite was analyzed for reactivity, corrosivity, and ignitability by Title 22 of the California Code of Regulations.

Laboratory Results

Laboratory reports are attached and the results are summarized in Table 1.

The results show that O&G was present in soil beneath the former hydraulic lift cylinder at concentrations of 12,000 ppm at 8.5 feet below ground surface (bgs), 1,600 ppm at 9.5 feet, 1,700 ppm at 10 feet, and 520 ppm at 12.5 feet.

The groundwater sample from the backfill well (MW-2) was analyzed and found to contain 1.7 ppm of O&G.

The stockpile soil sample results show O&G at 4,100 ppm. The stockpile composite lab results show soluble cadmium at 0.53 ppm, soluble lead at 0.73 ppm, soluble zinc at 0.67 ppm. Soluble chromium, soluble nickel and BTEX were not detected in the stockpile composite sample. Finally, the stockpile composite was not reactive of ignitable, and the pH was measured at 7.6 ppm.

Stockpile Disposal

The approximately 11 cubic yards of stockpiled soils were transported to the BFI Vasco Road Landfill for disposal. A gate ticket showing a total weight of 12.32 tons is attached.

DRAFT

Summary and Conclusions

This report has been prepared to document sampling beneath a former hydraulic lift cylinder removed from the subsurface at Chub's Auto Repair at, 1180 Main Street, Redwood City, California (Figure 1).

Soil samples were collected from beneath the hydraulic lift by hand boring into the bottom of the excavation created by removal (Figure 2). Laboratory results showed O&G in soils beneath the former hydraulic lift to a depth of 12.5 feet. Groundwater was encountered at 12.5 feet, so no deeper soil samples were collected. The soil sample from between 12 to 12.5 feet deep, the final depth of the excavation, was found to contain O&G at 520 ppm.

Subsequently, the excavation was deepened to approximately 12 feet, the maximum depth attainable with a backhoe that could fit inside the building. Water entered the excavation, filling it to 10.9 feet below ground surface. In accordance with LUFT guidelines the excavation was pumped once, with about 100 gallons of groundwater removed into 55-gallon drums. As a result of pumping the water level declined to about 11.3 feet. A hand boring was advanced 3.5 feet below the bottom of the excavation, to a total depth of 15.5 feet where the first water bearing zone was encountered. A backfill well (MW-2) was constructed in the boring and excavation of 4-inch diameter PVC pipe with sawcut slots. Pea gravel backfill was placed around the well from the bottom of the excavation to ground surface.

Two days after excavation pumping, ASE returned to the site and collected a grab groundwater sample from the backfill well. Because the excavation had been previously pumped, the well was not purged. Lab results show that the groundwater sample contained 1.7 ppm of O&G, which is below the required practical quantitation reporting limit for leaking underground fuel tanks.

Laboratory analytical results also showed that the stockpiled soil excavated contained O&G at 4,100 ppm and soluble metals at apparently non-hazardous concentrations. In addition, lab results showed that the soil was not reactive, corrosive, or ignitable. The stockpile soil was transported to BFI Vasco Road Landfill for disposal.

DRAFT

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

Attachments

cc: Mr. Larry Chubick, Chub's Auto Repair



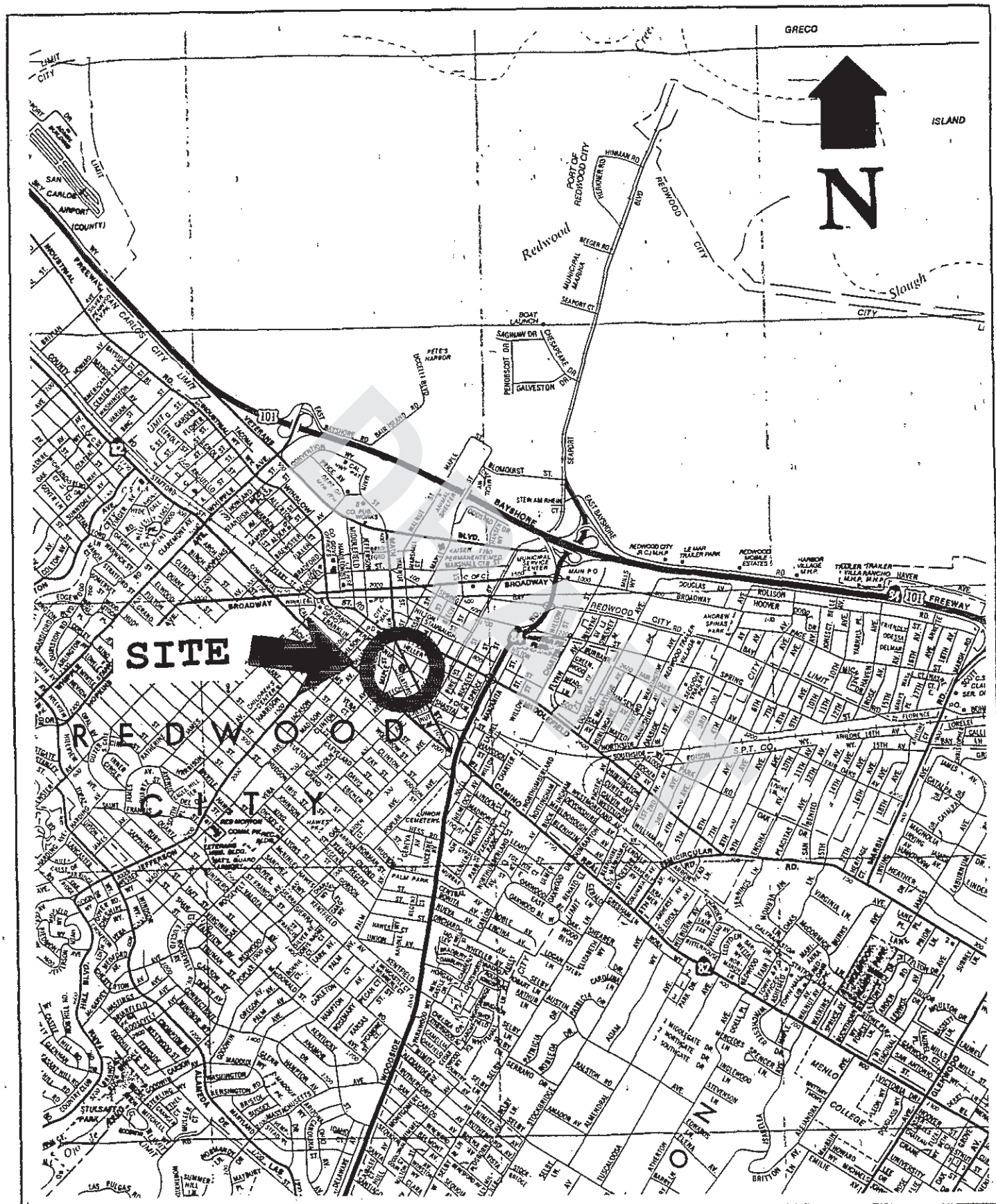
DRAFT

Table 1
Analytical Results (ppm)
Chub's Automotive
Hydraulic Lift Excavation

Location	Oil and Grease
Soil	
8' - 8.5'	12,000
9' - 9.5'	1,600
9.5'-10'	1,700
12' -12.5'	520
Stockpile	4,100
Water	
MW-2	1.7

DRAFT

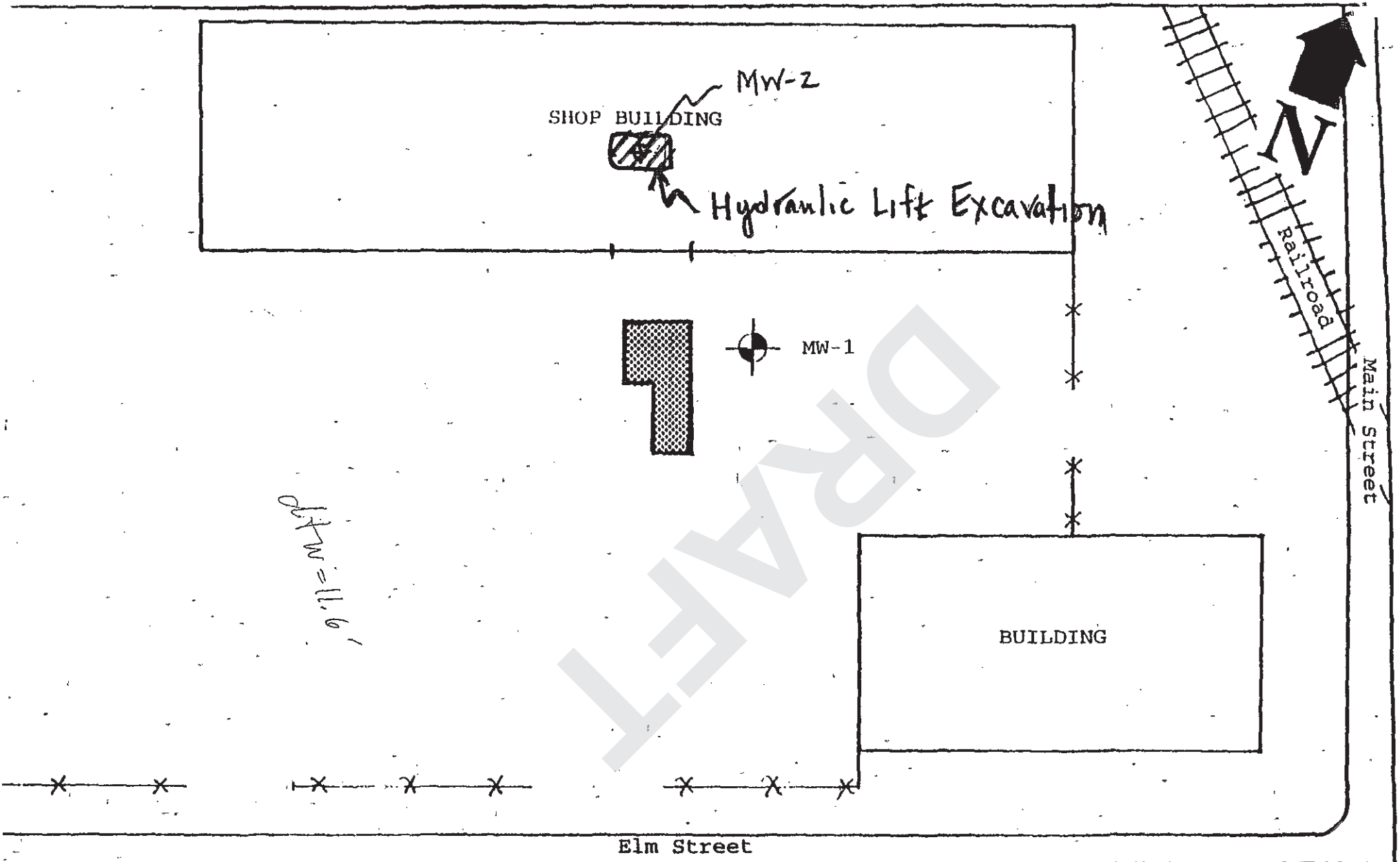
dtw =



ASE

APPLIED SCIENCE AND ENGINEERING INC.

Figure 1: Location Map
Chub's Auto Repair
1180 Main Street
Redwood City, California



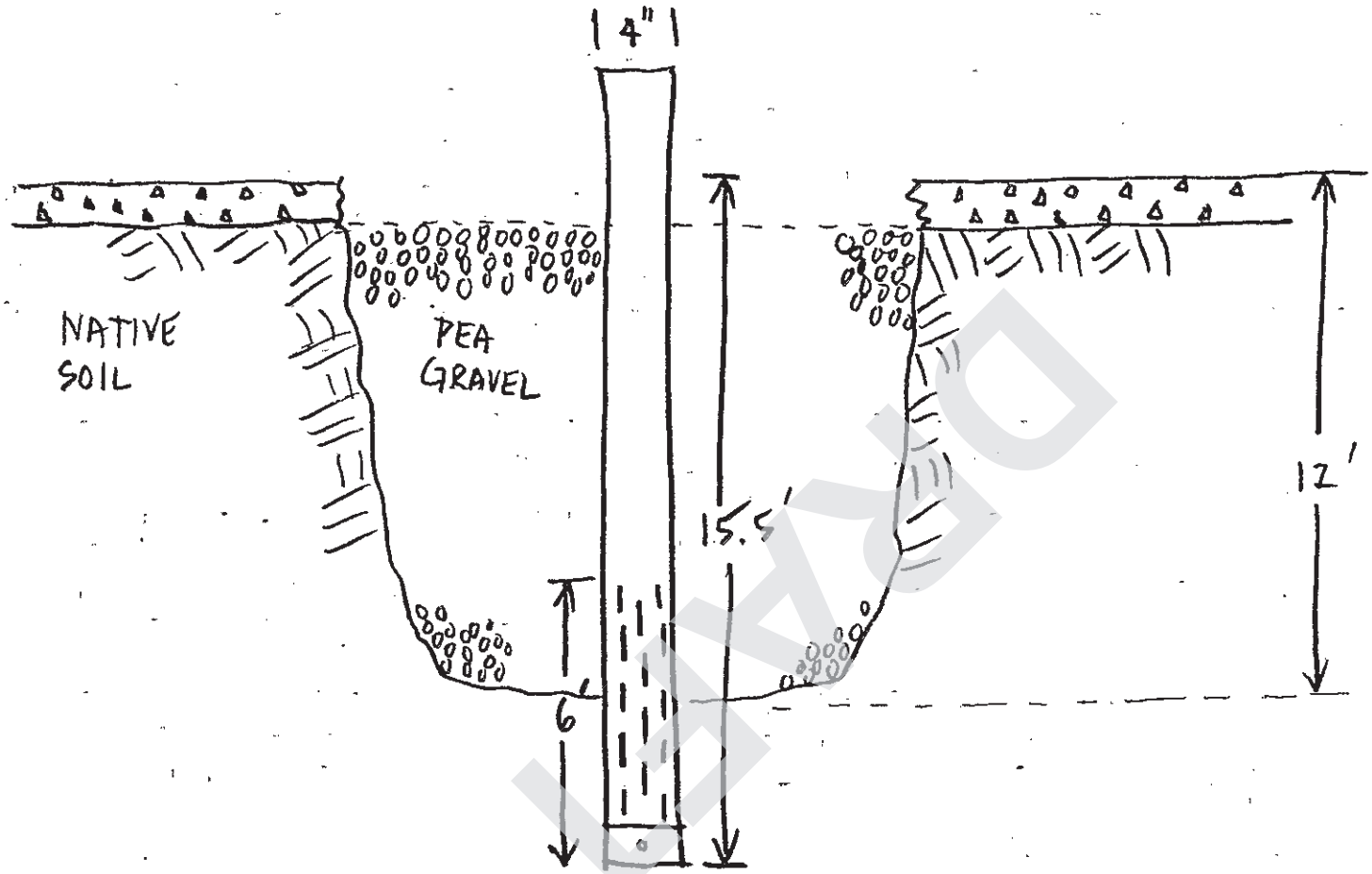
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APPLIED SCIENCE AND ENGINEERING INC.

1" = 20'

EXISTING MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California



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APPLIED SCIENCE AND ENGINEERING INC.

NOT TO SCALE

Figure 3. Backfill Well Schematic
Chub's Auto Repair
1180 Main Street
Redwood City, CA

Date: 8-16-94 By: F. Yukevi To: Sheet:

Job Name: CHVB's AVTO Job No:

Main Activity: SAMPLE SOIL IN HOIST EXCAVATION

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Odometer In

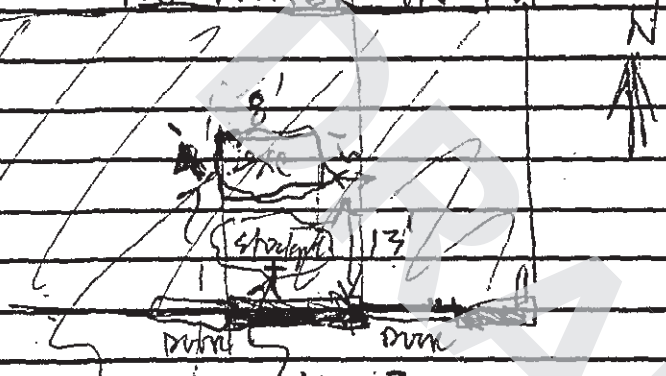
Vehicle Pers. Odometer Out

Rent. Mileage

Time	Description
16:00	Arrive site

Excavation inside bldg between 2 front doors
9" concrete, ~9" orange brick AB (depth = 1.5'), ~2' gravelly Sy C

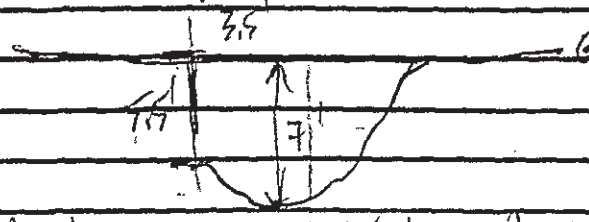
NO WATER IN PIT



10023

Use hand auger to probe and collect sample from bottom
explore brickwall - no evidence of leak
hoist excavation
beneath grnd W wall - bl Sy C, N wall - bl Sy C
E wall gray Gy Sy C
S wall bl Sy C
7' at deepest - excavation

Main St
0-2.5' FM
2.5-7 bl Sy C
>7 gray mottled bl Sy C moist



collect sample w/ hand auger @ 8', 2' from gray mottled bl Sy C, moist w/ ena

stockpile V ≃ 10' / (6') 2.5' long into ten

½ ≃ 30(2.5) = 75 ft³ ≃ 3 yd³

16:30 leave site collect stove pile sample from middle s

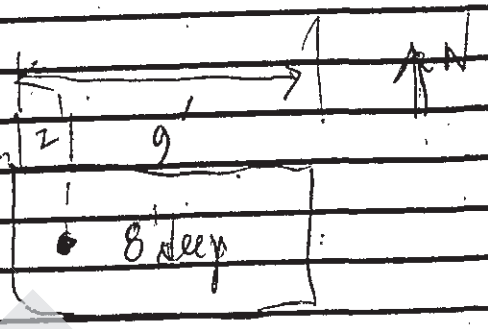
Date: 9-12-94 By: TW To: Sheet
Job Name: CHVB's Job No:
Main Activity: Hydr. Lift Excavation Sampling

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Vehicle Pers. Rent. Odometer In Odometer Out Mileage

Time	Description
9:00	Arrive Area



Primary by hand auger
Collect 1 Sample 9.0–9.5
9.5–10

Approx $V = \left[16 \times 8 \times \frac{3}{2}\right] \frac{1}{2} = .192 ft^3 = 7.1 yd^3$

10:00 Leave Area.

DRAFT

Date: 9.26-94 By: E. Yukevi To: _____ Sheet 1

Job Name: UMBS Job No: _____

Main Activity: Hydr. Lift Excavatm Sampling

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Odometer In ____

Vehicle Pers. _____ Odometer Out ____

Rent. _____ Mileage ____

Time	Description
13:30	Arrive ATE
	Collect three AM sampler
14:20	leave ATE.
10.4.94	
15:30	Arrive ATE
	~~collect soil sample~~
	water in hand auger hole
	DTW ≈ 11'
	TD ≈ 12'
	water seems only in tape — no sample
15:40	leave ATE

10.28.94

Excavatm

Collect 2 stockpile samples.

10098

10099

Down

Down

Date: 12.10.94 By: PM/ To: Sheet
Job Name: Chivers Job No:
Main Activity: Deepen EX

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Vehicle Pers. Odometer In
Rent. Odometer Out
Mileage

Time	Description
8:45	Arrive site
	remove pile from inside to outside
	Excavator — 5. wall leaks little fluid running down from ~21' other water white calcite deposit
9:00	PM. leave
9:25	PM return
	deepen hole deeper. Kubota KX 101
	start to 12' inlet of machine
9:55	water entering hole
10:05	DTW = 11.6'
10:25	DTW = 11.25
10:55	10.9
	Deepen hand to ~15.5 ⇒ encounter silty sand.
	pump ~ 100 gallons DTW = 11.5
	place 4" ø pipe w/ bottom cap — attached by screws
	6' of saw cut — vertical — 6 rows. ~6' long
	start filling hole w/ clean pea gravel
	~ ⅔ full
11:55	PM leave site

DRAFT

Date: 12-12-94 By: RPM Kri To: _____ Sheet _____

Job Name: Chmb Job No: _____

Main Activity: _____

Equipment Rental	Company	Hours	Rate

[Attach receipts for all outside expenses]

Odometer In _____

Vehicle Pers. _____ Odometer Out _____

Rent. _____ Mileage _____

Time	Description
11:30	Arrive site
	collect water sample from pit (M.W-2)
	NO f.p. - no oder.
	Hydrocarbon $\approx \frac{1}{2}(10)(20)3' \approx 300ft^3 \approx 11yd^3$
11:45	leave site

DRAFT

VASCO ROAD SANITARY LANDFILL No: 660939

A DIVISION OF BFI® BROWNING-FERRIS INDUSTRIES

4001 VASCO ROAD
LIVERMORE, CA 94550
(510) 447-0491

Ticket : A23130 12/13/94 02:10 pm
Customer: CASH
Account : 1009539 LMS #999
Truck : 14
SPECIAL
Manifest: 604555
P.O. No : CHUBS
Checker : RAYMOND
Gross Wt: 27.40 Manual
Tare: 15.08 Scale 2 Net: 12.32
Source: RICK

Volume	Contents	Rate	Charge
12.32	TN/SPECIAL 4	30.00	369.60
TOTAL			$ 369.60
Check Tendered			$ 369.60
Change			$ 0.00

THANK YOU FOR YOUR BUSINESS!!!

WARNING: Transporting any unauthorized hazardous waste to this facility for disposal is prohibited by law. Persons violating this prohibition are subject to civil and criminal prosecution.

All children must remain in vehicles.
Absolutely no salvaging allowed.

Niños deben de permanecer en los carros a todas horas.

No se permite llever cosas del dompe absolutamente.

Ck# 10138
they kept ck

DRIVER

DRIVER

DRAFT

COAST-TO-COAST ANALYTICAL SERVICES

4765 Calle Quetzal	Camarillo, CA 93012	(805) 389-1353	FAX (805) 389-1438
7726 Moller Rd.	Indianapolis, IN 46268	(317) 875-5894	FAX (317) 872-6189
2059 Junction Ave.	San Jose, CA 95131	(408) 955-9077	FAX (408) 955-9078
141 Suburban Road	San Luis Obispo, CA 93401	(805) 547-3888	FAX (805) 543-2685
2400 Cumberland Dr.	Valparaiso, IN 46383	(219) 464-2389	FAX (219) 462-2953
340 County Road No. 5	Westbrook, ME 04092	(207) 874-2400	FAX (207) 775-4029

Chain of Custody

440817.507 Page 1 of 1

• PLEASE PRINT IN PEN

Client	Applied Science & Engineering	Contact	Fred Yukic	Phone # (415) 363-2445	FAX # (415) 363-8449
Address	PO Box 1166	City	San Carlos	State CA	Zip 94070
Project Name/Number	~~Exxon~~ Clubs			Project MGR	Fred Yukic
Bill (If different than above)		Address			
Sampler (Print and sign)	Fred Yukic FAYukic	Due Date	7 day FIRM	Circle for RUSH*	Copies To: / Auth. Init.

* Subject to Availability

Sample Description	Date/Time Coll'd	*Matrix	# of Containers	Pres.	Filt. y/n	Analysis	Remarks	Lab ID #
1002Z	8-16-94 16:15	SL	1	—	—	418.1		374669
1002Y	8-16-94 16:30	SL	1	—	—	418.1		374670

Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By
FAYukic	8/17/94 12:05	David Oliveira		8/17/94 400	Ken McIntosh
David Oliveira	8/17/94 13:07	Ron Trevella			

FOR LAB USE ONLY

Shipping Method	Shipping #	Received By	Date/Time	Condition (See Remarks) Cold	Sealed	Intact

REMARKS

* Matrix:
DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
IM - Impinger
FI - Filter
FP - Free Product
A/G - Air/Gas
SL - Sludge/Soil/Solid
OT - Other

DRAFT

PRIORITY ENVIRONMENTAL L

9409039
25220X

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

PAGE 1 OF 1

PROJECT MGR.: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
San Carlos CA 94616
PHONE: 415-363-2445 FAX: 415-363-8449
SIGNATURE: FAYukic

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)			NUMBER OF CONTAINERS
10055	9/12/94	9:25	SOIL							X				1
10056	9/12/94	9:35	SOIL							X				1

TPH

Per M. David
9/19/94 9:49 AM

PROJECT INFORMATION
PROJECT NAME: CHVB
PROJECT NUMBER:

SAMPLES RECEIPT
TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 3 day turnaround

RELINQUISHED BY: 1	RECEIVED BY:		RECEIVED BY: 2
SIGNATURE: FAYukic	SIGNATURE: David Oldow		SIGNATURE:
Date: 9.12.94 Time: 17:00	Date: Time:	Date: 9/13/94 Time:	Date: 9/19/94 Time: 15:40
COMPANY: ASE	COMPANY: ASE	COMPANY: ASE	COMPANY: PEL

DRAFT

PRIORITY ENVIRONMENTAL LABS

PEL # 9409039

INV # 25220

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 9/14/94 PAGE: 1 OF 1

PROJECT MGR.: FRED YVKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
San Carlos CA 94616
PHONE: 415-363-2495 FAX: 415-363-8449
SIGNATURE: FAYvkic

ANALYSIS REPORT

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)								NUMBER OF CONTAINERS
10055	9/12/94	9:25	SOIL							X									1
10056	9/12/94	9:35	SOIL	—	—	—	—	—	—	—	—	HOLD	—	—	—	—	—	—	1

DRAFT

PROJECT INFORMATION
PROJECT NAME: CHVB
PROJECT NUMBER:

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 3 day turnaround

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
SIGNATURE: FAYvkic	SIGNATURE: David Olkowski	SIGNATURE: David Olkowski	SIGNATURE: Jason Lam
Date: 9-12-94 Time: 17:00	Date: " Time: "	Date: 9/13/94 Time: 15:37	Date: 9/13/94 Time: 15:40
COMPANY: ASE	COMPANY: ASE	COMPANY: ASE	COMPANY: PEL

PRIORITY ENVIRONMENTAL LABS

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 09/26/94 PAGE: 1 OF 1

PROJECT MGR.: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
SAN CARLOS CA 94070
PHONE: 415-363-2445 FAX: 415-363-8499
SIGNATURE: [signature]

ANALYSIS REPORT

PEL # 9409099
INV # 25280

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030.8015)	TPH-Gasoline(5030.8015) w/BTEX(EPA 602.8020)	TPH-Diesel (EPA 3510/3550.8015)	PURGEABLE AROMATICS BTEX (EPA 602.8020)	TOTAL OIL & GREASE (EPA 5520 C.D&F)	PESTICIDES/PCB (EPA 608.8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601.8010)			NUMBER OF CONTAINERS
10074	9-26-94	14:10	SOIL									HOLD		1
10075	9-26-94	14:15	SOIL									HOLD		1
10076	9-26-94	14:20	SOIL							X				1

DRAFT

PROJECT INFORMATION
PROJECT NAME: CHVB
PROJECT NUMBER:

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 3
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 3 DAY TURNAROUND

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
FAYYUKIC	DAVID OLKOWSKI	DAVID OLKOWSKI	THINH LAM
SIGNATURE: [signature]	SIGNATURE: [signature]	SIGNATURE: [signature]	SIGNATURE: [signature]
Date: 9-26-94 Time: 15:00	Date: 9/26/94 Time: 15:00	Date: 9/26/ Time: 15:50	Date: 9/26/94 Time: 3:50PM
COMPANY: ASE	COMPANY: ASE	COMPANY: ASE	COMPANY: PEL

PRIORITY ENVIRONMENTAL LABS

PEL # 9410087

INV # 25389

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: __/__/__ PAGE: ___ OF ___

PROJECT MGR.: FRED YUKI
COMPANY: ASE
ADDRESS: PO BOX 1166 SAN CARLOS, CA 9407
PHONE: 415-363-2495 FAX: 415-363-8997
SIGNATURE: FAYuki

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030.8015)	TPH-Gasoline(5030.8015) w/BTEX(EPA 602.8020)	TPH-Diesel (EPA 3510/3550.8015)	PURGEABLE AROMATICS BTEX (EPA 602.8020)	TOTAL OIL & GREASE (EPA 5520 C.D&F)	PESTICIDES/PCB (EPA 608.8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601.8010)		BTEX	STLC CAM 5	RCI						NUMBER OF CONTAINERS
10098	10.28.94	10:15	SOIL	}	Composite				Non				X	X	X							1
10099	10.28.94	10:15	SOIL	}																		1

DRAFT

PROJECT INFORMATION
PROJECT NAME: CHUB
PROJECT NUMBER:

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 3-DAY

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
FRED YUKI	DAVID OLKOWSKI		THANH CAM
SIGNATURE: FAYuki	SIGNATURE: David Olkowski	SIGNATURE:	SIGNATURE:
Date: 10.28.94 Time: 12:53	Date: 10/28/94 Time: 12:53	Date: Time:	Date: 10/28/94 Time: 2:15 PM
COMPANY: ASE	COMPANY: ASE	COMPANY:	COMPANY: PEL

PRIORITY ENVIRONMENTAL LABS

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 12/12/94 PAGE: 1 OF 1

PROJECT MGR.: FRED YUKC
COMPANY: ASE
ADDRESS: PO BOX 1160 SAN CARLOS, CA
PHONE: 415-363-2445 FAX: 415-363-8999
SIGNATURE: FA Yukc

ANALYSIS REPORT

PEL # 9412041
INV # 25515

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)	Turn 8415	NUMBER OF CONTAINERS
MW-2	12/12/94	11:40	GW							X			2

DRAFT

PROJECT INFORMATION
PROJECT NAME: CHVB
PROJECT NUMBER:

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 1 Week turnaround

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
FA YUKC			
SIGNATURE: FA Yukc	SIGNATURE:	SIGNATURE:	SIGNATURE:
Date: 12/12/94 Time: 14:00	Date: 12/12/94 Time: 2:30 PM	Date: Time:	Date: Time:
COMPANY: ASE	COMPANY: PEL	COMPANY:	COMPANY:

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

August 22, 1994

Mr. Fred Yukic
Applied Science & Engineering
P O Box 1166
San Carlos, CA 94070

RE: PACE Project No. 440817.507
Client Reference: CHUBS

Dear Mr. Yukic:

Enclosed is the report of laboratory analyses for samples received August 17, 1994.

Footnotes are given at the end of the report.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Ronald M. Chew

Ronald M. Chew
Project Manager

Enclosures

DRAFT

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

An Equal Opportunity Employer

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Applied Science & Engineering
P O Box 1166
San Carlos, CA 94070

August 22, 1994
PACE Project Number: 440817507

Attn: Mr. Fred Yukic

Client Reference: CHUBS

PACE Sample Number:			70 0374669	
Date Collected:			08/16/94	
Date Received:			08/17/94	
			10022	Excavation 28'
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
TOTAL PETRO HYDROCARBONS EPA 9071/418.1				
Total Petroleum Hydrocarbons, by IR	mg/kg wet	1200	12000	08/18/94
Date Extracted			08/18/94	

DRAFT

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

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pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

August 22, 1994
PACE Project Number: 440817507

Client Reference: CHUBS

PACE Sample Number:			70 0374677	
Date Collected:			08/16/94	
Date Received:			08/17/94	
Client Sample ID:			10023 Stockpile	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
TOTAL PETRO HYDROCARBONS EPA 9071/418.1				
Total Petroleum Hydrocarbons, by IR	mg/kg wet	500	4100	08/18/94
Date Extracted			08/18/94	

These data have been reviewed and are approved for release.

Darrell C. Cain
Regional Director

DRAFT

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

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Mr. Fred Yukic
Page 3

FOOTNOTES
for pages 1 through 2

August 22, 1994
PACE Project Number: 440817507

Client Reference: CHUBS

MDL Method Detection Limit

DRAFT

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

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pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Mr. Fred Yukic
Page 4

QUALITY CONTROL DATA

August 22, 1994
PACE Project Number: 440817507

Client Reference: CHUBS

TOTAL PETRO HYDROCARBONS EPA 9071/418.1
Batch: 70 33074
Samples: 70 0374669, 70 0374677

what extraction used???

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Total Petroleum Hydrocarbons, by IR	mg/kg wet	50	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Total Petroleum Hydrocarbons, by IR	mg/kg wet	50	533	87%	96%	10%

DRAFT

EPA # 5520 - silica gel extraction

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Novato, CA 94949
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Mr. Fred Yukic
Page 5

FOOTNOTES
for page 4

August 22, 1994
PACE Project Number: 440817507

Client Reference: CHUBS

MDL	Method Detection Limit
ND	Not detected at or above the MDL.
RPD	Relative Percent Difference

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Novato, CA 94949
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PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

September 15, 1994 PEL # 9409039

APPLIED SCIENCE ENGINEERING, INC.

Attn: Fred Yukic
Re: One soil sample for total Recoverable Hydrocarbons analysis.

Project name: CHVB

Date sampled: Sep 12, 1994 Date submitted: Sep 13, 1994
Date extracted: Sep 14-15, 1994 Date analyzed: Sep 14-15, 1994

RESULTS:

SAMPLE I.D.	Total Recoverable Hydrocarbons (mg/Kg)
1055	1600
Excavation @ 9'-9.5'	
Blank	N.D.
Detection limit	100
Method of Analysis	418.1

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

September 21, 1994 PEL # 9409039

APPLIED SCIENCE ENGINEERING, INC.

Attn: Fred Yukic
Re: One soil sample for total Recoverable Hydrocarbons analysis.

Project name: CHVB

Date sampled: Sep 12, 1994 Date submitted: Sep 13, 1994
Date extracted: Sep 20, 1994 Date analyzed: Sep 20, 1994

RESULTS:

SAMPLE I.D.	Total Recoverable Hydrocarbons (mg/Kg)
10056	1700
Excavation @ 9.5-10	
Blank	N.D.
Detection limit	100
Method of Analysis	418.1

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

September 28, 1994 PEL # 9409099

APPLIED SCIENCE ENGINEERING, INC.

Attn: Fred Yukic
Re: One soil sample for total Recoverable Hydrocarbons analysis.

Project name: CHVB

Date sampled: Sept 26, 1994 Date submitted: Sept 26, 1994
Date extracted: Sept 26-28, 1994 Date analyzed: Sept 26-28, 1994

RESULTS:

SAMPLE I.D.	Total Revocerable Hydrocarbons (mg/Kg)
10076	520
Blank	N.D.
Detection limit	10
Method of Analysis	418.1

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

October 31, 1994 PEL # 9410087

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: One composited soil sample for STLC Cadmium, STLC Chromium, STLC Lead, STLC Nickel, and STLC Zinc analyses.

Project name: CHUB

Date sampled: Oct 28, 1994 Date submitted: Oct 28, 1994
Date extracted: Oct 28-31, 1994 Date analyzed: Oct 28-31, 1994

RESULTS:

SAMPLE I.D.	STLC Cadmium (mg/L)	STLC Chromium (mg/L)	STLC Lead (mg/L)	STLC Nickel (mg/L)	STLC Zinc (mg/L)
10098 & 10099 Stockpile Composite	0.53	N.D.	0.73	N.D.	0.67
Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Detection limit	0.10	0.10	0.10	0.50	0.50
Method of Analysis	1310 / 7130	1310 / 7190	1310 / 7420	1310 / 7520	1310 / 7950

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

October 31, 1994 PEL # 9410087

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: One composited soil sample for BTEX analysis.

Project name: CHUB

Date sampled: Oct 28, 1994 Date submitted: Oct 28, 1994
Date extracted: Oct 28-29, 1994 Date analyzed: Oct 28-29, 1994

RESULTS:

SAMPLE I.D.	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylenes (ug/Kg)
10098 & 10099 Stockpile Composite	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	87.1%	92.9%	103.8%	80.7%
Detection limit	5.0	5.0	5.0	5.0
Method of Analysis	8020	8020	8020	8020

David Duong
Laboratory Director

DRAFT

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PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

October 31, 1994 PEL # 9410087

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: One composited soil sample for RCI analysis.

Project name: CHUB

Date sampled: Oct 28, 1994 Date submitted: Oct 28, 1994
Date extracted: Oct 28-31,1994 Date analyzed: Oct 28-31, 1994

RESULTS:

SAMPLE I.D.	REACTIVITY	CORROSIVITY	IGNITABILITY
10098 & 10099	NO	pH 7.6	NO
Blank	NO	pH 7.0	NO
Method of Analysis	Title 22, CCR 66261.23	Title 22, CCR 66261.22	Title 22, CCR 66261.21

David Duong
Laboratory Director

DRAFT

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PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

December 14, 1994 PEL # 9412041

APPLIED SCIENCE ENGINEERING

Attn: Fred Yukic
Re: One water sample for total Recoverable Hydrocarbons analysis.

Project name: CHVB

Date sampled: Dec 12, 1994
Date extracted: Dec 12-14, 1994
Date submitted: Dec 12, 1994
Date analyzed: Dec 12-14, 1994

RESULTS:

SAMPLE I.D.	Total Recoverable Hydrocarbons (mg/L)
MW 2	1.7
Blank	N.D.
Detection limit	0.5
Method of Analysis	418.1

David Duong
Laboratory Director

DRAFT

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

DRAFT

APPENDIX Z

MW-1 Groundwater Sampling Report Hydraulic Lift Excavation report produced by ASE

ASE
APPLIED SCIENCE AND ENGINEERING INC.

14

June 2, 1995

Ms. Michele Shoemaker
Office of Environmental Health
Department of Health Services
San Mateo County
590 Hamilton Street
Redwood City, CA 94063

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
JUN 5 1995
RECEIVED

SUBJECT: MW-1 Groundwater Sampling Report
Hydraulic Lift Excavation
Chub's Auto Repair
1180 Main Street
Redwood City, California

Dear Ms. Shoemaker,

Applied Science and Engineering, Inc. (ASE) respectfully submits this groundwater sampling report for monitor well MW-1 as part of a groundwater investigation associated with a former hydraulic lift at Chub's Auto Repair, 1180 Main Street in Redwood City, California (Figure 1). At the request of Michele Shoemaker of SMCDHS a sample was collected from MW-1 and analyzed for oil and grease (O&G) be EPA Method 418.1 as described in detail below. Attached to this report are copies of field notes, chain of custody forms, and laboratory reports for your records.

DRAFT

History

A hydraulic lift was removed from the above-referenced site, an automobile repair shop, in early August 1994. Reportedly, the lift was approximately 10 years old. The lift was removed because the cylinder was leaking by BCM Services and Engineering prior to August 16, 1994.

Soil samples were collected from beneath the hydraulic lift contained oil and grease (O&G) at progressively lower concentrations (Table 1). The excavation was deepened to the maximum depth attainable with a backhoe that could fit inside the building, approximately 12 feet, where the concentration of O&G was measured at 520 ppm. Water entered the excavation, filling it to 10.9 feet below ground surface. The excavation was pumped once, with about 100 gallons of groundwater removed. Then, a hand boring was advanced 3.5 feet below the bottom of the excavation, to a total depth of 15.5 feet, into the first water bearing zone. A monitor well (MW-2) was constructed in the excavation boring. A grab groundwater sample from the well contained 1.7 ppm of O&G (Table 1).

Subsequently, MW-2 was sampled on March 13, 1995. Laboratory results for the sample collected showed 1.5 ppm of O&G (Table 1). On May 13, 1995 approximately 779 gallons were extracted from MW-2 with discharge to the sanitary sewer under permit. A groundwater sample collected on May 15, 1995 was found to contain 1.6 ppm of O&G.

Previous to removal of the hydraulic lift, a monitor well (MW-1) had been constructed at the location of two former USTs for gasoline and waste oil (Figure 2). MW-1 is located about 30 feet south of MW-1. MW-1 was sampled for four quarters for Total Petroleum Hydrocarbons (TPH) as diesel, with results showing no detectable hydrocarbons. Recently, the lab data for the last two samples from MW-1 were re-inspected by the laboratory for the presence of motor oil, with none detected.

In April 1995 additional hydraulic lifts were removed from the site. A temporary piezometer was constructed in one of these lifts and an engineering survey was conducted at the site. Water level measurements taken on April 21, 1995 showed that the horizontal hydraulic gradient between the monitor wells at the site is imperceptible.

Monitor Well Purging and Sampling

On June 1, 1995 ASE returned to the site to sample monitor well MW-1. Field notes documenting the well sampling are attached.

Prior to purging, the depth to water (DTW) was measured at 9.67 feet below the top of the well casing (TOC). A new clean polyethylene bailer was used for purging. No petroleum odors or visual presence of petroleum were noted during purging. Purge water was discharged into 5-gallon buckets calibrated for volume measurement. A total of 6 gallons were purged from the well, equivalent to greater than 3 casing volumes.

At the end of purging the DTW was measured at 9.68 feet, indicating instant recovery. Ms. Michele Shoemaker of SMCDHS gave permission to collect a sample in her absence.

A new clean polyethylene bailer was used for collection of a sample. Two 1 liter amber bottles with preservative were filled with groundwater. The samples were labelled with the time, date, location, and sampler's name prior to storage in a cooler with blue ice.

All purge water was placed in labeled buckets pending analytical results. The well was capped, locked, and covered.

DRAFT

MW-1 Laboratory Analyses

The groundwater sample was transported under chain of custody (attached) to Priority Environmental Labs, a state certified laboratory, for analyses for oil and grease (O&G) by EPA method 418.1. Laboratory reports are attached which include quality control. Table 1 summarizes the laboratory results. The MW-1 groundwater sample did not contain any detectable O&G.

Summary

This report has been prepared to document groundwater sampling on June 1, 1995 of MW-1 at Chub's Auto Repair, 1180 Main Street, Redwood City, California. Laboratory results for the groundwater sample collected from MW-1 show no detectable O&G.

Conclusions and Recommendations

ASE recommends site closure based on the following observations and conclusions:

1. O&G has been detected in MW-2 at concentrations below the published practical quantitation reporting limit required by the Tri-Regional Recommendations of 5 mg/L.

2. Studies of urban run-off into San Francisco Bay found a mean O&G concentration of 3 mg/L in water, higher than the concentration of O&G detected in MW-2 which is located in close proximity to Redwood Creek.

3. There is no published State of California drinking water standard for O&G.

4. There is no perceptible gradient between MW-1 and MW-2, suggesting little potential for lateral migration of the viscous O&G. The O&G should biodegrade with time.

5. Analytical results for MW-1, located about 30 feet from the former hydraulic lift, show no detectable O&G, suggesting that O&G in groundwater is limited to a localized area around MW-2.

6. The benefit realized by a reduction in O&G concentrations in groundwater over such a limited area from present levels (1.5 mg/L) to less than the detection limit (0.5 mg/L) can not be justified considering the economic cost that would be required.

DRAFT

Please call me at (415) 363-2445 if you have any questions or require additional information.

Sincerely,

Frederick A. Yukic, MS, PE
Principal Engineer

Attachments

cc: Mr. Larry Chubick, Chub's Auto Repair

REGISTERED PROFESSIONAL ENGINEER
FREDERICK A. YUKIC
No. 046369
EXP. 12-31-98
CIVIL
STATE OF CALIFORNIA

mw1-5d1.rpt

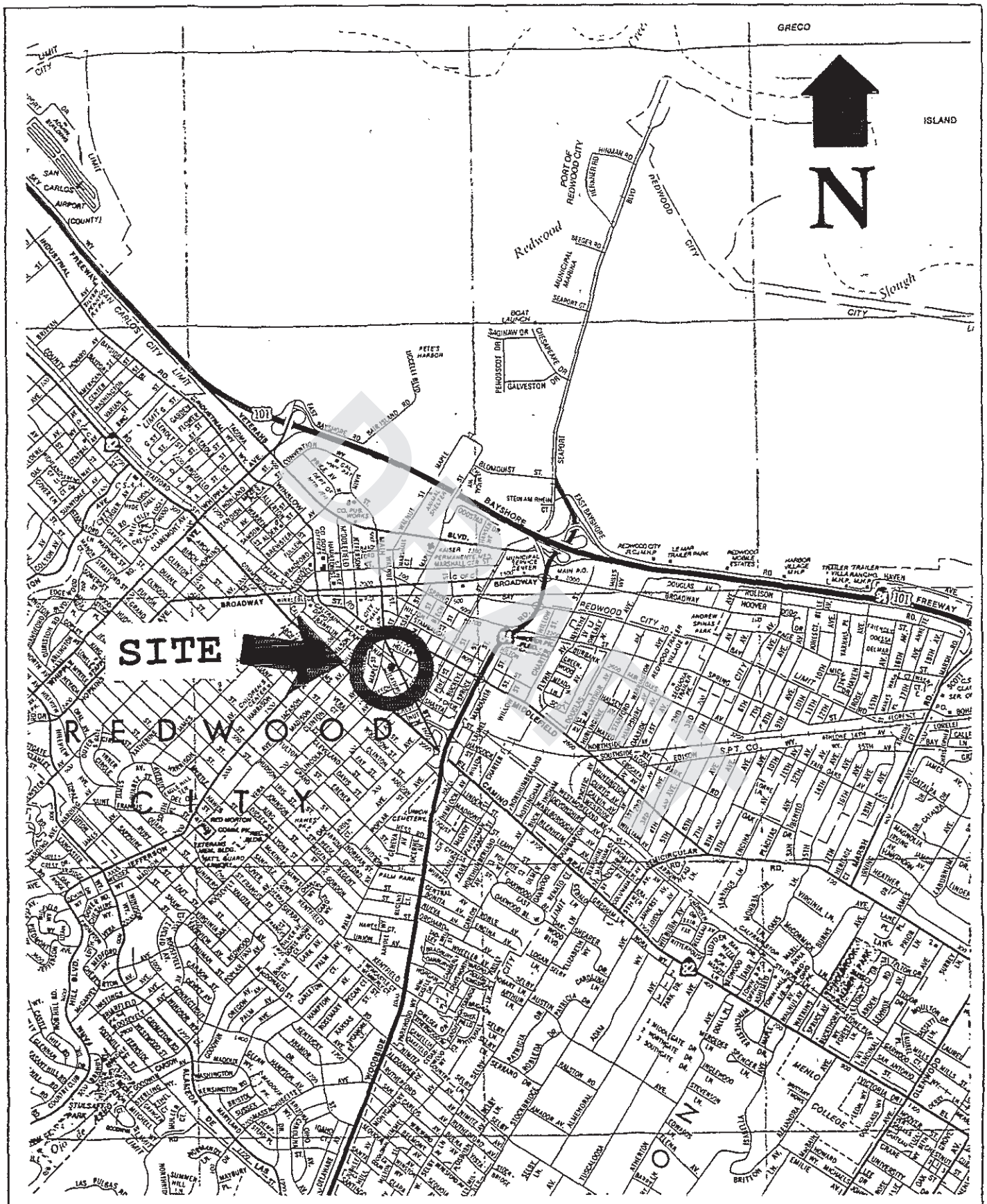
DRAFT

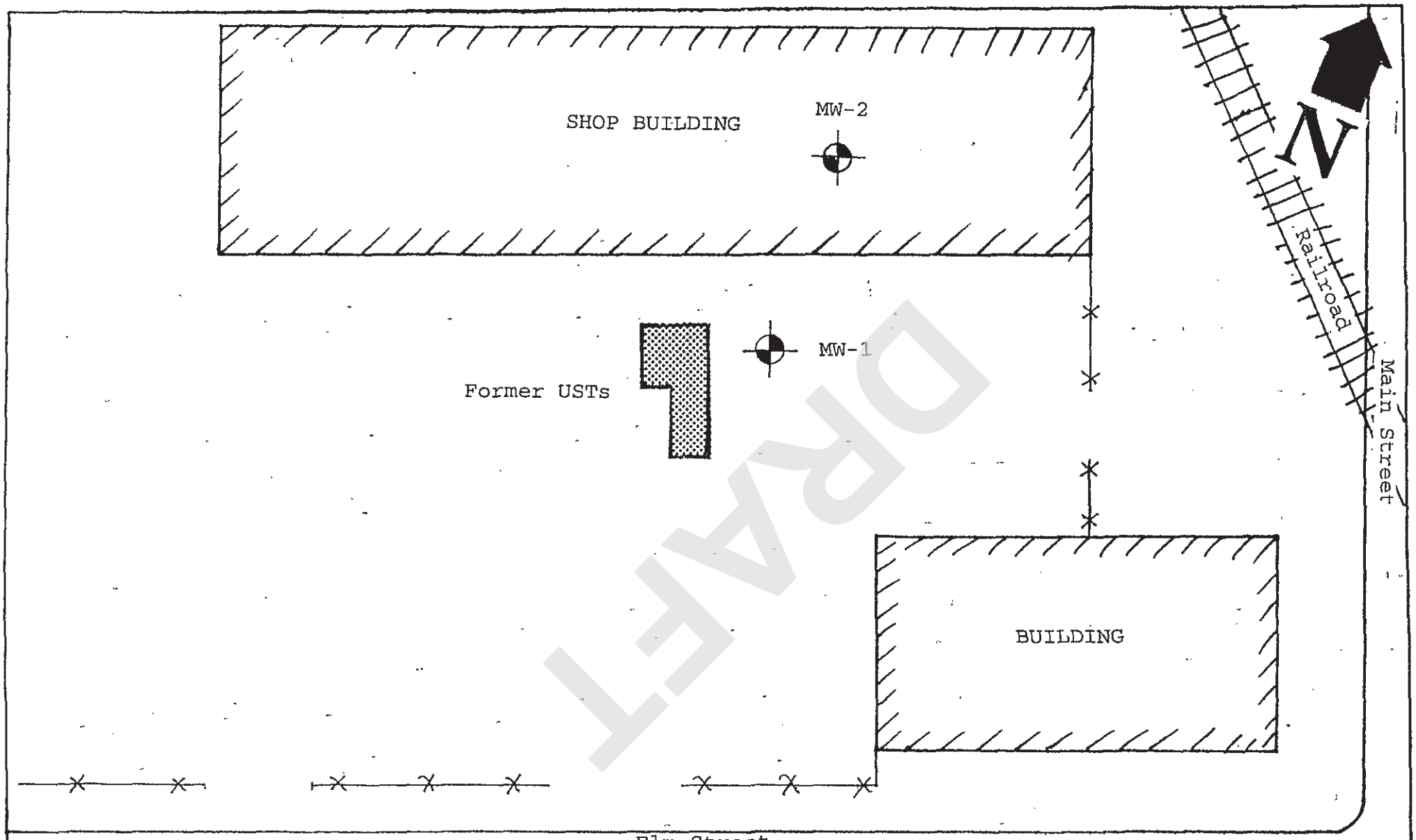
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APPLIED SCIENCE AND ENGINEERING INC.

Table 1
Analytical Results (mg/L)
Chub's Automotive
Hydraulic Lift Excavation

Location	Date	Oil and Grease
Soil		
8' - 8.5'		12,000
9' - 9.5'		1,600
9.5'-10'		1,700
12' -12.5'		520
Stockpile		4,100
Water		
MW-2	12/12/94	1.7
MW-2	3/13/95	1.5
MW-2	5/15/95	1.6
MW-1	**6/ 1/95**	**ND**

DRAFT


GRECO
ISLAND
N
SITE
REDWOOD CITY
BAYSHORE
BROADWAY
101 FREEWAY
EAST BAYSHORE
SEAPORT
PORT OF REDWOOD CITY
REDWOOD BLVD
Redwood Slough
SAN CARLOS AIRPORT (COUNTY)
INDUSTRIAL WAY
SAN CARLOS CITY LIMIT
VETERANS
MAIN
BLOOMQUIST ST.
STEINHAM RHEIN CT
SAGINAW OR CHESAPEAKE DR
PENOBSCOT DR
GALVESTON DR
PETE'S HARBOR
BOAT LAUNCH
MUNICIPAL MARINA
SEAPORT CT
BEEGER RD
HINMAN RD
REDWOOD CITY ACLIMS
LE MAR TRAILER PARK
REDWOOD MOBILE ESTATES
HARBOR VILLAGE MHP
TRAILER TRAILER VILLA RANCHO HAVEN M.H.P.
MAIN P.O.
CITY HALL
COUNTY OFFICES
MUNICIPAL SERVICE CENTER
DOUGLAS AV
HOOVER
PULISON
ANDREW SPINAS PARK
REDWOOD CITY ELEMENTARY SCHOOL DISTRICT
REDWOOD CITY
CITY RD
SPRING
LIMIT
MAPLE
FAIR OAKS
ALAMEDA DE LAS PULGAS
EDISON
S.P.T. CO.
CIRCULAR RD
MENLO
COLLEGE
VICTORIA CIR
LAS PULGAS
MAYBURY
SUMMER HILL
MONUMENT
HILLSIDE
WOODSIDE
ATHERTON
BRITTON
EMILIE
MARSH
JAMES
CATALPA DR
MAGNOLIA
IRVING
HEATHER
LAURENTIAN
LORELEI
CALLE
BAY
ALAMEDA
ALMENDRAL
PATRICIA
DALTON RD
SEAWARD DR
STOCKBRIDGE
INGLEWOOD
STEVENSON
MIDDLEGATE
WORTHGATE
SOUTHGATE
MEADOWLARK
WILLOW
MIDDLEFIELD
CHARTER
CAMINO
NORTHUMBERLAND
WESTMORELAND
WILLIAMSBURG
WILLIAMSBURG
WILLIAMSBURG



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APPLIED SCIENCE AND ENGINEERING INC.

1" = 20'

MONITOR WELL

Temporary Piezometer

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

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APPLIED SCIENCE AND ENGINEERING INC.

DATA SHEET FOR SAMPLING WELL MW-1

JOB NAME CHOB
SAMPLED BY DAVID OLKOWSKI

DATE 6/1/1995
SHEET 1 OF 1

USE POSITIVE VALUES
WELL DEPTH (WD) 20 ft
INITIAL DEPTH TO WATER (DTWI) 9.67 ft
(WD - DTWI) (X GAL/FT) = CASING VOLUME (CV)
20 ~~9.67~~ - 9.67) (0.17 GAL/FT) = 1.76 GALLONS/CV
(3CV) (GAL/CV) = 3 CASING VOLUMES
(3) (1.76) = 5.27 GALLONS NEED TO BE PURGED

DIA. X
(2" 0.17)
4" 0.66
6" 1.5

TIME	DTW	GALS	MICR S	pH	TEMP C	NOTES
9:52						ARRIVE SITE
10:00	9.67ft					
10:18		0				CLEAR
10:31		6				TURBID
10:33	9.68ft					INSTANT RECOVERY
10:50						FILL 2 1L
						PLUG, LOCK & COVER MW-1
11:06						PLACE WATER IN LABELED BUCKETS
11:07						CREEK IS LOW
11:08						LEAVE SITE

FINAL DEPTH TO WATER (DTWF)
0.2(DTWF) + 0.8(DTWI) = DTW FOR 80% RECOVERY (DTW80%R)
0.2( ) + 0.8( ) = FT MAX. BEFORE SAMPLING
DWO\DATAS1D4

DRAFT

PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

June 02, 1995 PEL # 9506006

APPLIED SCIENCE ENGINEERING, INC.

Attn: Fred Yukic

Re: One RUSH water sample for total Recoverable Hydrocarbons analysis.

Project name: CHUB

Date sampled: June 01,1995 Date submitted:June 01, 1995
Date extracted:June 01-02, 1995 Date analyzed:June 01-02, 1995

RESULTS:

SAMPLE I.D.	Total Recoverable Hydrocarbons (mg/L)
MW-1	N.D.
Blank	N.D.
Detection limit	0.5
Method of Analysis	418.1

David Duong
Laboratory Director

DRAFT

PRIORITY ENVIRONMENTAL LABS

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 6/1/95 PAGE: 1 OF 1

PROJECT MGR: FRED YUKIC
COMPANY: ASE
ADDRESS: PO BOX 1166
: SAN CARLOS, CA 94070
PHONE: 415-363-2445 FAX: 415-363-8449
SIGNATURE:

PEL # 9506006
INV # 26014

SAMPLE ID	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030,8015)	TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020)	TPH-Diesel (EPA 3510/3550,8015)	PURGEABLE AROMATICS BTEX (EPA 602,8020)	TOTAL OIL & GREASE (EPA 5520 C,D&F)	PESTICIDES/PCB (EPA 608,8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601,8010)									NUMBER OF CONTAINERS
MW-1	6/1/95	10:50	GW							X										2

DRAFT

PROJECT INFORMATION
PROJECT NAME: CHUB
PROJECT NUMBER:

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 2
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: 24 hour turn around

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
DAVID OLKOWSKI			
SIGNATURE: David Olkowski	SIGNATURE: THOMAS LAU	SIGNATURE:	SIGNATURE:
Date: 6/1/95 Time: 15:02	Date: 6/1/95 Time: 12:02	Date: Time:	Date: Time:
COMPANY: ASE	COMPANY: PEL	COMPANY:	COMPANY:

JUN-02-95 FRI 01:48 PM PRIORITY LABS
408+946+9663
P.03

DRAFT

Appendix ZZ

San Mateo County Department of Health Services-Environmental Health Case Closure Memorandum

SAN MATEO COUNTY REMEDIAL OVERSIGHT PROGRAM
CASE CLOSURE
M E M O R A N D U M

TO: SAN MATEO COUNTY REMEDIAL OVERSIGHT PROGRAM

FROM: Michele Shoemaker **DATE:** June 13, 1995

SUBJECT: Case Closure for San Mateo County Site #330120, Chub's Auto Repair, 1180 Main Street, Redwood City, California.

BACKGROUND

On January 14, 1994, a 1,000 gallon waste oil underground storage tank (UST) were removed from the subject site. During the process of excavating, a second 1,000 gallon tank was discovered. It was determined to have held gasoline. Both tanks were single walled steel tanks. The waste oil tank had holes, a solvent odor was noted in the air, and the soil beneath the tank was stained. The gasoline tank did not have any holes, odors, or staining. The two tanks were in separate excavations. One soil sample was taken from each end of the tank in both excavations.

INVESTIGATION

Four soil samples were taken from the two UST excavations. Analytical results indicated:

	TPH-g	TPH-d	O&G	B	T	E	X
E-8' wot	<1	<10	<50	<0.005	<0.005	<0.005	<0.005
W-8.5' wot	<1	810	<50	<0.005	<0.005	<0.005	<0.005
N-8' gas	<1	- -	- -	<0.005	<0.005	<0.005	<0.005
S-9.5' gas	<1	- -	- -	<0.005	<0.005	<0.005	<0.005

On 2/3/94 overexcavation of the waste oil tank pit occurred to approximately 10' below ground surface (bgs). A soil sample was obtained at approximately 8' bgs on the west wall. Analytical results were as follows: <1 ppm TPH-g, <10 ppm TPH-d, <50 ppm oil & grease, non detect for 8010 compounds, <0.005 ppm for BTEX constituents. Groundwater was encountered at approximately 9.5' bgs; the pit was partially pumped due to pump failure and a water sample was obtained. Due to contractor error, the pit water sample was only analyzed for oil and grease. The result was 9,000 ppb oil and grease.

The pump was fixed and the pit was pumped at least two more times prior to the sampling the re-charge. The groundwater was sampled again on 02/17/94. Analytical results were: <50 ppb TPH-g, <0.5 ppb BTEX, 530 ppb TPH-d, <5000 ppb oil & grease, and non-detect for 8010 compounds. The diesel was noted by the lab as non-typical diesel.

On 05/04/94 groundwater monitoring well MW-1 was installed within ten (10) feet of the former tanks at the subject site (groundwater gradient was deterimined at the site using two groundwater

monitoirng wells and a temporary piezometer. Based on the data, there is no perceptible gradient). A soil sample was obtained from 10.5-11' below ground surface (bgs). No odors were noted on the boring log. The depth to water was 14' bgs. The soil sample was analyzed for TPH-mo, TPH-d, and BTEX compounds. All analytes were below detection limits: 0.005 ppm for BTEX, 5 ppm TPH-d, and 10 ppm TPH-mo.

The groundwater monitoring well has been monitored four consecutive quarters; no contaminants have been detected. Analytical results are attached.

In early August, 1994 a hydraulic lift was removed from the subject site. The pit was excavated to groundwater at 12' bgs. Soil samples were collected from the excavation and analyzed for oil and grease by 418.1 (see table below). A grab water sample was obtained from the pit. A saw-cut PVC pipe was installed in the excavation and backfilled with pea gravel. The consultant named the PVC pipe as MW-2. Soil and groundwater results from the hoist removal are seen below:

Hydraulic Hoist Analytical Results

Soil sample depth	oil & grease
8-8.5'	12,000 ppm
9-9.5'	1,600 ppm
9.5-10'	1,700 ppm
12-12.5'	520 ppm
pit water 12/12/94	1700 ppb
MW-2 water 3/13/95	1500 ppb
MW-2 water 5/15/95	1600 ppb

DRAFT

An estimated 2.5 cubic yards of soil contaminated with approximately one (1) gallon of hydraulic oil remains in place at the site.

Approximately 800 gallons were purged from MW-2 and the well was re-sampled for oil and grease. The analytical results are shown above. The samples were analyzed by EPA Method 418.1. On 02/03/95, MW-1 was analyzed for kerosene, diesel, and motor oil with detection limits of 50, 50, and 0.5 ppb. No kerosene, diesel, or motor oil was detected in the groundwater.

On May 29, 1995 MW-1 was sampled for oil and grease. None was detected at detection of 0.5 ppm. The low levels of oil and grease in MW-2 do not pose a threat to human health or the environment. There is not a perceptible gradient between MW-1 and MW-2. Since there is no oil and grease in MW-1, this indicates there is little potential for lateral migration of the oil and grease found in MW-2. Further, the economic cost of remediating such low levels of oil and grease does not warrant additional investigation. According to the consultant, "a study conducted by ABAG of urban run-off into the San Francisco Bay showed mean concentrations of 3 mg/L (oil and grease) during dry periods and 8 mg/L during wet periods. In addition, a study conducted in Fresno, California by the USGS measured oil and grease in urban run-off at an average concentration of 3 mg/L for a residential catchment and 11 mg/L for an industrial

catchment. Thus, the concentration of O&G in MW-2 is lower than the average concentration measured in urban run-off flowing into San Francisco Bay" and therefore the site should be closed.

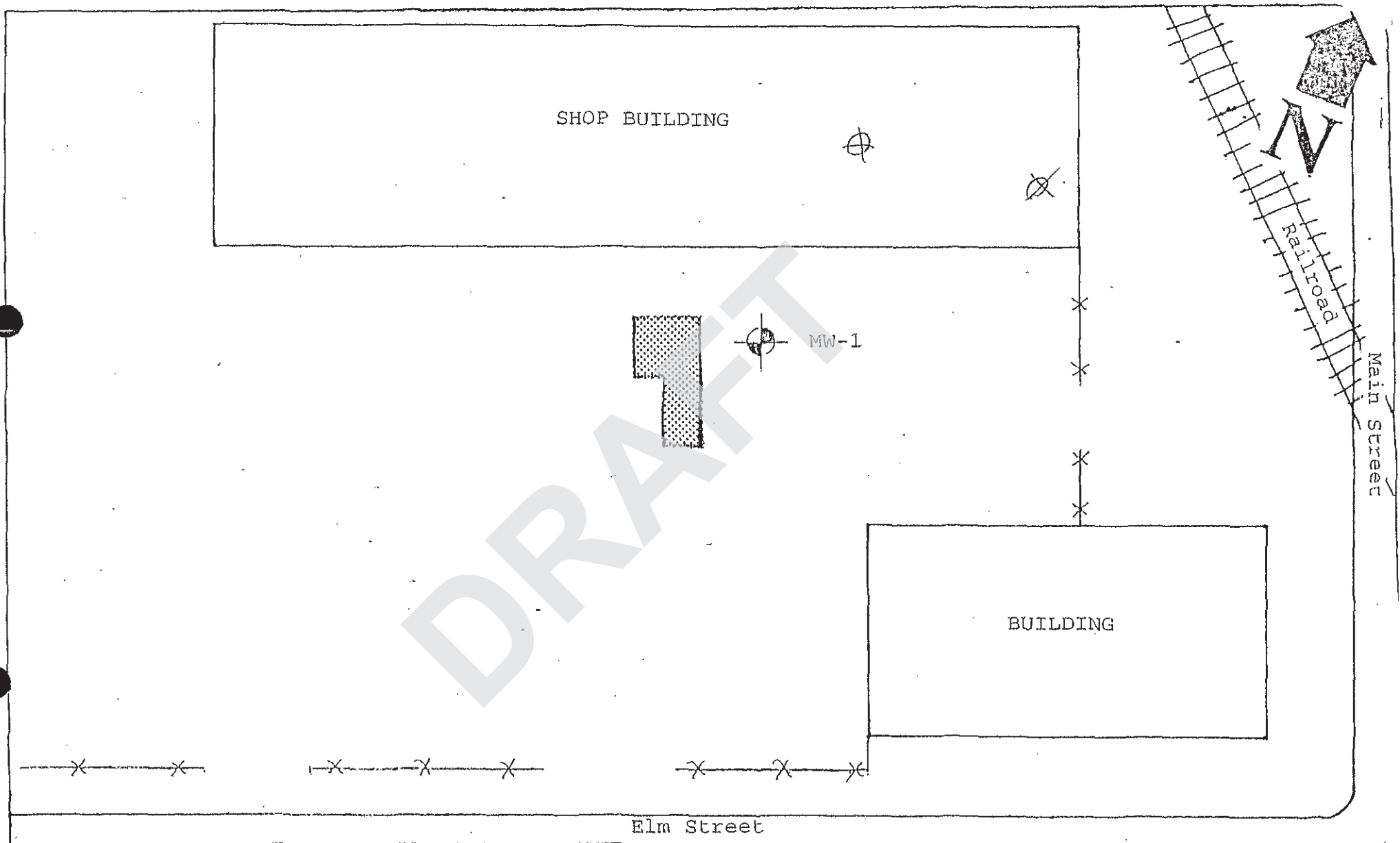
GEOLOGY

Black silty clays are present to approximately 14' bgs. Black and gray fine gravel and sand underlie the silty clays to at least 20' bgs, the total depth explored.

RECOMMENDATIONS:

Based on the investigation, monitoring results, and other information which is currently and actually known to this agency, we have determined that all appropriate response actions have been completed, all acceptable or remedial practice were implemented, and no further investigation, remedial/removal action, or monitoring is required at the site with regard to a release of hazardous waste or substance from the underground storage tank located at the site. We have determined that a significant release of gasoline fuel has not occurred and the shallow waters have not been significantly impacted. San Mateo County Remedial Oversight Program staff have determined that the water quality objectives of the San Francisco Bay Regional Water Quality Control Board have been satisfied.

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1" = 20'

MONITOR WELL

Figure 2: Site Map
Chub's Auto Repair
1180 Main Street
Redwood City, California

Table 2
Water Analytical Results (ppb)
Chub's Automotive

Location	Date	TPH-G	TPH-D	B	T	E	X	O&G	Volatile Organics	Cd	Cr	Pb	Ni	Zn	
Excavation	2- 9-94	--	--	--	--	--	--	9,000	--	--	--	--	--	--	
Excavation	2-17-94	ND	530	ND	ND	ND	ND	ND	ND	--	--	--	--	--	
MW-1	5-05-94	ND	ND	ND	ND	ND	ND	--	ND	--	--	--	--	--	DTW 7.74
MW-1	8-04-94	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	10.32
MW-1	11-03-94	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	10.37
MW-1	2-02-95	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	8.42

Note: TPH-G = Total Petroleum Hydrocarbons-Gasoline
TPH-D = Total Petroleum Hydrocarbons-Diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylene
O&G = Oil & Grease
Cd = Cadmium
Cr = Chromium
Pb = Total Lead
Ni = Nickel
Zn = Zinc
ND = Not Detected
-- = Not Analyzed

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APPENDIX ZZZ

Monitoring Well Closure Documentation

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7/13/95

CROP - CLOSURE CHECKLIST

Site Name CHUBS

Site Address 1180 MAIN

Site Number 330120

☒ Closure memo review signatures

	Staff	Lead	PM	Director
Initials	MS			
Date	6/13	6/13	6/13	10/24/95

☒ Closure summary to RWQCB for 30 day review

After 30 day review:

☒ CROP data report

☐ SWRCB quarterly report 6/21/95

☐ Closure letter for BZ signature to sign

☒ Send letter to RP for well destruction and waste disposal stating BZ letter will be sent once report of destruction/disposal is submitted

☐ Well destruction permit

☐ Soil disposal, drum disposal documentation

Copies to:

	RP	Site file	RWQCB	SWRCB	corr file	City Bldg Dpt
closure letter	x	x	x	x	x	x
closure memo		x			x	
closure summary		x		x	x	
cover letter		x			x	x

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SAN MATEO COUNTY

DEPARTMENT OF HEALTH SERVICES - ENVIRONMENTAL HEALTH
590 Hamilton Street, Redwood City, CA 94063
(415) 363-4305

OFFICIAL INSPECTION REPORT / FIELD OBSERVATIONS

Site Name: Chubb's Auto Repair
Site Address: 1180 Main St., PVC

Page 1 of
Date: 6/21/95
Program: CROP
Site Computer #
APN:

On site for scheduled well abandonment by pressure grouting. MW-2 in gravel, took 55 gal grout in pit, then concrete & cement in PVC piping.

MW-1 took approximately 20 gal grout & held pressure.

Larry Chubbuck to finish top 3" of seal to match his pavement / concrete floor.

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Inspector: M Schemah
Received By: the file

1180 Main St., RWC Club's Auto

4/26/95 Fred Yukic called. He wanted to know if Chubb could pump water from well in lift pit. I said ok. xns

5/2/95 Reviewed report on gradient & called Fred. Asked to sample MW-1 for O+G also. Fred said "MW-2" will be pumped extensively on 5/13/95 which is a Saturday - it won't interrupt business. Will sample for O+G. xns. Turn close

5/24/95 Submitted for closure.
5/25/95 Gail Lee rejected for closure. If no gradient, then shouldn't conclude the source of oil & grease is from the Redwood Creek. I called Fred & asked him to sample MW-1 for oil & grease. He said the lab quantified a sample from MW-1 for motor oil, diesel, & kerosene (0.5/50/50 ppb detection) & all were non-detect. Spoke w/ Gail she said sample MW-1 for O+G.

5/30/95 Called Larry, asked to sample well (MW-1) for O+G.
6/2/95 Fred Yukic called. MW-1 was non-detect for O+G.
6/13/95 Ken Horowitz 415-328-4500 ext. 14 - Attny handling sale of property. Would like to know when send closure request to state.

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Chubs Auto, 1180 Main St., RWC #330120

2/(17)/95 Sent fax to Fred Yukic about well construction.

2/21/95 Rec'd quarterly report. Requests case closure. KMS
Performed partial closure review, but need gradient at site and also need to resolve oil and grease issue. Sent letter. KMS

date not recorded (before 4/20/95)
Spoke with Fred Yukic regarding gradient at the site. Told him it is necessary to know it before can close. Use other wells, or provide rationale. KMS

4/20/95 Fred Yukic called. Put piezometer into one of the hydraulic hoist ~~rep~~ holes. Determined that gradient is flat. KMS

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SAN MATEO COUNTY

DEPARTMENT OF HEALTH SERVICES - ENVIRONMENTAL HEALTH
590 Hamilton Street, Redwood City, CA 94063
(415) 363-4305

OFFICIAL INSPECTION REPORT / FIELD OBSERVATIONS

Site Name: Chub's Auto
Site Address: 1180 Main St., RWC

Page 1 of 1
Date: 3FEB95
Program: 330120
Site Computer #:
APN:

2/3/95 On site for scheduled groundwater sampling. No odor/sheen. David O. w/ ASE = sampler TPH-d, BTEX. Water is brownish. ASE questioning tidal influence had done some monitoring of depth yesterday. 2x amber l ~~VOA~~ bottle, x40 ml VOA

Piping in the hoist excavation present but not concreted. Recommend that cover-cement the pea gravel. Mr Chubbuck wondered if needed well in that area & I said yes, based on conversation w/ RWQCB & levels detected in the soil. xms

Inspector: Michele Shoemaker
Received By: File

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1180 Main St. RWC chubs #330120

JANUARY 31, 1995 - David of ASF called to say he's sampling at 11 on 2/3/95. xms

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Chubb's Auto, 1180 Main St. RWC #330120

12/9/94 Spoke w/ Fred Yukic. He wanted to remind me that the overexcavation would be occurring tomorrow at the site. I told Fred I may not go, but that Fred should go, if possible. Fred said he didn't know if he was going to be there so he would talk with Mr. Chubbick today and call me back.

Need grab water sample if hit water (probably will). Stockpile going to Vasco Rd. What is going to be used as fill? Fred will find out. tmg

12/12/14 (on Saturday) Fred called. He said he put in a saw cut (6"screen") PVC pipe in the hole @ Chubbs to act as a well. He pumped out approximately 100 gallons & then sampled Monday. The water appeared oily. The pit was dug out to 12' bgs.

Question: is the pipe considered a well??

12/20/94 - Spoke with Fred Yukic - the water sample from the pit came back at 2 ppm O+G.

1/12/95 Fred Y. called. Wanted to know why a well was needed if O+G are at detection. I called back 1/13/95 and left message for him to call me. tmg

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Chubbs Auto, 1180 main St., RWC #330120

8/4/94 On-site for scheduled gw sampling. Did not stay to witness sampling. Brought student intern Barry Buy. XMS

9/1/94 Rec'd quarterly. Still non-detect. Need gradients wrote letter XMS

10/5/94 Fred Yukic called. A hydraulic hoist was removed from the site. Soil samples have been taken and they had hits so dug deeper and still have 500 ppm oil and grease at the water level. I told Fred that I would be the main contact person for this cleanup. I asked him to forward all analytical to me and a brief workplan for the work that he's proposing. We'll probably have to take a water sample and take it from there - XMS

10/7/94
Received fax of analytical to date. Called Fred to see when work is occurring. Left message.

11/16/94 Rec'd quarterly report. Send letter.

11/28/94 Fred Yukic called. He'll be sending a letter to update me on the site. RP is hiring someone to overdig if it may happen on a weekend. I told Fred to have RP call me for notifications regardless of the day XMS

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Chub's Auto Repair, 1180 Main St., RWC #330120

5/4/94 On site to witness monitoring well installation. Showed up just as ready to pour seal. Well is 20' deep, water at 10' took soil samples at 5½', 10½ feet. Will analyze one of them, depending on water level tomorrow when the well is developed. Dave of Applied Science + Engineering will be on site tomorrow from 10-1 to develop the well.

Soils were clayey to 14' and then gravel/course sand encountered.

Soil sample to run for TPH-d, BTEX, water sample for the whole scan, without oil and grease as this was low in the original water sample. TPH-gd, BTEX, volatiles. xMshoemaker.

5/5/94 On site for well sampling. Well hadn't fully recovered so I didn't wait for sampling. Water was very silty. No odors. xMshoemaker

5/31/94 Received well monitoring report. All ND. I called Fred because his report states the ~~well~~ pit (MS) was pumped dry and didn't re-charge but SMCo. asked for well anyway. I told him I would send him a copy of my notes. Also, Fred asked if volatiles could be eliminated from sampling requirements.

6/2/94 called SMCo. Revised report should be out soon. xMS

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1180 Main Street, Redwood City, CA # 330120 CHUB'S AUTO REPAIR

4/8/94 (continued) submitted, then maybe I won't require so many analyses. Soil does not need to be analyzed for everything, just TPH-d and BTEX, as workplan proposes. x MShoemaker

4/18/94 Fred Called. He said the pit sample on 2/9/94 was only analyzed for oil and grease and was at 9 ppm. He said the tank was analyzed for volatiles before disposal, but results were low. I said the well needs to be analyzed for volatiles, but can hold oil and grease. MShoemaker

4/19/94 received drilling application. I approved it. MShoemaker

4/29/94 Received Tank Removal Report from SEMCO dated 4/26/94. x MShoemaker. Sent letter 5/4/94.

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1180 Main St, PWC CHUB'S AUTO REPAIR SM # 330120

2/17 called Chuck w/ SEMCO. Asked him why pumped pit more than one time. He said thought it was ok to do three times. SM Co. Guidelines state one time only. I faxed him copy of Guidelines page iii. x MSroemaker

3/3/94 Randy w/ SEMCO called. Wants to pump pit again. I asked for results from previous water sampling before I make a decision. Told Randy that more purging and sampling is not going to preclude Chub's from putting in a well.

3/15/94 Called Chuck w/ Semco because I received a call from a prospective consultant at the site (Fred Yukic 363-2445). Fred had talked with Mr. Chubbick and was told the water had some weird chemicals in it. I don't have the pit water results yet so I requested them from Chucks. K MSroemaker

3/18/94 Received analytical results from SEMCO, from second sampling. Have not received sample results for original pit water sampling (2/9/94) x MSroemaker

3/31/94 Redd workplan for the installation of one monitoring well. Consultant is Applied Science and Engineering. x MSroemaker

4/8/94 - Fred Yukic called abt. the letter from this office 4/4/94. I want gradient determined once the well is in place, just for confirmation. I want water sampled for parameters listed because SEMCO overpumped the pit, invalidating results. If 2/9/94 water sample results are

continued

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(415) 368-2224

Chubs Auto Repair

1180 Main St., RWC

2/16/94 - Semco pumped pit, set appt for sampling 1 pm. [(2) of 5000 gal tanks]

2/17/94 arrived on site. Pit was being pumped when I arrived. Pit had been pumped dry yesterday & re-filled partially.

It rained last night, not covered, but bermed. (water level unchanged per Pat of Semco). Berming material was soil but not covered with plastic.

There was sheen on water seen.

~100 gal was pumped today.

Worker @ Chub's said the water level had varied, he thought due to tidal influence. Redwood Creek very close to pit - approx. 60' to the west. The paved ditch was running quickly

- Sample #: Pit H_2O #1 to be submitted to laboratory. Sampler didn't know which lab, nor which were the proper containers. Suggested he call lab to check.

x Michele Stromski

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1180 Main St., RWC - Chubs Auto Repair
2/3/94 - Rec'd and approved brief workplan
2/9/94 - on site for over excavation

- Arrived on site, had already began digging and hit groundwater. were pumping the pit (having problems w/ pump) but were pumping slower than re-charge so got no. where. There was a sheen on the water - Took a water sample. Samples to be submitted for TPH-g, TPH-d, BTEX, CL hydrocarbons, GTO. Soil Sample was taken at ~8' on the west wall. Depth to groundwater was approximately 9½ feet.

x Michele Sholund

2/14/94 Chuck w/ SEMCO wanted to know if could re-pump pit because of pump difficulties. The samples are on hold that were submitted 2/9/94. He has a tank on site to pump into. OK by me.

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Appendix ZZZZ

Asbestos and Lead-Based Paint Documentation

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November 11, 2010

NESHAP ASBESTOS SURVEY and LEAD-BASED PAINT INSPECTION

134 Maple Street & 1180 Main Street
Redwood City, California 94063

DRAFT

Project No. 292738

Prepared For

Lathrop PARC Redwood City, LLC
101 Seminary Drive
Menlo Park, CA 94025

Prepared By

AEI Consultants
2500 Camino Diablo, Suite 200
Walnut Creek, CA 94597
(925) 746-6000

EXECUTIVE SUMMARY

AEI Consultants (AEI) was retained by Lathrop PARC Redwood City, LLC (Client) to conduct a NESHAP Asbestos Survey and Lead-based Paint Inspection for the structures located at 134 Maple Street and 1180 Main Street in Redwood City, California. The survey was performed on November 5, 2010. The purpose of the survey was to locate, identify, sample and assess the condition of interior and exterior building materials suspected of containing greater than one percent (1%) asbestos and to perform a lead paint inspection. The survey included the assessment and characterization of suspect friable and non-friable ACM and lead content in painted surfaces. Asbestos containing construction material (ACCM) will also be identified, if applicable.

The subject property at 134 Maple Street is located on the east side of Maple Street in a mixed residential and commercial area of Redwood City, California. The property is improved with a concrete warehouse/retail facility that was vacant at the time of this investigation.

The subject property at 1180 Main Street is located on the south side of Main Street in a mixed residential and commercial area of Redwood City, California. The property is improved with two structures: a stand-alone office building at the southeast corner of the property, as well as a warehouse/retail facility along the north side of the property; both properties were occupied at the time of this investigation. The warehouse/retail facility is the only structure involved under the scope of this survey.

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NESHAP Asbestos Summary

A total of thirty-two (32) samples of suspect ACM were collected from the subject property buildings during the survey.

- RACM was detected in the materials collected from 134 Maple Street, and is listed in the table below:

RACM identified at 134 Maple Street

Material	Location	NESHAP Category	Quantity	% Asbestos
Tan Vinyl Floor Sheet	**Hallway and Bathroom**	**RACM**	**~ 200 ft^2**	**60% Chrysotile**

Any repairs or renovations to the ACMs should be performed by a licensed asbestos contractor. Proper safety procedures for the removal or repair of ACMs should always be followed in order to protect the occupants of the building and the abatement workers.

- No asbestos-containing materials were detected from the sampling conducted at 1180 Main Street.

See attached asbestos analytical results in Appendix A.

Lead-based Paint Inspection

A total of ninety-seven (97) samples of suspect paint were taken from the painted surfaces of components throughout the subject property buildings. The United States Department of

Housing and Urban Development (HUD) standard for 'lead-based paint' (LBP) is ≥1.0 mg/cm² (0.50% by weight).

- None of the painted surfaces sampled registered above the action level of ≥1.0 mg/cm² (0.5% wt and 5,000 ppm).

See attached analytical results with details and locations of areas inspected in Appendix B.

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A ASBESTOS ANALYTICAL DOCUMENTATION
B LEAD PAINT INSPECTION DOCUMENTATION

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1.0 INTRODUCTION

This report documents the methods and findings of a NESHAP Asbestos Survey and Lead-based Paint Inspection for the structures located at 134 Maple Street and 1180 Main Street in Redwood City, California. The survey was performed on November 5, 2010. AEI Consultants (AEI) inspected all readily accessible areas of the buildings.

The Code of Federal Regulations (CFR), 40 CFR 61, Subpart M, National Emissions Standards for Hazardous Air Pollutants (NESHAP), classifies Asbestos Containing Materials (ACM) as any material or product that contains *greater than* 1% asbestos. As suspect ACM is identified, it is classified as either friable or non-friable.

Non-friable ACM is classified as either Category 1 or Category 2 material as follows:

- **Category 1** – Asbestos containing packings, gaskets, resilient floor coverings and asphalt roofing products; and

- **Category 2** – All remaining types of non-friable asbestos containing material not included in Category 1 that when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.

Friable materials are more hazardous than non-friable materials since they are more likely to release fibers into the air. Friable is defined as any ACM that when dry, can be crumbled, pulverized or reduced to powder by hand pressure.

- **Regulated Asbestos containing materials (RACM) –** A hazardous waste when friable, is classified as any manufactured material that contains *greater than* 1% asbestos and is:

    1. Friable – The material can be crumbled, pulverized or reduced to powder by hand pressure;

    2. Category 1 that are subjected to sanding, grinding, cutting or abrading;

    3. Category 1 material that has become friable during renovation activities; or

    4. Category 2 material that has become friable during renovation activities.

Materials containing *greater than* 1% asbestos are subject to the NESHAP regulations (40 CFR Part 61, Subpart M). RACM (friable ACM and non-friable ACM that will become friable during renovation/demolition operations) must be removed from structures prior to renovations or demolitions. Certain non-friable ACM and materials containing 1% or less asbestos may remain in structures during renovations/demolitions; however, there are waste handling/disposal issues and Cal/OSHA work requirements that may make it cost ineffective to do so. Contractors are responsible for segregating and characterizing waste streams prior to disposal.

With respect to potential worker exposure, notification, and registration requirements, Cal/OSHA regulations (Title 8, California Code of Regulations (CCR) Section 1529) define asbestos-containing construction material (ACCM) as any material with an asbestos content of >0.1% (Title 8, CCR §341.6). Removal or disturbance of more than 100 ft^2 of ACCM must be performed by a DOSH registered contractor utilizing asbestos-trained workers. It is important to

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note the associated EPA waste labeling is not required if the material contains 1% or less asbestos, however, Cal/OSHA labeling is still required at concentrations $\leq$1%. Furthermore, at concentrations >1% all requirements of the standards become effective.

Construction activities (including demolition) that disturb materials or paints containing any amount of lead (both LCP and LBP) are subject to certain requirements of the Cal/OSHA lead standard contained in Title 8, CCR, §1532.1. Deteriorated paint is defined be Title 17, CCR, Division 1, Chapter 8, §35022 as a surface coating that is cracking, chalking, flaking, chipping, peeling, non-intact, failed or otherwise separating from a component. Demolition of a deteriorated Lead Containing Paint (LCP) component would require waste characterization and appropriate disposal. Intact LCP on a component is currently accepted by most landfill facilities; however, contractors are responsible for segregating and characterizing waste streams prior to disposal.

Potential hazards exist to workers who remove or cut through LCP coatings during demolition. Dust containing hazardous concentrations of lead may be generated during scraping or cutting materials coated with LCP. Torching of these materials may produce lead oxide fumes. Therefore, air monitoring and/or respiratory protection may be required during the demolition of materials coated with LCP. Guidelines regarding regulatory provisions for construction work where workers by be exposed to lead are presented in Title 8, CCR, §1532.1.

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1.1 Scope of Work

The purpose of the survey was to locate, identify, sample and assess the condition of random building materials suspected of containing greater than one percent (1%) asbestos, as well as perform a lead-based paint inspection.

The survey was performed on November 5, 2010, by Alain Grissette of AEI, a Certified Asbestos Consultant (CAC #07-4300) and a Cal/DOSH Certified Lead-Paint Inspector/Assessor (#18206). The asbestos inspection was performed in conformance with modified protocols set forth by the Environmental Protection Agency (EPA) Asbestos Hazard Emergency Response Act (AHERA), the National Emission Standards for Hazardous Air Pollutants (NESHAP) and Cal/OSHA. The lead inspection was performed in conformance with modified protocols set forth by the Housing for Urban Development (HUD) Lead-Based Paint Inspection Guidelines.

1.2 Limitations

The data presented and the opinions expressed in this report are qualified as follows:

- The sole purpose of the investigation and of this report is to assess the Site with respect to asbestos materials as defined in AEI's Scope of Work and the applicable State, Federal and local environmental laws and regulations.

- AEI derived the data in this report primarily from visual inspections, interviews with individuals with information about the Site and a limited number of environmental samples. The passage of time, manifestation of latent conditions, or occurrence of future events may require further exploration at the Site, analysis of the data, and reevaluation of the findings, observations, conclusions, and recommendations expressed in the report.

- In preparing this report, AEI has relied upon and presumed accurate certain information (or absence thereof) about the Site provided by the Client, and others identified herein. Except as otherwise stated in the report, AEI has not attempted to verify the accuracy or completeness of such information.

- The data reported and the findings, observations, conclusions, and recommendations expressed in the report are limited by the Scope of Services, including the extent of environmental sampling and other tests. The Scope of Services was defined by the requests of the Client, the time and budgetary constraints imposed by the Client, and the availability of access to the Site.

- The collection of bulk building material samples for analysis is a destructive procedure and may cause damage to the integrity of building systems. AEI will take normal state-of-the-art precautions to minimize damage, however, AEI will not be held responsible for damage to the building systems as a result of sample collection.

- Suspect ACMs may be present in the building in inaccessible areas such as hidden or concealed wall cavities or ceiling; the discovery of hidden or concealed materials is a destructive process, not in the scope of work for this survey.

- Because of the limitations stated above, the findings, observations, conclusions and recommendations expressed by AEI in this report are limited to the information obtained and the surface and subsurface investigation undertaken and should not be considered an opinion concerning the compliance of any past or current owner(s) or operator(s) of the Site with any Federal, State or local laws or regulations. No warranty or guarantee, whether express or implied, is made with respect to the data reported or findings, observations, conclusions, or recommendations expressed in this report. Furthermore, such data, findings, observations, conclusions and recommendations are based solely upon Site conditions in existence at the time of investigation.

- This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the Agreement and the provisions thereof.

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2.0 SITE DESCRIPTION

2.1 Site Description

The subject property at 134 Maple Street is located on the east side of Maple Street in a mixed residential and commercial area of Redwood City, California. The property is improved with a concrete warehouse/retail facility that was vacant at the time of this investigation.

The subject property at 1180 Main Street is located on the south side of Main Street in a mixed residential and commercial area of Redwood City, California. The property is improved with two structures: a stand-alone office building at the southeast corner of the property, as well as a warehouse/retail facility along the north side of the property; both properties were occupied at the time of this investigation. The warehouse/retail facility is the only structure involved under the scope of this survey.

Suspect building materials that may contain asbestos include: gypsum drywall panel with associated joint compound, vinyl floor sheet, and roofing materials.

Suspect painted surfaces include paint on interior drywall/plaster walls and associated trim, as well as paint on exterior brick and stucco walls and associated trim.

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3.0 METHODOLOGY

3.1 Material Sampling

3.1.1 Asbestos Sampling Procedures

During the survey, AEI visually inspected all readily accessible areas of the subject buildings, identified homogeneous areas of suspect material (materials that share the same texture, color, use, and appear to have been applied at approximately the same time) and collected representative samples of suspect material for laboratory analysis. The samples collected were placed in plastic bags, sealed, labeled and transported under chain of custody documentation to an accredited laboratory.

3.1.2 Lead Sampling Procedures

An RMD XRF Lead Paint Analyzer was utilized. The XRF works by exposing a paint surface to radiation emitted from a sealed source inside the instrument. The source of the radiation in all the XRF analyzers currently used is the cobalt-57 (^{57}C0) or the cadmium-109 (^{109}Cd) isotopes. Both of these radioactive materials spontaneously emit energy in the form of X-rays and gamma rays. When these rays are released from an XRF analyzer and hit a painted surface, the elements in the paint matrix – which include lead – are "excited" and respond by emitting energy in the form of X-rays characteristic of each of the elements. This response is known as fluorescence. The detector in the analyzer then reports the concentration, if any, of lead in the surface. In addition to the XRF analysis, each painted area was evaluated for evidence of deterioration (i.e., flaking or cracking).

3.2 Analytical Methods

All asbestos samples collected were transported under chain of custody documentation to EMSL Analytical Inc. (EMSL) in San Leandro, California for analysis. EMSL is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP #101208-0) and the California Environmental Laboratory Accreditation Program (CA-ELAP # 1620).

All paint samples from the survey were analyzed using a RMD XRF Lead Paint Analyzer.

3.2.1 Asbestos Analysis

All bulk suspect asbestos samples were analyzed using polarized light microscopy (PLM) in accordance with the Environmental Protection Agency's (EPA) "Method of Determination of Asbestos in Bulk Samples" (EPA 600/R-93/116, July, 1993). This method is referred to as the "Improved Method" and is recommended by EPA as a preferred substitute to the Interim Method EPA 600/M4-82-020, 1982.

The EPA regulations define ACM as any material with an asbestos content greater than one percent (>1%). However, Cal/OSHA regulations define ACCM as any material with an asbestos content of >0.1%; Cal/OSHA and EPA regulations regarding the proper handling of ACMs and ACCMs must be followed.

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If based on the results of the initial sampling, a 400-Point Count Reanalysis may be necessary for asbestos results of 1% or less to confirm the material is 1% or less by NESHAP rule. A 1000- Point Count Reanalysis would be necessary to confirm the material is 0.1% or less by Cal/OSHA rule. If point count reanalysis is not performed on these materials, then the material is covered by NESHAP and Cal/OSHA as ACM.

3.2.2 Lead Analysis

All LCP samples from the survey were analyzed using a RMD XRF Lead Paint Analyzer.

3.3 Limiting Conditions

AEI was granted access to all areas of the subject property.

Suspect ACMs and LBP may be present in the building in inaccessible areas such as hidden or concealed wall cavities or ceiling. Upon exposure of the inaccessible areas, AEI recommends sampling and analysis of any newly discovered suspect materials.

This report was prepared for the sole use and benefit of Lathrop PARC Redwood City, LLC. Neither this report, nor any of the information contained herein shall be used or relied upon for any purpose by any person or entity other than Lathrop PARC Redwood City, LLC.

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4.0 SAMPLING AND ANALYSIS

4.1 Asbestos Survey

A total of thirty-two (32) bulk suspect asbestos-containing building material samples were collected from the structures throughout the subject property. In addition, two (2) additional 1000 point count analyses were conducted to better characterize materials with trace amounts of asbestos for the establishing proper work practices during renovation or demolition.

The sample descriptions and results are listed in the tables below:

Sample Analytical Results for 1180 Main Street, Redwood City, CA

Sample #	Material (Layer) Description	Location of Materials	NESHAP Category	% Asbestos
A-101	A. Acoustic Ceiling Tile	Rear Storage Area	n/a	None Detect
A-102	A. Drywall	Rear Storage Area	n/a	None Detect
	B. Joint Compound		n/a	None Detect
A-103	A. Drywall	Main Storage Area	n/a	None Detect
	B. Joint Compound		n/a	None Detect
A-104	A. Grey Base Cove	Rear Storage Area	n/a	None Detect
	B. White Mastic		n/a	None Detect
A-105	A. Drywall	Office	n/a	None Detect
A-106	A. Black Roofing Mastic	Roof – Penetrations & Edges	n/a	None Detect
A-107	A. Roof Core	Roof – Near Main Street	n/a	None Detect
A-108	A. Roof Core	Roof – Rear of Building	n/a	<0.1 Chrysotile*
A-109	A. Window Putty	Exterior Windows North Side	n/a	0.1 Chrysotile*

** Reanalyzed utilizing 1000 Point Count Method*

See attached analytical results and chain of custody documentation in Appendix A.

- No asbestos-containing materials were detected in the samples collected.

While trace amounts of asbestos was detected in samples A-108 & A-109, further point count analysis reduced the asbestos percentage to below the threshold both EPA and Cal/OSHA require for ACM or ACCM categorization.

DRAFT

Sample Analytical Results for 134 Main Street, Redwood City, CA

Sample #	Material (Layer) Description	Location of Materials	NESHAP Category	% Asbestos
B-101	A. Drywall	Front Room Front Wall	n/a	None Detect
	B. Joint Compound		n/a	None Detect
B-102	A. Drywall	Front Room Side Wall	n/a	None Detect
	B. Joint Compound		n/a	None Detect
B-103	A. Drywall	Front Room Wall Behind Counter	n/a	None Detect
	B. Joint Compound		n/a	None Detect
B-104	A. Tan Vinyl Floor Sheet	**Front Room Hallways & Bathroom**	n/a	None Detect
	B. Paper Backing		**RACM**	**60% Chrysotile**
B-105	A. Drywall	Rear Storage Ceiling	n/a	None Detect
	B. Joint Compound		n/a	None Detect
B-106	A. Drywall	Rear Storage Wall Next To Stairs	n/a	None Detect
	B. Joint Compound		n/a	None Detect
B-107	A. Roof Core	Roof – Front of Building	n/a	None Detect
	B. Paint		n/a	None Detect
B-108	A. Roof Core	Roof – Rear of Building	n/a	None Detect
	B. Paint		n/a	None Detect
B-109	A. Roof Felt	Roof – Parapet	n/a	None Detect
	B. Paint		n/a	None Detect
B-110	A. Grey/Black Roof Mastic	Roof – Penetrations	n/a	None Detect
	B. Paint		n/a	None Detect

DRAFT

See attached analytical results and chain of custody documentation in Appendix A.

The following materials were determined to be asbestos-containing materials (>1% Asbestos):

- Tan Vinyl Floor Sheet & Paper Backing – Front Room, Hallway & Bathroom *~ 200 sq. ft.*

The ACMs were observed in poor condition and do pose a health and safety concern to occupants of the subject property in their current state.

Any repairs or renovations to the ACMs should be performed by a licensed asbestos contractor. Proper safety procedures for the removal or repair of ACMs should always be followed in order to protect the occupants of the building and the abatement workers.

DRAFT

4.2 Lead-based Paint Inspection

A total of ninety-seven (97) samples of suspect paint were taken from the painted surfaces of components throughout the subject property buildings.

The United States Department of Housing and Urban Development (HUD) standard for 'lead-based paint' (LBP) is ≥1.0 mg/cm² (0.50% by weight).

- None of the painted surfaces sampled registered above the action level of ≥1.0 mg/cm² (0.5% wt and 5,000 ppm).

OSHA and Cal/OSHA standards require protection for all workers when working with paint containing lead, regardless of the concentration. A contractor performing paint removal work should follow the OSHA lead standard for the construction industry. The lead content of the paint should be considered when choosing a method to remove the paint, as proper waste disposal requirements and worker protection measures must be taken.

Lead Containing Paint Compliance Summary

Construction activities that disturb materials or paints containing *any* amount of lead are subject to certain requirements of the Cal/OSHA lead standard contained in Title 8, CCR, §1532.1. Deteriorated paint is defined be Title 17, CCR, Division 1, Chapter 8, §35022 as a surface coating that is cracking, chalking, flaking, chipping, peeling, non-intact, failed or otherwise separating from a component. Demolition of a deteriorated Lead Containing Paint (LCP) component would require waste characterization and appropriate disposal. Intact LCP on a component is currently accepted by most landfill facilities; however, contractors are responsible for segregating and characterizing waste streams prior to disposal.

Potential hazards exist to workers who remove or cut through LCP coatings during demolition. Dust containing hazardous concentrations of lead may be generated during scraping or cutting materials coated with LCP. Torching of these materials may produce lead oxide fumes. Therefore, air monitoring and/or respiratory protection may be required during the demolition of materials coated with LCP. Guidelines regarding regulatory provisions for construction work where workers by be exposed to lead are presented in Title 8, CCR, §1532.1.

DRAFT

5.0 SUMMARY

AEI Consultants (AEI) was retained by Lathrop PARC Redwood City, LLC (Client) to conduct a NESHAP Asbestos Survey and Lead-based Paint Inspection for the structures located at 134 Maple Street and 1180 Main Street in Redwood City, California. The survey was performed on November 5, 2010. The purpose of the survey was to locate, identify, sample and assess the condition of interior and exterior building materials suspected of containing greater than one percent (1%) asbestos and to perform a lead paint inspection. The survey included the assessment and characterization of suspect friable and non-friable ACM and lead content in painted surfaces. Asbestos containing construction material (ACCM) will also be identified, if applicable.

NESHAP Asbestos Summary

A total of thirty-two (32) samples of suspect ACM were collected from the subject property buildings during the survey.

- RACM was detected in the materials collected from 134 Maple Street, and is listed in the table below:

RACM identified at 134 Maple Street

Material	Location	NESHAP Category	Quantity	% Asbestos
Tan Vinyl Floor Sheet	Hallway and Bathroom	RACM	~ 200 ft^2	60% Chrysotile

Any repairs or renovations to the ACMs should be performed by a licensed asbestos contractor. Proper safety procedures for the removal or repair of ACMs should always be followed in order to protect the occupants of the building and the abatement workers.

- No asbestos-containing materials were detected from the sampling conducted at 1180 Main Street.

See attached asbestos analytical results in Appendix A.

Lead-based Paint Inspection

A total of ninety-seven (97) samples of suspect paint were taken from the painted surfaces of components throughout the subject property buildings. The United States Department of Housing and Urban Development (HUD) standard for 'lead-based paint' (LBP) is ≥1.0 mg/cm² (0.50% by weight).

- None of the painted surfaces sampled registered above the action level of ≥1.0 mg/cm² (0.5% wt and 5,000 ppm).

See attached analytical results with details and locations of areas inspected in Appendix B.

DRAFT

6.0 RECOMMENDATIONS

AEI recommends the following:

- Written notification to contractors (that will be conducting renovation, demolition, relocation, or related activities) of the presence and location of asbestos and lead-based paint;

- Prepare bid documents and specifications for the demolition project to control the project and ensure lawful removal techniques are used;

- Remove and dispose of ACM prior to demolition using licensed abatement contractors in accordance with Federal, State, and Local regulations and ordinances, and

- Follow Federal, State, and Local regulations and ordinances for proper disposal of ACM.

DRAFT

7.0 SIGNATURE OF ENVIRONMENTAL PROFESSIONALS

AEI Consultants (AEI) was retained by Lathrop PARC Redwood City, LLC (Client) to conduct a NESHAP Asbestos Survey and Lead-based Paint Inspection for the structures located at 134 Maple Street and 1180 Main Street in Redwood City, California. The survey was performed on November 5, 2010. Any exceptions to, or deletions from, this practice are described in Sections 1.2 and 3.3 of this report.

Prepared By:



Alain Grissette, CAC 07-4300, CLIA 18206
Project Manager

Reviewed By:



Aaron Buchanan
Senior Reviewer

DRAFT

APPENDIX A

DRAFT

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2500 Camino Diablo #100
Walnut Creek, CA 94597

Fax: (925) 746-6095 Phone: (925) 746-6000
Project: **134 Maple, Redwood City**

Customer ID: AEIC62
Customer PO: TBD
Received: 11/05/10 3:30 PM
EMSL Order: 091009777

EMSL Proj:
Analysis Date: 11/7/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

DRAFT

			Non-Asbestos			Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**	**% Type**
B-101-Drywall *091009777-0001*	Front room front wall	Brown/White Fibrous Heterogeneous	10%	Cellulose	90% Non-fibrous (other)	**None Detected**
B-101-Joint Compound *091009777-0001A*	Front room front wall	White Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
B-102-Drywall *091009777-0002*	Front room side wall	Brown/White Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
B-102-Joint Compound *091009777-0002A*	Front room side wall	White Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
B-103-Drywall *091009777-0003*	Front room wall behind counter	Brown/White Fibrous Heterogeneous	10%	Cellulose	90% Non-fibrous (other)	**None Detected**
B-103-Joint Compound *091009777-0003A*	Front room wall behind counter	White Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**

Initial report from 11/07/2010 14:42:42

Analyst(s)

Rui Cindy Geng (20)

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.

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DRAFT

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
B-104-VInyl floor sheet *091009777-0004*	Front room bath and hallway	Tan Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
B-104-Backing *091009777-0004A*	Front room bath and hallway	Tan Fibrous Heterogeneous		40% Non-fibrous (other)	**60% Chrysotile**
B-105-Drywall *091009777-0005*	Rear storage ceiling	Brown/White Fibrous Heterogeneous	10% Cellulose 2% Glass	88% Non-fibrous (other)	**None Detected**
B-105-Joint Compound *091009777-0005A*	Rear storage ceiling	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
B-106-Drywall *091009777-0006*	Rear storage wall next to stairs	Brown/White Fibrous Heterogeneous	10% Cellulose 2% Glass	88% Non-fibrous (other)	**None Detected**
B-106-Joint Compound *091009777-0006A*	Rear storage wall next to stairs	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
B-107-Roof core *091009777-0007*	Roof front	Black Fibrous Heterogeneous	20% Glass	80% Non-fibrous (other)	**None Detected**

Initial report from 11/07/2010 14:42:42

Analyst(s)

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or other approved signatory

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

DRAFT

			Non-Asbestos			Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**	**% Type**
B-107-Paint *091009777-0007A*	Roof front	Silver Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
B-108-Roof core *091009777-0008*	Roof rear	Black Fibrous Heterogeneous	20%	Synthetic	80% Non-fibrous (other)	**None Detected**
B-108-Paint *091009777-0008A*	Roof rear	Silver Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
B-109-Roof felt *091009777-0009*	Roof parapet	Black Fibrous Heterogeneous	20%	Synthetic	80% Non-fibrous (other)	**None Detected**
B-109-Paint *091009777-0009A*	Roof parapet	Silver Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
B-110-Roof mastic *091009777-0010*	Roof penetrations	Gray/Black Fibrous Heterogeneous	50%	Cellulose	50% Non-fibrous (other)	**None Detected**
B-110-Paint *091009777-0010A*	Roof penetrations	Silver Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**

Initial report from 11/07/2010 14:42:42

Analyst(s)

Rui Cindy Geng (20)

Baojia Ke, Laboratory Manager
or other approved signatory

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Project: **1180 Main, Redwood City**

Customer ID: AEIC62
Customer PO: TBD
Received: 11/05/10 3:30 PM
EMSL Order: 091009779

EMSL Proj:
Analysis Date: 11/7/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

DRAFT

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
A-101-Acoustic ceiling tile *091009779-0001*	Rear storage	White Fibrous Heterogeneous	70% Cellulose 10% Glass	20% Non-fibrous (other)	None Detected
A-102-Drywall *091009779-0002*	Rear storage wall against bricks	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
A-102-Joint Compound *091009779-0002A*	Rear storage wall against bricks	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
A-103-Drywall *091009779-0003*	Main storage	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
A-103-Joint Compound *091009779-0003A*	Main storage	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
A-104-Base base *091009779-0004*	Rear storage	Gray Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
A-104-Mastic *091009779-0004A*	Rear storage	White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected

Initial report from 11/07/2010 14:35:28

Analyst(s)

Rui Cindy Geng (12)

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.

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Project: **1180 Main, Redwood City**

Customer ID: AEIC62
Customer PO: TBD
Received: 11/05/10 3:30 PM
EMSL Order: 091009779

EMSL Proj:
Analysis Date: 11/7/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

DRAFT

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
A-105-Drywall *091009779-0005*	Office	Brown/White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (other)	**None Detected**
		No Joint compound in the sample			
A-106-Roof mastic *091009779-0006*	Roof penetrations and edges	Black Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
A-107-Roof core *091009779-0007*	Roof front	Black Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
A-108-Roof core *091009779-0008*	Roof rear	Black Non-Fibrous Heterogeneous		**100% Non-fibrous (other)**	**<1% Chrysotile**
A-109-Window putty *091009779-0009*	Side ext windows	Green Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**<1% Chrysotile**

Initial report from 11/07/2010 14:35:28

Analyst(s)

Rui Cindy Geng (12)

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.

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Project: **1180 Main, Redwood City**

Customer ID: AEIC62
Customer PO: TBD
Received: 11/05/10 3:30 PM
EMSL Order: 091009779

EMSL Proj:
Analysis Date: 11/11/2010

Test Report: Asbestos Analysis of Bulk Material via EPA 600/R-93/116. Quantitation using the 1,000 Point Count Procedure

DRAFT

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
A-108-Roof core *091009779-0008*	Roof rear	Black Non-Fibrous Homogeneous		100.00% Non-fibrous (other)	**<0.1% Chrysotile**
A-109-Window putty *091009779-0009*	Side ext windows	White Non-Fibrous Homogeneous		99.90% Non-fibrous (other)	**0.10% Chrysotile**

Initial report from 11/07/2010 14:35:28

Analyst(s)
Nonette Patron (2)

Baojia Ke, Laboratory Manager
or other approved signatory

Disclaimer:Some samples may contain asbestos fibers present in dimensions below PLM resolution limits.The limit of detection as stated in the method is 0.1%. EMSL Analytical Inc suggests that samples reported as <0.1% or none detected undergo additional analysis via TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval EMSL Analytical Inc. This test report must not be used by the client to claim product endorsement by NVLAP or any agency of the United States Government. EMSL Analytical Inc. bears no responsibility for sample collection activities, analytical method limitations, or the accuracy of results when requested to separate layered samples. EMSL Analytical Inc liability is limited to the cost of sample analysis.The test results contained within this report meet the requirements of NELAC unless otherwise noted.Samples received in good condition unless otherwise noted. Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San Leandro CA NVLAP Lab Code 101048-3, MA AA000201, WA C2007

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091009777

EMSL

Chain of Custody Form

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091009777

Project Manager: ALAIN GRISSETTE

Project Name: 134 MAPLE **Project #:** TBD

Project Location: REDWOOD CITY **Project State (US):** CA

TURNAROUND TIME

☐ 3 Hours	☐ 6 Hours	☐ 12 Hours	☒ 24 Hours	☐ 48 Hours	☐ 72 Hours	☐ 4 Days	☐ 5 Days	☐ 6-10 Days

SAMPLE MATRIX

☐ Air	☒ Bulk	☐ Soil	☐ Wipe	☐ Micro-Vac	☐ Drinking Water	☐ Wastewater	☐ Chips	☐ Other

ASBESTOS ANALYSIS

PCM - Air
- ☐ NIOSH 7400 (A) Issue 2: August 1994
- ☐ OSHA w/TWA

TEM AIR
- ☐ AHERA 40 CFR, Part 763 Subpart E
- ☐ NIOSH 7402 Issue 2
- ☐ EPA Level II

PLM - Bulk
- ☑ EPA 600/R-93/116
- ☐ NY Stratified Point Count
- ☐ California Air Resource Board (CARB) 435
- ☐ NIOSH 9002
- ☐ PLM NOB (Gravimetric) NYS 198.1
- ☐ EPA Point Count (400 Points)
- ☐ EPA Point Count (1,000 Points)
- ☐ Standard Addition Point Count

SOILS
- ☐ EPA Protocol Qualitative
- ☐ EPA Protocol Quantitative
- ☐ EMSL MSD 9000 Method fibers/gram
- ☐ Superfund EPA 540-R097-028 (dust generation)

TEM BULK
- ☐ Drop Mount (Qualitative)
- ☐ Chatfield SOP-1988-02
- ☐ TEM NOB (Gravimetric) NY 198.4

TEM MICROVAC
- ☐ ASTM D 5755-95 (Quantitative)

TEM WIPE
- ☐ ASTM D-6480-99
- ☐ Qualitative☐

TEM WATER
- ☐ EPA 100.1
- ☐ EPA 100.2
- ☐ NYS 198.2
- ☐ Other:_____

LEAD ANALYSIS

Flame Atomic Absorption
- ☐ Wipe, SW846-7420☐ASTM ☐ non ASTM
- ☐ Soil, SW846-7420
- ☐ Air, NIOSH 7082
- ☐ Chips, SW846-7420 or AOAC 5.009 (974.02)
- ☐ Wastewater, SW 846-7420
- ☐ TCLP LEAD SW846-1311/7420

Graphite Furnace Atomic Absorption
- ☐ Air, NIOSH 7105
- ☐ Wastewater, SW846-7421
- ☐ Soil, SW846-7421
- ☐ Drinking Water, EPA 239.2

ICP – Inductively Coupled Plasma
- ☐Wipe, SW846-6010☐ASTM ☐ non ASTM
- ☐ Soil, SW846-6010
- ☐ Air, NIOSH 7300

MATERIALS ANALYSIS

- ☐ Full Particle Identification
- ☐ Optical Particle Identification
- ☐ Dust Mites and Insect Fragments
- ☐ Particle Size & Distribution
- ☐ Product Comparison
- ☐ Paint Characterization
- ☐ Failure Analysis
- ☐ Corrosion Analysis
- ☐ Glove Box Containment Study
- ☐ Petrographic Examination of Concrete
- ☐ Portland Cement in Workplace Atmospheres (OSHA ID-143)
- ☐ Man Made Vitrous Fibers – MMVF's
- ☐ Synthetic Fiber Identification
- ☐ Other:_____

MICROBIAL ANALYSIS

Air Samples
- ☐Mold & Fungi by Air O Cell
- ☐Mold & Fungi by Agar Plate count & id
- ☐Bacterial Count and Gram Stain
- ☐Bacterial Count and Identification

Water Samples
- ☐ Total Coliforms, Fecal Coliforms
- ☐ Escherichia Coli, Fecal Streptococcus
- ☐ Legionella
- ☐ Salmonella
- ☐ Giardia and Cryptosporidium

Wipe and Bulk Samples
- ☐ Mold & Fungi – Direct Examination
- ☐ Mold & Fungi – (Culture follow up to direct examination if necessary)
- ☐ Mold & Fungi – Culture (Count & ID)
- ☐ Mold & Fungi – Culture (Count only)
- ☐ Bacterial Count & Gram Stain
- ☐ Bacterial Count & Identification (3 most prominent types)
- ☐ Other:_____

IAQ ANALYSIS

- ☐ Nuisance Dust (NIOSH 0500 & 0600)
- ☐ Airborne Dust (PM10, TSP)
- ☐ Silica Analysis by XRD ☐NIOSH 7500
- ☐ HVAC Efficiency
- ☐ Carbon Black
- ☐ Airborne Oil Mist
- ☐ Other:_____

Additional Information/Comments/Instructions: PLEASE COMPOSITE ANY POSITIVE SC W/ DW

Email Results to: AGRISSETTE@AEICONSULTANTS.COM **TOTAL SAMPLE #** 10

Relinquished:		**Date:**	11/5/10	**Time:** 3:30 PM
Received:		**Date:**	11/5/10	**Time:** 3:30 PM PDT
Relinquished:		**Date:**		**Time:**
Received:		**Date:**		**Time:**

Please Submit Samples to: EMSL Analytical, Inc. - 107 Haddon Avenue - Westmont, NJ 08108 **800-220-3675**

DRAFT

091009777

EMSL

Chain of Custody Form

☒ AEI CONSULTANTS
2500 CAMINO DIABLO
SUITE 200
WALNUT CREEK, CA 94597
TEL. 925.283.6000
FAX. 925.283.6121

☐ AEI (SAN JOSE)
3880 S. BASCOM AVENUE
SUITE112
SAN JOSE, CA 95124
TEL. 408.559.7600
FAX. 408.559.7601

☐ AEI (LOS ANGELES)
2447 PACIFIC COAST HWY
SUITE 101
HERMOSA BEACH, CA 90254
TEL. 310.798.4255
FAX. 310.798.2841

☐ AEI (CHICAGO)
1140 LAKE STREET
SUITE 501
OAK PARK, IL 60301
TEL. 708.386.6140
FAX. 708.386.6135

☐ AEI (KANSAS CITY)
10502 N. AMBASSADOR DR.
SUITE 260
KANSAS CITY, MO 64153
TEL: 816.801.7020
FAX: 816.801.7028

☐ AEI (MIAMI)
200 SOUTH PARK ROAD
SUITE 400
HOLLYWOOD, FL 33021
TEL. 954.966.1746
Fax.954.966.1747

☐ AEI (ATLANTA)
TWO RAVINIA DRIVE
SUITE 500
ATLANTA, GA 30346
TEL. 678.855.7142
FAX. 404.963.0834

☐ AEI (DENVER)
165 SOUTH UNION BLVD.
SUITE 270
LAKEWOOD, CO 80228
TEL. 720.238.4582
FAX. 303.524.3401

☐ AEI (DALLAS)
2501OAKLAWN AVENUE
SUITE 420
DALLAS, TX 75219
TEL. 214.393.5810
FAX 214.393.5815

☐ AEI (NEW YORK)
30 MONTGOMERY STREET
SUITE 1450
JERSEY CITY, NJ 07302
TEL.201.332.1844
FAX.201.332-1880

☐ AEI (ARIZONA)
1255 W. BASELINE RD
SUITE 212
MESA, AZ 85202
TEL. 480.820.2545
Fax. 480.820.2598

134 MAPLE

091009777

	SAMPLE NUMBER	SAMPLE DESCRIPTION/LOCATION	VOLUME Air (L)	Area (Inches sq.)
1	B-101	DWS (DRYWALL SYSTEM)	FRONT ROOM -	FRONT WALL
2	B-102	DWS	"	- SIDE WALL
3	B-103	DWS	"	- WALL BEHIND COUNTER
4	B-104	TAN VINYL FLOOR SHEET	"	- BATH & HALLWAY
5	B-105	DWS	REAR STORAGE -	CEILING
6	B-106	DWS	"	- WALL NEXT TO STAIRS
7	B-107	ROOF CORE	ROOF -	FRONT
8	B-108	ROOF CORE	"	- REAR
9	B-109	ROOF FELT	"	- PARAPET
10	B-110	BLACK/GREY ROOF MASTIC	"	- PENETRATIONS

DRAFT

Relinquished:		**Date:**	11/5/10	**Time:**	3:00 PM
Received:		**Date:**		**Time:**	
Relinquished:		**Date:**		**Time:**	
Received:		**Date:**	11/5/2010	**Time:**	3:30 PM

Please Submit Samples to: EMSL Analytical, Inc. - 107 Haddon Avenue - Westmont, NJ 08108 800-220-3675

091009779

EMSL

Chain of Custody Form

☒ AEI CONSULTANTS
2500 CAMINO DIABLO
SUITE 200
WALNUT CREEK, CA 94597
TEL. 925.283.6000
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☐ AEI (SAN JOSE)
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HERMOSA BEACH, CA 90254
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☐ AEI (ARIZONA)
1255 W. BASELINE RD
SUITE 212
MESA, AZ 85202
TEL. 480.820.2545
Fax. 480.820.2598

Project Manager: ALAIN GRISSETTE $910$9779

Project Name: 1180 MAIN **Project #:** TBD

Project Location: REDWOOD CITY **Project State (US):** CA

TURNAROUND TIME

☐ 3 Hours	☐ 6 Hours	☐ 12 Hours	☒ 24 Hours	☐ 48 Hours	☐ 72 Hours	☐ 4 Days	☐ 5 Days	☐ 6-10 Days

SAMPLE MATRIX

☐ Air	☒ Bulk	☐ Soil	☐ Wipe	☐ Micro-Vac	☐ Drinking Water	☐ Wastewater	☐ Chips	☐ Other

ASBESTOS ANALYSIS

PCM - Air
- ☐ NIOSH 7400 (A) Issue 2: August 1994
- ☐ OSHA w/TWA

TEM AIR
- ☐ AHERA 40 CFR, Part 763 Subpart E
- ☐ NIOSH 7402 Issue 2
- ☐ EPA Level II

PLM - Bulk
- ☒ EPA 600/R-93/116
- ☐ NY Stratified Point Count
- ☐ California Air Resource Board (CARB) 435
- ☐ NIOSH 9002
- ☐ PLM NOB (Gravimetric) NYS 198.1
- ☐ EPA Point Count (400 Points)
- ☐ EPA Point Count (1,000 Points)
- ☐ Standard Addition Point Count

SOILS
- ☐ EPA Protocol Qualitative
- ☐ EPA Protocol Quantitative
- ☐ EMSL MSD 9000 Method fibers/gram
- ☐ Superfund EPA 540-R097-028 (dust generation)

TEM BULK
- ☐ Drop Mount (Qualitative)
- ☐ Chatfield SOP-1988-02
- ☐ TEM NOB (Gravimetric) NY 198.4

TEM MICROVAC
- ☐ ASTM D 5755-95 (Quantitative)

TEM WIPE
- ☐ ASTM D-6480-99
- ☐ Qualitative☐

TEM WATER
- ☐ EPA 100.1
- ☐ EPA 100.2
- ☐ NYS 198.2
- ☐ Other:_____

LEAD ANALYSIS

Flame Atomic Absorption
- ☐ Wipe, SW846-7420 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-7420
- ☐ Air, NIOSH 7082
- ☐ Chips, SW846-7420 or AOAC 5.009 (974.02)
- ☐ Wastewater, SW 846-7420
- ☐ TCLP LEAD SW846-1311/7420

Graphite Furnace Atomic Absorption
- ☐ Air, NIOSH 7105
- ☐ Wastewater, SW846-7421
- ☐ Soil, SW846-7421
- ☐ Drinking Water, EPA 239.2

ICP – Inductively Coupled Plasma
- ☐ Wipe, SW846-6010 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-6010
- ☐ Air, NIOSH 7300

MATERIALS ANALYSIS

- ☐ Full Particle Identification
- ☐ Optical Particle Identification
- ☐ Dust Mites and Insect Fragments
- ☐ Particle Size & Distribution
- ☐ Product Comparison
- ☐ Paint Characterization
- ☐ Failure Analysis
- ☐ Corrosion Analysis
- ☐ Glove Box Containment Study
- ☐ Petrographic Examination of Concrete
- ☐ Portland Cement in Workplace Atmospheres (OSHA ID-143)
- ☐ Man Made Vitrous Fibers – MMVF's
- ☐ Synthetic Fiber Identification
- ☐ Other:_____

MICROBIAL ANALYSIS

Air Samples
- ☐ Mold & Fungi by Air O Cell
- ☐ Mold & Fungi by Agar Plate count & id
- ☐ Bacterial Count and Gram Stain
- ☐ Bacterial Count and Identification

Water Samples
- ☐ Total Coliforms, Fecal Coliforms
- ☐ Escherichia Coli, Fecal Streptococcus
- ☐ Legionella
- ☐ Salmonella
- ☐ Giardia and Cryptosporidium

Wipe and Bulk Samples
- ☐ Mold & Fungi – Direct Examination
- ☐ Mold & Fungi – (Culture follow up to direct examination if necessary)
- ☐ Mold & Fungi – Culture (Count & ID)
- ☐ Mold & Fungi – Culture (Count only)
- ☐ Bacterial Count & Gram Stain
- ☐ Bacterial Count & Identification (3 most prominent types)
- ☐ Other:_____

IAQ ANALYSIS

- ☐ Nuisance Dust (NIOSH 0500 & 0600)
- ☐ Airborne Dust (PM10, TSP)
- ☐ Silica Analysis by XRD ☐ NIOSH 7500
- ☐ HVAC Efficiency
- ☐ Carbon Black
- ☐ Airborne Oil Mist
- ☐ Other:_____

Additional Information/Comments/Instructions: ☒ PLEASE COMPOSITE POSITIVE S/C w/ DW

Email Results to: AGRISSETTE@AEICONSULTANTS.COM **TOTAL SAMPLE #** 9

		Date:	Time:
Relinquished:		11/5/10	3:00 PM
Received:		11/5/10	3:30 PM
Relinquished:			
Received:			

Please Submit Samples to: EMSL Analytical, Inc. - 107 Haddon Avenue - Westmont, NJ 08108 **800-220-3675**

DRAFT

091009779

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Chain of Custody Form

☒ AEI Consultants
2500 Camino Diablo
Suite 200
Walnut Creek, CA 94597
Tel. 925.283.6000
Fax. 925.283.6121

☐ AEI (San Jose)
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☐ AEI (Arizona)
1255 W. Baseline Rd
Suite 212
Mesa, AZ 85202
Tel. 480.820.2545
Fax. 480.820.2598

1180 MAIN

091009779

	SAMPLE NUMBER	SAMPLE DESCRIPTION/LOCATION	VOLUME Air (L)	Area (Inches sq.)
1	A-101	2'X4' Acoustic Ceiling Tile	REAR STORAGE	
2	A-102	DWS (Drywall System)	"	WALL AGAINST BRICKS
3	A-103	DWS	MAIN STORAGE	
4	A-104	GREY BASE COVE & MASTIC	REAR STORAGE	
5	A-105	DWS	OFFICE	
6	A-106	GREY ROOF MASTIC	ROOF -	PENETRATIONS & EDGES
7	A-107	ROOF CORE	ROOF -	FRONT
8	A-108	ROOF CORE	ROOF -	REAR
9	A-109	WINDOW PUTTY	SIDE EXT.	WINDOWS

DRAFT

Relinquished:		Date:	11/5/10	Time:	5:00pm
Received:		Date:		Time:	
Relinquished:		Date:		Time:	
Received:		Date:	11/5/2010	Time:	3:30pm

Please Submit Samples to: EMSL Analytical, Inc. - 107 Haddon Avenue - Westmont, NJ 08108 800-220-3675

APPENDIX B

DRAFT

LEAD PAINT INSPECTION REPORT

REPORT NUMBER: 11/05/10 16:03

INSPECTION FOR: Lathrop Parc Redwood City, LLC

PERFORMED AT: **134 Maple Street, Redwood City**

INSPECTION DATE: 11/05/10

INSTRUMENT TYPE: R M D
MODEL LPA-1
XRF TYPE ANALYZER
Serial Number: 2683

ACTION LEVEL: 1.0 mg/cm**2

OPERATOR LICENSE: CLIA #18206



SIGNED _____ DATE November 10, 2010

DRAFT

SUMMARY REPORT OF LEAD PAINT INSPECTION FOR: **134 Maple Street, Redwood City**

Inspection Date: 11/05/10
Report Date: 11/9/2010
Abatement Level: 1.0
Report No. 11/05/10 16:03
Total Readings: 45
Actionable: **0**
Job Started: 11/05/10 16:03
Job Finished: 11/05/10 16:32

Read No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm²)	Mode

---- End of Readings ----

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION FOR: **134 Maple Street, Redwood City**

Inspection Date: 11/05/10
Report Date: 11/9/2010
Abatement Level: 1.0
Report No. 11/05/10 16:03
Total Readings: 45
Job Started: 11/05/10 16:03
Job Finished: 11/05/10 16:32

Read No.	Rm	Room Name	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm²)	Mode
1		CALIBRATION								0.9	TC
2	001	Front Room	A	Wall	Lft		I	Brick	White	0.0	QM
3	001	Front Room	D	Wall	Ctr		I	Brick	White	0.0	QM
4	001	Front Room	A	Wall	Ctr		I	Brick	White	0.2	QM
5	001	Front Room	A	Wall	Rgt		I	Brick	White	-0.3	QM
6	001	Front Room	B	Wall	Rgt		I	Dry wall	White	-0.1	QM
7	001	Front Room	B	Wall	Lft		I	Dry wall	White	-0.1	QM
8	001	Front Room	C	Wall	Lft		I	Dry wall	White	0.0	QM
9	001	Front Room	C	Wall	Rgt		I	Dry wall	White	-0.4	QM
10	001	Front Room	C	Ceiling	Rgt		I	Dry wall	White	-0.2	QM
11	002	Office	C	Wall	Rgt		I	Dry wall	White	-0.2	QM
12	002	Office	D	Wall	Rgt		I	Dry wall	White	-0.2	QM
13	002	Office	B	Wall	Rgt		I	Dry wall	White	0.0	QM
14	002	Office	B	Door	Rgt	U Rgt	I	Wood	White	-0.4	QM
15	002	Office	B	Door	Rgt	Frame	I	Wood	White	-0.2	QM
16	003	Bathroom	D	Door	Rgt	U Rgt	I	Wood	White	-0.3	QM
17	003	Bathroom	D	Door	Rgt	Frame	I	Wood	White	-0.2	QM
18	003	Bathroom	D	Wall	U Rgt		I	Brick	White	-0.1	QM
19	003	Bathroom	C	Wall	U Rgt		I	Dry wall	White	-0.1	QM
20	003	Bathroom	D	Wall	U Rgt		I	Dry wall	White	0.0	QM
21	001	Front Room	C	Door	Rgt	U Rgt	I	Wood	White	-0.3	QM
22	001	Front Room	C	Door	Rgt	Frame	I	Wood	White	-0.2	QM
23	004	Rear Storag	A	Door	Rgt	Frame	I	Wood	White	0.0	QM
24	004	Rear Storag	A	Door	Rgt	U Rgt	I	Wood	White	-0.3	QM
25	004	Rear Storag	A	Wall	Lft		I	Dry wall	Lt. Blue	0.0	QM
26	004	Rear Storag	D	Door	Rgt	U Rgt	I	Metal	Brown	0.0	QM
27	004	Rear Storag	D	Door	Rgt	Frame	I	Metal	Brown	0.2	QM
28	004	Rear Storag	A	Wall	Ctr		I	Dry wall	Lt. Blue	-0.2	QM
29	004	Rear Storag	A	Wall	Rgt		I	Dry wall	Lt. Blue	-0.1	QM
30	004	Rear Storag	A	Door	Rgt	Frame	I	Wood	White	-0.1	QM
31	004	Rear Storag	A	Door	Rgt	U Rgt	I	Wood	White	-0.3	QM
32	004	Rear Storag	A	Stairs	Ctr	Railing cap	I	Wood	Lt. Blue	-0.2	QM
33	004	Rear Storag	A	Stairs	Ctr	Column	I	Wood	Lt. Blue	0.0	QM
34	004	Rear Storag	A	Stairs	Ctr	Baseboard	I	Wood	Lt. Blue	-0.1	QM
35	004	Rear Storag upstairs	A	Railing	Ctr	Frame	I	Wood	Lt. Blue	0.0	QM
36	001	Number Only	D	Wall	Ctr		I	Brick	Yellow	0.1	QM
37	001	Number Only	D	Wall	Rgt		I	Brick	Yellow	0.2	QM
38	001	Number Only	D	Garage Door	Rgt		I	Metal	red	0.1	QM
39	001	Number Only	C	Wall	Lft		I	Brick	Yellow	0.0	QM
40	001	Number Only	C	Wall	Rgt		I	Brick	Yellow	0.0	QM
41	001	Number Only	C	Down Spout	Rgt		I	Metal	Yellow	0.1	QM
42	001	Number Only	C	Down Spout	Lft		I	Metal	Yellow	-0.1	QM
43	001	Number Only	D	Wall	Lft		I	Brick	Yellow	-0.2	QM
44	001	Number Only	A	Wall	Lft		I	Brick	Yellow	-0.3	QM
45		CALIBRATION								0.9	TC

---- End of Readings ----

DRAFT

LEAD PAINT INSPECTION REPORT

REPORT NUMBER: 11/05/10 15:07

INSPECTION FOR: Lathrop Parc Redwood City, LLC

PERFORMED AT: **1180 Main St, Redwood City, CA**

INSPECTION DATE: 11/05/10

INSTRUMENT TYPE: R M D
MODEL LPA-1
XRF TYPE ANALYZER
Serial Number: 2683

ACTION LEVEL: 1.0 mg/cm**2

OPERATOR LICENSE: CLIA #18206



SIGNED _____ DATE November 10, 2010

DRAFT

SUMMARY REPORT OF LEAD PAINT INSPECTION FOR: **1180 Main St, Redwood City**

Inspection Date: 11/05/10
Report Date: 11/9/2010
Abatement Level: 1.0
Report No. 11/05/10 15:07
Total Readings: **52**
Actionable: **0**
Job Started: 11/05/10 15:07
Job Finished: 11/05/10 15:38

Read No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm²)	Mode

---- End of Readings ----

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION FOR: **1180 Main St, Redwood city**

Inspection Date: 11/05/10
Report Date: 11/9/2010
Abatement Level: 1.0
Report No. 11/05/10 15:07
Total Readings: 52
Job Started: 11/05/10 15:07
Job Finished: 11/05/10 15:38

Read No.	Rm	Room Name	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm²)	Mode
1		CALIBRATION								0.6	TC
2	001	Main Garage	B	Wall	U	Lft	I	Dry wall	White	-0.1	QM
3	001	Main Garage	B	Wall	L	Lft	I	Dry wall	Grey	0.1	QM
4	001	Main Garage	B	Door		Lft U Rgt	I	Wood	White	-0.3	QM
5	001	Main Garage	B	Door		Lft Lft casing	I	Wood	White	0.1	QM
6	001	Main Garage	B	Door		Lft Rgt jamb	I	Wood	White	-0.1	QM
7	001	Main Garage	A	Wall		Rgt	I	Brick	White	0.0	QM
8	001	Main Garage	A	Wall		Ctr	I	Brick	White	0.3	QM
9	001	Main Garage	A	Wall		Lft	I	Brick	White	0.0	QM
10	001	Main Garage	A	Garage Door		Lft	I	Wood	White	0.1	QM
11	001	Main Garage	A	Garage Door		Ctr	I	Wood	White	0.0	QM
12	001	Main Garage	A	Garage Door		Rgt	I	Wood	White	0.1	QM
13	001	Main Garage	D	Wall		Rgt	I	Brick	White	0.0	QM
14	001	Main Garage	C	Wall		Rgt	I	Brick	White	0.0	QM
15	001	Main Garage	C	Ceiling		Rgt	I	Wood	White	0.0	QM
16	001	Main Garage	C	Ceiling		Rgt Beam	I	Wood	White	-0.2	QM
17	001	Main Garage	C	Wall		Ctr	I	Brick	White	0.2	QM
18	002	Rear Storag	C	Wall		Ctr	I	Brick	White	0.1	QM
19	002	Rear Storag	A	Wall		Ctr	I	Dry wall	White	0.1	QM
20	002	Rear Storag	D	Wall		Ctr	I	Dry wall	White	-0.2	QM
21	002	Rear Storag	B	Wall		Ctr	I	Dry wall	White	-0.1	QM
22	002	Rear Storag	B	Door		Ctr U Rgt	I	Wood	White	-0.2	QM
23	002	Rear Storag	B	Door		Ctr Rgt casing	I	Wood	White	-0.2	QM
24	002	Rear Storag	A	Door		Ctr U Rgt	I	Wood	White	-0.6	QM
25	003	Bathroom	B	Wall		Ctr	I	Brick	White	-0.1	QM
26	003	Bathroom	A	Wall		Ctr	I	Dry wall	White	-0.3	QM
27	003	Bathroom	A	Cabinet		Ctr	I	Wood	Grey	-0.2	QM
28	003	Bathroom	A	Baseboard		Ctr	I	Wood	Grey	0.0	QM
29	001	Main Garage	A	Floor		Ctr	F	Cement	Grey	-0.3	QM
30	004	Office	D	Wall		Ctr	I	Dry wall	Grey	-0.1	QM
31	004	Office	A	Wall		Ctr	I	Brick	Grey	0.0	QM
32	004	Office	B	Wall		Ctr	I	Brick	Grey	0.1	QM
33	004	Office	C	Wall		Ctr	I	Dry wall	Grey	0.0	QM
34	004	Office	C	Ceiling		Ctr	I	Dry wall	White	-0.1	QM
35	004	Office	A	Door		Ctr U Rgt	I	Wood	Blue	-0.3	QM
36	004	Office	A	Door		Ctr Rgt casing	I	Wood	White	-0.2	QM
37	001	Number Only to office	A	Door		Ctr Rgt casing	I	Wood	Lt. Blue	-0.2	QM
38	001	Number Only	A	Door		Ctr Rgt casing	I	Wood	Lt. Blue	-0.2	QM
39	001	Number Only	A	Door		Ctr Header	I	Wood	Lt. Blue	0.1	QM
40	001	Number Only	A	Wall		Lft	I	Brick	Lt. Blue	0.0	QM
41	001	Number Only electrical panel	A	Door		Lft U Rgt	I	Wood	Lt. Blue	-0.2	QM
42	001	Number Only	A	Window		Lft Sill	I	Cement	Lt. Blue	0.0	QM
43	001	Number Only	A	Garage Door		Lft	I	Wood	Blue	-0.1	QM
44	001	Number Only	A	Garage Door		Lft Frame	I	Wood	Blue	-0.1	QM
45	001	Number Only	A	Overhang		Lft	I	Wood	Lt. Blue	0.1	QM
46	001	Number Only	A	Garage Door		Ctr	I	Wood	Blue	0.0	QM
47	001	Number Only	A	Garage Door		Rgt	I	Wood	Blue	0.0	QM
48	001	Number Only	A	Wall		Rgt	I	Brick	Lt. Blue	0.0	QM
49	001	Number Only	D	Wall		Lft	I	Brick	Lt. Blue	-0.1	QM
50	001	Number Only	D	Window		Lft Sill	I	Cement	Blue	0.0	QM
51	001	Number Only	D	Window		Lft Frame	I	Metal	Blue	-0.3	QM
52	001	Number Only	A	Rain Gutter		Lft	I	Metal	Blue	0.0	QM

---- End of Readings ----

DRAFT

P.W. STEPHENS ENVIRONMENTAL, INC.
ASBESTOS · LEAD · MOLD REMEDIATION
CORPORATE OFFICE
15201 Pipeline Ln., Ste. B • Huntington Beach, CA 92649
(800) 750-7733 • www.pwsei.com • Fed. Tax I.D. #26-2908551

INVOICE

DATE: 12/30/2010 A

JOB NAME:
- LATHROP PARK
- 134 MAPLE STREET
- REDWOOD CITY, CA 94063-

INVOICE #: FR-022425

JOB #: FR-029983

SALESMAN: AK TYPE: A

CUSTOMER:
- WL BUTLER CONSTRUCTION
- 135 FRANKLIN STREET
- REDWOOD CITY, CA 94063-
- ATTN: KEVIN FLAHERTY

CLAIM #: _____

Job Scope: REMOVE AND DISPOSE OF 200 SQ FT OF TAN SHEET VINYL FLOORING. SCRAPE MASTIC FROM CONCRETE.

DRAFT

ORIGINAL CONTRACT AMOUNT:	$1,280.00
	$0.00
TOTAL:	$1,280.00
DOWN PAYMENT:	$0.00
BALANCE DUE:	$1,280.00

Interest at the rate of 1½% per month will be charged on all past due accounts. In the event of failure to pay any of the amount due on this Invoice, all collection costs and/or attorney's fees in the collection of any such amount will be paid by the customer.

P.W. STEPHENS ENVIRONMENTAL, INC. **JOB NAME:** LATHROP PARK

INVOICE #	DATE	TOTAL $	BALANCE DUE
FR-022425	12/30/2010 A	$1,280.00	$1,280.00

PLEASE PAY THIS AMOUNT $ 1,280.00

JOB #
FR-029983

MasterCard VISA

PAYMENT OPTIONS

☐ VISA Card # _____ Exp. Date ___/___

Name as shown on credit card _____

☐ MasterCard Authorized Signature _____

DETACH AND RETURN THIS STUB WITH YOUR REMITTANCE

MAIL PAYMENT TO:
P.W. STEPHENS ENVIRONMENTAL, INC.
15201 PIPELINE LANE, STE. B
HUNTINGTON BEACH, CA 92649

CERTIFICATE *of* COMPLETION

This is to certify that the Asbestos abatement project has been completed at:

134 MAPLE STREET, REDWOOD CITY, CA 94063-

Scope of Work

REMOVE AND DISPOSE OF 200 SQ FT OF TAN SHEET VINYL FLOORING. SCRAPE MASTIC FROM CONCRETE. ENCAPSULATE, FOG MIST AND MONITOR AIR.

DRAFT

Date: **December 30, 2010**

Mickie C. Lazala

Company Representative

P.W. STEPHENS ENVIRONMENTAL, INC. License No: 922790

OSHA No: 966

Job Name: **LATHROP PARK**

Job Number: **FR-029983**

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
CAD981400513	1	800-780-7733	007899187 JJK

GENERATOR

5. Generator's Name and Mailing Address
LATHROP PARK
134 MAPLE STREET
REDWOOD CITY, CA 94063
Generator's Phone: 650-562-5145

Generator's Site Address (if different than mailing address)
FR 25523

6. Transporter 1 Company Name
P. W. STEPHENS ENVIRONMENTAL, INC.
U.S. EPA ID Number
CAR000056515

7. Transporter 2 Company Name
UNIWASTE 750
U.S. EPA ID Number
CAL000317320

8. Designated Facility Name and Site Address
ALTAMONT LAND FILL
10840 ALTAMONT PASS ROAD
LIVERMORE, CA 94550
Facility's Phone: 925-449-9539
U.S. EPA ID Number
CAD981382732

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. RQ ASBESTOS, D, NA 2212, PG III	6	DM	1	Y	151
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
P.W. STEPHENS, INC
3047 CLIPPER COURT
FREMONT, CA 94539
(925) 791-7733
EPA #:
EPA REGION IX
WEAR APPROPRIATE PROTECTIVE CLOTHING AND RESPIRATORS
24 HR EMERGENCY NO. (OAI) SCHOOL
EMT ASSESSMENT
RULE 11-2 ASBESTOS NOT.
90 ELLIS STREET
SAN FRANCISCO, CA 94102
415 554-6000

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Aaron Wilder — Signature: agent for Wilder — Month: 12 — Day: 22 — Year: 10

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Anderson Jr — Signature — Month: 12 — Day: 22 — Year: 10

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name — Signature — Month — Day — Year

DRAFT

December 23, 2010

Lathrop PARC Redwood City, LLC
101 Seminary Drive
Menlo Park, CA 94025

Subject: Post-Abatement Clearance Survey
134 Maple Street
Redwood City, California 94063

This letter summarizes Post-Abatement Clearance Survey performed by AEI Consultants (AEI) at the above referenced property. The survey was performed on December 22, 2010, by Alain Grissette of AEI. Mr. Grissette is a Certified Asbestos Consultant (#07-4300). This Post-Abatement Clearance Survey was performed in response to a request by the Client for visual and air sampling verification of the successful abatement of asbestos-containing vinyl floor sheet from the subject property.

The subject property at 134 Maple Street is located on the east side of Maple Street in a mixed residential and commercial area of Redwood City, California. The property is improved with a concrete warehouse/retail facility that was vacant at the time of this investigation. An initial survey conducted by AEI on November 11, 2010 revealed the presence of asbestos-containing vinyl floor sheet. Abatement was conducted on December 22, 2010 by PW Stephens, a California DOSH registered asbestos abatement contractor.

VISUAL CLEARANCE

A visual assessment of the property was conducted by Mr. Grissette of AEI to ensure the removal of all vinyl floor sheet from the containment area (bathroom and hallway) and that the containment area was left free of debris and dust. Containment was installed around the areas to be abated, with warning signs posted outside the work area.

The following is a summary of AEI's observations:

- All vinyl floor sheet had been removed from the bathroom and hallway, with no dust or debris observed.

AIR SAMPLING CLEARANCE

Clearance of the abatement of the vinyl floor sheeting was conducted by PCM air samples to ensure safe work practices were utilized during abatement. PCM air samples were analyzed using NIOSH 7400 methodology in accordance with the Environmental

Protection Agency's (EPA) regulations. PCM analysis determines the presence or absence of any type of fibers on the sample cassette filter. The clearance level for using the PCM method is 0.01 fibers per cubic centimeter. If any samples collected contain fiber concentrations above the PCM clearance level, the sample will be reanalyzed using Transmission Electron Microscopy (TEM) analysis according to AHERA methodology to determine the actual concentration of asbestos fibers present on the sample cassette filter.

All samples collected were transported under Chain of Custody documentation (Appendix A) to EMSL Analytical Inc. (EMSL) in San Leandro, California for analysis. EMSL is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP No.101208-0) and the California Environmental Laboratory Accreditation Program (CA/ELAP No.1620). Copies of the analytical results provided by EMSL are attached.

AEI collected a total of two (2) PCM air samples from within the containment areas and submitted for analysis by NIOSH 7400 methodology. In addition, two (2) PCM samples were submitted for quality assurance purposes (one field blank sample and one sealed lab sample); these samples are only to be analyzed if the initial containment samples exceeded clearance levels.

The samples, descriptions and results are listed in the following table:

PCM Air Clearance Sample Results

Sample #	Sample Locations	Analytical Results (f/cc^2)
PA-1	Hallway	0.0025
PA-2	Bathroom	0.0031
PA-Field	Field Blank	*Not Analyzed*
PA-Lab	Lab Blank	*Not Analyzed*

Results given in Fibers per cubic centimeter (F/cc^2)
Acceptable limit = 0.01 f/cc^2

Based on the results of the air samples collected, airborne fibers have not been released during the abatement activities onsite.

The asbestos abatement has passed both visual and air sampling clearance requirements.

The recommendations and conclusions presented as a result of this study apply strictly to the environmental regulations and property conditions existing at the time the study was performed. The sample analytical results are only valid for the time and place of collection and AEI does not warrant that these results will be repeatable or are representative of past or future conditions.

Please call me at (925) 746-6000, x151 if you have any questions.

DRAFT

Sincerely,



Alain Grissette
Project Manager, CAC #07-4300

Attached: Laboratory Analytical Documentation

DRAFT

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone: (510) 895-3675 Fax: (510) 895-3680 Email: milpitaslab@emsl.com

Attn: **Alain Grissette**
AEI Consultants
2500 Camino Diablo #100
Walnut Creek, CA 94597

Fax: (925) 746-6095 Phone: (925) 746-6000
Project: **Maple P.A. - Redwood City**

Customer ID: AEIC62
Customer PO:
Received: 12/22/10 4:45 PM
EMSL Order: 091011086

EMSL Proj:
Analysis Date: 12/22/2010

Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method, Revision 3, Issue 2, 8/15/94

DRAFT

Sample	Location	Sample Date	Volume (liters)	Fibers	Fields	LOD (fib/cc)	Fibers/ mm²	Fibers/ cc	Notes
PA-101 (clearance) *091011086-0001*	Hallway	12/22/2010	1200.00	6	100	0.0023	7.64	0.0025	
PA-102 (clearance) *091011086-0002*	Bathroom	12/22/2010	1200.00	7.5	100	0.0023	9.55	0.0031	
PA - Field *091011086-0003*	Field blank	12/22/2010		<5.5	100		<7.01		Field Blank
PA - Lab *091011086-0004*	Lab blank	12/22/2010		<5.5	100		<7.01		Lab Blank

The results reported have been blank corrected as applicable.

Initial report from 12/22/2010 19:12:48

Analyst(s)
Todd Patrick (4)

Baojia Ke, Laboratory Manager
or other approved signatory

Limit of detection is 7 fibers/mm². Interlaboratory Sr values: 5-20 fibers = 0.35, 21-50 fibers = 0.30, 51-100 fibers = 0.20. The laboratory is not responsible for data reported in fibers/cc, which is dependent on volume collected by non-laboratory personnel. Results have been blank corrected as applicable. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears not responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San Leandro CA MA AA000201

THIS IS THE LAST PAGE OF THE REPORT.

091011086

091011086

EMSL – San Leandro ◆ 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

(888) 455-3675 ◆ Phone (510) 895-3675 ◆ Fax (510) 895-3680 ◆ sanleandrolab@emsl.com

EMSL Rep:		*Third Party Billing*	**requires written authorization from third party*
Company:	AEI CONSULTANTS	**EMSL-Bill to:**	
Contact:	ALAIN GRISSETTE	**Contact:**	
Address:	2500 CAMINO DIABLO #100	**Address:**	
City & State:	WALNUT CREEK, CA **Zip** 94597	**City & State:**	**Zip**
Phone:	925-746-6000	**Fax:**	925-944-2895
☒ **Email Results**	AGRISSETTE@AEICONSULTANTS.COM	☐ **Fax results**	
Project Name or Number:	MAPLE P.A. - REDWOOD CITY	**Purchase Order Number:**	

TURNAROUND TIME

☒ 3 Hours ☐ 6 Hours ☐ 24 Hours ☐ 48 Hours ☐ 72 Hours ☐ 5 Days ☐ 10 Days

SAMPLE MATRIX

☒ Air ☐ Bulk ☐ Soil ☐ Wipe ☐ Micro-Vac ☐ Drinking Water ☐ Wastewater ☐ Chips ☐ Other

ASBESTOS ANALYSIS

PCM - Air
- ☒ NIOSH 7400 (A) Issue 2: August 1994
- ☐ OSHA w/ Time Weighted Average

TEM AIR
- ☐ AHERA 40 CFR, Part 763 Subpart E
- ☐ NIOSH 7402 Issue 2
- ☐ EPA Level II

PLM - Bulk
- ☐ EPA 600/R-93/116
- ☐ + Add Gravimetric Reduction (EPA NOB)

PLM CARB 435 Level: ☐ A (0.25%) ☐ B (0.1%)
- ☐ NIOSH 9002
- ☐ EPA Point Count (400 Points)
- ☐ + Add Gravimetric Reduction (EPA NOB)
- ☐ EPA Point Count (1,000 Points)
- ☐ + Add Gravimetric Reduction (EPA NOB)
- ☐ Standard Addition Point Count

SOILS

PLM CARB 435 Level: ☐ A (0.25%) ☐ B (0.1%)
TEM CARB 435 Level: ☐ B (0.1%) ☐ C (0.01%) ☐ D (0.001%) ☐ E (0.0005%) ☐ F (0.0001%)
- ☐ EMSL MSD 9000 Method fibers/gram
- ☐ Superfund EPA 540-R097-028 (dust generation)

EPA Protocol ☐ Qualitative ☐ Quantitative

TEM BULK
- ☐ TEM EPA NOB, EPA 600/R-93/116 Section 2.5.5.1 (TEM % by VAE)
- ☐ Chatfield SOP-1988-02
- ☐ TEM EPA 600/R-93/116 Section 2.5.5.2 (TEM % by Mass)

TEM MICROVAC
- ☐ ASTM D 5755 (Quantitative)

TEM WIPE
- ☐ ASTM D-6480 (Quantitative)

TEM WATER
- ☐ EPA 100.2 (≥10 microns)
- ☐ Modified EPA 100.2 (≥ 0.5 microns)

OTHER:

LEAD ANALYSIS

Flame Atomic Absorption
- ☐ Wipe, SW846-7420 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-7420
- ☐ Air, NIOSH 7082
- ☐ Chips, SW846-7420 or AOAC 5.009 (974.02)
- ☐ Wastewater, SW 846-7420
- ☐ TCLP LEAD SW846-1311/7420

Graphite Furnace Atomic Absorption
- ☐ Air, NIOSH 7105
- ☐ Wastewater, SW846-7421
- ☐ Soil, SW846-7421
- ☐ Drinking Water, EPA 239.2

ICP – Inductively Coupled Plasma
- ☐ Wipe, SW846-6010 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-6010
- ☐ Air, NIOSH 7300

MATERIALS ANALYSIS
- ☐ Particle Identification
- ☐ Full Particle Identification
- ☐ Dust Mites and Insect Fragments
- ☐ Particle Size & Distribution
- ☐ Product Comparison
- ☐ Paint Characterization
- ☐ Failure Analysis
- ☐ Corrosion Analysis
- ☐ Glove Box Containment Study
- ☐ Petrographic Examination of Concrete
- ☐ Portland Cement in Workplace Atmospheres (OSHA ID-143)
- ☐ Man Made Vitrous Fibers – MMVF's
- ☐ Synthetic Fiber Identification
- ☐ Other:

MICROBIAL ANALYSIS

Air Samples
- ☐ Mold & Fungi by Air O Cell
- ☐ Mold & Fungi by Agar Plate count & id
- ☐ Bacterial Count and Gram Stain
- ☐ Bacterial Count and Identification

Water Samples
- ☐ Total Coliforms, Fecal Coliforms
- ☐ Escherichia Coli, Fecal Streptococcus
- ☐ Legionella
- ☐ Salmonella
- ☐ Giardia and Cryptosporidium

Wipe and Bulk Samples
- ☐ Mold & Fungi – Direct Examination
- ☐ Mold & Fungi – (Culture follow up to direct examination if necessary)
- ☐ Mold & Fungi – Culture (Count & ID)
- ☐ Mold & Fungi – Culture (Count only)
- ☐ Bacterial Count & Gram Stain
- ☐ Bacterial Count & Identification (3 most prominent types)
- ☐ Other:

IAQ ANALYSIS
- ☐ Nuisance Dust (NIOSH 0500 & 0600)
- ☐ Airborne Dust (PM10, TSP)
- ☐ Silica Analysis by XRD ☐ NIOSH 7500
- ☐ HVAC Efficiency
- ☐ Carbon Black
- ☐ Airborne Oil Mist
- ☐ Other:

Relinquished:		**Date:**	**Time:**
Received:		**Date:** 12/22/10	**Time:** 3:00 pm
Relinquished:		**Date:** 12/22/10	**Time:** 1639 DTO
Received:		**Date:**	**Time:**

DRAFT

091011086

EMSL ANALYTICAL, INC.

EMSL – San Leandro ◆ 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

	SAMPLE NUMBER	SAMPLE DESCRIPTION	LOCATION	VOLUME Air (L) Area (Inches sq.)
1	PA-101	PCM CLEARANCE	HALLWAY	1200 L
2	PA-102	"	BATHROOM	1200 L
3	PA-FIELD	FIELD BLANK	—	—
4	PA-LAB	LAB BLANK	—	—
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

DRAFT

Client Sample # (S)

TOTAL SAMPLE # 4

Relinquished:		Date:	12/22/10	Time:	3:00pm
Received:		Date:	12/22/10	Time:	16:39 DLO
Relinquished:		Date:		Time:	
Received:		Date:		Time:	

101 2nd Street
Suite 300
San Francisco, CA 94105

415.644.3000 PHONE
415.541.9378 FAX

www.TRCsolutions.com

October 11, 2011

Mr. Luis Denziel
LATHROP PARC
101 Seminary Drive
Menlo Park, California 94025

RE: SOIL SAMPLING SERVICES
LATHROP PARC
REDWOOD CITY, CALIFORNIA

DRAFT

Dear Mr. Denziel:

We are pleased to present this letter summarizing the results of soil sampling services performed at the Lathrop Park site located in Redwood City, California.

THE PROJECT
TRC evaluated the current soil conditions at the site for potential reuse or landfill disposal. It is our understanding that approximately 4,500 Cubic Yards of soil will be excavated during construction activities at the site.

SOIL SAMPLING
As requested, to evaluate disposal options for soil generated during construction activities at the site, we collected five four-point composite samples from the subject soil. It is anticipated that approximately 4,500 cubic yards of soil will be excavated for off-site disposal or potential reuse. The soil samples were collected from the in-place soil using a backhoe provided by Lathrop Park LLC. Using our standard sampling protocols the samples were collected at various depths from the exploratory pits located within the foot-print of the planned excavation. The samples were collected in stainless steel liners, the ends covered in Teflon tape, taped, and capped with plastic end caps. The samples were then placed in an ice cooled chest for transport to a state-certified laboratory under chain of custody documentation. All soil sampling equipment were cleaned in a solution of laboratory grade detergent and distilled water before use and between sample points.

LABORATORY ANALYSIS
Based on information obtained from various Phase I Environmental Assessment Report (TRC, July, 2007; Dominion, 2011) the site was historically used for commercial purposes, including a fee mill and grain warehouse, a feed and fuel supply facility, car services and gas station, and in more recent times site-use included an electrical equipment store and contractor equipment storage. The underground storage tanks of the former gas station were removed in 1984 and the site received closure form the San Mateo County of Department of Environmental Health.

Based on the site history, the five composite soil samples were analyzed for total petroleum hydrocarbons in the diesel and motor oil range (EPA Method 8015B), 17 California Assessment Manual (CAM) metals (EPA Test Method 6010/7000); (EPA Test Method 8270), and organochlorine pesticides (EPA Test Method 8081). Additionally, the soil samples were analyzed for volatile organic compounds (VOCs) including gasoline range petroleum hydrocarbons (TPHg) (EPA Test Method 8015); benzene, toluene, ethylbenzene, and xylenes (BTEX) (EPA Test Method 8260).

RESULTS

As shown on the attached laboratory reports, the analyses performed did not detect pesticides, VOC's, including gasoline-range hydrocarbons, BTEX nor MTBE in any of the samples analyzed. The metal concentrations detected appear typical of naturally occurring background concentrations and are below Total Threshold Level Concentrations (TTLC), except for chromium, nickel and lead. Of these only lead in the near-surface sample with a detected concentration of 54 mg/kg appeared anomalous and above the hazardous waste TTLC level of 50 mg/kg.

The detected chromium concentrations in samples collected at a depth of 1.5, 3.0, 4.5 and 6.0 feet, although above the hazardous waste TTLC level of 50 mg/kg, appear consistent with naturally occurring levels for soils known from the area. Nickel concentrations are also elevated, but exceeded the hazardous waste TTLC concentration only in soil sample ABCD-1.5.

As with chromium, the detected nickel levels appear consistent with natural occurring background concentrations. Elevated chromium and nickel concentrations are typical of ultramafic bedrock, naturally occurring and common in the area of the investigation. However, since the concentrations were above the hazardous waste levels, additional solubility tests (STLC) were completed on all soil samples with TTLC exceedances. Results of the solubility tests demonstrated that none of the samples exceeded the hazardous STLC waste levels and therefore the soil can be safely disposed off as non-hazardous waste.

Furthermore, laboratory analysis detected motor oil, diesel and low-level pesticide concentrations in samples collected from the upper 4.5 feet. But only the near-surface sample produced motor oil concentrations that exceeded the ecology risk-based environmental screening level (ESL) established by the State Regional Water Quality Control Board for residential site use and beneficial use of groundwater.

RECOMMENDATIONS

Based on the chemical analytical data, the soil appears non-hazardous and should be acceptable for off-site disposal at any Class II landfill. Furthermore, if selective excavation and disposal is considered, based on the analytical results, soil below a depth of 1.0 ft, did not exceed established ESLs for residential site use, and therefore this soil does not appear to pose a risk to human health or the environment. Consequently, the soil below 1.0 foot can be considered for residential reuse, or alternatively, for appropriate disposal at a Class III landfill.

The near-surface soil (0-1.0 ft), due to the detected above ESL motor oil concentrations is not recommended for re-use and should be disposed off at an appropriate Class II landfill. We recommend submitting this report and the laboratory results to your selected landfill for their review and acceptance of the soil.

LIMITATIONS

This report was prepared for the use of Lathrop Park LLC in evaluating soil quality at the referenced Site at the time of this study. The accuracy and reliability of geo- or hydrochemical studies are a reflection of the number

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and type of samples taken and extent of the analyses conducted, and are thus inherently limited and dependent upon the resources expended. We make no warranty, expressed or implied, except that our services have been performed in accordance with environmental principles generally accepted at this time and location. The chemical and other data presented in this report can change over time and are applicable only to the time this study was performed.

Thank you for choosing us to assist you with this project. If you have any questions, please call and we shall be glad to discuss them with you.

Very truly yours,

Agreement accepted by:

TRC ENGINEERS, INC.

Charles Mettler, P.G.
Principal Geologist

CCM:

Copies: Addressee (email)

OK:Lathrop Soil Letter 101111.docx
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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

TestAmerica Job ID: 720-37686-1
Client Project/Site: Lathrop PARC

For:
TRC Solutions, Inc.
101 2nd street
Suite 300
San Francisco, California 94105

Attn: Mr. Charles Mettler

Authorized for release by:
10/04/2011 04:40:28 PM

Dimple Sharma
Project Manager I
dimple.sharma@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.
F	RPD of the MS and MSD exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

DRAFT

Job ID: 720-37686-1

Laboratory: TestAmerica San Francisco

Narrative

Job Narrative
720-37686-1

Comments
No additional comments.

Receipt
Samples A(B,C,D)- SURF on COC have IDs as A(B,C,D)-0.5 on containers. Logged in as on COC.

All other samples were received in good condition within temperature requirements.

GC/MS VOA
Method 8260B: Internal standard responses were outside of acceptance limits for the following samples 720-37686-5, 10, 15. The samples show evidence of matrix interference; confirmed by re-analysis.

No other analytical or quality issues were noted.

GC VOA
No analytical or quality issues were noted.

GC Semi VOA
Method 8015B: Due to the level of dilution required for the following sample, surrogate recoveries are not reported: A,B,C,D-SURF (720-37686-25).

Method 8081A: The matrix spike / matrix spike duplicate (MS/MSD) precision for batch 99844 was outside control limits. Non-homogeneity of the sample matrix is suspected. The associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision met acceptance criteria.

No other analytical or quality issues were noted.

Metals
No analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

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Detection Summary

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Client Sample ID: A,B,C,D-1.5 — Lab Sample ID: 720-37686-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	83		2.0		mg/Kg	2		8015B	Silica Gel Clean
Motor Oil Range Organics [C24-C36]	310		99		mg/Kg	2		8015B	Silica Gel Clean
alpha-Chlordane	2.8		2.0		ug/Kg	1		8081A	Total/NA
gamma-Chlordane	3.4		2.0		ug/Kg	1		8081A	Total/NA
Arsenic	4.0		3.8		mg/Kg	4		6010B	Total/NA
Barium	250		1.9		mg/Kg	4		6010B	Total/NA
Chromium	200		1.9		mg/Kg	4		6010B	Total/NA
Cobalt	22		0.77		mg/Kg	4		6010B	Total/NA
Copper	28		5.8		mg/Kg	4		6010B	Total/NA
Lead	27		1.9		mg/Kg	4		6010B	Total/NA
Nickel	410		1.9		mg/Kg	4		6010B	Total/NA
Vanadium	45		1.9		mg/Kg	4		6010B	Total/NA
Zinc	87		5.8		mg/Kg	4		6010B	Total/NA
Mercury	0.29		0.0097		mg/Kg	1		7471A	Total/NA

Client Sample ID: A,B,C,D-3.0 — Lab Sample ID: 720-37686-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	79		2.0		mg/Kg	2		8015B	Silica Gel Clean
Motor Oil Range Organics [C24-C36]	350		100		mg/Kg	2		8015B	Silica Gel Clean
Chlordane (technical)	44		40		ug/Kg	1		8081A	Total/NA
alpha-Chlordane	3.9		2.0		ug/Kg	1		8081A	Total/NA
gamma-Chlordane	4.7		2.0		ug/Kg	1		8081A	Total/NA
Barium	230		2.0		mg/Kg	4		6010B	Total/NA
Beryllium	0.56		0.40		mg/Kg	4		6010B	Total/NA
Chromium	180		2.0		mg/Kg	4		6010B	Total/NA
Cobalt	17		0.80		mg/Kg	4		6010B	Total/NA
Copper	32		6.0		mg/Kg	4		6010B	Total/NA
Lead	20		2.0		mg/Kg	4		6010B	Total/NA
Nickel	180		2.0		mg/Kg	4		6010B	Total/NA
Vanadium	44		2.0		mg/Kg	4		6010B	Total/NA
Zinc	80		6.0		mg/Kg	4		6010B	Total/NA
Mercury	0.22		0.0091		mg/Kg	1		7471A	Total/NA

Client Sample ID: A.B.C.D-4.5 — Lab Sample ID: 720-37686-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	63		2.0		mg/Kg	2		8015B	Silica Gel Clean
Motor Oil Range Organics [C24-C36]	230		98		mg/Kg	2		8015B	Silica Gel Clean
Heptachlor epoxide	2.2		2.0		ug/Kg	1		8081A	Total/NA
Chlordane (technical)	67		39		ug/Kg	1		8081A	Total/NA
alpha-Chlordane	9.2		2.0		ug/Kg	1		8081A	Total/NA
gamma-Chlordane	12		2.0		ug/Kg	1		8081A	Total/NA
Arsenic	6.9		4.0		mg/Kg	4		6010B	Total/NA
Barium	330		2.0		mg/Kg	4		6010B	Total/NA
Beryllium	0.75		0.40		mg/Kg	4		6010B	Total/NA
Chromium	85		2.0		mg/Kg	4		6010B	Total/NA
Cobalt	12		0.80		mg/Kg	4		6010B	Total/NA
Copper	38		6.0		mg/Kg	4		6010B	Total/NA
Lead	22		2.0		mg/Kg	4		6010B	Total/NA
Nickel	130		2.0		mg/Kg	4		6010B	Total/NA
Vanadium	43		2.0		mg/Kg	4		6010B	Total/NA
Zinc	120		6.0		mg/Kg	4		6010B	Total/NA
Mercury	0.25		0.010		mg/Kg	1		7471A	Total/NA

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Client Sample ID: A,B,C,D-6.0 — Lab Sample ID: 720-37686-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	6.9		0.99		mg/Kg	1		8015B	Silica Gel Clean
Arsenic	5.9		4.0		mg/Kg	4		6010B	Total/NA
Barium	270		2.0		mg/Kg	4		6010B	Total/NA
Beryllium	0.71		0.40		mg/Kg	4		6010B	Total/NA
Chromium	55		2.0		mg/Kg	4		6010B	Total/NA
Cobalt	8.9		0.80		mg/Kg	4		6010B	Total/NA
Copper	30		6.0		mg/Kg	4		6010B	Total/NA
Lead	10		2.0		mg/Kg	4		6010B	Total/NA
Nickel	62		2.0		mg/Kg	4		6010B	Total/NA
Vanadium	49		2.0		mg/Kg	4		6010B	Total/NA
Zinc	62		6.0		mg/Kg	4		6010B	Total/NA
Mercury	0.066		0.0097		mg/Kg	1		7471A	Total/NA

Client Sample ID: A,B,C,D-SURF — Lab Sample ID: 720-37686-25

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	130		5.0		mg/Kg	5		8015B	Silica Gel Clean
Motor Oil Range Organics [C24-C36]	410		250		mg/Kg	5		8015B	Silica Gel Clean
4,4'-DDE	2.3		2.0		ug/Kg	1		8081A	Total/NA
Chlordane (technical)	150		39		ug/Kg	1		8081A	Total/NA
alpha-Chlordane	8.0		2.0		ug/Kg	1		8081A	Total/NA
gamma-Chlordane	14		2.0		ug/Kg	1		8081A	Total/NA
Barium	250		2.0		mg/Kg	4		6010B	Total/NA
Chromium	36		2.0		mg/Kg	4		6010B	Total/NA
Cobalt	8.2		0.79		mg/Kg	4		6010B	Total/NA
Copper	21		5.9		mg/Kg	4		6010B	Total/NA
Lead	54		2.0		mg/Kg	4		6010B	Total/NA
Nickel	31		2.0		mg/Kg	4		6010B	Total/NA
Vanadium	45		2.0		mg/Kg	4		6010B	Total/NA
Zinc	96		5.9		mg/Kg	4		6010B	Total/NA
Mercury	0.28		0.0092		mg/Kg	1		7471A	Total/NA

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Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Client Sample ID: A,B,C,D-1.5
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-5
Matrix: Solid

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Acetone	ND		49		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Benzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Dichlorobromomethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Bromobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Chlorobromomethane	ND		20		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Bromoform	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Bromomethane	ND		9.8		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
2-Butanone (MEK)	ND		49		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
n-Butylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
sec-Butylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
tert-Butylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Carbon disulfide	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Carbon tetrachloride	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Chlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Chloroethane	ND		9.8		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Chloroform	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Chloromethane	ND		9.8		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
2-Chlorotoluene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
4-Chlorotoluene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Chlorodibromomethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,2-Dichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,3-Dichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,4-Dichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,3-Dichloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,1-Dichloropropene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,2-Dibromo-3-Chloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Ethylene Dibromide	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Dibromomethane	ND		9.8		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Dichlorodifluoromethane	ND		9.8		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,1-Dichloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,2-Dichloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,1-Dichloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
cis-1,2-Dichloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
trans-1,2-Dichloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,2-Dichloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
cis-1,3-Dichloropropene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
trans-1,3-Dichloropropene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Ethylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Hexachlorobutadiene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
2-Hexanone	ND		49		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Isopropylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
4-Isopropyltoluene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Methylene Chloride	ND		9.8		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
4-Methyl-2-pentanone (MIBK)	ND		49		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Naphthalene	ND		9.8		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
N-Propylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Styrene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,1,1,2-Tetrachloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,1,2,2-Tetrachloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1

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Client Sample ID: A,B,C,D-1.5
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-5
Matrix: Solid

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Toluene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,2,3-Trichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,2,4-Trichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,1,1-Trichloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,1,2-Trichloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Trichloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Trichlorofluoromethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,2,3-Trichloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,2,4-Trimethylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
1,3,5-Trimethylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Vinyl acetate	ND		49		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Vinyl chloride	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Xylenes, Total	ND		9.8		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
2,2-Dichloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 17:05	1
Gasoline Range Organics (GRO) -C5-C12	ND		240		ug/Kg		09/29/11 09:31	09/29/11 17:05	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*86*		*45 - 131*	*09/29/11 09:31*	*09/29/11 17:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*60 - 140*	*09/29/11 09:31*	*09/29/11 17:05*	*1*
Toluene-d8 (Surr)	*95*		*58 - 140*	*09/29/11 09:31*	*09/29/11 17:05*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC) - Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**83**		2.0		mg/Kg		09/30/11 13:41	10/04/11 05:37	2
Motor Oil Range Organics [C24-C36]	**310**		99		mg/Kg		09/30/11 13:41	10/04/11 05:37	2

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Capric Acid (Surr)	*0.5*		*0 - 1*	*09/30/11 13:41*	*10/04/11 05:37*	*2*
p-Terphenyl	*49*		*38 - 148*	*09/30/11 13:41*	*10/04/11 05:37*	*2*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
Dieldrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
Endrin aldehyde	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
Endrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
Endrin ketone	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
Heptachlor	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
Heptachlor epoxide	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
4,4'-DDT	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
4,4'-DDE	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
4,4'-DDD	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
Endosulfan I	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
Endosulfan II	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
alpha-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
beta-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
gamma-BHC (Lindane)	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
delta-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Client Sample ID: A,B,C,D-1.5
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-5
Matrix: Solid

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan sulfate	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
Methoxychlor	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
Toxaphene	ND		40		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
Chlordane (technical)	ND		40		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
alpha-Chlordane	**2.8**		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1
gamma-Chlordane	**3.4**		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:12	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*79*		*34 - 110*	*09/28/11 13:37*	*10/01/11 03:12*	*1*
DCB Decachlorobiphenyl	*57*		*21 - 136*	*09/28/11 13:37*	*10/01/11 03:12*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.9		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Arsenic	**4.0**		3.8		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Barium	**250**		1.9		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Beryllium	ND		0.38		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Cadmium	ND		0.48		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Chromium	**200**		1.9		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Cobalt	**22**		0.77		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Copper	**28**		5.8		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Lead	**27**		1.9		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Molybdenum	ND		1.9		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Nickel	**410**		1.9		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Selenium	ND		3.8		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Silver	ND		0.96		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Thallium	ND		1.9		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Vanadium	**45**		1.9		mg/Kg		09/29/11 15:53	09/30/11 13:13	4
Zinc	**87**		5.8		mg/Kg		09/29/11 15:53	09/30/11 13:13	4

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.29**		0.0097		mg/Kg		09/29/11 18:40	09/30/11 14:28	1

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Client Sample ID: A,B,C,D-3.0
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-10
Matrix: Solid

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Acetone	ND		46		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Benzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Dichlorobromomethane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Bromobenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Chlorobromomethane	ND		19		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Bromoform	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Bromomethane	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
2-Butanone (MEK)	ND		46		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
n-Butylbenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
sec-Butylbenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
tert-Butylbenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Carbon disulfide	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Carbon tetrachloride	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Chlorobenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Chloroethane	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Chloroform	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Chloromethane	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
2-Chlorotoluene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
4-Chlorotoluene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Chlorodibromomethane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,2-Dichlorobenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,3-Dichlorobenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,4-Dichlorobenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,3-Dichloropropane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,1-Dichloropropene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,2-Dibromo-3-Chloropropane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Ethylene Dibromide	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Dibromomethane	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Dichlorodifluoromethane	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,1-Dichloroethane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,2-Dichloroethane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,1-Dichloroethene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
cis-1,2-Dichloroethene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
trans-1,2-Dichloroethene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,2-Dichloropropane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
cis-1,3-Dichloropropene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
trans-1,3-Dichloropropene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Ethylbenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Hexachlorobutadiene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
2-Hexanone	ND		46		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Isopropylbenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
4-Isopropyltoluene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Methylene Chloride	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
4-Methyl-2-pentanone (MIBK)	ND		46		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Naphthalene	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
N-Propylbenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Styrene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,1,1,2-Tetrachloroethane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,1,2,2-Tetrachloroethane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1

DRAFT

Client Sample ID: A,B,C,D-3.0
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-10
Matrix: Solid

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Toluene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,2,3-Trichlorobenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,2,4-Trichlorobenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,1,1-Trichloroethane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,1,2-Trichloroethane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Trichloroethene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Trichlorofluoromethane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,2,3-Trichloropropane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,2,4-Trimethylbenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
1,3,5-Trimethylbenzene	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Vinyl acetate	ND		46		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Vinyl chloride	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Xylenes, Total	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
2,2-Dichloropropane	ND		4.6		ug/Kg		09/29/11 09:31	09/29/11 17:34	1
Gasoline Range Organics (GRO) -C5-C12	ND		230		ug/Kg		09/29/11 09:31	09/29/11 17:34	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*84*		*45 - 131*	*09/29/11 09:31*	*09/29/11 17:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*115*		*60 - 140*	*09/29/11 09:31*	*09/29/11 17:34*	*1*
Toluene-d8 (Surr)	*95*		*58 - 140*	*09/29/11 09:31*	*09/29/11 17:34*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC) - Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**79**		2.0		mg/Kg		09/30/11 13:41	10/04/11 06:02	2
Motor Oil Range Organics [C24-C36]	**350**		100		mg/Kg		09/30/11 13:41	10/04/11 06:02	2

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Capric Acid (Surr)	*0.7*		*0 - 1*	*09/30/11 13:41*	*10/04/11 06:02*	*2*
p-Terphenyl	*59*		*38 - 148*	*09/30/11 13:41*	*10/04/11 06:02*	*2*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
Dieldrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
Endrin aldehyde	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
Endrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
Endrin ketone	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
Heptachlor	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
Heptachlor epoxide	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
4,4'-DDT	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
4,4'-DDE	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
4,4'-DDD	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
Endosulfan I	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
Endosulfan II	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
alpha-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
beta-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
gamma-BHC (Lindane)	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
delta-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Client Sample ID: A,B,C,D-3.0
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-10
Matrix: Solid

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan sulfate	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
Methoxychlor	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
Toxaphene	ND		40		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
Chlordane (technical)	**44**		40		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
alpha-Chlordane	**3.9**		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1
gamma-Chlordane	**4.7**		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:28	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*89*		*34 - 110*	*09/28/11 13:37*	*10/01/11 03:28*	*1*
DCB Decachlorobiphenyl	*62*		*21 - 136*	*09/28/11 13:37*	*10/01/11 03:28*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Arsenic	ND		4.0		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Barium	**230**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Beryllium	**0.56**		0.40		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Cadmium	ND		0.50		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Chromium	**180**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Cobalt	**17**		0.80		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Copper	**32**		6.0		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Lead	**20**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Molybdenum	ND		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Nickel	**180**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Selenium	ND		4.0		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Silver	ND		1.0		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Thallium	ND		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Vanadium	**44**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:20	4
Zinc	**80**		6.0		mg/Kg		09/29/11 15:53	09/30/11 13:20	4

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.22**		0.0091		mg/Kg		09/29/11 18:40	09/30/11 14:30	1

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Client Sample ID: A.B.C.D-4.5
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-15
Matrix: Solid

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Acetone	ND		49		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Benzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Dichlorobromomethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Bromobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Chlorobromomethane	ND		19		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Bromoform	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Bromomethane	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
2-Butanone (MEK)	ND		49		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
n-Butylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
sec-Butylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
tert-Butylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Carbon disulfide	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Carbon tetrachloride	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Chlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Chloroethane	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Chloroform	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Chloromethane	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
2-Chlorotoluene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
4-Chlorotoluene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Chlorodibromomethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,2-Dichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,3-Dichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,4-Dichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,3-Dichloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,1-Dichloropropene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,2-Dibromo-3-Chloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Ethylene Dibromide	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Dibromomethane	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Dichlorodifluoromethane	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,1-Dichloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,2-Dichloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,1-Dichloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
cis-1,2-Dichloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
trans-1,2-Dichloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,2-Dichloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
cis-1,3-Dichloropropene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
trans-1,3-Dichloropropene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Ethylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Hexachlorobutadiene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
2-Hexanone	ND		49		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Isopropylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
4-Isopropyltoluene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Methylene Chloride	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
4-Methyl-2-pentanone (MIBK)	ND		49		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Naphthalene	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
N-Propylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Styrene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,1,1,2-Tetrachloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,1,2,2-Tetrachloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Client Sample ID: A.B.C.D-4.5
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-15
Matrix: Solid

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Toluene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,2,3-Trichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,2,4-Trichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,1,1-Trichloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,1,2-Trichloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Trichloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Trichlorofluoromethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,2,3-Trichloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,2,4-Trimethylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
1,3,5-Trimethylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Vinyl acetate	ND		49		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Vinyl chloride	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Xylenes, Total	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
2,2-Dichloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 19:28	1
Gasoline Range Organics (GRO) -C5-C12	ND		240		ug/Kg		09/29/11 09:31	09/29/11 19:28	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*85*		*45 - 131*	*09/29/11 09:31*	*09/29/11 19:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*124*		*60 - 140*	*09/29/11 09:31*	*09/29/11 19:28*	*1*
Toluene-d8 (Surr)	*93*		*58 - 140*	*09/29/11 09:31*	*09/29/11 19:28*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC) - Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**63**		2.0		mg/Kg		09/30/11 13:41	10/04/11 06:26	2
Motor Oil Range Organics [C24-C36]	**230**		98		mg/Kg		09/30/11 13:41	10/04/11 06:26	2

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Capric Acid (Surr)	*0.6*		*0 - 1*	*09/30/11 13:41*	*10/04/11 06:26*	*2*
p-Terphenyl	*67*		*38 - 148*	*09/30/11 13:41*	*10/04/11 06:26*	*2*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
Dieldrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
Endrin aldehyde	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
Endrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
Endrin ketone	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
Heptachlor	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
Heptachlor epoxide	**2.2**		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
4,4'-DDT	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
4,4'-DDE	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
4,4'-DDD	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
Endosulfan I	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
Endosulfan II	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
alpha-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
beta-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
gamma-BHC (Lindane)	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
delta-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Client Sample ID: A.B.C.D-4.5
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-15
Matrix: Solid

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan sulfate	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
Methoxychlor	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
Toxaphene	ND		39		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
Chlordane (technical)	**67**		39		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
alpha-Chlordane	**9.2**		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1
gamma-Chlordane	**12**		2.0		ug/Kg		09/28/11 13:37	10/01/11 03:45	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*97*		*34 - 110*	*09/28/11 13:37*	*10/01/11 03:45*	*1*
DCB Decachlorobiphenyl	*71*		*21 - 136*	*09/28/11 13:37*	*10/01/11 03:45*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Arsenic	**6.9**		4.0		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Barium	**330**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Beryllium	**0.75**		0.40		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Cadmium	ND		0.50		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Chromium	**85**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Cobalt	**12**		0.80		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Copper	**38**		6.0		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Lead	**22**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Molybdenum	ND		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Nickel	**130**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Selenium	ND		4.0		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Silver	ND		1.0		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Thallium	ND		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Vanadium	**43**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:27	4
Zinc	**120**		6.0		mg/Kg		09/29/11 15:53	09/30/11 13:27	4

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.25**		0.010		mg/Kg		09/29/11 18:41	09/30/11 14:32	1

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Client Sample ID: A,B,C,D-6.0
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-20
Matrix: Solid

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Acetone	ND		49		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Benzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Dichlorobromomethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Bromobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Chlorobromomethane	ND		19		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Bromoform	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Bromomethane	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
2-Butanone (MEK)	ND		49		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
n-Butylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
sec-Butylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
tert-Butylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Carbon disulfide	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Carbon tetrachloride	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Chlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Chloroethane	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Chloroform	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Chloromethane	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
2-Chlorotoluene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
4-Chlorotoluene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Chlorodibromomethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,2-Dichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,3-Dichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,4-Dichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,3-Dichloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,1-Dichloropropene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,2-Dibromo-3-Chloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Ethylene Dibromide	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Dibromomethane	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Dichlorodifluoromethane	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,1-Dichloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,2-Dichloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,1-Dichloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
cis-1,2-Dichloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
trans-1,2-Dichloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,2-Dichloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
cis-1,3-Dichloropropene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
trans-1,3-Dichloropropene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Ethylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Hexachlorobutadiene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
2-Hexanone	ND		49		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Isopropylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
4-Isopropyltoluene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Methylene Chloride	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
4-Methyl-2-pentanone (MIBK)	ND		49		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Naphthalene	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
N-Propylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Styrene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,1,1,2-Tetrachloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,1,2,2-Tetrachloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1

DRAFT

Client Sample ID: A,B,C,D-6.0
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-20
Matrix: Solid

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Toluene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,2,3-Trichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,2,4-Trichlorobenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,1,1-Trichloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,1,2-Trichloroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Trichloroethene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Trichlorofluoromethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,2,3-Trichloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,2,4-Trimethylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
1,3,5-Trimethylbenzene	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Vinyl acetate	ND		49		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Vinyl chloride	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Xylenes, Total	ND		9.7		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
2,2-Dichloropropane	ND		4.9		ug/Kg		09/29/11 09:31	09/29/11 18:31	1
Gasoline Range Organics (GRO) -C5-C12	ND		240		ug/Kg		09/29/11 09:31	09/29/11 18:31	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*92*		*45 - 131*	*09/29/11 09:31*	*09/29/11 18:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*60 - 140*	*09/29/11 09:31*	*09/29/11 18:31*	*1*
Toluene-d8 (Surr)	*96*		*58 - 140*	*09/29/11 09:31*	*09/29/11 18:31*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC) - Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**6.9**		0.99		mg/Kg		09/30/11 13:41	10/04/11 06:50	1
Motor Oil Range Organics [C24-C36]	ND		50		mg/Kg		09/30/11 13:41	10/04/11 06:50	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Capric Acid (Surr)	*0.06*		*0 - 1*	*09/30/11 13:41*	*10/04/11 06:50*	*1*
p-Terphenyl	*80*		*38 - 148*	*09/30/11 13:41*	*10/04/11 06:50*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
Dieldrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
Endrin aldehyde	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
Endrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
Endrin ketone	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
Heptachlor	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
Heptachlor epoxide	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
4,4'-DDT	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
4,4'-DDE	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
4,4'-DDD	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
Endosulfan I	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
Endosulfan II	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
alpha-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
beta-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
gamma-BHC (Lindane)	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
delta-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Client Sample ID: A,B,C,D-6.0
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-20
Matrix: Solid

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan sulfate	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
Methoxychlor	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
Toxaphene	ND		39		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
Chlordane (technical)	ND		39		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
alpha-Chlordane	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1
gamma-Chlordane	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:01	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*78*		*34 - 110*	*09/28/11 13:37*	*10/01/11 04:01*	*1*
DCB Decachlorobiphenyl	*63*		*21 - 136*	*09/28/11 13:37*	*10/01/11 04:01*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Arsenic	**5.9**		4.0		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Barium	**270**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Beryllium	**0.71**		0.40		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Cadmium	ND		0.50		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Chromium	**55**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Cobalt	**8.9**		0.80		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Copper	**30**		6.0		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Lead	**10**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Molybdenum	ND		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Nickel	**62**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Selenium	ND		4.0		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Silver	ND		1.0		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Thallium	ND		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Vanadium	**49**		2.0		mg/Kg		09/29/11 15:53	09/30/11 13:34	4
Zinc	**62**		6.0		mg/Kg		09/29/11 15:53	09/30/11 13:34	4

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.066**		0.0097		mg/Kg		09/29/11 18:41	09/30/11 14:35	1

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Client Sample ID: A,B,C,D-SURF
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-25
Matrix: Solid

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Acetone	ND		47		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Benzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Dichlorobromomethane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Bromobenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Chlorobromomethane	ND		19		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Bromoform	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Bromomethane	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
2-Butanone (MEK)	ND		47		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
n-Butylbenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
sec-Butylbenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
tert-Butylbenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Carbon disulfide	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Carbon tetrachloride	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Chlorobenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Chloroethane	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Chloroform	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Chloromethane	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
2-Chlorotoluene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
4-Chlorotoluene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Chlorodibromomethane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,2-Dichlorobenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,3-Dichlorobenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,4-Dichlorobenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,3-Dichloropropane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,1-Dichloropropene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,2-Dibromo-3-Chloropropane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Ethylene Dibromide	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Dibromomethane	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Dichlorodifluoromethane	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,1-Dichloroethane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,2-Dichloroethane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,1-Dichloroethene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
cis-1,2-Dichloroethene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
trans-1,2-Dichloroethene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,2-Dichloropropane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
cis-1,3-Dichloropropene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
trans-1,3-Dichloropropene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Ethylbenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Hexachlorobutadiene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
2-Hexanone	ND		47		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Isopropylbenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
4-Isopropyltoluene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Methylene Chloride	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
4-Methyl-2-pentanone (MIBK)	ND		47		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Naphthalene	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
N-Propylbenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Styrene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,1,1,2-Tetrachloroethane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,1,2,2-Tetrachloroethane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1

DRAFT

Client Sample ID: A,B,C,D-SURF
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-25
Matrix: Solid

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Toluene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,2,3-Trichlorobenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,2,4-Trichlorobenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,1,1-Trichloroethane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,1,2-Trichloroethane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Trichloroethene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Trichlorofluoromethane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,2,3-Trichloropropane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,2,4-Trimethylbenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
1,3,5-Trimethylbenzene	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Vinyl acetate	ND		47		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Vinyl chloride	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Xylenes, Total	ND		9.3		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
2,2-Dichloropropane	ND		4.7		ug/Kg		09/29/11 09:31	09/29/11 18:59	1
Gasoline Range Organics (GRO) -C5-C12	ND		230		ug/Kg		09/29/11 09:31	09/29/11 18:59	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*92*		*45 - 131*	*09/29/11 09:31*	*09/29/11 18:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*60 - 140*	*09/29/11 09:31*	*09/29/11 18:59*	*1*
Toluene-d8 (Surr)	*96*		*58 - 140*	*09/29/11 09:31*	*09/29/11 18:59*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC) - Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**130**		5.0		mg/Kg		09/30/11 13:41	10/04/11 07:15	5
Motor Oil Range Organics [C24-C36]	**410**		250		mg/Kg		09/30/11 13:41	10/04/11 07:15	5

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Capric Acid (Surr)	*0*	*D*	*0 - 1*	*09/30/11 13:41*	*10/04/11 07:15*	*5*
p-Terphenyl	*0*	*D*	*38 - 148*	*09/30/11 13:41*	*10/04/11 07:15*	*5*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
Dieldrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
Endrin aldehyde	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
Endrin	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
Endrin ketone	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
Heptachlor	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
Heptachlor epoxide	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
4,4'-DDT	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
4,4'-DDE	**2.3**		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
4,4'-DDD	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
Endosulfan I	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
Endosulfan II	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
alpha-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
beta-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
gamma-BHC (Lindane)	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
delta-BHC	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Client Sample ID: A,B,C,D-SURF
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-25
Matrix: Solid

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan sulfate	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
Methoxychlor	ND		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
Toxaphene	ND		39		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
Chlordane (technical)	**150**		39		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
alpha-Chlordane	**8.0**		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1
gamma-Chlordane	**14**		2.0		ug/Kg		09/28/11 13:37	10/01/11 04:18	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*78*		*34 - 110*	*09/28/11 13:37*	*10/01/11 04:18*	*1*
DCB Decachlorobiphenyl	*89*		*21 - 136*	*09/28/11 13:37*	*10/01/11 04:18*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Arsenic	ND		4.0		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Barium	**250**		2.0		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Beryllium	ND		0.40		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Cadmium	ND		0.50		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Chromium	**36**		2.0		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Cobalt	**8.2**		0.79		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Copper	**21**		5.9		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Lead	**54**		2.0		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Molybdenum	ND		2.0		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Nickel	**31**		2.0		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Selenium	ND		4.0		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Silver	ND		0.99		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Thallium	ND		2.0		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Vanadium	**45**		2.0		mg/Kg		09/29/11 16:06	09/30/11 13:55	4
Zinc	**96**		5.9		mg/Kg		09/29/11 16:06	09/30/11 13:55	4

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.28**		0.0092		mg/Kg		09/29/11 18:41	09/30/11 14:37	1

DRAFT

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS

Lab Sample ID: MB 720-99901/1-A
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99901

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Acetone	ND		50		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Benzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Dichlorobromomethane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Bromobenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Chlorobromomethane	ND		20		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Bromoform	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Bromomethane	ND		10		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
2-Butanone (MEK)	ND		50		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
n-Butylbenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
sec-Butylbenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
tert-Butylbenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Carbon disulfide	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Carbon tetrachloride	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Chlorobenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Chloroethane	ND		10		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Chloroform	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Chloromethane	ND		10		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
2-Chlorotoluene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
4-Chlorotoluene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Chlorodibromomethane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,2-Dichlorobenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,3-Dichlorobenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,4-Dichlorobenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,3-Dichloropropane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,1-Dichloropropene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,2-Dibromo-3-Chloropropane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Ethylene Dibromide	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Dibromomethane	ND		10		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Dichlorodifluoromethane	ND		10		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,1-Dichloroethane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,2-Dichloroethane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,1-Dichloroethene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
cis-1,2-Dichloroethene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
trans-1,2-Dichloroethene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,2-Dichloropropane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
cis-1,3-Dichloropropene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
trans-1,3-Dichloropropene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Ethylbenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Hexachlorobutadiene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
2-Hexanone	ND		50		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Isopropylbenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
4-Isopropyltoluene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Methylene Chloride	ND		10		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Naphthalene	ND		10		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
N-Propylbenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Styrene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,1,1,2-Tetrachloroethane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1

DRAFT

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Lab Sample ID: MB 720-99901/1-A
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99901

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Tetrachloroethene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Toluene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,2,3-Trichlorobenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,2,4-Trichlorobenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,1,1-Trichloroethane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,1,2-Trichloroethane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Trichloroethene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Trichlorofluoromethane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,2,3-Trichloropropane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,2,4-Trimethylbenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
1,3,5-Trimethylbenzene	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Vinyl acetate	ND		50		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Vinyl chloride	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Xylenes, Total	ND		10		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
2,2-Dichloropropane	ND		5.0		ug/Kg		09/29/11 09:31	09/29/11 10:51	1
Gasoline Range Organics (GRO) -C5-C12	ND		250		ug/Kg		09/29/11 09:31	09/29/11 10:51	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*865*		*41 - 838*	*609' 09882360 38*	*609' 09882386 18*	*8*
8:/ -7 ,D loroed hne-t 42durr(	*888*		*56 - 846*	*609' 09882360 38*	*609' 09882386 18*	*8*
Soluene-t) 2durr(	*868*		*1) - 846*	*609' 09882360 38*	*609' 09882386 18*	*8*

Lab Sample ID: LCS 720-99901/2-A
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99901

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Methyl tert-butyl ether	50.0	51.0		ug/Kg		102	71 - 144
Acetone	250	285		ug/Kg		114	30 - 162
Benzene	50.0	49.6		ug/Kg		99	82 - 124
Dichlorobromomethane	50.0	53.2		ug/Kg		106	86 - 131
Bromobenzene	50.0	46.8		ug/Kg		94	88 - 120
Chlorobromomethane	50.0	46.0		ug/Kg		92	81 - 116
Bromoform	50.0	42.6		ug/Kg		85	59 - 158
Bromomethane	50.0	43.4		ug/Kg		87	59 - 132
2-Butanone (MEK)	250	264		ug/Kg		106	61 - 150
n-Butylbenzene	50.0	54.6		ug/Kg		109	80 - 142
sec-Butylbenzene	50.0	51.4		ug/Kg		103	85 - 136
tert-Butylbenzene	50.0	50.6		ug/Kg		101	71 - 130
Carbon disulfide	50.0	47.6		ug/Kg		95	60 - 136
Carbon tetrachloride	50.0	57.8		ug/Kg		116	81 - 138
Chlorobenzene	50.0	48.0		ug/Kg		96	87 - 113
Chloroethane	50.0	44.8		ug/Kg		90	65 - 126
Chloroform	50.0	49.6		ug/Kg		99	77 - 127
Chloromethane	50.0	47.0		ug/Kg		94	60 - 149
2-Chlorotoluene	50.0	52.4		ug/Kg		105	80 - 138
4-Chlorotoluene	50.0	53.0		ug/Kg		106	79 - 136

DRAFT

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Lab Sample ID: LCS 720-99901/2-A
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99901

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Chlorodibromomethane	50.0	57.0		ug/Kg		114	75 - 146
1,2-Dichlorobenzene	50.0	49.4		ug/Kg		99	84 - 130
1,3-Dichlorobenzene	50.0	49.6		ug/Kg		99	84 - 131
1,4-Dichlorobenzene	50.0	48.2		ug/Kg		96	85 - 125
1,3-Dichloropropane	50.0	50.2		ug/Kg		100	79 - 140
1,1-Dichloropropene	50.0	49.6		ug/Kg		99	70 - 130
1,2-Dibromo-3-Chloropropane	50.0	49.8		ug/Kg		100	68 - 145
Ethylene Dibromide	50.0	49.8		ug/Kg		100	79 - 140
Dibromomethane	50.0	48.4		ug/Kg		97	80 - 139
Dichlorodifluoromethane	50.0	51.2		ug/Kg		102	37 - 158
1,1-Dichloroethane	50.0	49.0		ug/Kg		98	85 - 124
1,2-Dichloroethane	50.0	50.8		ug/Kg		102	72 - 130
1,1-Dichloroethene	50.0	43.6		ug/Kg		87	76 - 122
cis-1,2-Dichloroethene	50.0	49.6		ug/Kg		99	87 - 138
trans-1,2-Dichloroethene	50.0	46.2		ug/Kg		92	67 - 108
1,2-Dichloropropane	50.0	50.0		ug/Kg		100	73 - 127
cis-1,3-Dichloropropene	50.0	52.8		ug/Kg		106	68 - 147
trans-1,3-Dichloropropene	50.0	54.0		ug/Kg		108	84 - 136
Ethylbenzene	50.0	50.4		ug/Kg		101	80 - 137
Hexachlorobutadiene	50.0	46.8		ug/Kg		94	72 - 132
2-Hexanone	250	272		ug/Kg		109	60 - 161
Isopropylbenzene	50.0	49.8		ug/Kg		100	88 - 128
4-Isopropyltoluene	50.0	52.4		ug/Kg		105	85 - 133
Methylene Chloride	50.0	47.4		ug/Kg		95	72 - 134
4-Methyl-2-pentanone (MIBK)	250	259		ug/Kg		104	69 - 160
Naphthalene	50.0	52.0		ug/Kg		104	70 - 147
N-Propylbenzene	50.0	52.2		ug/Kg		104	72 - 125
Styrene	50.0	49.6		ug/Kg		99	89 - 126
1,1,1,2-Tetrachloroethane	50.0	51.4		ug/Kg		103	90 - 130
1,1,2,2-Tetrachloroethane	50.0	53.4		ug/Kg		107	82 - 146
Tetrachloroethene	50.0	45.2		ug/Kg		90	78 - 132
Toluene	50.0	48.4		ug/Kg		97	83 - 128
1,2,3-Trichlorobenzene	50.0	47.8		ug/Kg		96	82 - 135
1,2,4-Trichlorobenzene	50.0	49.0		ug/Kg		98	70 - 131
1,1,1-Trichloroethane	50.0	53.8		ug/Kg		108	80 - 127
1,1,2-Trichloroethane	50.0	50.4		ug/Kg		101	82 - 125
Trichloroethene	50.0	46.4		ug/Kg		93	81 - 133
Trichlorofluoromethane	50.0	50.2		ug/Kg		100	71 - 139
1,2,3-Trichloropropane	50.0	51.0		ug/Kg		102	76 - 146
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	43.4		ug/Kg		87	70 - 130
1,2,4-Trimethylbenzene	50.0	52.2		ug/Kg		104	84 - 130
1,3,5-Trimethylbenzene	50.0	52.2		ug/Kg		104	82 - 131
Vinyl acetate	50.0	55.8		ug/Kg		112	38 - 176
Vinyl chloride	50.0	54.2		ug/Kg		108	58 - 125
m-Xylene & p-Xylene	100	99.8		ug/Kg		100	79 - 146
o-Xylene	50.0	50.0		ug/Kg		100	84 - 140
2,2-Dichloropropane	50.0	56.6		ug/Kg		113	73 - 162

DRAFT

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Lab Sample ID: LCS 720-99901/2-A
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99901

Surrogate	LCS % Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	863		41 - 838
8:/ -7 ,Di loroed hne-t 42durr(	864		56 - 846
Soluene-t) 2durr(	86/		1) - 846

Lab Sample ID: LCS 720-99901/4-A
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99901

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Gasoline Range Organics (GRO) -C5-C12	1000	835		ug/Kg		84	61 - 128

Surrogate	LCS % Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	86T		41 - 838
8:/ -7 ,Di loroed hne-t 42durr(	86T		56 - 846
Soluene-t) 2durr(	86/		1) - 846

Lab Sample ID: LCSD 720-99901/3-A
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99901

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Methyl tert-butyl ether	49.7	54.1		ug/Kg		109	71 - 144	6	20
Acetone	249	271		ug/Kg		109	30 - 162	5	30
Benzene	49.7	51.9		ug/Kg		104	82 - 124	5	20
Dichlorobromomethane	49.7	56.3		ug/Kg		113	86 - 131	6	20
Bromobenzene	49.7	49.1		ug/Kg		99	88 - 120	5	20
Chlorobromomethane	49.7	48.5		ug/Kg		98	81 - 116	5	20
Bromoform	49.7	46.3		ug/Kg		93	59 - 158	8	20
Bromomethane	49.7	46.5		ug/Kg		94	59 - 132	7	20
2-Butanone (MEK)	249	265		ug/Kg		107	61 - 150	1	20
n-Butylbenzene	49.7	56.3		ug/Kg		113	80 - 142	3	20
sec-Butylbenzene	49.7	53.3		ug/Kg		107	85 - 136	4	20
tert-Butylbenzene	49.7	52.7		ug/Kg		106	71 - 130	4	20
Carbon disulfide	49.7	49.3		ug/Kg		99	60 - 136	4	20
Carbon tetrachloride	49.7	60.0		ug/Kg		121	81 - 138	4	20
Chlorobenzene	49.7	50.3		ug/Kg		101	87 - 113	5	20
Chloroethane	49.7	47.9		ug/Kg		96	65 - 126	7	20
Chloroform	49.7	52.1		ug/Kg		105	77 - 127	5	20
Chloromethane	49.7	50.1		ug/Kg		101	60 - 149	6	20
2-Chlorotoluene	49.7	55.1		ug/Kg		111	80 - 138	5	20
4-Chlorotoluene	49.7	55.7		ug/Kg		112	79 - 136	5	20
Chlorodibromomethane	49.7	60.6		ug/Kg		122	75 - 146	6	20
1,2-Dichlorobenzene	49.7	51.5		ug/Kg		104	84 - 130	4	20
1,3-Dichlorobenzene	49.7	51.5		ug/Kg		104	84 - 131	4	20
1,4-Dichlorobenzene	49.7	50.7		ug/Kg		102	85 - 125	5	20
1,3-Dichloropropane	49.7	53.3		ug/Kg		107	79 - 140	6	20
1,1-Dichloropropene	49.7	50.9		ug/Kg		102	70 - 130	3	20
1,2-Dibromo-3-Chloropropane	49.7	53.7		ug/Kg		108	68 - 145	7	20

DRAFT

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Lab Sample ID: LCSD 720-99901/3-A
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99901

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Ethylene Dibromide			49.7	52.9		ug/Kg		106	79 - 140	6	20
Dibromomethane			49.7	51.7		ug/Kg		104	80 - 139	7	20
Dichlorodifluoromethane			49.7	52.9		ug/Kg		106	37 - 158	3	20
1,1-Dichloroethane			49.7	51.1		ug/Kg		103	85 - 124	4	20
1,2-Dichloroethane			49.7	53.5		ug/Kg		108	72 - 130	5	20
1,1-Dichloroethene			49.7	45.1		ug/Kg		91	76 - 122	3	20
cis-1,2-Dichloroethene			49.7	52.3		ug/Kg		105	87 - 138	5	20
trans-1,2-Dichloroethene			49.7	48.1		ug/Kg		97	67 - 108	4	20
1,2-Dichloropropane			49.7	52.5		ug/Kg		106	73 - 127	5	20
cis-1,3-Dichloropropene			49.7	55.7		ug/Kg		112	68 - 147	5	20
trans-1,3-Dichloropropene			49.7	57.5		ug/Kg		116	84 - 136	6	20
Ethylbenzene			49.7	52.5		ug/Kg		106	80 - 137	4	20
Hexachlorobutadiene			49.7	48.9		ug/Kg		98	72 - 132	4	20
2-Hexanone			249	276		ug/Kg		111	60 - 161	2	20
Isopropylbenzene			49.7	51.9		ug/Kg		104	88 - 128	4	20
4-Isopropyltoluene			49.7	54.1		ug/Kg		109	85 - 133	3	20
Methylene Chloride			49.7	49.9		ug/Kg		100	72 - 134	5	20
4-Methyl-2-pentanone (MIBK)			249	273		ug/Kg		110	69 - 160	5	20
Naphthalene			49.7	55.5		ug/Kg		112	70 - 147	6	20
N-Propylbenzene			49.7	54.3		ug/Kg		109	72 - 125	4	20
Styrene			49.7	52.5		ug/Kg		106	89 - 126	6	20
1,1,1,2-Tetrachloroethane			49.7	54.7		ug/Kg		110	90 - 130	6	20
1,1,2,2-Tetrachloroethane			49.7	56.9		ug/Kg		114	82 - 146	6	20
Tetrachloroethene			49.7	46.5		ug/Kg		94	78 - 132	3	20
Toluene			49.7	50.5		ug/Kg		102	83 - 128	4	20
1,2,3-Trichlorobenzene			49.7	50.9		ug/Kg		102	82 - 135	6	20
1,2,4-Trichlorobenzene			49.7	51.5		ug/Kg		104	70 - 131	5	20
1,1,1-Trichloroethane			49.7	56.3		ug/Kg		113	80 - 127	4	20
1,1,2-Trichloroethane			49.7	53.7		ug/Kg		108	82 - 125	6	20
Trichloroethene			49.7	47.7		ug/Kg		96	81 - 133	3	20
Trichlorofluoromethane			49.7	51.5		ug/Kg		104	71 - 139	3	20
1,2,3-Trichloropropane			49.7	53.9		ug/Kg		108	76 - 146	5	20
1,1,2-Trichloro-1,2,2-trifluoroetha ne			49.7	44.7		ug/Kg		90	70 - 130	3	20
1,2,4-Trimethylbenzene			49.7	54.5		ug/Kg		110	84 - 130	4	20
1,3,5-Trimethylbenzene			49.7	54.3		ug/Kg		109	82 - 131	4	20
Vinyl acetate			49.7	60.0		ug/Kg		121	38 - 176	7	20
Vinyl chloride			49.7	56.5		ug/Kg		114	58 - 125	4	20
m-Xylene & p-Xylene			99.4	104		ug/Kg		105	79 - 146	4	20
o-Xylene			49.7	52.9		ug/Kg		106	84 - 140	6	20
2,2-Dichloropropane			49.7	60.0		ug/Kg		121	73 - 162	6	20

Surrogate	*LCSD % Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*861*		*41 - 838*
8:/ -7 ,Di loroed hne-t 42durr(	*864*		*56 - 846*
Soluene-t) 2durr(	*86/*		*1) - 846*

DRAFT

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Lab Sample ID: LCSD 720-99901/5-A
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99901

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO) -C5-C12			1000	810		ug/Kg		81	61 - 128	3	20

Surrogate	*LCSD % Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*86)*		*41 - 838*
8:/ -7 ,D loroed hne-t 42d urr(	*860*		*56 - 846*
Soluene-t) 2d urr(	*86/*		*1) - 846*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 720-99995/1-A
Matrix: Solid
Analysis Batch: 100040

Client Sample ID: Method Blank
Prep Type: Silica Gel Cleanup
Prep Batch: 99995

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		1.0		mg/Kg		09/30/11 13:41	10/01/11 19:25	1
Motor Oil Range Organics [C24-C36]	ND		50		mg/Kg		09/30/11 13:41	10/01/11 19:25	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Chpr,D2AD,t 2d urr(	*6.6668*		*6 - 8*	*609369882833 48*	*869689882830 / 1*	*8*
p-Serpi enyl	*0T*		*3) - 84)*	*609369882833 48*	*869689882830 / 1*	*8*

Lab Sample ID: LCS 720-99995/2-A
Matrix: Solid
Analysis Batch: 100040

Client Sample ID: Lab Control Sample
Prep Type: Silica Gel Cleanup
Prep Batch: 99995

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits		
Diesel Range Organics [C10-C28]			83.2	68.4		mg/Kg		82	50 - 150		

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
p-Serpi enyl	*04*		*3) - 84)*

Lab Sample ID: LCSD 720-99995/3-A
Matrix: Solid
Analysis Batch: 100040

Client Sample ID: Lab Control Sample Dup
Prep Type: Silica Gel Cleanup
Prep Batch: 99995

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]			83.3	57.4		mg/Kg		69	50 - 150	18	35

Surrogate	*LCSD % Recovery*	*LCSD Qualifier*	*Limits*
p-Serpi enyl	*03*		*3) - 84)*

DRAFT

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 720-99844/1-A
Matrix: Solid
Analysis Batch: 99996

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99844

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
Dieldrin	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
Endrin aldehyde	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
Endrin	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
Endrin ketone	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
Heptachlor	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
Heptachlor epoxide	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
4,4'-DDT	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
4,4'-DDE	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
4,4'-DDD	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
Endosulfan I	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
Endosulfan II	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
alpha-BHC	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
beta-BHC	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
gamma-BHC (Lindane)	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
delta-BHC	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
Endosulfan sulfate	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
Methoxychlor	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
Toxaphene	ND		40		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
Chlordane (technical)	ND		40		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
alpha-Chlordane	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1
gamma-Chlordane	ND		2.0		ug/Kg		09/28/11 13:37	09/30/11 21:26	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
SeahD loro-m-xylene	*T5*		*34 - 886*	*609) 9882 3 3T*	*609 369 882 8 / 5*	*8*
7 CB2 eDhD lorob,pi enyl	*) T*		*/ 8 - 835*	*609) 9882 3 3T*	*609 369 882 8 / 5*	*8*

Lab Sample ID: LCS 720-99844/2-A
Matrix: Solid
Analysis Batch: 99996

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99844

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Aldrin	16.7	12.0		ug/Kg		72	54 - 120
Dieldrin	16.7	13.7		ug/Kg		82	59 - 120
Endrin aldehyde	16.7	14.5		ug/Kg		87	40 - 120
Endrin	16.7	13.8		ug/Kg		83	53 - 120
Endrin ketone	16.7	15.6		ug/Kg		94	40 - 120
Heptachlor	16.7	13.0		ug/Kg		78	54 - 120
Heptachlor epoxide	16.7	13.3		ug/Kg		80	40 - 120
4,4'-DDT	16.7	13.6		ug/Kg		81	51 - 120
4,4'-DDE	16.7	12.9		ug/Kg		77	40 - 120
4,4'-DDD	16.7	14.3		ug/Kg		86	40 - 120
Endosulfan I	16.7	13.2		ug/Kg		79	40 - 120
Endosulfan II	16.7	14.1		ug/Kg		85	40 - 120
alpha-BHC	16.7	12.4		ug/Kg		75	40 - 120
beta-BHC	16.7	14.4		ug/Kg		86	40 - 120
gamma-BHC (Lindane)	16.7	12.8		ug/Kg		77	50 - 96
delta-BHC	16.7	13.7		ug/Kg		82	40 - 120
Endosulfan sulfate	16.7	14.5		ug/Kg		87	40 - 120

DRAFT

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 720-99844/2-A
Matrix: Solid
Analysis Batch: 99996

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99844

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Methoxychlor	16.7	16.8		ug/Kg		101	40 - 120
alpha-Chlordane	16.7	13.0		ug/Kg		78	40 - 120
gamma-Chlordane	16.7	12.8		ug/Kg		77	40 - 120

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
SeahDi loro-m-xylene	*T4*		*34 - 886*
7 CBZ eDhDi lorob,pi enyl	*) 0*		*/ 8 - 835*

Lab Sample ID: LCSD 720-99844/3-A
Matrix: Solid
Analysis Batch: 99996

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99844

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Aldrin	16.7	12.4		ug/Kg		74	54 - 120	4	20
Dieldrin	16.7	14.1		ug/Kg		84	59 - 120	3	20
Endrin aldehyde	16.7	14.9		ug/Kg		89	40 - 120	2	20
Endrin	16.7	14.3		ug/Kg		86	53 - 120	3	20
Endrin ketone	16.7	15.6		ug/Kg		93	40 - 120	0	20
Heptachlor	16.7	13.6		ug/Kg		81	54 - 120	4	20
Heptachlor epoxide	16.7	13.8		ug/Kg		83	40 - 120	4	20
4,4'-DDT	16.7	13.8		ug/Kg		83	51 - 120	2	20
4,4'-DDE	16.7	13.5		ug/Kg		81	40 - 120	4	20
4,4'-DDD	16.7	14.6		ug/Kg		88	40 - 120	2	20
Endosulfan I	16.7	13.6		ug/Kg		82	40 - 120	3	20
Endosulfan II	16.7	14.4		ug/Kg		86	40 - 120	2	35
alpha-BHC	16.7	12.8		ug/Kg		77	40 - 120	3	20
beta-BHC	16.7	15.5		ug/Kg		93	40 - 120	7	20
gamma-BHC (Lindane)	16.7	13.3		ug/Kg		80	50 - 96	4	20
delta-BHC	16.7	14.1		ug/Kg		85	40 - 120	3	20
Endosulfan sulfate	16.7	14.6		ug/Kg		88	40 - 120	1	20
Methoxychlor	16.7	16.1		ug/Kg		97	40 - 120	4	20
alpha-Chlordane	16.7	13.5		ug/Kg		81	40 - 120	4	20
gamma-Chlordane	16.7	13.4		ug/Kg		80	40 - 120	4	20

Surrogate	*LCSD % Recovery*	*LCSD Qualifier*	*Limits*
SeahDi loro-m-xylene	*TT*		*34 - 886*
7 CBZ eDhDi lorob,pi enyl	*) 0*		*/ 8 - 835*

Lab Sample ID: 720-37686-5 MS
Matrix: Solid
Analysis Batch: 99996

Client Sample ID: A,B,C,D-1.5
Prep Type: Total/NA
Prep Batch: 99844

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	% Rec	% Rec. Limits
Aldrin	ND		16.6	12.9		ug/Kg		78	53 - 120
Dieldrin	ND		16.6	14.4		ug/Kg		87	46 - 130
Endrin aldehyde	ND		16.6	14.8		ug/Kg		89	40 - 120
Endrin	ND		16.6	14.7		ug/Kg		88	32 - 143
Endrin ketone	ND		16.6	16.8		ug/Kg		101	40 - 120
Heptachlor	ND		16.6	15.5		ug/Kg		93	52 - 120

DRAFT

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 720-37686-5 MS
Matrix: Solid
Analysis Batch: 99996

Client Sample ID: A,B,C,D-1.5
Prep Type: Total/NA
Prep Batch: 99844

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	% Rec	% Rec. Limits
Heptachlor epoxide	ND		16.6	15.4		ug/Kg		93	40 - 120
4,4'-DDT	ND		16.6	14.9		ug/Kg		90	17 - 144
4,4'-DDE	ND		16.6	12.7		ug/Kg		76	40 - 120
4,4'-DDD	ND		16.6	15.2		ug/Kg		92	40 - 120
Endosulfan I	ND		16.6	16.4		ug/Kg		99	40 - 120
Endosulfan II	ND		16.6	18.2		ug/Kg		110	40 - 120
alpha-BHC	ND		16.6	13.5		ug/Kg		81	40 - 120
beta-BHC	ND		16.6	16.5		ug/Kg		99	40 - 120
gamma-BHC (Lindane)	ND		16.6	16.6		ug/Kg		100	58 - 120
delta-BHC	ND		16.6	14.5		ug/Kg		87	40 - 120
Endosulfan sulfate	ND		16.6	13.1		ug/Kg		79	40 - 120
Methoxychlor	ND		16.6	17.7		ug/Kg		107	40 - 120
alpha-Chlordane	2.8		16.6	16.7		ug/Kg		83	40 - 120
gamma-Chlordane	3.4		16.6	18.6		ug/Kg		91	40 - 120

Surrogate	*MS % Recovery*	*MS Qualifier*	*Limits*
SeahD loro-m-xylene	*) 4*		*34 - 886*
7 CB7 eDhD lorob,pi enyl	*T1*		*/ 8 - 835*

Lab Sample ID: 720-37686-5 MSD
Matrix: Solid
Analysis Batch: 99996

Client Sample ID: A,B,C,D-1.5
Prep Type: Total/NA
Prep Batch: 99844

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Aldrin	ND		16.2	11.7		ug/Kg		72	53 - 120	10	20
Dieldrin	ND		16.2	12.9		ug/Kg		80	46 - 130	11	20
Endrin aldehyde	ND		16.2	11.8	F	ug/Kg		73	40 - 120	22	20
Endrin	ND		16.2	13.3		ug/Kg		82	32 - 143	9	20
Endrin ketone	ND		16.2	15.2		ug/Kg		94	40 - 120	10	20
Heptachlor	ND		16.2	14.5		ug/Kg		89	52 - 120	6	20
Heptachlor epoxide	ND		16.2	13.5		ug/Kg		83	40 - 120	13	20
4,4'-DDT	ND		16.2	13.5		ug/Kg		83	17 - 144	10	20
4,4'-DDE	ND		16.2	11.7		ug/Kg		72	40 - 120	8	20
4,4'-DDD	ND		16.2	13.8		ug/Kg		85	40 - 120	10	20
Endosulfan I	ND		16.2	14.6		ug/Kg		90	40 - 120	11	20
Endosulfan II	ND		16.2	15.6		ug/Kg		96	40 - 120	16	30
alpha-BHC	ND		16.2	12.7		ug/Kg		78	40 - 120	6	20
beta-BHC	ND		16.2	14.6		ug/Kg		90	40 - 120	12	20
gamma-BHC (Lindane)	ND		16.2	15.2		ug/Kg		94	58 - 120	9	20
delta-BHC	ND		16.2	12.9		ug/Kg		80	40 - 120	11	20
Endosulfan sulfate	ND		16.2	11.7		ug/Kg		72	40 - 120	11	20
Methoxychlor	ND		16.2	16.6		ug/Kg		102	40 - 120	7	20
alpha-Chlordane	2.8		16.2	14.8		ug/Kg		74	40 - 120	12	20
gamma-Chlordane	3.4		16.2	16.7		ug/Kg		82	40 - 120	11	20

Surrogate	*MSD % Recovery*	*MSD Qualifier*	*Limits*
SeahD loro-m-xylene	*) 6*		*34 - 886*
7 CB7 eDhD lorob,pi enyl	*1)*		*/ 8 - 835*

DRAFT

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 720-99936/1-A
Matrix: Solid
Analysis Batch: 100014

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99936

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.50		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Arsenic	ND		1.0		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Barium	ND		0.50		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Beryllium	ND		0.10		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Cadmium	ND		0.13		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Chromium	ND		0.50		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Cobalt	ND		0.20		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Copper	ND		1.5		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Lead	ND		0.50		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Molybdenum	ND		0.50		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Nickel	ND		0.50		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Selenium	ND		1.0		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Silver	ND		0.25		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Thallium	ND		0.50		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Vanadium	ND		0.50		mg/Kg		09/29/11 15:53	09/30/11 12:27	1
Zinc	ND		1.5		mg/Kg		09/29/11 15:53	09/30/11 12:27	1

Lab Sample ID: LCS 720-99936/2-A
Matrix: Solid
Analysis Batch: 100014

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99936

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Antimony	50.0	48.9		mg/Kg		98	80 - 120
Arsenic	50.0	47.9		mg/Kg		96	80 - 120
Barium	50.0	48.2		mg/Kg		96	80 - 120
Beryllium	50.0	49.5		mg/Kg		99	80 - 120
Cadmium	50.0	48.8		mg/Kg		98	80 - 120
Chromium	50.0	49.4		mg/Kg		99	80 - 120
Cobalt	50.0	48.8		mg/Kg		98	80 - 120
Copper	50.0	49.6		mg/Kg		99	80 - 120
Lead	50.0	48.9		mg/Kg		98	80 - 120
Molybdenum	50.0	49.4		mg/Kg		99	80 - 120
Nickel	50.0	49.9		mg/Kg		100	80 - 120
Selenium	50.0	46.9		mg/Kg		94	80 - 120
Silver	25.0	24.5		mg/Kg		98	80 - 120
Thallium	50.0	49.7		mg/Kg		99	80 - 120
Vanadium	50.0	48.4		mg/Kg		97	80 - 120
Zinc	50.0	47.8		mg/Kg		96	80 - 120

Lab Sample ID: LCSD 720-99936/3-A
Matrix: Solid
Analysis Batch: 100014

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99936

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Antimony	50.0	48.4		mg/Kg		97	80 - 120	1	20
Arsenic	50.0	47.1		mg/Kg		94	80 - 120	2	20
Barium	50.0	47.8		mg/Kg		96	80 - 120	1	20
Beryllium	50.0	49.3		mg/Kg		99	80 - 120	0	20
Cadmium	50.0	48.1		mg/Kg		96	80 - 120	1	20
Chromium	50.0	49.3		mg/Kg		99	80 - 120	0	20

DRAFT

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCSD 720-99936/3-A
Matrix: Solid
Analysis Batch: 100014

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99936

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Cobalt	50.0	48.2		mg/Kg		96	80 - 120	1	20
Copper	50.0	49.7		mg/Kg		99	80 - 120	0	20
Lead	50.0	48.2		mg/Kg		96	80 - 120	2	20
Molybdenum	50.0	49.4		mg/Kg		99	80 - 120	0	20
Nickel	50.0	49.2		mg/Kg		98	80 - 120	1	20
Selenium	50.0	45.9		mg/Kg		92	80 - 120	2	20
Silver	25.0	24.1		mg/Kg		96	80 - 120	2	20
Thallium	50.0	48.9		mg/Kg		98	80 - 120	2	20
Vanadium	50.0	48.5		mg/Kg		97	80 - 120	0	20
Zinc	50.0	47.0		mg/Kg		94	80 - 120	2	20

Lab Sample ID: LCSSRM 720-99936/24-A
Matrix: Solid
Analysis Batch: 100014

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99936

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	% Rec	% Rec. Limits
Antimony	105	63.6		mg/Kg		61	11 - 101
Arsenic	79.4	65.4		mg/Kg		82	69 - 119
Beryllium	304	254		mg/Kg		84	56 - 102
Cadmium	48.3	40.0		mg/Kg		83	67 - 118
Chromium	171	143		mg/Kg		84	67 - 121
Cobalt	59.2	47.3		mg/Kg		80	64 - 133
Copper	327	281		mg/Kg		86	68 - 126
Lead	181	139		mg/Kg		77	62 - 113
Molybdenum	156	131		mg/Kg		84	62 - 128
Nickel	76.0	62.9		mg/Kg		83	65 - 117
Selenium	76.9	59.7		mg/Kg		78	63 - 126
Silver	29.1	26.4		mg/Kg		91	51 - 130
Thallium	192	148		mg/Kg		77	64 - 124
Vanadium	213	176		mg/Kg		83	67 - 123
Zinc	256	197		mg/Kg		77	62 - 110

Lab Sample ID: LCSSRM 720-99936/24-A
Matrix: Solid
Analysis Batch: 100105

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99936

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	% Rec	% Rec. Limits
Barium	391	348		mg/Kg		89	61 - 117

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 720-99938/1-A
Matrix: Solid
Analysis Batch: 100005

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99938

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.010		mg/Kg		09/29/11 17:13	09/30/11 13:52	1

DRAFT

Method: 7471A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 720-99938/2-A
Matrix: Solid
Analysis Batch: 100005

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99938

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits		
Mercury			0.833	0.809		mg/Kg		97	80 - 120		

Lab Sample ID: LCSD 720-99938/3-A
Matrix: Solid
Analysis Batch: 100005

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99938

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Mercury			0.833	0.812		mg/Kg		97	80 - 120	0	20

DRAFT

GC/MS VOA

Analysis Batch: 99888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-5	A,B,C,D-1.5	Total/NA	Solid	8260B/CA_LUFT MS	99901
720-37686-10	A,B,C,D-3.0	Total/NA	Solid	8260B/CA_LUFT MS	99901
720-37686-15	A.B.C.D-4.5	Total/NA	Solid	8260B/CA_LUFT MS	99901
720-37686-20	A,B,C,D-6.0	Total/NA	Solid	8260B/CA_LUFT MS	99901
720-37686-25	A,B,C,D-SURF	Total/NA	Solid	8260B/CA_LUFT MS	99901
LCS 720-99901/2-A	Lab Control Sample	Total/NA	Solid	8260B/CA_LUFT MS	99901
LCS 720-99901/4-A	Lab Control Sample	Total/NA	Solid	8260B/CA_LUFT MS	99901
LCSD 720-99901/3-A	Lab Control Sample Dup	Total/NA	Solid	8260B/CA_LUFT MS	99901
LCSD 720-99901/5-A	Lab Control Sample Dup	Total/NA	Solid	8260B/CA_LUFT MS	99901
MB 720-99901/1-A	Method Blank	Total/NA	Solid	8260B/CA_LUFT MS	99901

Prep Batch: 99901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-5	A,B,C,D-1.5	Total/NA	Solid	5030B	
720-37686-10	A,B,C,D-3.0	Total/NA	Solid	5030B	
720-37686-15	A.B.C.D-4.5	Total/NA	Solid	5030B	
720-37686-20	A,B,C,D-6.0	Total/NA	Solid	5030B	
720-37686-25	A,B,C,D-SURF	Total/NA	Solid	5030B	
LCS 720-99901/2-A	Lab Control Sample	Total/NA	Solid	5030B	
LCS 720-99901/4-A	Lab Control Sample	Total/NA	Solid	5030B	
LCSD 720-99901/3-A	Lab Control Sample Dup	Total/NA	Solid	5030B	
LCSD 720-99901/5-A	Lab Control Sample Dup	Total/NA	Solid	5030B	
MB 720-99901/1-A	Method Blank	Total/NA	Solid	5030B	

GC Semi VOA

Prep Batch: 99844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-5	A,B,C,D-1.5	Total/NA	Solid	3546	
720-37686-5 MS	A,B,C,D-1.5	Total/NA	Solid	3546	
720-37686-5 MSD	A,B,C,D-1.5	Total/NA	Solid	3546	
720-37686-10	A,B,C,D-3.0	Total/NA	Solid	3546	
720-37686-15	A.B.C.D-4.5	Total/NA	Solid	3546	
720-37686-20	A,B,C,D-6.0	Total/NA	Solid	3546	
720-37686-25	A,B,C,D-SURF	Total/NA	Solid	3546	
LCS 720-99844/2-A	Lab Control Sample	Total/NA	Solid	3546	
LCSD 720-99844/3-A	Lab Control Sample Dup	Total/NA	Solid	3546	
MB 720-99844/1-A	Method Blank	Total/NA	Solid	3546	

Prep Batch: 99995

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-5	A,B,C,D-1.5	Silica Gel Cleanup	Solid	3546	
720-37686-10	A,B,C,D-3.0	Silica Gel Cleanup	Solid	3546	
720-37686-15	A.B.C.D-4.5	Silica Gel Cleanup	Solid	3546	

DRAFT

GC Semi VOA (Continued)

Prep Batch: 99995 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-20	A,B,C,D-6.0	Silica Gel Cleanup	Solid	3546	
720-37686-25	A,B,C,D-SURF	Silica Gel Cleanup	Solid	3546	
LCS 720-99995/2-A	Lab Control Sample	Silica Gel Cleanup	Solid	3546	
LCSD 720-99995/3-A	Lab Control Sample Dup	Silica Gel Cleanup	Solid	3546	
MB 720-99995/1-A	Method Blank	Silica Gel Cleanup	Solid	3546	

Analysis Batch: 99996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-5	A,B,C,D-1.5	Total/NA	Solid	8081A	99844
720-37686-5 MS	A,B,C,D-1.5	Total/NA	Solid	8081A	99844
720-37686-5 MSD	A,B,C,D-1.5	Total/NA	Solid	8081A	99844
720-37686-10	A,B,C,D-3.0	Total/NA	Solid	8081A	99844
720-37686-15	A.B.C.D-4.5	Total/NA	Solid	8081A	99844
720-37686-20	A,B,C,D-6.0	Total/NA	Solid	8081A	99844
720-37686-25	A,B,C,D-SURF	Total/NA	Solid	8081A	99844
LCS 720-99844/2-A	Lab Control Sample	Total/NA	Solid	8081A	99844
LCSD 720-99844/3-A	Lab Control Sample Dup	Total/NA	Solid	8081A	99844
MB 720-99844/1-A	Method Blank	Total/NA	Solid	8081A	99844

Analysis Batch: 100040

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 720-99995/2-A	Lab Control Sample	Silica Gel Cleanup	Solid	8015B	99995
LCSD 720-99995/3-A	Lab Control Sample Dup	Silica Gel Cleanup	Solid	8015B	99995
MB 720-99995/1-A	Method Blank	Silica Gel Cleanup	Solid	8015B	99995

Analysis Batch: 100114

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-5	A,B,C,D-1.5	Silica Gel Cleanup	Solid	8015B	99995
720-37686-10	A,B,C,D-3.0	Silica Gel Cleanup	Solid	8015B	99995
720-37686-15	A.B.C.D-4.5	Silica Gel Cleanup	Solid	8015B	99995
720-37686-20	A,B,C,D-6.0	Silica Gel Cleanup	Solid	8015B	99995
720-37686-25	A,B,C,D-SURF	Silica Gel Cleanup	Solid	8015B	99995

Metals

Prep Batch: 99936

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-5	A,B,C,D-1.5	Total/NA	Solid	3050B	
720-37686-10	A,B,C,D-3.0	Total/NA	Solid	3050B	
720-37686-15	A.B.C.D-4.5	Total/NA	Solid	3050B	
720-37686-20	A,B,C,D-6.0	Total/NA	Solid	3050B	
720-37686-25	A,B,C,D-SURF	Total/NA	Solid	3050B	
LCS 720-99936/2-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 720-99936/3-A	Lab Control Sample Dup	Total/NA	Solid	3050B	
LCSSRM 720-99936/24-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 720-99936/1-A	Method Blank	Total/NA	Solid	3050B	

Prep Batch: 99938

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-5	A,B,C,D-1.5	Total/NA	Solid	7471A	
720-37686-10	A,B,C,D-3.0	Total/NA	Solid	7471A	
720-37686-15	A.B.C.D-4.5	Total/NA	Solid	7471A	

DRAFT

Metals (Continued)

Prep Batch: 99938 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-20	A,B,C,D-6.0	Total/NA	Solid	7471A	
720-37686-25	A,B,C,D-SURF	Total/NA	Solid	7471A	
LCS 720-99938/2-A	Lab Control Sample	Total/NA	Solid	7471A	
LCSD 720-99938/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	
MB 720-99938/1-A	Method Blank	Total/NA	Solid	7471A	

Analysis Batch: 100005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-5	A,B,C,D-1.5	Total/NA	Solid	7471A	99938
720-37686-10	A,B,C,D-3.0	Total/NA	Solid	7471A	99938
720-37686-15	A.B.C.D-4.5	Total/NA	Solid	7471A	99938
720-37686-20	A,B,C,D-6.0	Total/NA	Solid	7471A	99938
720-37686-25	A,B,C,D-SURF	Total/NA	Solid	7471A	99938
LCS 720-99938/2-A	Lab Control Sample	Total/NA	Solid	7471A	99938
LCSD 720-99938/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	99938
MB 720-99938/1-A	Method Blank	Total/NA	Solid	7471A	99938

Analysis Batch: 100014

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-5	A,B,C,D-1.5	Total/NA	Solid	6010B	99936
720-37686-10	A,B,C,D-3.0	Total/NA	Solid	6010B	99936
720-37686-15	A.B.C.D-4.5	Total/NA	Solid	6010B	99936
720-37686-20	A,B,C,D-6.0	Total/NA	Solid	6010B	99936
720-37686-25	A,B,C,D-SURF	Total/NA	Solid	6010B	99936
LCS 720-99936/2-A	Lab Control Sample	Total/NA	Solid	6010B	99936
LCSD 720-99936/3-A	Lab Control Sample Dup	Total/NA	Solid	6010B	99936
LCSSRM 720-99936/24-A	Lab Control Sample	Total/NA	Solid	6010B	99936
MB 720-99936/1-A	Method Blank	Total/NA	Solid	6010B	99936

Analysis Batch: 100105

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSSRM 720-99936/24-A	Lab Control Sample	Total/NA	Solid	6010B	99936

DRAFT

Client Sample ID: A,B,C,D-1.5

Lab Sample ID: 720-37686-5

Date Collected: 09/27/11 08:45

Matrix: Solid

Date Received: 09/27/11 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			99901	09/29/11 09:31	JZ	TAL SF
Total/NA	Analysis	8260B/CA_LUFTMS		1	99888	09/29/11 17:05	BA	TAL SF
Silica Gel Cleanup	Prep	3546			99995	09/30/11 13:41	MP	TAL SF
Silica Gel Cleanup	Analysis	8015B		2	100114	10/04/11 05:37	WR	TAL SF
Total/NA	Prep	3546			99844	09/28/11 13:37	NP	TAL SF
Total/NA	Analysis	8081A		1	99996	10/01/11 03:12	WR	TAL SF
Total/NA	Prep	7471A			99938	09/29/11 18:40	SK	TAL SF
Total/NA	Analysis	7471A		1	100005	09/30/11 14:28	EFH	TAL SF
Total/NA	Prep	3050B			99936	09/29/11 15:53	SK	TAL SF
Total/NA	Analysis	6010B		4	100014	09/30/11 13:13	CAM	TAL SF

Client Sample ID: A,B,C,D-3.0

Lab Sample ID: 720-37686-10

Date Collected: 09/27/11 08:45

Matrix: Solid

Date Received: 09/27/11 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			99901	09/29/11 09:31	JZ	TAL SF
Total/NA	Analysis	8260B/CA_LUFTMS		1	99888	09/29/11 17:34	BA	TAL SF
Silica Gel Cleanup	Prep	3546			99995	09/30/11 13:41	MP	TAL SF
Silica Gel Cleanup	Analysis	8015B		2	100114	10/04/11 06:02	WR	TAL SF
Total/NA	Prep	3546			99844	09/28/11 13:37	NP	TAL SF
Total/NA	Analysis	8081A		1	99996	10/01/11 03:28	WR	TAL SF
Total/NA	Prep	7471A			99938	09/29/11 18:40	SK	TAL SF
Total/NA	Analysis	7471A		1	100005	09/30/11 14:30	EFH	TAL SF
Total/NA	Prep	3050B			99936	09/29/11 15:53	SK	TAL SF
Total/NA	Analysis	6010B		4	100014	09/30/11 13:20	CAM	TAL SF

Client Sample ID: A.B.C.D-4.5

Lab Sample ID: 720-37686-15

Date Collected: 09/27/11 08:45

Matrix: Solid

Date Received: 09/27/11 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			99901	09/29/11 09:31	JZ	TAL SF
Total/NA	Analysis	8260B/CA_LUFTMS		1	99888	09/29/11 19:28	BA	TAL SF
Silica Gel Cleanup	Prep	3546			99995	09/30/11 13:41	MP	TAL SF
Silica Gel Cleanup	Analysis	8015B		2	100114	10/04/11 06:26	WR	TAL SF
Total/NA	Prep	3546			99844	09/28/11 13:37	NP	TAL SF
Total/NA	Analysis	8081A		1	99996	10/01/11 03:45	WR	TAL SF
Total/NA	Prep	7471A			99938	09/29/11 18:41	SK	TAL SF
Total/NA	Analysis	7471A		1	100005	09/30/11 14:32	EFH	TAL SF
Total/NA	Prep	3050B			99936	09/29/11 15:53	SK	TAL SF
Total/NA	Analysis	6010B		4	100014	09/30/11 13:27	CAM	TAL SF

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Client Sample ID: A,B,C,D-6.0

Lab Sample ID: 720-37686-20

Date Collected: 09/27/11 08:45

Matrix: Solid

Date Received: 09/27/11 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			99901	09/29/11 09:31	JZ	TAL SF
Total/NA	Analysis	8260B/CA_LUFTMS		1	99888	09/29/11 18:31	BA	TAL SF
Silica Gel Cleanup	Prep	3546			99995	09/30/11 13:41	MP	TAL SF
Silica Gel Cleanup	Analysis	8015B		1	100114	10/04/11 06:50	WR	TAL SF
Total/NA	Prep	3546			99844	09/28/11 13:37	NP	TAL SF
Total/NA	Analysis	8081A		1	99996	10/01/11 04:01	WR	TAL SF
Total/NA	Prep	7471A			99938	09/29/11 18:41	SK	TAL SF
Total/NA	Analysis	7471A		1	100005	09/30/11 14:35	EFH	TAL SF
Total/NA	Prep	3050B			99936	09/29/11 15:53	SK	TAL SF
Total/NA	Analysis	6010B		4	100014	09/30/11 13:34	CAM	TAL SF

Client Sample ID: A,B,C,D-SURF

Lab Sample ID: 720-37686-25

Date Collected: 09/27/11 08:45

Matrix: Solid

Date Received: 09/27/11 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			99901	09/29/11 09:31	JZ	TAL SF
Total/NA	Analysis	8260B/CA_LUFTMS		1	99888	09/29/11 18:59	BA	TAL SF
Silica Gel Cleanup	Prep	3546			99995	09/30/11 13:41	MP	TAL SF
Silica Gel Cleanup	Analysis	8015B		5	100114	10/04/11 07:15	WR	TAL SF
Total/NA	Prep	3546			99844	09/28/11 13:37	NP	TAL SF
Total/NA	Analysis	8081A		1	99996	10/01/11 04:18	WR	TAL SF
Total/NA	Prep	7471A			99938	09/29/11 18:41	SK	TAL SF
Total/NA	Analysis	7471A		1	100005	09/30/11 14:37	EFH	TAL SF
Total/NA	Prep	3050B			99936	09/29/11 16:06	SK	TAL SF
Total/NA	Analysis	6010B		4	100014	09/30/11 13:55	CAM	TAL SF

Laboratory References:

TAL SF = TestAmerica San Francisco, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

DRAFT

Certification Summary

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica San Francisco	California	State Program	9	2496

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

DRAFT

Method Summary

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Method	Method Description	Protocol	Laboratory
8260B/CA_LUFTMS	8260B / CA LUFT MS	SW846	TAL SF
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL SF
8081A	Organochlorine Pesticides (GC)	SW846	TAL SF
6010B	Metals (ICP)	SW846	TAL SF
7471A	Mercury (CVAA)	SW846	TAL SF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SF = TestAmerica San Francisco, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

DRAFT

Sample Summary

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
720-37686-5	A,B,C,D-1.5	Solid	09/27/11 08:45	09/27/11 15:45
720-37686-10	A,B,C,D-3.0	Solid	09/27/11 08:45	09/27/11 15:45
720-37686-15	A.B.C.D-4.5	Solid	09/27/11 08:45	09/27/11 15:45
720-37686-20	A,B,C,D-6.0	Solid	09/27/11 08:45	09/27/11 15:45
720-37686-25	A,B,C,D-SURF	Solid	09/27/11 08:45	09/27/11 15:45

DRAFT

TRC

CHAIN OF CUSTODY RECORD

100-37686

☐ **Mountain View Office**
405 Clyde Ave.
Mountain View, CA 94043
Tel: 650.961.8236
Fax: 650.917.9278

☒ **San Francisco Office**
101 2nd Street, Suite 300
San Francisco, CA 94105
Tel: 415.544.3000
Fax: 415.541.9378

☐ **Concord Office**
1590 Solano Way, #A
Concord, CA 94520
Tel: 925.688.2461
Fax: 925.688.0388

133909 1 of 3

10/04/2011

Project Name: Lathrop PARC
Job No.: 166215.1 P.O. #:
Report To: Charles Mettler
Sampler (print): N E Bernbe
Sampler (signature): N E Bernbe

Electronic Deliverable Format Required: ☒ YES ☐ NO
EDF LOGCODE: ☐ LAMV ☐ LAO
Global ID # :
Sample Type: ☐ Storm Water ☐ Waste Water ~~☒ Groundwater~~ ☒ Soil ☐ Air ☐ Other

Turnaround Requirements
- ☒ 5 Working Days
- ☐ 72 Hours
- ☐ 24 Hours
- ☐ 2-3 Hours RUSH
- ☐ _____

QC Requirement:
- ☐ Level IV
- ☒ EDF
- ☐ Excel/EDD

ANALYSES REQUESTED

	Sample I.D. (Field Point Name)	Date	Time	Lab I.D.	Sample Matrix	# of cont	Preserved?	☐ EPA 8260B –Full List ☐ EPA 8260B -8010 List	☒ TPH gas ☒ BTEX ☐ Fuel oxygenates ☐ MTBE 8015 8260	☒ TPH Diesel ☒ Si-Gel ☒ Motor Oil 8015 Ext	TRPH (418.1) with silica gel column	☐ Ferrous Iron Fe^{+2} (HACH 8146)	☐ Hexavalent Chromium (7199)	☐ Bromide (300)	Metals: arsenic, barium, chromium, cadmium, copper, lead, selenium	Metals: ☒ CAM 17 (6010)/7000	Organochlorine Pesticides (8081)	PCBs (8082)	PAHs (8310) VOCs	Comments:
1	A - 1.5	9-27-11	0845		Soil	1	Ice		X	X						X	X		X	COMPOSITE
2	B - 1.5		0850						X	X						X	X		X	
3	C - 1.5		0855						X	X						X	X		X	
4	D - 1.5		0900						X	X						X	X		X	
6	A - 3.0	9-27-11	0845		Soil	1	Ice		X	X						X	X		X	COMPOSITE (10)
7	B - 3.0		0850						X	X						X	X		X	
8	C - 3.0		0855						X	X						X	X		X	
9	D - 3.0		0900						X	X						X	X		X	

Relinquished By: N E Bernbe	Date: 9-27-11	Time: 1120	Received By: [illegible]
Relinquished By: [illegible]	Date: 09/27/11	Time: 1545	Received By: [illegible] TRRP Date: 9/27/11 Time: 1545
Relinquished By:	Date:	Time:	Lab of Record:
			Received by Lab: Date: Time:

PM Initial:
Temp: 5.2°C

DRAFT

TRC

☐ **Mountain View Office**
405 Clyde Ave.
Mountain View 94043
Tel: 650.967.2365
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☒ **San Francisco Office**
101 2nd Street, Suite 300
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Tel: 415.644.3050
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☐ Concord Office
1590 Solano Way, #A
Concord, CA 94520
Tel: 925.688.2661
Fax: 925.688.0868

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133909

10/04/2011

CHAIN OF CUSTODY RECORD

Project Name: Lathrop PARC
Job No.: 166215.1
P.O. #:
Report To: Charles Mettler
Sampler (print): NE Berube
Sampler (signature):

Electronic Deliverable Format Required: ☒ YES ☐ NO
EDF LOGCODE: ☐ LAMV ☐ LAO
Global ID # :
Sample Type: ☐ Storm Water ☐ Waste Water ☒ ~~Groundwater~~ ☒ Soil ☐ Air ☐ Other

Turnaround Requirements
☒ 5 Working Days
☐ 72 Hours
☐ 24 Hours
☐ 2-3 Hours RUSH
☐ _____

QC Requirement:
☐ Level IV
☒ EDF
☐ Excel/EDD

ANALYSES REQUESTED

	Sample I.D. (Field Point Name)	Date	Time	Lab I.D.	Sample Matrix	# of cont	Preserved?	☐ EPA 8260B –Full List ☐ EPA 8260B -8010 List	TPH gas ☒ BTEX ☐ Fuel oxygenates ☐ MTBE	TPH Diesel ☒ Si-Gel ☒ Motor Oil	TRPH (418.1) with silica gel column	☐ Ferrous Iron Fe +2 (HACH 8146)	☐ Hexavalent Chromium (7199)	☐ Bromide (300)	Metals: arsenic, barium, chromium, cadmium, copper, lead, selenium	Metals: ☒ CAM 17 (6010)	Organochlorine Pesticides (8081)	PCBs (8082)	PAHs (8350)	Comments:
11	~~B~~ A - 4.5	9.27.11	0845		Soil		Ice		X	X						X	X		X	Composite (15)
12	B - 4.5	"	0850		"		"		X	X						X	X		X	
13	C - 4.5	"	0855		"		"		X	X						X	X		X	
14	D - 4.5	"	0900		"		"		X	X						X	X		X	
16	A - 6.0	9.27.11	0845		Soil		Ice		X	X						X	X		X	Composite (20)
17	B - 6.0	"	0850		"		"		X	X						X	X		X	
18	C - 6.0	"	0855		"		"		X	X						X	X		X	
19	D - 6.0	"	0900		"		"		X	X						X	X		X	

Relinquished By:	Date: 9-27-11	Time: 1140	Received By:	Date: 09/27/11	Time: 1140
Relinquished By:	Date: 09/27/11	Time: 1545	Received By:	Date: 9/27/11	Time: 1545
Relinquished By:	Date:	Time:	Lab of Record:		
			Received by Lab:	Date:	Time:

PM Initial:
Temp: 5.2C

DRAFT

TRC

CHAIN OF CUSTODY RECORD

☐ **Mountain View Office**
405 Clyde Ave.
Mountain View 94043
Tel: 650.967.2365
Fax: 650.967.2785

☒ **San Francisco Office**
101 2nd Street, Suite 300
San Francisco, CA 94105
Tel: 415.644.3050
Fax: 415.541.9878

☐ **Concord Office**
1390 Solano Way, #A
Concord, CA 94520
Tel: 925.688.2161
Fax: 925.689.0388

7203768sp

133909

10/04/2011

Project Name: Lathrop PARC

Job No.: 16215.1 P.O. #:

Report To: Charles Mettler

Sampler (print): NE Bennett

Sampler (signature): NEB

Electronic Deliverable Format Required: ☒ YES ☐ NO

EDF LOGCODE: ☐ LAMV ☐ LAO

Global ID # :

Sample Type: ☐ Storm Water ☐ Waste Water ☒ ~~Groundwater~~ ☒ Soil ☐ Air ☐ Other

Turnaround Requirements

- ☒ 5 Working Days
- ☐ 72 Hours
- ☐ 24 Hours
- ☐ 2-3 Hours RUSH
- ☐ _____

QC Requirement:
☐ Level IV
☒ EDF
☐ Excel/EDD

ANALYSES REQUESTED

Sample I.D. (Field Point Name)	Date	Time	Lab I.D.	Sample Matrix	# of cont	Preserved?	EPA 8260B –Full List / EPA 8260B -8010 List	TPH gas / BTEX / Fuel oxygenates / MTBE	TPH Diesel / Si-Gel / Motor Oil	TRPH (418.1) with silica gel column	Ferrous Iron Fe^{+2} (HACH 8146)	Hexavalent Chromium (7199)	Bromide (300)	Metals: arsenic, barium, chromium, cadmium, copper, lead, selenium	Metals: CAM 17 (6010/7000)	Organochlorine Pesticides (8081)	PCBs (8082)	PAHs (8310)	Comments:
21 A – Surf	9-27-11	0845		Soil	1	Ice		X	X						X	X		X	VOCs
22 B – Surf		0850						X	X						X	X		X	
23 C – Surf		0855						X	X						X	X		X	
24 D – Surf		0900						X	X						X	X		X	

Relinquished By: NEB Date: 9.27.11 Time: 1140

Relinquished By: Date: 09/27/11 Time: 1545

Relinquished By: Date: Time:

Received By: Date: 09/27/11 Time: 1140

Received By: Date: 9/27/11 Time: 1545

Lab of Record:

Received by Lab: Date: Time:

PM Initial:

Temp: 5.2C

DRAFT

Login Sample Receipt Checklist

Client: TRC Solutions, Inc.

Job Number: 720-37686-1

Login Number: 37686

List Source: TestAmerica San Francisco

List Number: 1

Creator: Hoang, Julie

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	False	SEE NCM
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DRAFT

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

TestAmerica Job ID: 720-37686-2
Client Project/Site: Lathrop PARC

For:
TRC Solutions, Inc.
101 2nd street
Suite 300
San Francisco, California 94105

Attn: Mr. Charles Mettler

Authorized for release by:
10/11/2011 10:45:19 AM

Dimple Sharma
Project Manager I
dimple.sharma@testamericainc.com

DRAFT

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-2

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

DRAFT

Job ID: 720-37686-2

Laboratory: TestAmerica San Francisco

Narrative

Job Narrative
720-37686-2

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

Metals
No analytical or quality issues were noted.

DRAFT

Detection Summary

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-2

Client Sample ID: A,B,C,D-1.5 — Lab Sample ID: 720-37686-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	3.5		0.25		mg/L	2.5		6010B	STLC Citrate
Chromium	0.30		0.25		mg/L	2.5		6010B	STLC Citrate

Client Sample ID: A,B,C,D-3.0 — Lab Sample ID: 720-37686-10

No Detections

Client Sample ID: A.B.C.D-4.5 — Lab Sample ID: 720-37686-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.34		0.25		mg/L	2.5		6010B	STLC Citrate

Client Sample ID: A,B,C,D-6.0 — Lab Sample ID: 720-37686-20

No Detections

Client Sample ID: A,B,C,D-SURF — Lab Sample ID: 720-37686-25

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	2.2		0.13		mg/L	2.5		6010B	STLC Citrate

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-2

Client Sample ID: A,B,C,D-1.5
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-5
Matrix: Solid

Method: 6010B - Metals (ICP) - STLC Citrate

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	3.5		0.25		mg/L		10/10/11 11:23	10/10/11 13:44	2.5
Chromium	0.30		0.25		mg/L		10/10/11 11:23	10/10/11 13:44	2.5

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-2

Client Sample ID: A,B,C,D-3.0
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-10
Matrix: Solid

Method: 6010B - Metals (ICP) - STLC Citrate

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.25		mg/L		10/10/11 11:23	10/10/11 13:49	2.5

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-2

Client Sample ID: A.B.C.D-4.5
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-15
Matrix: Solid

Method: 6010B - Metals (ICP) - STLC Citrate

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	0.34		0.25		mg/L		10/10/11 11:23	10/10/11 14:03	2.5

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-2

Client Sample ID: A,B,C,D-6.0
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-20
Matrix: Solid

Method: 6010B - Metals (ICP) - STLC Citrate

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.25		mg/L		10/10/11 11:23	10/10/11 14:08	2.5

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-2

Client Sample ID: A,B,C,D-SURF
Date Collected: 09/27/11 08:45
Date Received: 09/27/11 15:45

Lab Sample ID: 720-37686-25
Matrix: Solid

Method: 6010B - Metals (ICP) - STLC Citrate

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.2		0.13		mg/L		10/10/11 11:23	10/10/11 14:12	2.5

DRAFT

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 720-100552/1-A
Matrix: Solid
Analysis Batch: 100570

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 100552

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0050		mg/L		10/10/11 11:23	10/10/11 13:08	1
Nickel	ND		0.010		mg/L		10/10/11 11:23	10/10/11 13:08	1
Chromium	ND		0.010		mg/L		10/10/11 11:23	10/10/11 13:08	1

Lab Sample ID: LCS 720-100552/2-A
Matrix: Solid
Analysis Batch: 100570

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 100552

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Lead	1.00	0.974		mg/L		97	80 - 120
Nickel	1.00	0.981		mg/L		98	80 - 120
Chromium	1.00	0.962		mg/L		96	80 - 120

Lab Sample ID: LCSD 720-100552/3-A
Matrix: Solid
Analysis Batch: 100570

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 100552

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Lead	1.00	0.991		mg/L		99	80 - 120	2	20
Nickel	1.00	0.996		mg/L		100	80 - 120	2	20
Chromium	1.00	0.987		mg/L		99	80 - 120	3	20

Lab Sample ID: LB4 720-100494/1-B LB4
Matrix: Solid
Analysis Batch: 100570

Client Sample ID: Method Blank
Prep Type: STLC Citrate
Prep Batch: 100552

Analyte	LB4 Result	LB4 Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.13		mg/L		10/10/11 11:23	10/10/11 13:21	2.5
Nickel	ND		0.25		mg/L		10/10/11 11:23	10/10/11 13:21	2.5
Chromium	ND		0.25		mg/L		10/10/11 11:23	10/10/11 13:21	2.5

DRAFT

Metals

Leach Batch: 100494

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-5	A,B,C,D-1.5	STLC Citrate	Solid	CA WET Citrate	
720-37686-10	A,B,C,D-3.0	STLC Citrate	Solid	CA WET Citrate	
720-37686-15	A.B.C.D-4.5	STLC Citrate	Solid	CA WET Citrate	
720-37686-20	A,B,C,D-6.0	STLC Citrate	Solid	CA WET Citrate	
720-37686-25	A,B,C,D-SURF	STLC Citrate	Solid	CA WET Citrate	
LB4 720-100494/1-B LB4	Method Blank	STLC Citrate	Solid	CA WET Citrate	

Prep Batch: 100552

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-5	A,B,C,D-1.5	STLC Citrate	Solid	3005A	100494
720-37686-10	A,B,C,D-3.0	STLC Citrate	Solid	3005A	100494
720-37686-15	A.B.C.D-4.5	STLC Citrate	Solid	3005A	100494
720-37686-20	A,B,C,D-6.0	STLC Citrate	Solid	3005A	100494
720-37686-25	A,B,C,D-SURF	STLC Citrate	Solid	3005A	100494
LB4 720-100494/1-B LB4	Method Blank	STLC Citrate	Solid	3005A	100494
LCS 720-100552/2-A	Lab Control Sample	Total Recoverable	Solid	3005A	
LCSD 720-100552/3-A	Lab Control Sample Dup	Total Recoverable	Solid	3005A	
MB 720-100552/1-A	Method Blank	Total Recoverable	Solid	3005A	

Analysis Batch: 100570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-37686-5	A,B,C,D-1.5	STLC Citrate	Solid	6010B	100552
720-37686-10	A,B,C,D-3.0	STLC Citrate	Solid	6010B	100552
720-37686-15	A.B.C.D-4.5	STLC Citrate	Solid	6010B	100552
720-37686-20	A,B,C,D-6.0	STLC Citrate	Solid	6010B	100552
720-37686-25	A,B,C,D-SURF	STLC Citrate	Solid	6010B	100552
LB4 720-100494/1-B LB4	Method Blank	STLC Citrate	Solid	6010B	100552
LCS 720-100552/2-A	Lab Control Sample	Total Recoverable	Solid	6010B	100552
LCSD 720-100552/3-A	Lab Control Sample Dup	Total Recoverable	Solid	6010B	100552
MB 720-100552/1-A	Method Blank	Total Recoverable	Solid	6010B	100552

DRAFT

Lab Chronicle

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-2

Client Sample ID: A,B,C,D-1.5

Lab Sample ID: 720-37686-5

Date Collected: 09/27/11 08:45

Matrix: Solid

Date Received: 09/27/11 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
STLC Citrate	Leach	CA WET Citrate			100494	10/07/11 22:01	SK	TAL SF
STLC Citrate	Prep	3005A			100552	10/10/11 11:23	EFH	TAL SF
STLC Citrate	Analysis	6010B		2.5	100570	10/10/11 13:44	EFH	TAL SF

Client Sample ID: A,B,C,D-3.0

Lab Sample ID: 720-37686-10

Date Collected: 09/27/11 08:45

Matrix: Solid

Date Received: 09/27/11 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
STLC Citrate	Leach	CA WET Citrate			100494	10/07/11 22:01	SK	TAL SF
STLC Citrate	Prep	3005A			100552	10/10/11 11:23	EFH	TAL SF
STLC Citrate	Analysis	6010B		2.5	100570	10/10/11 13:49	EFH	TAL SF

Client Sample ID: A.B.C.D-4.5

Lab Sample ID: 720-37686-15

Date Collected: 09/27/11 08:45

Matrix: Solid

Date Received: 09/27/11 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
STLC Citrate	Leach	CA WET Citrate			100494	10/07/11 22:01	SK	TAL SF
STLC Citrate	Prep	3005A			100552	10/10/11 11:23	EFH	TAL SF
STLC Citrate	Analysis	6010B		2.5	100570	10/10/11 14:03	EFH	TAL SF

Client Sample ID: A,B,C,D-6.0

Lab Sample ID: 720-37686-20

Date Collected: 09/27/11 08:45

Matrix: Solid

Date Received: 09/27/11 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
STLC Citrate	Leach	CA WET Citrate			100494	10/07/11 22:01	SK	TAL SF
STLC Citrate	Prep	3005A			100552	10/10/11 11:23	EFH	TAL SF
STLC Citrate	Analysis	6010B		2.5	100570	10/10/11 14:08	EFH	TAL SF

Client Sample ID: A,B,C,D-SURF

Lab Sample ID: 720-37686-25

Date Collected: 09/27/11 08:45

Matrix: Solid

Date Received: 09/27/11 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
STLC Citrate	Leach	CA WET Citrate			100494	10/07/11 22:01	SK	TAL SF
STLC Citrate	Prep	3005A			100552	10/10/11 11:23	EFH	TAL SF
STLC Citrate	Analysis	6010B		2.5	100570	10/10/11 14:12	EFH	TAL SF

Laboratory References:

TAL SF = TestAmerica San Francisco, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

DRAFT

Certification Summary

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-2

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica San Francisco	California	State Program	9	2496

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

DRAFT

Method Summary

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-37686-2

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL SF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SF = TestAmerica San Francisco, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

DRAFT

Sample Summary

1 Qel t: Tn 1 RoCStiol sull c,
. roPectjRite: / atLroh . An 1

TestAmerica Job ID: 720-37686-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
720-37686-p	Au5ul uD-B,p	RoQd	09j27jBB 08:4p	09j27jBB Bp:4p
720-37686-B0	Au5ul uD-3,0	RoQd	09j27jBB 08:4p	09j27jBB Bp:4p
720-37686-Bp	A,5,1,D-4,p	RoQd	09j27jBB 08:4p	09j27jBB Bp:4p
720-37686-20	Au5ul uD-6,0	RoQd	09j27jBB 08:4p	09j27jBB Bp:4p
720-37686-2p	Au5ul uD-RUn F	RoQd	09j27jBB 08:4p	09j27jBB Bp:4p

DRAFT

720-37686-2

Sharma, Dimple

From: Nathan Berube [ncberube@comcast.net]
Sent: Wednesday, October 05, 2011 7:31 PM
To: Sharma, Dimple
Subject: STLC analysis

Hi Dimple:

We had some high hits in the results of our Lathrop PRAC project. Test America ID # 720-37686-1

Please perform STLC on the following samples:

Composite Sample for the 1.5 set: STLC analysis for Cr and Nickel

Composite Sample for the 3.0 set: STLC analysis for Cr

Composite Sample for the 4.5 set: STLC analysis for Cr

Composite Sample for the 6.0 set: STLC analysis for Cr

Composite Sample for the Surf set: STLC analysis for Pb

Charles has authorized a 4 day TAT.

I you have any questions please contact Charles Mettler at 408-690-0557 or cmettler@trcsolutions.com.

Thanks

Nathan Berube
TRC Solutions

DRAFT

3 RUSH

Login Sample Receipt Checklist

Client: TRC Solutions, Inc.

Job Number: 720-37686-2

Login Number: 37686
List Number: 1
Creator: Hoang, Julie

List Source: TestAmerica San Francisco

Question	Answer	Comment
RAaioActiditv eityer h As not meAsurea or, iwmeAsurea, is At or beloh bAcf krouna	N1⁄	
Tye coolergs custoav seAl, iW resent, is intAct.	N1⁄	
Tye cooler or sAm' les ao not A' ' eAr to yAde been com' romisea or tAm' erea h ity.	True	
SAm' les h ere receidea on ice.	True	
Cooler Tem' erAture is Acce' tAble.	True	
Cooler Tem' erAture is recoraea.	True	
Cp C is ' resent.	True	
Cp C is willea out in inf Ana lekible.	True	
Cp C is willea out h ity All ' ertinent inwormAtion.	True	
Is tye Cielа SAm' lergs nAme ' resent on Cp CF	True	
Tyere Are no aiscre' Ancies beth een tye sAm' le l? s on tye contAiners Ana tye Cp C.	OAlse	SDD NCE
SAm' les Are receidea h ityin Molaink Time.	True	
SAm' le contAiners yAde lekible lAbels.	True	
ContAiners Are not brof en or leAf ink.	True	
SAm' le collection aAte1times Are ' rodiaea.	True	
/ ' ' ro' riAte sAm' le contAiners Are usea.	True	
SAm' le bottles Are com' letelv willea.	True	
SAm' le HreserdAtion Periwiea.	N1⁄	
Tyere is suwicient dol. wor All reVuestea AnAlvses, incl. Anv reVuestea E S1E S? s	True	
Pp / sAm' le diAls ao not yAde yeAas' Ace or bubble is q6mm <(1⁄4") in aiAmeter.	True	
E ulti' yAsic sAm' les Are not ' resent.	True	
SAm' les ao not reVuire s' littink or com' ositink.	True	
ResiauAl Cylorine Cyecf ea.	N1⁄	

DRAFT

101 2nd Street
Suite 300
San Francisco, CA 94105

415.644.3000 PHONE
415.541.9378 FAX

www.TRCsolutions.com

December 16, 2011

Mr. Luis Deziel
LATHROP PARC
101 Seminary Drive
Menlo Park, California 94025

RE: SOIL SAMPLING SERVICES
LATHROP PARC
REDWOOD CITY, CALIFORNIA

DRAFT

Dear Mr. Deziel:

We are pleased to present this letter summarizing the results of soil sampling services performed at the Lathrop Park site located in Redwood City, California.

THE PROJECT
On October 25, 2011, TRC collected soil samples for laboratory evaluation of the in-place soil at the Area II of the site. The top 1-foot of soil in this area is being considered for potential reuse or landfill disposal. It is our understanding that approximately 200 Cubic Yards of soil will be excavated during construction activities at the site.

SOIL SAMPLING
As requested, to evaluate disposal options for soil generated during construction activities at the site, we collected one four-point composite sample from the subject soil. It is anticipated that approximately 200 cubic yards of soil will be excavated for off-site disposal or potential reuse. The soil samples were collected from the in-place soil using hand tools. Using our standard sampling protocols the samples were collected from various locations within the Second Area at depths from the surface to 1-foot below the existing ground surface. The samples were collected in clean glass jars provided by a state certified laboratory. The samples were then placed in an ice cooled chest for transport to a state-certified laboratory under chain of custody documentation. All soil sampling equipment was cleaned in a solution of laboratory grade detergent and distilled water before use and between sample points.

LABORATORY ANALYSIS

The composite sample collected from Area II was analyzed for total petroleum hydrocarbons in the motor oil range and total lead for the following reasons: Phase I Site history (see below), the results of the laboratory analysis from the top 1-foot of the adjacent site (Area I), and your intention that only the top 1-foot of the Second Area (Area II) will be excavated for off-haul.

Based on information obtained from various Phase I Environmental Assessment Reports (TRC, July, 2007; Dominion, 2011) the site (covering both, Area I and II) was historically used for commercial purposes,

including a fee mill and grain warehouse, a feed and fuel supply facility, car services and gas station, and in more recent times site-use included an electrical equipment store and contractor equipment storage. The underground storage tanks of the former gas station were removed in 1984 and the site received closure form the San Mateo County of Department of Environmental Health.

Since the site history was the same for both Area I and II and the only detected impact to the near-surface soil in Area I consisted of lead and motor oil range hydrocarbons, laboratory analysis of the near-surface soil samples collected in Area II was therefore limited to those two chemical compounds.

RESULTS

As shown on the attached laboratory report, the analyses performed detected Motor Oil Range Organics ranging from 59 to 1100 mg/Kg. Total Threshold Level Concentrations (TTLC) for lead was detected from 9.3 to 50 mg/Kg. The lead concentration of 50 mg/Kg detect in sample S-6-1.0 was equal to the minimum hazardous waste TTLC level.

Furthermore, none of the constituents detected in the sample exceeded concentrations of the ecology risk-based environmental screening level (ESL) established by the State Regional Water Quality Control Board for residential site use and beneficial use of groundwater. Also, none of the results exceeded the California Human Health Screening Levels (CHHSLs), which are human-exposure based screening levels.

RECOMMENDATIONS

Due to the exceedances of lead, the soil appears hazardous and a Class II landfill will likely require STLC analysis prior to acceptance. Because the concentrations did not exceed ESLs or CHHSLs the top 1.0-foot of soil can be considered for ONSITE residential or commercial reuse.

LIMITATIONS

This report was prepared for the use of Lathrop Park LLC in evaluating soil quality at the referenced Site at the time of this study. The accuracy and reliability of geo- or hydrochemical studies are a reflection of the number and type of samples taken and extent of the analyses conducted, and are thus inherently limited and dependent upon the resources expended. We make no warranty, expressed or implied, except that our services have been performed in accordance with environmental principles generally accepted at this time and location. The chemical and other data presented in this report can change over time and are applicable only to the time this study was performed.

Thank you for choosing us to assist you with this project. If you have any questions, please call and we shall be glad to discuss them with you.

Very truly yours,

TRC ENGINEERS, INC.

Charles Mettler, P.G.
Principal Geologist



DRAFT

CCM:

Copies: Addressee (email)

OK:Lathrop Soil Letter 121211.docx
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DRAFT

101 2nd Street
Suite 300
San Francisco, CA 94105

415.644.3000 PHONE
415.541.9378 FAX

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December 21, 2011

Mr. Luis Deziel
LATHROP PARC
101 Seminary Drive
Menlo Park, California 94025

RE: ADDITIONAL SOIL SAMPLING SERVICES, LATHROP PARC REDWOOD CITY, CALIFORNIA

DRAFT

Dear Mr. Deziel:

Thank you for requesting additional environmental services at the Lathrop PARC project site located at 134 Maple Street in Redwood City, California. This change order is being issued to address the additional services request by you to continue the soil management activities at the project site.

ORIGINAL SCOPE OF WORK

In accordance with our agreement dated September 23, 2011, TRC evaluated soil conditions at the site for potential reuse or landfill disposal. On September 27, 2011 we collected representative soil samples at the northern portion of the site where the foundation elements of the proposed building were to be excavated. The samples were analyzed at a California State certified laboratory and results were used to determine suitability for reuse onsite or disposal at various landfills. On October 05, 2011 an STLC analysis was performed on select samples as required by the landfill to determine the appropriate disposal facility.

ADDITIONAL SOIL SAMPLING

Subsequently the site was divided into three soil sampling Areas. Area I was located at the northernmost portion of the site where the foundation excavations were conducted, with Area II in the center and Area III at the southern portion of the site. The sampling locations are shown on the site plan (Figure 1). At your request, on October 25, 2011, TRC collected 1 four-point composite sample from the top 1-foot of Area II. On December 02, 2011 TRC collected 1 four-point composite sample on the top 1-foot of the Area III. All samples were analyzed at a State Certified laboratory.

ADDITIONAL LABORATORY ANALYSIS

The two 4-point composite soil samples mentioned above were analyzed at a State Certified Laboratory. Each sample was analyzed further to determine STLC parameters. On December 07, 2011 an STLC analysis was

performed on the Area II sample for lead. On December 16, 2011 an STLC analysis was performed on the Area III sample for lead and on December 19, 2011 an STLC analysis was requested for chromium.

LETTER REPORTS

At your request we provided two letters and various e-mail communications presenting the analytical results of the soil quality evaluation summarizing our conclusions and recommendations. Our conclusions and recommendations were based on readily available information, observations of existing conditions, and our interpretation of the analytical data.

FEES AND TERMS

The following table lists the billable tasks performed by TRC since the issue date of TRC's original proposal in September 2011. The additional work has been completed in accordance with the terms and conditions of this agreement. Payment for work shall be due and payable upon receipt of TRC's statement. To be recognized, any dispute over charges must be claimed in writing within 30 days of the billing date. Disputes or questions about a statement shall not be cause for withholding payment for remaining portions due. A service charge of 1 percent per month shall be assessed on balances unpaid 30 days after the issue date of TRC's statement to compensate TRC for the cost and burden of administering the account and collecting fees owed. Requested changes to this contract must be approved in writing before we proceed.

Additional services that are not outlined in this agreement, such as attendance at project meetings, preparation of additional draft reports, and review of environmental reports will be charged on a time-and-expense basis.

DRAFT

TABLE 1. FIXED FEES FOR ADDITIONAL ENVIRONMENTAL SERVICES

Soil Quality Evaluation

Soil Sampling	$1,620
Laboratory Analysis	$5,739
Project Coordination, Data Review and Reporting	$3,382
Total to date	$10,741
Proposal for original scope (September 2011)	($5,115)
Change Order	**$5,626**

AUTHORIZATION

Please indicate by initialing your agreement with the change order, terms, and fees by issuing a purchase order. Please email authorization referencing this change order to me at cmettler@trcsolutions.com. If you have any questions, please call and we will be glad to discuss them with you.

We look forward to continuing work with you on this important project. Thank you for choosing us to assist you. If you have any questions, please call and we will be glad to discuss them with you.

Very truly yours,

TRC ENGINEERS, INC.

Charles Mettler, P.G.
Principal Geologist

Agreement accepted by:

LATHROP PARC

Signature 12/22/11 Date

Louis Dezio

Please Print Name and Title

CCM:

Copies: Addressee (email)

OK:187850 CO ccm_122111.docx
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DRAFT

Louis Deziel

From: Berube, Nathan (SanFrancisco,CA-US) [NBerube@trcsolutions.com]
Sent: Tuesday, December 13, 2011 12:52 PM
To: Louis Deziel (LDeziel@atelier.com); ldeziel@lathropparc.com
Cc: Mettler, Charles (SanFrancisco,CA-US)
Subject: FW: are you following up with VASCO on the previous 4 samples and letter?
Attachments: J38315-2 UDS Level 2 Report Final Report.pdf

Louis;

Attached is the result of the STLC analysis for lead on sample S-6.0-1.0 taken from Area II. The analysis resulted in an STLC lead concentration of 2.1 mg/L which is below California Title 22 level (5.0 mg/L) for disposal in a Class II landfill.

Nate

-----Original Message-----
From: Berube, Nathan (SanFrancisco,CA-US)
Sent: Wednesday, December 07, 2011 12:53 PM
To: Louis Deziel
Cc: Mettler, Charles (SanFrancisco,CA-US)
Subject: RE: are you following up with VASCO on the previous 4 samples and letter?

Yes, I spoke to Joe Griffith regarding the required analysis for the soil samples collected at section two, on 10/25/11 and he says we need to do STLC on the one sample that returned 50 ppm for lead. I had the lab start the STLC today.
Joe says the soil will go to Vasco.

Nathan Berube

_____

From: Louis Deziel [LDeziel@atelier.com]
Sent: Tuesday, December 06, 2011 5:35 PM
To: Berube, Nathan (SanFrancisco,CA-US)
Subject: are you following up with VASCO on the previous 4 samples and letter?

Louis Deziel, Jr.
Lathrop PARC
101 Seminary Dr.
Menlo Park, CA 94025
650-462-4670
650-462-4660 fax

DRAFT

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Suite 300
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December 23, 2011

Mr. Luis Deziel
LATHROP PARC
101 Seminary Drive
Menlo Park, California 94025

RE: SOIL SAMPLING SERVICES
LATHROP PARC
REDWOOD CITY, CALIFORNIA

DRAFT

Dear Mr. Deziel:

We are pleased to present this letter summarizing the results of soil sampling services performed at the Lathrop Park site located in Redwood City, California.

THE PROJECT
On December 2, 2011, TRC collected soil samples for laboratory evaluation of the in-place soil at the Section 3 Area of the site. The top 1-foot of soil in this area is being considered for potential reuse or landfill disposal. It is our understanding that approximately 200 Cubic Yards of soil will be excavated during construction activities at the site.

SOIL SAMPLING
As requested, to evaluate disposal options for soil generated during construction activities at the site, we collected one four-point composite samples from the subject soil. It is anticipated that approximately 200 cubic yards of soil will be excavated for off-site disposal or potential reuse. The soil samples were collected from the in-place soil using a backhoe provided by Lathrop Park LLC. Using our standard sampling protocols the samples were collected at various depths from the surface to 1-foot below the existing ground surface. The samples were collected in clean glass jars provided by a state certified laboratory. The samples were then placed in an ice cooled chest for transport to a state-certified laboratory under chain of custody documentation. All soil sampling equipment was cleaned in a solution of laboratory grade detergent and distilled water before use and between sample points.

LABORATORY ANALYSIS
Based on information obtained from various Phase I Environmental Assessment Report (TRC, July, 2007; Dominion, 2011) the site was historically used for commercial purposes, including a fee mill and grain warehouse, a feed and fuel supply facility, car services and gas station, and in more recent times site-use included an electrical equipment store and contractor equipment storage. The underground storage tanks of the former gas station were removed in 1984 and the site received closure form the San Mateo County of Department of Environmental Health.

Based on the site history, the four-point composite soil sample was analyzed for total petroleum hydrocarbons in the diesel and motor oil range (EPA Method 8015B), 17 California Assessment Manual (CAM) metals (EPA Test Method 6010/7000); (EPA Test Method 8270), and organochlorine pesticides (EPA Test Method 8081). Additionally, the soil samples were analyzed for volatile organic compounds (VOCs) including gasoline range petroleum hydrocarbons (TPHg) (EPA Test Method 8015); benzene, toluene, ethylbenzene, and xylenes (BTEX) (EPA Test Method 8260).

RESULTS

As shown on the attached laboratory reports, the analyses performed did not detect pesticides, VOC's, including gasoline-range hydrocarbons, BTEX nor MTBE in the composite sample analyzed. Detected diesel and motor oil concentrations (190 mg/kg and 670 mg/kg respectively) exceeded the concentrations of the ecology risk-based environmental screening levels (ESL) established by the State Regional Water Quality Control Board for residential site use and beneficial use of groundwater. Therefore this soil is not suitable for residential on-site use unless it is capped by low permeable pavement (roadways, vehicle parking areas) reducing the risk of direct exposure. However in areas of surface exposure (landscaped areas) this soil needs to be removed and appropriately disposed off site.

The metal concentrations detected appear typical of naturally occurring background concentrations and are below Total Threshold Level Concentrations (TTLC), except for chromium and lead. The chromium and lead concentrations were reported at 130 mg/kg and 52 mg/kg respectively, which are above the hazardous waste TTLC level of 50 mg/kg for both. However chromium concentration appears consistent with naturally occurring levels for soils from the area. Subsequent STLC analysis detected a soluble lead concentration of 1.4 mg/L which is significantly below the hazardous waste level and therefore appears acceptable at either a Class II or possibly, a Class III landfill.

Based on field observations during sampling, it appears that the soil of Section 3 is similar to the Section 2 soil. Also site history and hence, the detected anomalous compounds and concentrations, are similar between the two site development sections and no additional soil quality characterization appears required.

RECOMMENDATIONS

Due to the exceedances of diesel and motor oil concentrations, the upper 1 foot of soil in Section 3 of the site cannot be reused in planned future landscaped areas and needs to be disposed off at an appropriate landfill. The soil may be reused in areas onsite where the soil will be capped in paved road ways or paved parking lot areas. Since chromium appears consistent with natural occurring levels and since previous and current STLC results indicate that neither lead nor chromium appears to exceed hazardous waste criteria levels, the soil from both site sections should be acceptable at a and a Class II or possibly at a Class III landfill. We recommend forwarding the analytical results to your selected landfill for their review and acceptance of the soil.

LIMITATIONS

This report was prepared for the use of Lathrop Park LLC in evaluating soil quality at the referenced Site at the time of this study. The accuracy and reliability of geo- or hydrochemical studies are a reflection of the number and type of samples taken and extent of the analyses conducted, and are thus inherently limited and dependent upon the resources expended. We make no warranty, expressed or implied, except that our services have been performed in accordance with environmental principles generally accepted at this time and location. The chemical and other data presented in this report can change over time and are applicable only to the time this study was performed.

DRAFT

Thank you for choosing us to assist you with this project. If you have any questions, please call and we shall be glad to discuss them with you.

Very truly yours,

TRC ENGINEERS, INC.

Charles Mettler, P.G.
Principal Geologist

CCM:

Copies: Addressee (email)

OK:Lathrop Soil Letter 122311.docx
Copyright © 2011TRC

Agreement accepted by:

PROFESSIONAL GEOLOGIST
CHARLES C. METTLER
PG - 8230
EXP. 5-31-13
STATE OF CALIFORNIA

DRAFT

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

TestAmerica Job ID: 720-39020-1
Client Project/Site: Lathrop PARC

For:
TRC Solutions, Inc.
101 2nd street
Suite 300
San Francisco, California 94105

Attn: Mr. Charles Mettler

Authorized for release by:
12/6/2011 3:13:02 PM

Dimple Sharma
Project Manager I
dimple.sharma@testamericainc.com

DRAFT

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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DRAFT

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.
X	Surrogate is outside control limits

Metals

Qualifier	Qualifier Description
F	RPD of the MS and MSD exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

DRAFT

Job ID: 720-39020-1

Laboratory: TestAmerica San Francisco

Narrative

Job Narrative
720-39020-1

Comments
No additional comments.

Receipt
COC lists PAHs by 8310, sample not logged for this test code.

All other samples were received in good condition within temperature requirements.

GC/MS VOA
No analytical or quality issues were noted.

GC VOA
No analytical or quality issues were noted.

GC Semi VOA
Method 8081A: The following sample was diluted due to color, appearance, viscosity, etc.>>: A,B,C,D-1.0 COMPOSITE (720-39020-5). Elevated reporting limits (RL) are provided.

No other analytical or quality issues were noted.

Metals
Method 7471A: The matrix spike / matrix spike duplicate (MS/MSD) precision for prep batch 103924 was outside control limits. Non-homogeneity of the sample matrix is suspected. The associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision met acceptance criteria.

No other analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

DRAFT

Client Sample ID: A,B,C,D-1.0 COMPOSITE

Lab Sample ID: 720-39020-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	190		9.9		mg/Kg	10		8015B	Silica Gel Clean
Motor Oil Range Organics [C24-C36]	670		500		mg/Kg	10		8015B	Silica Gel Clean
Antimony	4.2		1.8		mg/Kg	4		6010B	Total/NA
Barium	100		1.8		mg/Kg	4		6010B	Total/NA
Chromium	130		1.8		mg/Kg	4		6010B	Total/NA
Cobalt	30		0.73		mg/Kg	4		6010B	Total/NA
Copper	92		5.5		mg/Kg	4		6010B	Total/NA
Lead	52		1.8		mg/Kg	4		6010B	Total/NA
Nickel	94		1.8		mg/Kg	4		6010B	Total/NA
Vanadium	130		1.8		mg/Kg	4		6010B	Total/NA
Zinc	87		5.5		mg/Kg	4		6010B	Total/NA
Mercury	0.095		0.0087		mg/Kg	1		7471A	Total/NA

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-39020-1

Client Sample ID: A,B,C,D-1.0 COMPOSITE
Date Collected: 12/02/11 13:30
Date Received: 12/02/11 16:55

Lab Sample ID: 720-39020-5
Matrix: Solid

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Acetone	ND		49		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Benzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Dichlorobromomethane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Bromobenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Chlorobromomethane	ND		20		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Bromoform	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Bromomethane	ND		9.8		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
2-Butanone (MEK)	ND		49		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
n-Butylbenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
sec-Butylbenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
tert-Butylbenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Carbon disulfide	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Carbon tetrachloride	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Chlorobenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Chloroethane	ND		9.8		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Chloroform	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Chloromethane	ND		9.8		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
2-Chlorotoluene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
4-Chlorotoluene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Chlorodibromomethane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,2-Dichlorobenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,3-Dichlorobenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,4-Dichlorobenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,3-Dichloropropane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,1-Dichloropropene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,2-Dibromo-3-Chloropropane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Ethylene Dibromide	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Dibromomethane	ND		9.8		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Dichlorodifluoromethane	ND		9.8		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,1-Dichloroethane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,2-Dichloroethane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,1-Dichloroethene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
cis-1,2-Dichloroethene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
trans-1,2-Dichloroethene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,2-Dichloropropane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
cis-1,3-Dichloropropene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
trans-1,3-Dichloropropene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Ethylbenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Hexachlorobutadiene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
2-Hexanone	ND		49		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Isopropylbenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
4-Isopropyltoluene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Methylene Chloride	ND		9.8		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
4-Methyl-2-pentanone (MIBK)	ND		49		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Naphthalene	ND		9.8		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
N-Propylbenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Styrene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,1,1,2-Tetrachloroethane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,1,2,2-Tetrachloroethane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1

DRAFT

Client Sample ID: A,B,C,D-1.0 COMPOSITE
Date Collected: 12/02/11 13:30
Date Received: 12/02/11 16:55

Lab Sample ID: 720-39020-5
Matrix: Solid

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Toluene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,2,3-Trichlorobenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,2,4-Trichlorobenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,1,1-Trichloroethane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,1,2-Trichloroethane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Trichloroethene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Trichlorofluoromethane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,2,3-Trichloropropane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,2,4-Trimethylbenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
1,3,5-Trimethylbenzene	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Vinyl acetate	ND		49		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Vinyl chloride	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Xylenes, Total	ND		9.8		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
2,2-Dichloropropane	ND		4.9		ug/Kg		12/02/11 18:00	12/03/11 00:18	1
Gasoline Range Organics (GRO) -C5-C12	ND		240		ug/Kg		12/02/11 18:00	12/03/11 00:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*95*		*45 - 131*	*12/02/11 18:00*	*12/03/11 00:18*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*60 - 140*	*12/02/11 18:00*	*12/03/11 00:18*	*1*
Toluene-d8 (Surr)	*97*		*58 - 140*	*12/02/11 18:00*	*12/03/11 00:18*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC) - Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**190**		9.9		mg/Kg		12/02/11 17:57	12/05/11 16:55	10
Motor Oil Range Organics [C24-C36]	**670**		500		mg/Kg		12/02/11 17:57	12/05/11 16:55	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Capric Acid (Surr)	*0*		*0 - 1*	*12/02/11 17:57*	*12/05/11 16:55*	*10*
p-Terphenyl	*0*	*X D*	*38 - 148*	*12/02/11 17:57*	*12/05/11 16:55*	*10*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
Dieldrin	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
Endrin aldehyde	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
Endrin	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
Endrin ketone	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
Heptachlor	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
Heptachlor epoxide	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
4,4'-DDT	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
4,4'-DDE	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
4,4'-DDD	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
Endosulfan I	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
Endosulfan II	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
alpha-BHC	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
beta-BHC	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
gamma-BHC (Lindane)	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
delta-BHC	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-39020-1

Client Sample ID: A,B,C,D-1.0 COMPOSITE
Date Collected: 12/02/11 13:30
Date Received: 12/02/11 16:55

Lab Sample ID: 720-39020-5
Matrix: Solid

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan sulfate	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
Methoxychlor	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
Toxaphene	ND		200		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
Chlordane (technical)	ND		200		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
alpha-Chlordane	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5
gamma-Chlordane	ND		10		ug/Kg		12/02/11 17:55	12/05/11 18:13	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*102*		*34 - 110*	*12/02/11 17:55*	*12/05/11 18:13*	*5*
DCB Decachlorobiphenyl	*86*		*21 - 136*	*12/02/11 17:55*	*12/05/11 18:13*	*5*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**4.2**		1.8		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Arsenic	ND		3.7		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Barium	**100**		1.8		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Beryllium	ND		0.37		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Cadmium	ND		0.46		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Chromium	**130**		1.8		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Cobalt	**30**		0.73		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Copper	**92**		5.5		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Lead	**52**		1.8		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Molybdenum	ND		1.8		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Nickel	**94**		1.8		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Selenium	ND		3.7		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Silver	ND		0.92		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Thallium	ND		1.8		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Vanadium	**130**		1.8		mg/Kg		12/05/11 07:57	12/05/11 14:05	4
Zinc	**87**		5.5		mg/Kg		12/05/11 07:57	12/05/11 14:05	4

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.095**		0.0087		mg/Kg		12/05/11 12:57	12/05/11 16:18	1

DRAFT

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS

Lab Sample ID: MB 720-103864/1-A
Matrix: Solid
Analysis Batch: 103855

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103864

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
p etLMCert-bStMCetLer	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
Acetol e	y D		N0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
Bel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
DicLCrobromometLal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
Bromobel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
1 LCrobromometLal e	y D		20		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
Bromoform	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
BromometLal e	y D		80		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
2-BStal ol e (p Eg)	y D		N0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
l -BStMCel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
sec-BStMCel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
tert-BStMCel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
1 arbol disSCide	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
1 arbol tetracLCride	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
1 LCrobel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
1 LCroetLal e	y D		80		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
1 LCroform	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
1 LCrometLal e	y D		80		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
2-1 LCrotoCel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
9-1 LCrotoCel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
1 LCrodibromometLal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u2-DicLCrobel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u3-DicLCrobel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u9-DicLCrobel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u8-DicLCrohrohal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u8-DicLCrohrohel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u2-Dibromo-3-1 LCrohrohal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
EtLMel e Dibromide	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
DibromometLal e	y D		80		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
DicLCrodifCoromet Lal e	y D		80		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u8-DicLCroetLal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u2-DicLCroetLal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u8-DicLCroetLel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
cis-8u2-DicLCroetLel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
tral s-8u2-DicLCroetLel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u2-DicLCrohrohal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
cis-8u8-DicLCrohrohel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
tral s-8u8-DicLCrohrohel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
EtLMCel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
4 eHacLCrobStadiel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
2-4 eHal ol e	y D		N0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
IsohrohMCel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
9-IsohrohMCoCel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
p etLMCel e 1 LCride	y D		80		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
9-p etLMC2-hel tal ol e (p IBg)	y D		N0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
y ahLtLaCel e	y D		80		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
y -. rohMCel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
RtMel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u8u2-TetracLCroetLal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8

DRAFT

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Lab Sample ID: MB 720-103864/1-A
Matrix: Solid
Analysis Batch: 103855

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103864

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
8u8u2u2-TetracLCroetLal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
TetracLCroetLel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
ToCSel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u2u8-TricLCrobel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u2u9-TricLCrobel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u8u8-TricLCroetLal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u8u2-TricLCroetLal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
TricLCroetLel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
TricLCrofCSorometLal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u2u8-TricLCrohrohal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u8u2-TricLCro-8u2u2-trifCSoroetLal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u2u9-TrimetLMCbel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
8u8uN-TrimetLMCbel zel e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
Fil MCacetate	y D		N0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
Fil McLCride	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
VMel esuTotaC	y D		80		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
2u2-DicLCrohrohal e	y D		N,0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8
Xasoc1 e n al 5e Gr5al ics (Xn G) -1 N-1 82	y D		2N0		S5jg5		82j02j88 8K:00	82j02j88 8K:89	8

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*103*		*45 - 131*	*12/02/11 18:00*	*12/02/11 18:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*60 - 140*	*12/02/11 18:00*	*12/02/11 18:14*	*1*
Toluene-d8 (Surr)	*100*		*58 - 140*	*12/02/11 18:00*	*12/02/11 18:14*	*1*

Lab Sample ID: LCS 720-103864/2-A
Matrix: Solid
Analysis Batch: 103855

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103864

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
p etLMCtert-bStMCetLer	N0,0	N2,0		S5jg5		809	70 - 899
Acetol e	2N0	8O7		S5jg5		O7	30 - 8O2
Bel zel e	N0,0	97,K		S5jg5		6O	70 - 830
DicLCrobromometLal e	N0,0	N2,O		S5jg5		80N	70 - 838
Bromobel zel e	N0,0	N0,K		S5jg5		802	70 - 830
1 LCrobromometLal e	N0,0	N8,9		S5jg5		803	70 - 830
Bromoform	N0,0	NK,K		S5jg5		88K	N6 - 8NK
BromometLal e	N0,0	9N,9		S5jg5		68	N6 - 832
2-BStal ol e (p Eg)	2N0	228		S5jg5		KK	C0 - 8N0
l -BStMCbel zel e	N0,0	N2,9		S5jg5		80N	70 - 892
sec-BStMCbel zel e	N0,0	96,K		S5jg5		800	70 - 83O
tert-BStMCbel zel e	N0,0	N0,9		S5jg5		808	70 - 830
1 arbol disSCide	N0,0	37,2		S5jg5		79	C0 - 890
1 arbol tetracLCride	N0,0	9K,9		S5jg5		67	70 - 83K
1 LCrobel zel e	N0,0	96,O		S5jg5		66	70 - 830
1 LCroetLal e	N0,0	97,K		S5jg5		6O	CN - 830
1 LCroform	N0,0	N0,2		S5jg5		800	77 - 827
1 LCrometLal e	N0,0	98,0		S5jg5		K2	C0 - 896
2-1 LCrotoCSel e	N0,0	N8,2		S5jg5		802	70 - 83K
9-1 LCrotoCSel e	N0,0	N0,9		S5jg5		808	70 - 83O

DRAFT

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Lab Sample ID: LCS 720-103864/2-A
Matrix: Solid
Analysis Batch: 103855

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103864

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1 LCrodibromometLal e	N0,0	N3,K		S5jg5		80K	70 - 89O
8u2-DicLCrobel zel e	N0,0	N2,9		S5jg5		80N	70 - 830
8u3-DicLCrobel zel e	N0,0	N8,0		S5jg5		802	70 - 838
8u9-DicLCrobel zel e	N0,0	N8,2		S5jg5		802	70 - 830
8u3-DicLCrohrohal e	N0,0	N9,O		S5jg5		806	70 - 890
8u8-DicLCrohrohel e	N0,0	97,K		S5jg5		6O	70 - 830
8u2-Dibromo-3-1 LCrohrohal e	N0,0	N7,0		S5jg5		889	C0 - 89N
EtLMel e Dibromide	N0,0	NO,K		S5jg5		889	70 - 890
DibromometLal e	N0,0	N3,2		S5jg5		80O	70 - 836
DicLCrodifSoromet Lal e	N0,0	30,2		S5jg5		C0	37 - 8NK
8u8-DicLCroetLal e	N0,0	9K,0		S5jg5		6O	70 - 830
8u2-DicLCroetLal e	N0,0	N0,K		S5jg5		802	70 - 830
8u8-DicLCroetLel e	N0.0	90,9		S5jg5		K8	7O - 822
cis-8u2-DicLCroetLel e	N0,0	NO,9		S5jg5		883	70 - 83K
tral s-8u2-DicLCroetLel e	N0.0	36,K		S5jg5		K0	O7 - 830
8u2-DicLCrohrohal e	N0.0	96,O		S5jg5		66	73 - 827
cis-8u3-DicLCrohrohel e	N0.0	N9,2		S5jg5		80K	OK - 897
tral s-8u3-DicLCrohrohel e	N0.0	NO,C		S5jg5		883	70 - 83O
EtLMbel zel e	N0.0	96.K		S5jg5		800	K0 - 837
4 eHacLCrobStadiel e	N0,0	N8.0		S5jg5		802	70 - 832
2-4 eHal ol e	2N0	299		S5jg5		6K	C0 - 8O8
IsohrohMbel zel e	N0,0	N2,9		S5jg5		80N	KK - 82K
9-IsohrohMboSel e	N0,0	N8.0		S5jg5		802	70 - 833
p etLMel e 1 LCride	N0,0	9K.C		S5jg5		67	70 - 839
9-p etLMC2-hel tal ol e (p IBg)	2N0	2K0		S5jg5		882	C0 - 8C0
y ahLtLaCel e	N0,0	N7,2		S5jg5		889	C0 - 897
y -. rohMbel zel e	N0,0	9K,9		S5jg5		67	70 - 830
RtMel e	N0,0	NN,9		S5jg5		888	70 - 830
8u8u2-TetracLCroetLal e	N0,0	NO,0		S5jg5		882	70 - 830
8u8u2u2-TetracLCroetLal e	N0,0	NN,K		S5jg5		882	70 - 89O
TetracLCroetLel e	N0,0	N0,0		S5jg5		800	70 - 832
ToSel e	N0,0	9K,2		S5jg5		6O	K0 - 82K
8u2u3-TricLCrobel zel e	N0,0	NN,0		S5jg5		880	C0 - 890
8u2u9-TricLCrobel zel e	N0,0	N3,O		S5jg5		807	C0 - 890
8u8u8-TricLCroetLal e	N0,0	N0,0		S5jg5		800	70 - 830
8u8u2-TricLCroetLal e	N0,0	N3,O		S5jg5		807	70 - 830
TricLCroetLel e	N0,0	97,O		S5jg5		6N	70 - 833
TricLCrofSoromet Lal e	N0,0	9N,2		S5jg5		60	C0 - 890
8u2u3-TricLCrohrohal e	N0,0	NN,K		S5jg5		882	70 - 89O
8u8u2-TricLCro-8u2u2-trifSoroetLa l e	N0,0	92,9		S5jg5		KN	C0 - 890
8u2u9-TrimetLMbel zel e	N0,0	N0,O		S5jg5		808	70 - 830
8u8uN-TrimetLMbel zel e	N0,0	N0,K		S5jg5		802	70 - 838
Fil MCacetate	N0,0	C9,0		S5jg5		82K	3K - 87O
Fil MCcLCride	N0,0	92,K		S5jg5		KO	NK - 82N
m-VMel e & h-VMel e	800	808		S5jg5		808	70 - 89O
o-VMel e	N0,0	N2,2		S5jg5		809	70 - 890
2u2-DicLCrohrohal e	N0,0	N9,9		S5jg5		806	70 - 8C2

DRAFT

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Lab Sample ID: LCS 720-103864/2-A
Matrix: Solid
Analysis Batch: 103855

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103864

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	105		45 - 131
1,2-Dichloroethane-d4 (Surr)	108		60 - 140
Toluene-d8 (Surr)	103		58 - 140

Lab Sample ID: LCS 720-103864/4-A
Matrix: Solid
Analysis Batch: 103855

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103864

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Xaso01 e n al 5e Gr5al ics (Xn G) -1 N-1 82	8000	80N0		S5jg5		80N	O8 - 82K

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	103		45 - 131
1,2-Dichloroethane-d4 (Surr)	108		60 - 140
Toluene-d8 (Surr)	101		58 - 140

Lab Sample ID: LCSD 720-103864/3-A
Matrix: Solid
Analysis Batch: 103855

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 103864

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
p etLMOtert-bStMOetLer	N0,0	N8.C		S5jg5		803	70 - 899	8	20
Acetol e	2N0	8O9		S5jg5		OO	30 - 8O2	2	30
Bel zel e	N0,0	9K,2		S5jg5		6O	70 - 830	8	20
DicLOrobromometLal e	N0,0	N3,0		S5jg5		80O	70 - 838	8	20
Bromobel zel e	N0,0	N8,O		S5jg5		803	70 - 830	2	20
1 LOrobromometLal e	N0,0	N8,2		S5jg5		802	70 - 830	0	20
Bromoform	N0,0	NK,9		S5jg5		887	N6 - 8NK	8	20
BromometLal e	N0,0	9Q,O		S5jg5		63	N6 - 832	3	20
2-BStal ol e (p Eg)	2N0	287		S5jg5		K7	O0 - 8N0	2	20
I -BStMBel zel e	N0,0	N3,0		S5jg5		80O	70 - 892	8	20
sec-BStMBel zel e	N0,0	96,K		S5jg5		800	70 - 83O	0	20
tert-BStMBel zel e	N0,0	N8,0		S5jg5		802	70 - 830	8	20
1 arbol disSfide	N0,0	37,9		S5jg5		7N	O0 - 890	8	20
1 arbol tetracLOride	N0,0	9K,K		S5jg5		6K	70 - 83K	8	20
1 LOrobel zel e	N0,0	96,O		S5jg5		66	70 - 830	0	20
1 LOroetLal e	N0,0	9K,9		S5jg5		67	ON - 830	8	20
1 LOroform	N0,0	N0,2		S5jg5		800	77 - 827	0	20
1 LOrometLal e	N0,0	90,K		S5jg5		K2	O0 - 896	0	20
2-1 LOrotoSel e	N0,0	N8,O		S5jg5		803	70 - 83K	8	20
9-1 LOrotoSel e	N0,0	N8,2		S5jg5		802	70 - 83O	2	20
1 LOrodibromometLal e	N0,0	N9,0		S5jg5		80K	70 - 89O	0	20
8u2-DicLOrobel zel e	N0,0	N2,9		S5jg5		80N	70 - 830	0	20
8u3-DicLOrobel zel e	N0,0	N8,O		S5jg5		803	70 - 838	8	20
8u9-DicLOrobel zel e	N0,0	N8,2		S5jg5		802	70 - 830	0	20
8u3-DicLOrohrohal e	N0,0	N9,0		S5jg5		80K	70 - 890	8	20
8u3-DicLOrohrohel e	N0,0	9K,0		S5jg5		6O	70 - 830	0	20
8u2-Dibromo-3-1 LOrohrohal e	N0,0	NO,0		S5jg5		882	O0 - 89N	2	20

DRAFT

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Lab Sample ID: LCSD 720-103864/3-A
Matrix: Solid
Analysis Batch: 103855

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 103864

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
EtLMel e Dibromide			N0,0	NQ,2		S5jg5		882	70 - 890	8	20
DibromometLal e			N0,0	N3,0		S5jg5		80O	70 - 836	0	20
DicLCrodifSorometLal e			N0,0	30,2		S5jg5		C0	37 - 8NK	0	20
8u8-DicLCroetLal e			N0,0	9K,0		S5jg5		6O	70 - 830	0	20
8u2-DicLCroetLal e			N0,0	N0,O		S5jg5		808	70 - 830	0	20
8u8-DicLCroetLel e			N0,0	90,K		S5jg5		K2	7O - 822	8	20
cis-8u2-DicLCroetLel e			N0,0	NQ,O		S5jg5		883	70 - 83K	0	20
tral s-8u2-DicLCroetLel e			N0,0	36,K		S5jg5		K0	C7 - 830	0	20
8u2-DicLCrohrohal e			N0,0	N0,0		S5jg5		800	73 - 827	8	20
cis-8u8-DicLCrohrohel e			N0,0	N9,O		S5jg5		806	CK - 897	8	20
tral s-8u8-DicLCrohrohel e			N0,0	NQ,K		S5jg5		889	70 - 83O	0	20
EtLMCel zel e			N0,0	N0,0		S5jg5		800	K0 - 837	0	20
4 eHacLCrobStadiel e			N0,0	N8,2		S5jg5		802	70 - 832	0	20
2-4 eHal ol e			2NJ	23O		S5jg5		69	C0 - 8C8	3	20
IsohrohMCel zel e			N0,0	N2,O		S5jg5		80N	KK - 82K	0	20
9-IsohrohMCoSel e			N0,0	N8,O		S5jg5		803	70 - 833	8	20
p etLMCel e 1 LCride			N0,0	9K,9		S5jg5		67	70 - 839	0	20
9-p etLMC2-hel tal ol e (p lBg)			2N0	279		S5jg5		880	C0 - 8C0	2	20
y ahLtLaCel e			N0,0	NQ,9		S5jg5		883	C0 - 897	8	20
y -. rohMCel zel e			N0,0	96,0		S5jg5		6K	70 - 830	8	20
RtMel e			N0,0	NN,K		S5jg5		882	70 - 830	8	20
8u8u2-TetracLCroetLal e			N0,0	NQ,2		S5jg5		882	70 - 830	0	20
8u8u2u2-TetracLCroetLal e			N0,0	NN,9		S5jg5		888	70 - 89O	8	20
TetracLCroetLel e			N0,0	N0,2		S5jg5		800	70 - 832	0	20
ToSel e			N0,0	9K,9		S5jg5		67	K0 - 82K	0	20
8u2u8-TricLCrobel zel e			N0,0	NN,O		S5jg5		888	C0 - 890	8	20
8u2u9-TricLCrobel zel e			N0,0	N3,K		S5jg5		80K	C0 - 890	0	20
8u8u8-TricLCroetLal e			N0,0	N0,K		S5jg5		802	70 - 830	2	20
8u8u2-TricLCroetLal e			N0,0	N3,O		S5jg5		807	70 - 830	0	20
TricLCroetLel e			N0,0	9K,2		S5jg5		6O	70 - 833	8	20
TricLCrofSorometLal e			N0,0	9N,O		S5jg5		68	C0 - 890	8	20
8u2u8-TricLCrohrohal e			N0,0	NN,O		S5jg5		888	70 - 89O	0	20
8u8u2-TricLCro-8u2u2-trifSoroetLa l e			N0,0	92,2		S5jg5		K9	C0 - 890	0	20
8u2u9-TrimetLMCel zel e			N0,0	N8,0		S5jg5		802	70 - 830	8	20
8u8uN-TrimetLMCel zel e			N0,0	N8,9		S5jg5		803	70 - 838	8	20
Fil MCacetate			N0,0	C9,O		S5jg5		826	3K - 87O	8	20
Fil McLCride			N0,0	99,0		S5jg5		KK	NK - 82N	3	20
m-VMel e & h-VMel e			800	808		S5jg5		808	70 - 89O	0	20
o-VMel e			N0,0	N2,2		S5jg5		809	70 - 890	0	20
2u2-DicLCrohrohal e			N0,0	N9,9		S5jg5		806	70 - 8C2	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*104*		*45 - 131*
1,2-Dichloroethane-d4 (Surr)	*106*		*60 - 140*
Toluene-d8 (Surr)	*101*		*58 - 140*

DRAFT

Method: 8260B/CA_LUFTMS - 8260B / CA LUFT MS (Continued)

Lab Sample ID: LCSD 720-103864/5-A
Matrix: Solid
Analysis Batch: 103855

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 103864

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Xasoc1 e n al 5e Gr5al ics (Xn G) -1 N-1 82			8000	8090		S5jg 5		809	C8 - 82K	8	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*104*		*45 - 131*
1,2-Dichloroethane-d4 (Surr)	*110*		*60 - 140*
Toluene-d8 (Surr)	*102*		*58 - 140*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 720-103838/1-A
Matrix: Solid
Analysis Batch: 103891

Client Sample ID: Method Blank
Prep Type: Silica Gel Cleanup
Prep Batch: 103838

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DieseCn al 5e Gr5al ics [1 80-1 2K]	y D		0,6K		m5jg 5		82j02j88 82:28	82j0N88 8K:2K	8
p otor GiCn al 5e Gr5al ics [1 29-1 3C]	y D		96		m5jg 5		82j02j88 82:28	82j0N88 8K:2K	8

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Capric Acid (Surr)	*0.007*		*0 - 1*	*12/02/11 12:21*	*12/05/11 18:28*	*1*
p-Terphenyl	*96*		*38 - 148*	*12/02/11 12:21*	*12/05/11 18:28*	*1*

Lab Sample ID: LCS 720-103838/2-A
Matrix: Solid
Analysis Batch: 103891

Client Sample ID: Lab Control Sample
Prep Type: Silica Gel Cleanup
Prep Batch: 103838

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
DieseCn al 5e Gr5al ics [1 80-1 2K]			K3,2	96,0		m5jg 5		N6	3O - 882		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
p-Terphenyl	*80*		*38 - 148*

Lab Sample ID: LCSD 720-103838/3-A
Matrix: Solid
Analysis Batch: 103891

Client Sample ID: Lab Control Sample Dup
Prep Type: Silica Gel Cleanup
Prep Batch: 103838

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
DieseCn al 5e Gr5al ics [1 80-1 2K]			K3,8	9Q8		m5jg 5		NO	3O - 882	O	3N

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
p-Terphenyl	*81*		*38 - 148*

DRAFT

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 720-103833/1-A
Matrix: Solid
Analysis Batch: 103902

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103833

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
AQril	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
DieQril	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
El dril aQeLMde	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
El dril	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
El dril ketol e	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
4 ehtacLQr	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
4 ehtacLQr ehoHde	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
9u9'-DDT	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
9u9'-DDE	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
9u9'-DDD	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
El dosSfal I	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
El dosSfal II	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
aQLa-B4 1	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
beta-B4 1	y D		2.0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
5amma-B4 1 (/ il dal e)	y D		2.0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
deQa-B4 1	y D		2.0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
El dosSfal sSfate	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
p etLoHvtLQr	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
ToHahLel e	y D		90		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
1 LQrdal e (tecLI icaC)	y D		90		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
aQLa-1 LQrdal e	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8
5amma-1 LQrdal e	y D		2,0		S5jg5		82j02j88 88:93	82j0Nj88 87:0N	8

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*85*		*34 - 110*	*12/02/11 11:43*	*12/05/11 17:05*	*1*
DCB Decachlorobiphenyl	*86*		*21 - 136*	*12/02/11 11:43*	*12/05/11 17:05*	*1*

Lab Sample ID: LCS 720-103833/2-A
Matrix: Solid
Analysis Batch: 103902

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103833

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
AQril	8Q8	82,6		S5jg5		K0	N9 - 820
DieQril	8Q8	83,K		S5jg5		KN	N6 - 820
El dril aQeLMde	8Q8	89,6		S5jg5		62	90 - 820
El dril	8Q8	89,2		S5jg5		KK	N3 - 820
El dril ketol e	8Q8	8N,2		S5jg5		69	90 - 820
4 ehtacLQr	8Q8	83,K		S5jg5		KN	N9 - 820
4 ehtacLQr ehoHde	8Q8	83,K		S5jg5		KN	90 - 820
9u9'-DDT	8Q8	83,6		S5jg5		KO	N8 - 820
9u9'-DDE	8Q8	89,9		S5jg5		K6	90 - 820
9u9'-DDD	8Q8	8N,N		S5jg5		6O	90 - 820
El dosSfal I	8Q8	83,K		S5jg5		KO	90 - 820
El dosSfal II	8Q8	89,8		S5jg5		K7	90 - 820
aQLa-B4 1	8Q8	83,K		S5jg5		KN	90 - 820
beta-B4 1	8Q8	87,8		S5jg5		80O	90 - 820
5amma-B4 1 (/ il dal e)	8Q8	83,7		S5jg5		KN	N0 - 6O
deQa-B4 1	8Q8	8N,8		S5jg5		63	90 - 820
El dosSfal sSfate	8Q8	89,K		S5jg5		68	90 - 820

DRAFT

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 720-103833/2-A
Matrix: Solid
Analysis Batch: 103902

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103833

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
p etLoHvtLQr			8Q8	89,K		S5jg5		62	90 - 820		
a0La-1 LQrdal e			8Q8	83,K		S5jg5		KN	90 - 820		
5amma-1 LQrdal e			8Q8	83,O		S5jg5		K9	90 - 820		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*85*		*34 - 110*
DCB Decachlorobiphenyl	*85*		*21 - 136*

Lab Sample ID: LCSD 720-103833/3-A
Matrix: Solid
Analysis Batch: 103902

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 103833

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
AQril			8QO	83,9		S5jg5		K0	N9 - 820	3	20
DieQril			8QO	89,3		S5jg5		KO	N6 - 820	9	20
El dril aQeLMde			8QC	8N,N		S5jg5		63	90 - 820	9	20
El dril			8QC	89,7		S5jg5		K6	N3 - 820	9	20
El dril ketol e			8QO	8N,9		S5jg5		62	90 - 820	8	20
4 ehtacLQr			8QO	89,3		S5jg5		KO	N9 - 820	9	20
4 ehtacLQr ehoHde			8QO	89,2		S5jg5		KO	90 - 820	3	20
9u9'-DDT			8QO	89,8		S5jg5		KN	N8 - 820	2	20
9u9'-DDE			8QO	89,7		S5jg5		KK	90 - 820	2	20
9u9'-DDD			8QO	8N,6		S5jg5		6N	90 - 820	2	20
El dosSQal I			8QO	89,3		S5jg5		KO	90 - 820	3	20
El dosSQal II			8QO	89,N		S5jg5		K7	90 - 820	3	3N
a0La-B4 1			8QO	89,3		S5jg5		KO	90 - 820	9	20
beta-B4 1			8QO	87,3		S5jg5		809	90 - 820	8	20
5amma-B4 1 (/ il dal e)			8QO	89,2		S5jg5		KN	N0 - 6O	9	20
deQa-B4 1			8QO	8N,3		S5jg5		62	90 - 820	2	20
El dosSQal sSQate			8QO	89,K		S5jg5		K6	90 - 820	0	20
p etLoHvtLQr			8QO	89,O		S5jg5		KK	90 - 820	8	20
a0La-1 LQrdal e			8QO	89,2		S5jg5		KN	90 - 820	3	20
5amma-1 LQrdal e			8QO	89,0		S5jg5		K9	90 - 820	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*87*		*34 - 110*
DCB Decachlorobiphenyl	*84*		*21 - 136*

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 720-103896/1-A
Matrix: Solid
Analysis Batch: 103928

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103896

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Al timol M	y D		0,N0		m5jg5		82j0N88 07:N7	82j0N88 83:3O	8
Arsel ic	y D		8,0		m5jg5		82j0N88 07:N7	82j0N88 83:3O	8
BariSm	y D		0,N0		m5jg5		82j0N88 07:N7	82j0N88 83:3O	8
BerMQSm	y D		0,80		m5jg5		82j0N88 07:N7	82j0N88 83:3O	8

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Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: MB 720-103896/1-A
Matrix: Solid
Analysis Batch: 103928

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103896

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1 admiSm	y D		0,83		m5jg 5		82j0N88 07:N7	82j0N88 83:3O	8
1 LromiSm	y D		0,N0		m5jg 5		82j0N88 07:N7	82j0N88 83:3O	8
1 obaCt	y D		0,20		m5jg 5		82j0N88 07:N7	82j0N88 83:3O	8
1 ohher	y D		8,N		m5jg 5		82j0N88 07:N7	82j0N88 83:3O	8
/ ead	y D		0,N0		m5jg 5		82j0N88 07:N7	82j0N88 83:3O	8
p oMbdel Sm	y D		0,N0		m5jg 5		82j0N88 07:N7	82j0N88 83:3O	8
y ickeC	y D		0,N0		m5jg 5		82j0N88 07:N7	82j0N88 83:3O	8
Re@l iSm	y D		8,0		m5jg 5		82j0N88 07:N7	82j0N88 83:3O	8
RiOer	y D		0,2N		m5jg 5		82j0N88 07:N7	82j0N88 83:3O	8
TLaCCSm	y D		0,N0		m5jg 5		82j0N88 07:N7	82j0N88 83:3O	8
Fal adiSm	v D		0,N0		m5jg 5		82j0N88 07:N7	82j0N88 83:3O	8
Zil c	v D		8,N		m5jg 5		82j0N88 07:N7	82j0N88 83:3O	8

Lab Sample ID: LCS 720-103896/2-A
Matrix: Solid
Analysis Batch: 103928

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103896

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Al timol M	N0,0	N0.8		m5jg 5		800	K0 - 820
Arsel ic	N0,0	N0.C		m5jg 5		808	K0 - 820
BariSm	N0,0	N8,6		m5jg 5		809	K0 - 820
BerMCSm	N0,0	N8,8		m5jg 5		802	K0 - 820
1 admiSm	N0,0	N0,2		m5jg 5		800	K0 - 820
1 LromiSm	N0,0	N0.7		m5jg 5		808	K0 - 820
1 obaCt	N0,0	N2,0		m5jg 5		809	K0 - 820
1 ohher	N0,0	N0,6		m5jg 5		802	K0 - 820
/ ead	N0,0	N8,2		m5jg 5		802	K0 - 820
p oMbdel Sm	N0,0	N8,0		m5jg 5		802	K0 - 820
y ickeC	N0,0	N0,6		m5jg 5		802	K0 - 820
Re@l iSm	N0,0	N0,0		m5jg 5		800	K0 - 820
RiOer	2N,0	2N,9		m5jg 5		802	K0 - 820
TLaCCSm	N0,0	N8,9		m5jg 5		803	K0 - 820
Fal adiSm	N0,0	N0,8		m5jg 5		800	K0 - 820
Zil c	N0,0	N8,3		m5jg 5		803	K0 - 820

Lab Sample ID: LCSD 720-103896/3-A
Matrix: Solid
Analysis Batch: 103928

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 103896

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Al timol M	N0,0	96,9		m5jg 5		66	K0 - 820	8	20
Arsel ic	N0,0	96,O		m5jg 5		66	K0 - 820	2	20
BariSm	N0,0	N8,8		m5jg 5		802	K0 - 820	2	20
BerMCSm	N0,0	N0,3		m5jg 5		808	K0 - 820	8	20
1 admiSm	N0,0	96,9		m5jg 5		66	K0 - 820	2	20
1 LromiSm	N0,0	96,O		m5jg 5		66	K0 - 820	2	20
1 obaCt	N0,0	N8,0		m5jg 5		802	K0 - 820	2	20
1 ohher	N0,0	N0,3		m5jg 5		808	K0 - 820	8	20
/ ead	N0,0	N0,3		m5jg 5		808	K0 - 820	2	20
p oMbdel Sm	N0,0	N0,2		m5jg 5		800	K0 - 820	2	20

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Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCSD 720-103896/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 103928 — **Prep Batch: 103896**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
y ickeC			N0,0	N0,8		m5jg5		800	K0 - 820	2	20
Re@l iSm			N0,0	96,2		m5jg5		6K	K0 - 820	2	20
Ri@er			2N,0	2N,0		m5jg5		800	K0 - 820	2	20
TLaCCSm			N0,0	N0,N		m5jg5		808	K0 - 820	2	20
Fal adiSm			N0,0	96,O		m5jg5		66	K0 - 820	8	20
Zil c			N0,0	N0,3		m5jg5		808	K0 - 820	2	20

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 720-103924/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 103946 — **Prep Batch: 103924**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
p ercSrM	y D		0,080		m5jg5		82j0N88 82:N7	82j0N88 8Q08	8

Lab Sample ID: LCS 720-103924/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 103946 — **Prep Batch: 103924**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
p ercSrM			0,K33	0,K87		m5jg5		6K	K0 - 820		

Lab Sample ID: LCSD 720-103924/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 103946 — **Prep Batch: 103924**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
p ercSrM			0,K33	0,K20		m5jg5		6K	K0 - 820	0	20

Lab Sample ID: 720-39020-5 MS — **Client Sample ID: A,B,C,D-1.0 COMPOSITE**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 103946 — **Prep Batch: 103924**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
p ercSrM	0,06N		0,K33	0,662		m5jg5		80K	7N - 82N		

Lab Sample ID: 720-39020-5 MSD — **Client Sample ID: A,B,C,D-1.0 COMPOSITE**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 103946 — **Prep Batch: 103924**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
p ercSrM	0,06N		0,709	0,7K2	x	m5jg5		6K	7N - 82N	29	20

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GC/MS VOA

Analysis Batch: 103855

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-39020-5	A,B,C,D-1.0 COMPOSITE	Total/NA	Solid	8260B/CA_LUFT MS	103864
LCS 720-103864/2-A	Lab Control Sample	Total/NA	Solid	8260B/CA_LUFT MS	103864
LCS 720-103864/4-A	Lab Control Sample	Total/NA	Solid	8260B/CA_LUFT MS	103864
LCSD 720-103864/3-A	Lab Control Sample Dup	Total/NA	Solid	8260B/CA_LUFT MS	103864
LCSD 720-103864/5-A	Lab Control Sample Dup	Total/NA	Solid	8260B/CA_LUFT MS	103864
MB 720-103864/1-A	Method Blank	Total/NA	Solid	8260B/CA_LUFT MS	103864

Prep Batch: 103864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-39020-5	A,B,C,D-1.0 COMPOSITE	Total/NA	Solid	5030B	
LCS 720-103864/2-A	Lab Control Sample	Total/NA	Solid	5030B	
LCS 720-103864/4-A	Lab Control Sample	Total/NA	Solid	5030B	
LCSD 720-103864/3-A	Lab Control Sample Dup	Total/NA	Solid	5030B	
LCSD 720-103864/5-A	Lab Control Sample Dup	Total/NA	Solid	5030B	
MB 720-103864/1-A	Method Blank	Total/NA	Solid	5030B	

GC Semi VOA

Prep Batch: 103833

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-39020-5	A,B,C,D-1.0 COMPOSITE	Total/NA	Solid	3546	
LCS 720-103833/2-A	Lab Control Sample	Total/NA	Solid	3546	
LCSD 720-103833/3-A	Lab Control Sample Dup	Total/NA	Solid	3546	
MB 720-103833/1-A	Method Blank	Total/NA	Solid	3546	

Prep Batch: 103838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-39020-5	A,B,C,D-1.0 COMPOSITE	Silica Gel Cleanup	Solid	3546	
LCS 720-103838/2-A	Lab Control Sample	Silica Gel Cleanup	Solid	3546	
LCSD 720-103838/3-A	Lab Control Sample Dup	Silica Gel Cleanup	Solid	3546	
MB 720-103838/1-A	Method Blank	Silica Gel Cleanup	Solid	3546	

Analysis Batch: 103891

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-39020-5	A,B,C,D-1.0 COMPOSITE	Silica Gel Cleanup	Solid	8015B	103838
LCS 720-103838/2-A	Lab Control Sample	Silica Gel Cleanup	Solid	8015B	103838
LCSD 720-103838/3-A	Lab Control Sample Dup	Silica Gel Cleanup	Solid	8015B	103838
MB 720-103838/1-A	Method Blank	Silica Gel Cleanup	Solid	8015B	103838

Analysis Batch: 103902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-39020-5	A,B,C,D-1.0 COMPOSITE	Total/NA	Solid	8081A	103833
LCS 720-103833/2-A	Lab Control Sample	Total/NA	Solid	8081A	103833
LCSD 720-103833/3-A	Lab Control Sample Dup	Total/NA	Solid	8081A	103833
MB 720-103833/1-A	Method Blank	Total/NA	Solid	8081A	103833

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Metals

Prep Batch: 103896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-39020-5	A,B,C,D-1.0 COMPOSITE	Total/NA	Solid	3050B	
LCS 720-103896/2-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 720-103896/3-A	Lab Control Sample Dup	Total/NA	Solid	3050B	
MB 720-103896/1-A	Method Blank	Total/NA	Solid	3050B	

Prep Batch: 103924

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-39020-5	A,B,C,D-1.0 COMPOSITE	Total/NA	Solid	7471A	
720-39020-5 MS	A,B,C,D-1.0 COMPOSITE	Total/NA	Solid	7471A	
720-39020-5 MSD	A,B,C,D-1.0 COMPOSITE	Total/NA	Solid	7471A	
LCS 720-103924/2-A	Lab Control Sample	Total/NA	Solid	7471A	
LCSD 720-103924/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	
MB 720-103924/1-A	Method Blank	Total/NA	Solid	7471A	

Analysis Batch: 103928

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-39020-5	A,B,C,D-1.0 COMPOSITE	Total/NA	Solid	6010B	103896
LCS 720-103896/2-A	Lab Control Sample	Total/NA	Solid	6010B	103896
LCSD 720-103896/3-A	Lab Control Sample Dup	Total/NA	Solid	6010B	103896
MB 720-103896/1-A	Method Blank	Total/NA	Solid	6010B	103896

Analysis Batch: 103946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-39020-5	A,B,C,D-1.0 COMPOSITE	Total/NA	Solid	7471A	103924
720-39020-5 MS	A,B,C,D-1.0 COMPOSITE	Total/NA	Solid	7471A	103924
720-39020-5 MSD	A,B,C,D-1.0 COMPOSITE	Total/NA	Solid	7471A	103924
LCS 720-103924/2-A	Lab Control Sample	Total/NA	Solid	7471A	103924
LCSD 720-103924/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	103924
MB 720-103924/1-A	Method Blank	Total/NA	Solid	7471A	103924

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Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-39020-1

Client Sample ID: A,B,C,D-1.0 COMPOSITE — **Lab Sample ID: 720-39020-5**

Date Collected: 12/02/11 13:30 — **Matrix: Solid**

Date Received: 12/02/11 16:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			103864	12/02/11 18:00	LL	TAL SF
Total/NA	Analysis	8260B/CA_LUFTMS		1	103855	12/03/11 00:18	JZ	TAL SF
Silica Gel Cleanup	Prep	3546			103838	12/02/11 17:57	AM	TAL SF
Silica Gel Cleanup	Analysis	8015B		10	103891	12/05/11 16:55	DH	TAL SF
Total/NA	Prep	3546			103833	12/02/11 17:55	AM	TAL SF
Total/NA	Analysis	8081A		5	103902	12/05/11 18:13	EC	TAL SF
Total/NA	Prep	3050B			103896	12/05/11 07:57	EFH	TAL SF
Total/NA	Analysis	6010B		4	103928	12/05/11 14:05	BA	TAL SF
Total/NA	Prep	7471A			103924	12/05/11 12:57	SK	TAL SF
Total/NA	Analysis	7471A		1	103946	12/05/11 16:18	EFH	TAL SF

Laboratory References:

TAL SF = TestAmerica San Francisco, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

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Certification Summary

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-39020-1

Laboratory	Putgority	I roDram	Al P heDion	Certification IR
TestAmerica San Francisco	California	State Program	9	2496

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

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Method Summary

Method	Method Description	Protocol	Laboratory
W2B0_j1 AU/ F MT5 R	W2B0_ j 1 A / F MT 5 R	Rp W4B	TA/ RM
W08g_	DieseOn al Oe (rOal ics)Dn (G)d 1 G	Rp W4B	TA/ RM
W0W8A	(rOal ocLGril e . esticiyes)d 1 G	Rp W4B	TA/ RM
B080_	5 etaGs)l1 . G	Rp W4B	TA/ RM
7478A	5 ercSrV)1 = AAG	Rp W4B	TA/ RM

Protocol References:

Rp W4B " ETest 5 etLoys Mor v NaGSatil ORoGy p asteu. LVsicaG1 LemicaC5 etLoysEuTLiry v yitiol u9 oNember 86WB Al y Its F hyates,

Laboratory References:

TA/ RM" TestAmerica Ral Mral ciscou8220 QSarrV / al eu. Gasal tol u1 A 64gBBuTv /)62gG4W4-8686

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Sample Summary

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-39020-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
720-39020-5	A,B,C,D-1.0 COMPOSITE	Solid	12/02/11 13:30	12/02/11 16:55

DRAFT

TRC
405 Clyde Ave.
Mountain View 94043
Tel: 650.967.2365
Fax: 650.967.2785

101 2nd Street, Suite 300
San Francisco, CA 94105
Tel: 415.644.3000
Fax: 415.541.9378

720-39020

135210

CHAIN OF CUSTODY RECORD

Project Name: Lathrop PARC
Job No.: 166215.1 P.O. #:
Report To: charles mettler
Sampler (print): J E Berwbo
Sampler (signature):
Electronic Deliverable Format Required: ☒ YES ☐ NO
EDF LOGCODE: ☐ TRCO
Global ID # :
Sample Type: Soil

Turnaround Requirements
5 Working Days
☐ 72 Hours
☐ 24 Hours
☒ 1 DAY 2-3 Hours RUSH !
☐ STANDARD

QC Requirement:
☐ Level IV
☐ EDF
☒ Excel/EDD

Sample I.D. (Field Point Name)	Date	Time	Lab I.D.	Sample Matrix	# of cont	Preserved?	TPH EPA 8260B ☒ Gas w/ ☒ BTEX ☐ MTBE	TPH EPA 8015M* ☒ Diesel ☒ Motor Oil ☒ Silica Gel ☐ Other 8015B	Metals: ☐ Lead ☐ LUFT ☐ RCRA	TRPH (418.1) with silica gel column	☐ Ferrous Iron Fe+2 (HACH 8146)	☐ Hexavalent Chromium (7199)	☐ Bromide (300)	Metals: arsenic, barium, chromium, cadmium, copper, lead, selenium	Metals: ☒ CAM 17 (6010/7000)	Organochlorine Pesticides (8081)	PCBs (8082)	PAHs (8310) VOCs	(1) 4-pt composite
~~S-1.0~~	12/2/11	1320		Soil	1	Ice	X	X							X	X		X	
B-1.0		1333					X	X							X	X		X	
C-1.0		1336					X	X							X	X		X	
D-1.0		1339					X	X							X	X		X	
						RUSH													

Relinquished By:	Date: 12/2/11	Received By:	Date: 12/02/11 Time: 1545
Relinquished By:	Date: 12/02/11 Time: 1655	Received By:	Date: 12/2/11 Time: 1655
Relinquished By:	Date: Time:	Lab of Record:	
		Received by Lab:	Date: Time:

PM Initial:
Temp:

Temp 3.6°

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12/6/2011

Login Sample Receipt Checklist

Client: TRC Solutions, Inc.

Job Number: 720-39020-1

Login Number: 39020

List Source: TestAmerica San Francisco

List Number: 1

Creator: Apostol, Anita

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

TestAmerica Job ID: 720-39020-2
Client Project/Site: Lathrop PARC

For:
TRC Solutions, Inc.
101 2nd street
Suite 300
San Francisco, California 94105

Attn: Mr. Charles Mettler

Authorized for release by:
12/21/2011 11:47:05 AM

Dimple Sharma
Project Manager I
dimple.sharma@testamericainc.com

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LINKS

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Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-39020-2

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

DRAFT

Job ID: 720-39020-2

Laboratory: TestAmerica San Francisco

Narrative

Job Narrative
720-39020-2

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

Metals
No analytical or quality issues were noted.

DRAFT

Detection Summary

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-39020-2

Client Sample ID: A,B,C,D-1.0 COMPOSITE — **Lab Sample ID: 720-39020-5**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	1.4		0.13		mg/L	2.5		6010B	STLC Citrate

DRAFT

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-39020-2

Client Sample ID: A,B,C,D-1.0 COMPOSITE
Date Collected: 12/02/11 13:30
Date Received: 12/02/11 16:55

Lab Sample ID: 720-39020-5
Matrix: Solid

Method: 6010B - Metals (ICP) - STLC Citrate

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**1.4**		0.13		mg/L		12/19/11 12:05	12/19/11 21:17	2.5
Chromium	ND		0.25		mg/L		12/19/11 12:05	12/19/11 21:17	2.5

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Method: 6010B - Metals (ICP)

Lab Sample ID: MB 720-104815/1-A
Matrix: Solid
Analysis Batch: 104862

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 104815

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0050		mg/L		12/19/11 12:05	12/19/11 19:51	1
Chromium	ND		0.010		mg/L		12/19/11 12:05	12/19/11 19:51	1

Lab Sample ID: LCS 720-104815/2-A
Matrix: Solid
Analysis Batch: 104862

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 104815

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	1.02		mg/L		102	80 - 120
Chromium	1.00	1.01		mg/L		101	80 - 120

Lab Sample ID: LCSD 720-104815/3-A
Matrix: Solid
Analysis Batch: 104862

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 104815

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	1.00	1.00		mg/L		100	80 - 120	1	20
Chromium	1.00	0.999		mg/L		100	80 - 120	1	20

Lab Sample ID: LB4 720-104761/1-C LB4
Matrix: Solid
Analysis Batch: 104862

Client Sample ID: Method Blank
Prep Type: STLC Citrate
Prep Batch: 104815

Analyte	LB4 Result	LB4 Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.13		mg/L		12/19/11 12:05	12/19/11 20:49	2.5
Chromium	ND		0.25		mg/L		12/19/11 12:05	12/19/11 20:49	2.5

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Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-39020-2

Metals

Leach Batch: 104761

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-39020-5	A,B,C,D-1.0 COMPOSITE	STLC Citrate	Solid	CA WET Citrate	
LB4 720-104761/1-C LB4	Method Blank	STLC Citrate	Solid	CA WET Citrate	

Prep Batch: 104815

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-39020-5	A,B,C,D-1.0 COMPOSITE	STLC Citrate	Solid	3005A	104761
LB4 720-104761/1-C LB4	Method Blank	STLC Citrate	Solid	3005A	104761
LCS 720-104815/2-A	Lab Control Sample	Total Recoverable	Solid	3005A	
LCSD 720-104815/3-A	Lab Control Sample Dup	Total Recoverable	Solid	3005A	
MB 720-104815/1-A	Method Blank	Total Recoverable	Solid	3005A	

Analysis Batch: 104862

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-39020-5	A,B,C,D-1.0 COMPOSITE	STLC Citrate	Solid	6010B	104815
LB4 720-104761/1-C LB4	Method Blank	STLC Citrate	Solid	6010B	104815
LCS 720-104815/2-A	Lab Control Sample	Total Recoverable	Solid	6010B	104815
LCSD 720-104815/3-A	Lab Control Sample Dup	Total Recoverable	Solid	6010B	104815
MB 720-104815/1-A	Method Blank	Total Recoverable	Solid	6010B	104815

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Lab Chronicle

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-39020-2

Client Sample ID: A,B,C,D-1.0 COMPOSITE — **Lab Sample ID: 720-39020-5**

Date Collected: 12/02/11 13:30 — **Matrix: Solid**

Date Received: 12/02/11 16:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
STLC Citrate	Leach	CA WET Citrate			104761	12/16/11 22:35	SK	TAL SF
STLC Citrate	Prep	3005A			104815	12/19/11 12:05	JR	TAL SF
STLC Citrate	Analysis	6010B		2.5	104862	12/19/11 21:17	BA	TAL SF

Laboratory References:

TAL SF = TestAmerica San Francisco, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

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Certification Summary

Client: TRC Solutions, Inc.
Project/Site: Lathrop PARC

TestAmerica Job ID: 720-39020-2

Laboratory	Putgority	I roDram	Al P heDion	Certification ER
TestAmerica San Francisco	California	State Program	9	2496

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

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Method	Method Description	Protocol	Laboratory
10B0M	(etaG)l8 . F	Rp W41	TA/ R=

Protocol References:

Rp W41 " dTest (etLoEs =or v gaGSatil y RoQE p asteu. LNsicaQ8 LemicaQ(etLoEsduTLirE v Eitiol u9 ogember B6W1 Al E Its UhEates,

Laboratory References:

TA/ R= " TestAmerica Ral =ral ciscouB220 QSarrN/ al eu. Qasal tol u8 A 64511uTv /)625R4W4-B6B6

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Sample Summary

1 Qel t: Tn 1 RoCStiol sull c,
. roPectjRite: / atLroh . An 1

TestAmerica Job ID: 720-39020-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
720-39020-p	Au5 ul uD-B,0 1 OM. ORITE	RoQd	B2j02jBB B3:30	B2j02jBB B6:pp

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720-39020-2

Sharma, Dimple

From: Berube, Nathan (SanFrancisco,CA-US) [NBerube@trcsolutions.com]
Sent: Friday, December 16, 2011 1:45 PM
To: Sharma, Dimple
Subject: Additional Lathrop PARC analysis

Hi Dimple,

Regarding your report # 720-39020-1: We got a high result for Lead on the latest composite soil sample from Lathrop PARC.

Please start an STLC analysis for sample A,B,C,D-1.0 Composite for Lead.

The client didn't mention the high Chromium concentration. Will the STLC results automatically reveal STLC concentrations for everything above the detection limit (like Chromium)? Or do you only look for the one specified contaminant (Lead in this case)?

Thanks,

Nate

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Sharma, Dimple

From: Berube, Nathan (SanFrancisco,CA-US) [NBerube@trcsolutions.com]
Sent: Monday, December 19, 2011 6:55 PM
To: Sharma, Dimple
Subject: FW: Additional Lathrop PARC analysis

HI Dimple;

The client would now like to include STLC analysis for Chromium from the same sample as below.

Thanks,

Nate

From: Berube, Nathan (SanFrancisco,CA-US)
Sent: Friday, December 16, 2011 1:45 PM
To: Sharma, Dimple
Subject: Additional Lathrop PARC analysis

Hi Dimple,

Regarding your report # 720-39020-1: We got a high result for Lead on the latest composite soil sample from Lathrop PARC.

Please start an STLC analysis for sample A,B,C,D-1.0 Composite for Lead.

The client didn't mention the high Chromium concentration. Will the STLC results automatically reveal STLC concentrations for everything above the detection limit (like Chromium)? Or do you only look for the one specified contaminant (Lead in this case)?

Thanks,

Nate

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Login Sample Receipt Checklist

Client: TRC Solutions, Inc.

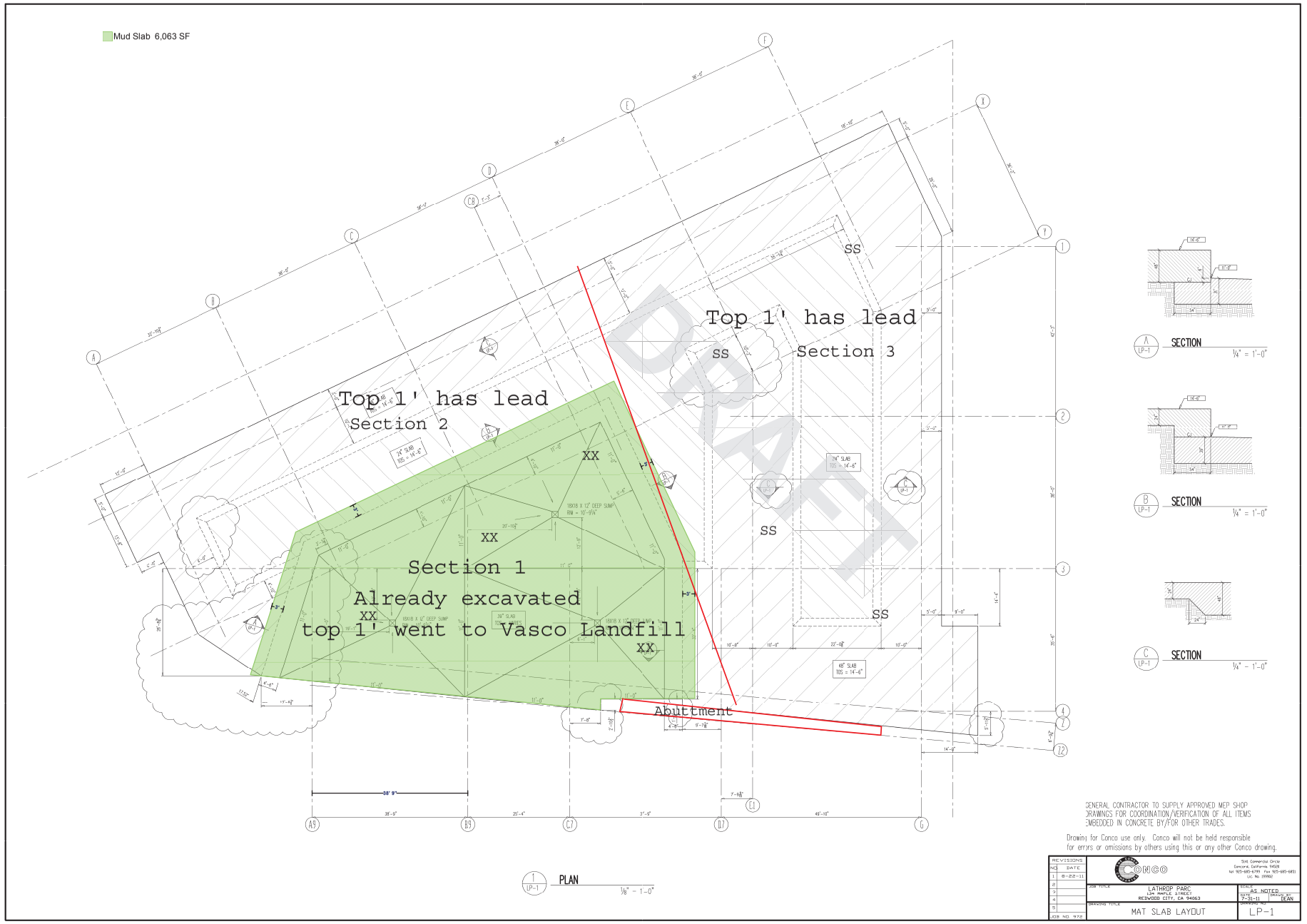
Job Number: 720-39020-2

Login Number: 39020
List Number: 1
Creator: Apostol, Anita

List Source: TestAmerica San Francisco

Question	Answer	Comment
RAaioActiditv eityer h As not meAsurea or, iwmeAsurea, is At or beloh bAcf krouna	N1⁄	
Tye coolergs custoav seAl, iW resent, is intAct.	N1⁄	
Tye cooler or sAm' les ao not A' ' eAr to yAde been com' romisea or tAm' erea h ity.	True	
SAm' les h ere receidea on ice.	True	
Cooler Tem' erAture is Acce' tAble.	True	
Cooler Tem' erAture is recoraea.	True	3.p
C6 C is ' resent.	True	
C6 C is willea out in inf Ana lekible.	True	
C6 C is willea out h ity All ' ertinent inwormAtion.	OAlse	
Is tye Ciela SAm' lergs nAme ' resent on C6 CF	True	
Tyere Are no aiscre' Ancies beth een tye sAm' le l? s on tye contAiners Ana tye C6 C.	True	
SAm' les Are receidea h ityin Dolaink Time.	True	
SAm' le contAiners yAde lekible lAbels.	True	
ContAiners Are not brof en or leAf ink.	True	
SAm' le collection aAte1times Are ' rodiaea.	True	
/ ' ' ro' riAte sAm' le contAiners Are usea.	True	
SAm' le bottles Are com' letelv willea.	True	
SAm' le HreserdAtion Periwiea.	N1⁄	
Tyere is suwicient dol. wor All reVuestea AnAlvses, incl. Anv reVuestea q S1q S? s	True	
P6 / sAm' le diAls ao not yAde yeAas' Ace or bubble is Mpmm <(14") in aiAmeter.	True	
q ulti' yAsic sAm' les Are not ' resent.	True	
SAm' les ao not reVuire s' littink or com' ositink.	True	
ResiauAl Cylorine Cyecf ea.	True	

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GENERAL CONTRACTOR TO SUPPLY APPROVED MEP SHOP DRAWINGS FOR COORDINATION/VERIFICATION OF ALL ITEMS EMBEDDED IN CONCRETE BY/FOR OTHER TRADES.

Drawing for Conco use only. Conco will not be held responsible for errors or omissions by others using this or any other Conco drawing.

REVISIONS		
NO.	DATE	
1	8-22-11	
2		
3		
4		
5		

JOB NO. 972

CONCO

501 Commercial Circle
Concord, California 94520
tel 925-685-6789 fax 925-685-6831
Lic. No. 799982

JOB TITLE
LATHROP PARC
12th MAPLE STREET
REDWOOD CITY, CA 94063

SCALE: AS NOTED
DATE: 12-31-11
DRAWN BY: DEAN

DRAWING TITLE
MAT SLAB LAYOUT

DRAWING NO.
LP-1

APPENDIX H

OTHER SUPPORTING DOCUMENTATION

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TAX CODE AREA
53-14
MAPLE ST.
LATHROP
ELM ST.
MAIN
PENNSYLVANIA AVE.
S.P.R.R.
HELLER ST.
MIDDLEFIELD RD.
STAMBAUGH ST.
BEECH ST.
CASSIA ST.
ELM (Aband.) ST.
LOT 1
LOT 2
147
149
148
142
145
141
143
144
E.A.
20' Ease.
30' Ease.
PARCEL MAP VOL 79/74-76
EASTERN ADDITION PTN. OF RSM 1/81
HANCOCK ADDITION PTN. OF RSM 01/80
ASSESSOR'S MAP COUNTY OF SAN MATEO, CALIF.
5-26-71

AEI Consultants

Environmental & Engineering Services

Instructions: Please complete the following questionnaire to the best of your knowledge.

ENVIRONMENTAL SITE ASSESSMENT QUESTIONNAIRE			
PROJECT/SITE INFORMATION			
Project Street Address(es): 1180 and 1190 Main Street			
City: Redwood City	County: San Mateo	State: CA	Zip: 94063
Parcel Number(s): APN 053-147-060 ("Lot 1", 1.186 ac) and APN 053-147-070 ("Lot 2", 0.126 ac)			
CONTACT INFORMATION			
Contact	*Name*	*Telephone Number*	*Years Associated w/Site*
Owner:	Louis Deziel	650-462-4670	6 - 7 (two parcels)
Site Contact:	Louis Deziel	650-462-4670	6 - 7
Key Site Mgr:	Kevin Flaherty	650-743-3213	6
Previous Owner(s), Operators and/or Occupants:	Nicholas Marcelli / Don Wright agent; Butler Realty	Wright: 650-465-0437 Butler: 650-361-1270	
PROPERTY USE AND SPECIFICATIONS			
☐ Single-Family Residential		☒ Vacant or undeveloped	
☐ Multi-Family Residential		☐ Agricultural *specify type:*	
☐ Commercial Office		☐ Industrial *specify type:*	
☒ Commercial Retail		☒ Other *specify type:*	
Provide a general site description: Lot 1 is currently vacant, entitled and permitted for healthcare facility development; Lot 2 has an older 1,920 sf general office. Previous uses were lighting contractor store and auto repair shop.			
Provide all known current/former addresses and/or parcel numbers: 134 Maple St. was 053-147-010; 1180/1190 Main St. were 053-147-020 and 053-147-050. The block was reconfigured as two different parcels with a Parcel map that was filed (~2010).			
Total Property Size: approx. 1.312 acres total		Original Construction Date: UNK, pre-1970	
Total Number of Buildings: 1		Was Construction Phased? ☐Yes ☐No ☒Unk	
Total Sq. Ft. of Buildings: 1,920		Dates of Renovations/Phases: 2012	
Are there any plans for site redevelopment or change in use? ☒Yes ☐No If yes, please describe: Property is being sold to a developer to develop a mixed use project (unknown mix of office, residential, retail).			
Are there any bodies of water on or immediately adjacent to the site? ☒Yes ☐No If yes, please describe: Redwood Creek currently serves as a concrete lined City storm water channel running along and across the western edge of property.			
Electricity Provider: PG&E		Gas Provider: PG&E	
Heating System Fuel Source(s): gas		Cooling System Power Source: electricity	
Potable Water Source/Provider: City of Redwood City			
Any waste water discharge at the site? ☐ Septic Tank/Leachfield ☒ Sanitary Sewer ☐ Other		Sanitary Sewer Provider (if applicable): City of Redwood City	

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OCCUPANTS/TENANTS		
Current Occupant(s)/Tenant(s)	*Length of occupancy*	*Brief description of on-site operations*
Lathrop PARC Redwood City, LLC	7 years	Construction office, now idle

Previous Occupant(s)/Tenant(s)	*Length of occupancy*	*Brief description of on-site operations*
Auto storage (-020, -050)	+/- 4 years	Truck and auto storage on asphalt pavement since demolished
Pet kennel (-020)	+/- 4 years	Pet kennel
Marcelli Lighting (-010)	+/- 35 years	Lighting store and contractor office/yard
Chubbs Auto repair (-020)	decades	Auto repair

Has the subject site ever been occupied by the following:
☐ Dry Cleaner ☐ Gas Station ☐ Printing Facility ☐ Manufacturing Facility
If yes, provide length of occupancy:

Marcelli had an underground gas tank for use by his business according to our previous Phase I. I do not know if Chubbs sold gasoline, they sold motor oil.

Have any previous investigations been performed at the subject property? ☒Yes ☐No If Yes, are copies available? 2007 (PhsI) and 2010-2011 (phase II) by TRC Solutions, and 2011 (Phase I) by Dominion Due Diligence. Inspection and remediation of existing 1,920sf building was done by several consultants in 2010-2012 for lead/asbestos/etc. LUST remediation by previous owners of both -010 and -020 in 1970s, Chubbs and Marcelli. See reports provided.

If Yes, note type and describe: ☒ Phase I ESA ☒ Phase II ☒ Asbestos ☒ Lead Paint ☐ Radon

ON-SITE ENVIRONMENTAL CONDITIONS

Are you aware of any of the following environmental conditions, **either current or former**, on the subject site? **NOTE:** If applicable, please provide inventory records, inspection records and material safety data sheets to site inspector during site inspection.

Environmental Condition/Issue	*Response*	*Notes on Yes Responses*
Aboveground Storage Tanks	☐ Yes ☒ No	
Underground Storage Tanks	☒ Yes ☐ No	See Phase I report for work in ~1970s
Hazardous/Toxic Substances	☒ Yes ☒ No	Presumed materials used by former lighting / general contractor (Marcelli on -010) and auto storage and repair businesses at Chubbs on (-020). Lathop PARC's Phase II report from TRC states that top one foot of soil has (slightly) excessive concentrations of hydrocarbons and

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		certain elements/metals (chromium and nickel??); see report.
Stored Chemicals	☐ Yes ☒ No	Presumed materials used by former lighting / general contractor (Marcelli on -010) and auto storage and repair businesses at Chubbs on (-020).
Chemical Spills/Releases	☐ Yes ☒ No	
Dump Areas/Landfills	☐ Yes ☒ No	But note Archeology report shows general area was infilled with fill dirt about 2' deep.
Waste Treatment Systems	☐ Yes ☒ No	
Wastewater Discharges	☒ Yes ☐ No	Bathroom sewer pipe to Elm St. at Chubbs was leaking before demolition
Floor Drains/Sumps/Clarifiers	☒ Yes ☐ No	Chubbs Auto repair had pits for hydraulic lifts.
Pits, Ponds, Lagoons	☐ Yes ☒ No	
Stained Soil/Vegetation	☒ Yes ☐ No	See TRC soil lab reports; slightly elevated hydrocarbons present in top 1 foot; perhaps from CalTrain exhaust.
Pesticide/Herbicide Use	☐ Yes ☒ No	
Polychlorinated Biphenyls (PCBs)	☐ Yes ☒ No	I am not aware of any. But Marcelli was an Electrical contractor; also check TRC lab reports.
Electrical Transformers	☐ Yes ☒ No	
Hydraulic Lifts	☒ Yes ☐ No	Chubbs auto repair had lifts, see Phase 1.
Elevators	☐ Yes ☒ No	
Asbestos	☒ Yes ☐ No	Roof and ceiling tiles (?) of existing building. Tiles were removed. Some asbestos may still remain encapsulated in the roof of the existing building. See abatement reports.
Environmental Condition/Issue	*Response*	*Notes on Yes Responses*
Lead-based paint	☒ Yes ☐ No	Lead paint was detected in existing building prior to its remodel in 2011. See abatement reports.
Oil/Gas Wells	☐ Yes ☒ No	
Environmental Clean-ups	☒ Yes ☐ No	Two LUSTS in the 1970s. Asbestos/Lead/etc. in 2010-2012. Removal of slightly contaminated soil to Class II dump (Vasco) by current owner per TRC direction.
Environmental Permits	☒ Yes ☐ No	I have an old, possibly usable, permit to dump remaining top 1' of soil at Vasco.
OTHER ENVIRONMENTAL CONDITIONS		
Are you aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property?		

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☐ Yes ☒ No
If yes, provide brief explanation.

Are you aware of any pending, threatened or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property?
☒ Yes ☐ No
If yes, provide brief explanation:
There was remediation of LUSTs and hydraulic pits approximately during the 1970s that received clearances.

During entitlement of the SNF we identified certain soils that when excavated had to be dumped a class II dump (top 1 foot plus certain deeper soil that was at the side wall of the LUST at Marcelli).

During excavation for our foundation we discovered an abandoned length of pipe buried in the soil near the creek channel that may have had asbestos and we abated it.

Our plans did not require excavating more than a couple feet deep on the Chubbs site, so nothing other than the top 1 foot needed to be removed to a Class II dump. However, our project was not going to disturb the soil at the side walls of the Chubbs Hydraulic lifts, and, similar to Marcelli, the soil at the side wall of the hydraulic pits may need to be dumped at a classed dump if excavated.

Are you aware of any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?
☐ Yes ☒ No
If yes, provide brief explanation.

Are you aware of any incidents of flooding, leaks, or other water intrusion, and/or complaints related to indoor air quality?
☐ Yes ☒ No
If yes, provide brief explanation.

However, the existing building does have cracks in exterior walls that allow air and dust to pass to the interior.

Are you aware of any cases of extreme water damage or mold throughout the building(s)?
☐ Yes ☒ No
If yes, provide brief explanation.

However, the existing building exterior windows at the corner of Elm St. and Main St. are temporary replacements installed after a vandal broke them. All windows in the room facing the railroad were installed improperly (inside out) and have a tendency to leak water onto the window sill and cause the sill wood to swell and the sill paint to bubble.

Person completing questionnaire: Louis Deziel, Jr.

Title/Affiliation to the subject property: Manager for current Owner

Number of years associated with the subject property: 6 - 7

Date: July 17, 2017

DRAFT

CITY OF REDWOOD CITY
2016 ANNUAL WATER QUALITY REPORT

What's Inside:

1 Our Drinking Water Sources and

2 Protecting Our Watersheds

2 Contaminants and Regulations

3 Water Quality

3 Key Water Quality Terms

4 Water Quality Data Table

6 Drinking Water and Lead

6 Special Health Needs

6 Fluoridation and Dental Fluorosis

7 City's Conservation Programs

This state-mandated report contains important information about your drinking water. Translate it, or speak with someone who understands it.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.



Tuolumne River — SFPUC Website

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OUR DRINKING WATER SOURCES AND TREATMENT

Supplied by the San Francisco Regional Water System (SFRWS), which is owned and operated by the San Francisco Public Utilities Commission (SFPUC), our major water source originates from spring snowmelt flowing down the Tuolumne River to storage in the Hetch Hetchy Reservoir. This well protected Sierra water source is exempt from filtration requirements by the United States Environmental Protection Agency (USEPA) and State Water Resources Control Board's Division of Drinking Water (SWRCB-DDW). Water from the Hetch Hetchy reservoir receives the following treatments to meet appropriate drinking water standards: disinfection by ultraviolet light and chlorine, corrosion control by adjustment of the water pH value, fluoridation for dental health protection, and chloramination for maintaining disinfectant residual and minimizing disinfection byproduct formation.

Hetch Hetchy water is supplemented with surface water from two local watersheds. Rainfall and runoff from the 35,000 acre Alameda Watershed in Alameda and Santa Clara counties are collected in the Calaveras and San Antonio reservoirs, and delivered to the Sunol Valley Water Treatment Plant (SVWTP). Rainfall and runoff from the 23,000 acre Peninsula Watershed in San Mateo County are stored in the Crystal Springs, San Andreas and Pilarcitos reservoirs, and are delivered to the Harry Tracy Water Treatment Plant. In addition to these local sources, the SWRCB-DDW approved the SFPUC to use the surface water in Lake Eleanor, Lake Cherry and the associated creeks all conveyed via the Lower Cherry Aqueduct, Early Intake Reservoir and Tuolumne River (collectively known as Upcountry Non-Hetch Hetchy Sources, or UNHHS) as additional drinking water sources to the SFRWS. The UNHHS water, if used, will be treated at the SVWTP prior to service to customers. In 2016, the SFRWS did not use UNHHS. Water at the two local treatment plants is subject to filtration, disinfection, fluoridation, and pH adjustment for corrosion control optimization. Redwood City receives water from Hetch Hetchy reservoir and Alameda Watershed.



The SFPUC conducts watershed sanitary surveys for the Hetch Hetchy source annually and local water sources every five years. The last local sanitary survey was done in 2016. The SFPUC conducted a special watershed sanitary survey for UNHHS in 2015 as part of its drought response plan efforts. These surveys evaluate the sanitary condition, water quality, potential contamination sources and the results of watershed management activities, and were completed with support from partner agencies including National Park Service and US Forest Service.

These surveys identified wildlife, stock, and human activities as potential contamination sources. You may contact the San Francisco District office of the SWRCB-DDW at 510-620-3474 to review these reports.

LAWN BE GONE!

Save water by removing your grass! Redwood City residents and businesses are eligible to receive rebates of $1 per square foot for replacing lawn with a beautiful, drought tolerant landscape.

How do I receive a rebate?

To receive the rebate, you must submit an application and receive a Notice to Proceed from your water provider before removing your lawn. Visit www.redwoodcity.org/conservation for more information and program requirements.



Get Paid to Transform Your Landscaping!

DRAFT

CONTAMINANTS AND REGULATIONS

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- **Microbial contaminants**, such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- **Inorganic contaminants**, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- **Pesticides and herbicides**, that may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application and septic systems.
- **Radioactive contaminants**, that can be naturally-occurring or be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline 800-426-4791, or at ***www.epa.gov/safewater***.

WATER QUALITY

The SFPUC's Water Quality Division (WQD) regularly collects and tests water samples from reservoirs and designated sampling points throughout the system to ensure the water delivered to you meets or exceeds federal and state drinking water standards. In 2016, WQD staff conducted more than 50,200 drinking water tests in the transmission and distribution systems. This is in addition to the extensive treatment process control monitoring performed by the SFPUC's certified operators and online instruments.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. In order to ensure that tap water is safe to drink, the USEPA and SWRCB-DDW prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration regulations and California law also establish limits for contaminants in bottled water that provide the same protection for public health.



TO LEARN MORE

Additional water quality data may be obtained by contacting Justin Chapel at Redwood City Public Works Services (650) 780-7464.

Want to learn more about drinking water regulations? Visit the SWRCB Division of Drinking Water at www.swrcb.ca.gov/drinkingwater or the U.S. Environmental Protection Agency at www.epa.gov.

Water quality policies are decided at public hearings held at regularly scheduled City Council meetings. For more information visit www.redwoodcity.org.

Key Water Quality Terms
Following are definitions of key terms referring to water quality standards and goals noted on the adjacent data table.
Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the USEPA.
Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs or MCLGs as is economically and technologically feasible. Secondary MCLs (SMCLs) are set to protect the odor, taste, and appearance of drinking water.
Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
Primary Drinking Water Standard (PDWS): MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.
Regulatory Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.
Turbidity: A water clarity indicator that measures cloudiness of the water, and is also used to indicate the effectiveness of the filtration system. High turbidity can hinder the effectiveness of disinfectants.
Cryptosporidium is a parasitic microbe found in most surface water. The SFPUC regularly tests for this waterborne pathogen, and found it at very low levels in source water and treated water in 2015. However, current test methods approved by the USEPA do not distinguish between dead organisms and those capable of causing disease. Ingestion of *Cryptosporidium* may produce symptoms of nausea, abdominal cramps, diarrhea, and associated headaches. *Cryptosporidium* must be ingested to cause disease, and it may be spread through means other than drinking water.

KEY			
< / ≤	= less than / less than or equal to	**NL**	= Notification level
AL	= Action Level	**NoP**	= Number of Coliform-Positive Sample
Max	= Maximum	**NTU**	= Nephelometric Turbidity Unit
Min	= Minimum	**ORL**	= Other Regulatory level
N/A	= Not Available	**ppb**	= part per billion
ND	= Non-Detect	**ppm**	= part per million
µS/cm	= microSiemens/ centimeter		

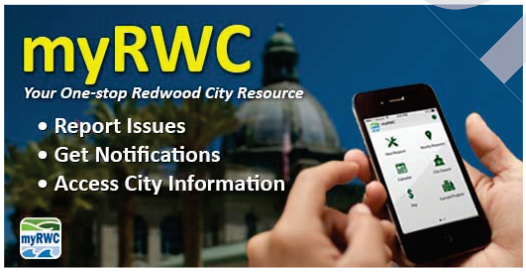
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City of Redwood City—Water Quality Data for Year 2016 [1]

Detected Contaminants	Unit	MCL	PHG or (MCLG)	Range or Level Found	Average or [Max]	Major Sources in Drinking Water
Turbidity						
Unfiltered Hetch Hetchy Water	NTU	5	N/A	0.3 - 0.5 [2]	[3.2]	Soil Runoff
Filtered Water from Sunol Valley Water Treatment Plant (SVWTP)	NTU -	1 [3] Min 95% of samples ≤ 0.3 NTU [3]	N/A N/A	- 98% - 100%	[1] -	Soil Runoff Soil Runoff
Disinfection Byproducts and Precursors						
Total Trihalomethanes	ppb	80	N/A	43 - 75.8	[63.1] [4]	Byproduct of drinking water disinfection
Haloacetic Acids	ppb	60	N/A	23 - 81.7	[55.3] [4]	Byproduct of drinking water disinfection
Total Organic Carbon [5]	ppm	TT	N/A	1.6 - 5.3	2.1	Various natural and man-made sources
Microbiological						
Total Coliform	-	NoP ≤5.0% of monthly samples	(0)	-	[0%]	Naturally present in the environment
Giardia lamblia	Cyst/L	TT	(0)	0 - 0.11	0.03	Naturally present in the environment.
Inorganics						
Fluoride (source water) [6]	ppm	2.0	1	ND - 0.8	0.3 [7]	Erosion of natural deposits; water additive to promote strong teeth
Chloramine (as chlorine)	ppm	MRDL=4.0	MRDLG=4	0.01 - 2.9	[2.44] [8]	Drinking water disinfectant added for treatment
Constituents with Secondary Standards	**Unit**	**SMCL**	**PHG**	**Range**	**Average**	**Major Sources of Contaminant**
Aluminum [9]	Ppb	200	600	ND—55	ND	Erosion of natural deposits; some surface water treatment residue
Chloride	ppm	500	N/A	<3 - 16	8.8	Runoff / leaching from natural deposits
Color	unit	15	N/A	<5 –11	<5	Naturally-occurring organic materials
Specific Conductance	µS/cm	1600	N/A	31 - 218	146	Substances that form ions when in water
Sulfate	ppm	500	N/A	1 - 30	16	Runoff / leaching from natural deposits
Total Dissolved Solids	ppm	1000	N/A	<20 - 95	63	Runoff / leaching from natural deposits
Turbidity	NTU	5	N/A	0ND - 0.5	0.2	Soil runoff
Lead and Copper	**Unit**	**AL**	**PHG**	**Range**	**90th Percentile**	**Major Sources in Drinking Water**
Copper	ppb	1300	300	< 1 - 107 [10]	27.4	Internal corrosion of household water plumbing systems
Lead	ppb	15	0.2	<1 - 6.9 [11]	3.8	Internal corrosion of household water plumbing systems

City of Redwood City—Water Quality Data for Year 2016

Other Water Quality Parameters	Unit	ORL	Range	Average
Alkalinity (as $CaCO_3$)	ppm	N/A	7 - 112	39
Boron	ppb	1000 (NL)	ND-123	ND
Bromide	ppb	N/A	<5-19	8
Calcium (as Ca)	ppm	N/A	2 - 18	10
Chlorate(12)	ppb	800 (NL)	47 - 250	143
Hardness (as $CaCO_3$)	ppm	N/A	8 - 76	44
Magnesium	ppm	N/A	0.2 - 6	3.6
pH	-	N/A	8.2 - 9.8	9.4
Phosphate (Ortho)	ppm	N/A	<0.03-0.11	0.04
Potassium	ppm	N/A	0.2 - 1	0.6
Silica	ppm	N/A	5.1 - 5.7	5.3
Sodium	Ppm	N/A	2.6 - 17	11
Strontium	ppb	N/A	13 - 204	13



Footnotes:

(1) All results met State and Federal drinking water health standards.
(2) These are monthly average turbidity values measured every 4 hours daily.
(3) There is no turbidity MCL for filtered water. The limits are based on the TT requirements for filtration systems.
(4) This is the highest locational running annual average value.
(5) Total organic carbon is a precursor for disinfection byproduct formation. The TT requirement applies to the filtered water from the SVWTP only.
(6) In May 2015, the SWRCB recommended an optimal fluoride level of 0.7 ppm be maintained in the treated water. In 2016, the range and average of the fluoride levels were 0.5 ppm - 0.8 ppm and 0.6 ppm, respectively.
(7) The natural fluoride levels in the upcountry sources were ND. Elevated fluoride levels in the SVWTP and HTWTP raw water are attributed to the transfer of fluoridated Hetch Hetchy water into the local reservoirs.
(8) This is the highest running annual average value.
(9) Aluminum also has a primary MCL of 1,000 ppb
(10) The most recent Lead and Copper Rule monitoring was in 2015. 0 of 31 site samples collected at consumer taps had copper concentrations above the AL.
(11) The most recent Lead and Copper Rule monitoring was in 2015. 0 of 31 site samples collected at consumer taps had lead concentrations above the AL.
(12) The detected chlorate in the treated water is a degradation product of sodium hypochlorite used by the SFPUC for water disinfection.

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WATER USE PROGRAM - "MYWATER"

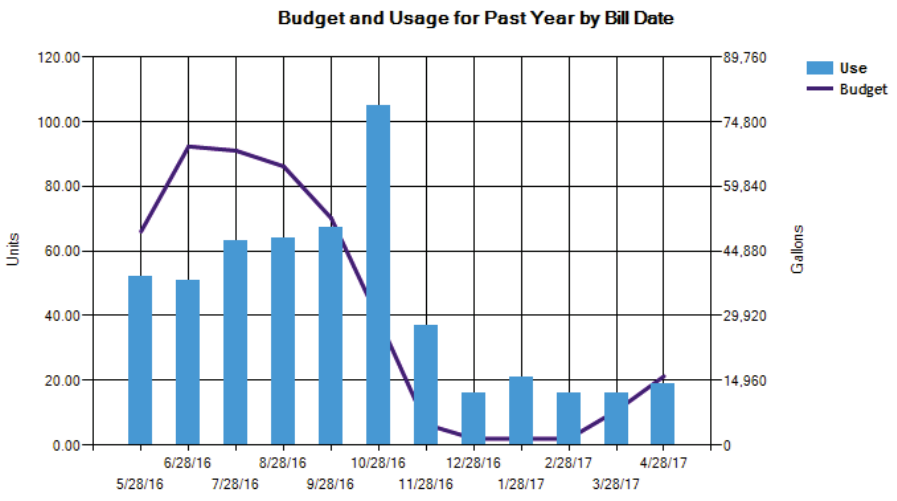
Conserving water can be a difficult task, but by using the tools in the MyWater Program, you will find it much easier. View water use compared to your water budget, sign up for leak alerts, water use reports and much more.

MyWater is a useful tool provided to you by Redwood City's Water Utility Services Division. MyWater allows you to view your water budget and consumption information on an hourly, daily, or monthly basis.

MyWater's purpose is to empower the customer through better customer service so that we may use water more wisely, and in turn, save money and help the environment.

MyWater allows you to:

- View hourly water use
- Sign up for leak alerts
- View water use reports
- View water use compared to a customized water budget









DRINGKING WATER AND LEAD

Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. There are no known lead service lines in the SFRWS. We are responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. It is possible that lead levels at your home may be higher than at others because of plumbing materials used in your property.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Infants and young children are typically more vulnerable to lead in drinking water than the general population. You can minimize the potential for lead exposure, when your water has been sitting for several hours, by flushing your tap for 30 seconds to 2 minutes (or until the water temperature has changed) before using water for drinking or cooking. If you are concerned about lead levels in your water, you may wish to have your water tested. Additional information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the USEPA's Safe Drinking Water Hotline 800-426-4791, or at ***www.epa.gov/lead.***

SPECIAL HEALTH NEEDS

Some people may be more vulnerable to contaminants in drinking water than the general population.

Immuno-compromised persons, such as:

* Those with cancer undergoing chemotherapy,
* Persons who have undergone organ transplants,
* People with HIV/AIDS or other immune system disorders
* Some elderly people and infants,

can be particularly at risk from infections.

These people should seek advice about drinking water from their health care providers. USEPA and Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the USEPA's Safe Drinking Water Hotline 800-426-4791 or at ***www.epa.gov/safewater***.

FLUORIDATION AND DENTAL FLUOROSIS

Mandated by State law, water fluoridation is a widely accepted practice proven to be safe and effective for preventing and controlling tooth decay. The SFPUC's fluoride target level in the water is 0.7 milligram per liter, consistent with the May 2015 State regulatory guidance on optimal fluoride level.

Infants fed formula mixed with water containing fluoride at this level may still have a chance of developing tiny white lines or streaks in their teeth. These marks are referred to as mild to very mild fluorosis, and are often only visible under a microscope. Even in cases where the marks are visible, they do not pose any health risk. The CDC considers it safe to use optimally fluoridated water for preparing infant formula.

To lessen this chance of dental fluorosis, you may choose to use low-fluoride bottled water to prepare infant formula. Nevertheless, children may still develop dental fluorosis due to fluoride intake from other sources such as food, toothpaste and dental products.

Contact your health provider or SWRCB-DDW if you have concerns about dental fluorosis. For additional information about fluoridation or oral health, visit the CDC website ***www.cdc.gov/fluoridation*** or SWRCB-DDW website ***www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Fluoridation.shtml***.

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2016 ANNUAL WATER QUALITY REPORT

City of Redwood City
Water Utility Services
1400 Broadway
Redwood City, CA 94063-2505
Phone: 650-780-7464
www.redwoodcity.org

APPENDIX I

QUALIFICATIONS

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Megan Nolet – Project Manager, Due Diligence

BA- Environmental Studies, Brown University, Providence, RI

Ms. Nolet provides project management to ensure ASTM compliance and satisfaction of client requirements for Phase I Environmental Assessments, Environmental Transaction Screens, Regulatory Database Review, and Historical Records Review.

Project experience for Ms. Nolet includes:

- Phase I Environmental Site Assessments (PHI ESA)
- Environmental Transaction Screens (ETS)
- Regulatory Database Review
- Historical Records Review

In addition, prior to joining the environmental consulting industry, Ms. Nolet spent four years studying a diverse range of environmental disciplines including: environmental health, coastal ecology and conservation, environmental statistics, ecology, conservation biology, environmental law and policy, and science communications.

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Steven H. Yekich – National Client Manager

B.S. – Earth Science, State University of New York at Brockport

AHERA Asbestos Inspector – The Environmental Institute

Annual 40 Hour HAZWOPER

Mr. Yekich has over 16 years of experience in the environmental consulting field and has performed ASTM Phase I-II Environmental Site Assessments (ESAs) and subsequent phases of investigation/cleanups for banks, Certified Development Companies (CDCs), private investment groups, private landowners and large commercial/industrial facilities throughout the United States. This work has included dozens of subsurface investigations of contaminated soil and/or groundwater and vapor intrusion, involving underground storage tanks, manufacturing facilities, and dry-cleaning facilities. Mr. Yekich worked for an in/ex-site chemical oxidation/reduction company which designed and implemented injections throughout the Southeast which involved the use of several chemical agents. In addition, Mr. Yekich has been a Senior Author for over 1500 ASTM Phase I's, Phase II's, Environmental Transaction Screens (ETS), and SBA Record Search's (RSRA).

Project experience for Mr. Yekich includes:

- **WOOD TREATING FACILITY, EAST POINT, GEORGIA**

  Mr. Yekich provided technical and field support associated with semi-annual monitoring of existing well network which included clustered shallow, intermediate, and deep wells along with assistance of RCRA Part B permitting for an operating wood treatment facility contaminated with pentachlorophenol (PCP), cresol, naphthalene, chlorinated solvents, and petroleum-type constituents. The facility was documented to contain several Solid Waste Management Units (SWMUs) along with Hazardous Waste Management Units (HWMUs), consisting of a former waste disposal pit and pressure vessel areas utilizing PCP. In addition, Mr. Yekich developed a sampling protocol following US EPA guidance documentation and implemented the sampling event using field staff, which was overseen by the Georgia Environmental Protection Division (GA EPD) personnel during sampling events. A semi-annual Corrective Action Report (CAR) was prepared and submitted to the Georgia Environmental Protection Division (GA EPD) using the data collected.

- **FORMER COTTON MILL, BUILDING RENOVATION & BROWNFIELD SITE, MONROE, GEORGIA**

  Mr. Yekich performed an extensive Phase I/II assessment followed by preparation of a Prospective Purchaser Corrective Action Plan (PPCAP) at a late-1800's cotton mill. Environmental concerns were identified through a review of historic Sanborn maps, aerials, and interviews and included former diesel ASTs, USTs, ruptured transformers, a cooling pit, and a dry pond previously used to dispose of coal ash. The assessment also identified the presence of asbestos

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containing piping throughout the facility. Mr. Yekich oversaw the abatement of damaged areas of the piping and prepared an Operation & Maintenance Plan for addressing materials left in-place. Extensive Phase II Site Investigations were performed on a "rush" basis to investigate the subsurface RECs. The results indicated the presence of several RCRA metals and PAHs in soils exceeding regulatory limits, particularly in the pond area due to coal ash layer. A Brownfield CAP was prepared and approved by the Georgia EPD along with a plan for additional assessment and eventual remedial action.

- **FORMER COMMERCIAL PRINTER, OAKWOOD, GEORGIA**

  Mr. Yekich provided technical and field support associated with a Phase I/II ESA prior to redevelopment into a Wal-Mart Supercenter. The Phase I ESA identified the mixing of paint along with raw materials located in underground storage tanks (USTs), which included both hazardous and petroleum-type substances. In addition, the facility was identified to have utilized two septic tank systems. Mr. Yekich installed 12 monitoring wells, which included Type II and II wells in order to delineate the horizontal and vertical extent of dissolved phase petroleum hydrocarbons, hazardous solvents, and RCRA Metals, associated with past printing operations, USTs, hazardous storage room, and septic tank systems. Contamination was confirmed resulted from the former operations released in soil and groundwater. Mr. Yekich also established site specific metal background concentration and also assisted in preparation of the Prospective Purchaser Corrective Action Plan (PPCAP) report which recommended Dig and Haul to remove the constituents of concern (COCs) to below the applicable Risk Reduction Standard (RRS).

- **FORMER SERVICE STATION, ATLANTA, GEORGIA**

  Mr. Yekich provided technical and field support associated with a Corrective Action Plan – Part "B", which included the installation of 5 monitoring well to further delineate the horizontal and vertical extent of Free Product and dissolved phase petroleum hydrocarbons in soil and groundwater. Mr. Yekich assisted in preparation of the CAP-B report which recommended In-site Chemical Oxidation (ISCO) to treat petroleum hydrocarbons.

- **MISCELLANEOUS ASSESSMENT/REMEDIATION PROJECTS**

  Mr. Yekich has extensive experience in subsurface soil and groundwater assessments and remediation in a variety of geologic/hydrogeologic provinces (Piedmont, Coast, Valley & Ridge, and Blue Ridge). His drilling assessment experience includes: direct-push technology (DPT), NQ rock coring, air-rotary, hollow-stem auger, and rotosonic drilling methods. Remediation methods utilized have included Chemical Oxidation/Reduction (ISCO/ISCR), both in-situ or ex-situ, Enhanced Bioremediation, Soil Vapor Extraction (SVE), Air-Sparging (AS), Dual-Phase Extraction (DPE) and other related technologies.

Technical reports prepared by Mr. Yekich have included Phase I/II/III property assessments, CAP/CSRs, PPCAPs, Quarterly/Semi-Annual monitoring reports for UST/RCRA facilities, SPCC Plans, Storm Water Plans, Asbestos Survey Reports, and U.S. Army Corps of Engineers (USACE) Wetland Delineation/Permitting reports and permits.

- **AEROSPACE PARTS MANUFACTURER PORTFOLIO, THROUGHOUT THE U.S.**

  Mr. Yekich provided technical review support associated with eight (8) aerospace manufacturing facilities located throughout the United States for a large regional banking client. Several of the facilities dated back into the 1940s and 50s. The facilities manufactured aerospace parts which involved shaping, bending, grinding, sandblasting, and chemical etching. Several of the facilities utilized vapor degreasers, wastewater lagoons, vats/pits, and numerous hazardous solvents as part of their operations, which included trichloroethene (TCE), 1,1,1-trichloroethane (1,1,1-TCA).

- **MISCELLANEOUS CHEMICAL INJECTION PROJECTS**

  Mr. Yekich provided technical design of chemical oxidation/reduction along with implementation of sodium persulfate (Klozur), sodium permanganate, Fenton's reagent, surfactants, and chemical reduction using Zero Valent Iron (ZVI) to various environmental consulting companies throughout the United States, and worked closely with manufacturers of these chemicals which included FMC Corporation, Carus Corporation, Adventus Group, and VeruTek Technologies. Mr. Yekich attended Battelle Symposium, AIGP events, and gave numerous PowerPoint presentations to consulting companies and their clients. Mr. Yekich also presented at the Alabama Department of Environmental Management (ADEM), groundwater conference in Montgomery, Alabama, in addition to hosting a large presentation for environmental consultants in Alabama, which included the presentation of all the chemical manufacturers listed above, discussion of their products, case studies, and audience participation. Mr. Yekich also prepared case studies using activated persulfate (Klozur), which are posted on the FMC Corporation website.

- **FORMER INDUSTRIAL MANUFACTURER, OPELIKA, AL**

  Mr. Yekich assisted in the design and implementation of a former large manufacturing plant which manufactured exercise equipment. This facility was contaminated with chlorinated ethene's and ethane's, in addition to petroleum related constituents. Over 1,000 injections points were installed throughout the interior and exterior portions of the subject buildings, which received various concentrations of activated persulfate using sodium hydroxide, over the course of several injections.

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- **FORMER TRUCKING FACILITY, ATLANTA, GA**

  Mr. Yekich helped design and implement a large ex-situ soil blending project on behalf of the GEPD and their client, in order to reduce Free Product and dissolved petroleum-impacted groundwater. This project involved the excavation of petroleum-impacted soils; transportation of soil via front end loaders into industrial sieves, placement of sieved soils into a modified soil blending machine, which applied activated persulfate with iron and hydrogen peroxide as the activators. The material was stockpiles pending laboratory analysis, and placed back into the excavation. Monitoring wells were installed within the excavation area to document the decreasing concentrations. Dewatering of petroleum-impacted groundwater was placed inside aboveground storage tanks (ASTs), pending transportation to an off-site waste facility.

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Appendix F GEOTECHNICAL INVESTIGATION

GEOTECHNICAL INVESTIGATION
1180 MAIN STREET
Redwood City, California

Prepared For:

Premia, LLC
801 Hamilton Street
Redwood City, California 94063

Prepared By:

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Principal/Vice President

2 April 2018
770643401

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GEOTECHNICAL INVESTIGATION
1180 Main Street
Redwood City, California

1.0 INTRODUCTION

This report presents the results of a geotechnical investigation performed by Langan Engineering and Environmental Services, Inc. (Langan) for the proposed development at 1180 Main Street in Redwood City, California. The site is bound by Pennsylvania Avenue and railroad tracks (Caltrain) to the northeast, Main Street to the east, Elm Street to the south, Lathrop Street to the southwest, and Maple Street to the northwest; the approximate site location is shown on Figure 1. The site is irregularly shaped with long dimensions of about 300 feet by 400 feet and a total area of about 1.3 acres.

Previously, the site appears to have been occupied by buildings, concrete slabs and paved parking lots, which were demolished in mid- to late-2011. The majority of the site is currently a vacant lot with scattered vegetation, with the exception of the southeast corner of the site, which is currently occupied by a one-story commercial building, and the northwest portion of the site, which contains an open, concrete-lined channel for Redwood Creek and an associated concrete stormwater detention area.

We understand the proposed project consists of an approximately 112,000 square foot four-story office building above two levels of underground parking[1], with the lowest basement level located approximately 21½ feet below the existing ground surface (bgs). The project also includes the development of a public park to be located along the western side of the proposed office building and a pedestrian bridge within the park that will span across the existing culvert that runs through the southwest portion of the property.

We previously performed a preliminary geotechnical study of the site based on available geotechnical data in the vicinity and presented our findings in a letter dated 18 August 2017.

2.0 SCOPE OF SERVICES

Our services were performed in general conformance with our scope of services outlined in our proposal dated 1 December 2017, and included drilling two borings at the project site to

[1] Based on plans titled "1180-90 Main Street Planning Application, Office Building by Premia Capital" by brick architects, dated 26 February 2018.

supplement the available data and collect physical soil samples. We used the results of our field exploration and findings from our preliminary geotechnical study to develop conclusions and design-level recommendations regarding:

- soil and groundwater conditions;
- most appropriate foundation type(s) for the proposed building;
- design criteria for the appropriate foundation types, including final vertical and lateral capacities;
- estimates of total and differential settlement of new foundations;
- site seismicity and seismic hazards, including liquefaction and associated hazards;
- 2016 California Building Code (CBC) seismic design criteria, including site classification, mapped values S_S and S_1, modification factors F_a and F_v and S_{MS} and S_{M1};
- site grading, including criteria for fill quality and compaction;
- soil subgrade preparation;
- excavation, dewatering, and temporary cut slopes;
- design of below-grade walls;
- temporary shoring
- concrete flatwork; and
- construction considerations.

3.0 FIELD EXPLORATION

3.1 Previous Investigations

Geotechnical investigations[2],[3] of the site were performed by others for a proposed development that was not constructed; data from those reports was reviewed by us and used as part of this study. During those investigations, five borings were drilled and four Cone Penetration Tests (CPTs) were advanced in the northern and central portions of the site. Logs

[2] Report by TRC titled "Preliminary Geotechnical Investigation, Lathrop Post-Acute Recovery Center, 134 Maple Street, Redwood City, California," dated 12 June 2008

[3] Report by TRC titled "Geotechnical Investigation and Geologic Hazards Review, Lathrop Post-Acute Recovery Center, 134 Maple Street, Redwood City, California," dated 31 August 2009

of the borings and CPTs and laboratory test results are presented in Appendix A and the locations are presented on Figure 2.

As part of our preliminary investigation we advanced three Cone Penetration Tests (CPTs). The CPTs, designated as CPT-1 through CPT-3, were performed at the approximate locations shown on Figure 2. The CPTs were advanced to depths of about 52 feet below ground surface (bgs). The CPTs were performed by hydraulically pushing a 1.7-inch-diameter, cone-tipped probe, with a projected area of 15 square centimeters, into the ground. The cone tip measures tip resistance, and the friction sleeve behind the cone tip measures frictional resistance. Electrical strain gauges or load cells within the cone continuously measured the cone tip resistance and frictional resistance during the entire depth of each probing. Accumulated data was processed by computer to provide engineering information, such as the types and approximate strength characteristics of the soil encountered. The CPT logs, showing tip resistance, side friction and friction ratio by depth, pore pressures, and interpreted soil classification, are presented in Appendix B. Soil types were estimated using the classification chart included in Appendix B.

Pore-pressure dissipation tests (PPDTs) were performed during each of the CPTs. PPDTs are conducted at various depths to measure hydrostatic water pressures and to determine the approximate depth of the groundwater level. The variation of pore pressure with time is measured behind the tip of the cone and recorded. For this investigation, the duration of the tests was about 5 minutes. The results of the three PPDTs are presented Appendix B.

3.2 Current Field Exploration

To further evaluate the subsurface conditions at the site, we performed a field exploration on 8 February 2018, which consisted of drilling two borings, designated B-1 and B-2, respectively. The approximate locations of the borings are presented on Figure 2.

Prior to commencing our field work, we obtained the necessary soil boring permit from the San Mateo County Health System's Environmental Health Division (SMCHSEHD). We also retained a private utility locating subcontractor to check for underground utilities at each boring location and, as required by law, we notified Underground Service Alert (USA) at least 72 hours prior to the start of work.

The borings were drilled by Pitcher Drilling of Palo Alto using a truck-mounted rig equipped with rotary wash drilling equipment. Both borings were drilled to depths of approximately 41½ feet

bgs. During drilling, our field engineers logged the borings and obtained representative samples of soil encountered for classification and laboratory testing. The boring logs are presented in Appendix C on Figures C-1 and C-2. The soil was logged in accordance with the soil classification system described on Figure C-3.

Soil samples were obtained using the following sampler types.

- Standard Penetration Test (SPT) split-barrel sampler with a 2.0-inch-outside diameter and a 1.38-inch-inside diameter, without liners
- Sprague and Henwood (S&H) split-barrel sampler with a 3.0-inch-outside diameter, 2.5 inch-inside diameter, lined with 2.43-inch inside diameter stainless steel tubes
- Shelby Tube (ST) sampler with a 3-inch outside diameter and a 2.93-inch inside diameter

The sampler types were chosen on the basis of soil type and desired sample quality for laboratory testing. In general, the SPT sampler was used to evaluate the relative density of sandy soil and the S&H sampler was used to obtain samples in medium stiff to very stiff cohesive soil. The ST sampler was used to obtain relatively undisturbed samples of soft to medium stiff cohesive soils.

The SPT and S&H samplers were driven with a 140-pound, above-ground, automatic safety hammer falling 30 inches. The samplers were driven up to 18 inches and the hammer blows required to drive the samplers every six inches of penetration were recorded and are presented on the boring logs. A "blow count" is defined as the number of hammer blows per six inches of penetration. The blow counts required to drive the S&H and SPT samplers were converted to approximate SPT N-values to account for sampler type and hammer energy using factors of 0.7 and 1.2, respectively. The blow counts used for this conversion were the last two blow counts of an 18-inch drive. The final converted blow counts for each sample are shown on the boring logs.

The ST samplers were pushed hydraulically into the soil; the piston pressures, measured in pounds per square inch (psi), required to advance the samplers are shown on the logs.

Upon completion, both borings were backfilled with grout consisting of cement and water in accordance with the requirements of the SMCHSEHD. The soil cuttings generated from the borings were placed in 55-gallon drums, stored temporarily at the site, and later transported off-site for disposal.

3.3 Laboratory Testing

The soil samples from the field exploration program were re-examined in the office by our engineer for soil classifications, and representative samples were selected for laboratory testing. Samples were tested to measure moisture content, dry density, fines contents, plasticity (Atterberg Limits), shear strength, and compressibility. Results of the laboratory tests are included on the boring logs and in Appendix D.

4.0 SITE AND SUBSURFACE CONDITIONS

4.1 Site Conditions

A one-story commercial building exists in the southeast corner of the site. In the northwest portion of the site exists an open, concrete-lined channel for Redwood Creek and an associated concrete stormwater detention area, located immediately adjacent to the channel. The remaining majority of the site is currently a vacant lot occupied by scattered vegetation. Site elevations outside of the creek channel and stormwater detention areas generally vary between about 15½ feet[4] and 17 feet. Within the stormwater detention area, the ground slopes down from about Elevation 16 to approximately Elevation 11 feet; within the existing Redwood Creek channel area, the ground slopes down to a minimum elevation of approximately 6 feet.

Previously, the site appears to have been occupied by buildings, concrete slabs, and paved parking lots, which were demolished in mid- to late-2011.

4.2 Subsurface Conditions

The results of previous investigations and our field investigation indicate that the project site is blanketed by up to 4½ feet of fill consisting of sand with clay, sandy clay, and clay with varying amounts of asphalt, concrete and brick debris; in addition along the northeast boundary railroad ballast rock was encountered in the fill. The fill is underlain by a layer of medium stiff to very stiff clay that extends to depths of about 15 to 22 feet bgs, except at CPT-2 where medium dense sand was encountered to depths of about 12 feet overlying the clay layer. Atterberg limits tests indicate the upper few feet of the clay has high expansion potential. Below the clay is an approximately 7 to 23 foot thick layer of loose to dense sand with varying fines content.

[4] Elevations based on plan titled "1180/1190 Main Street Planning Submittal Existing Conditions Plan" by BKF Engineers, Surveyors, Planners, dated 11/20/17. All elevations provided herein reference Redwood City Datum (RCD), unless otherwise noted.

These sand layers were found to extend to depths ranging from about 22 to 39 feet bgs, roughly corresponding to Elevations -6 and -23 feet, respectively. Underlying these sand layers is stiff to very stiff clay, to the maximum explored depth of 50 feet bgs.

Due to the use of rotary wash drilling methods, the groundwater level was obscured during drilling operations. PPDTs performed as part of our preliminary investigation indicate groundwater is at depths of about 10 to 12 feet bgs, roughly corresponding to Elevations 6 and 4 feet, respectively. This matches with groundwater measurements taken during drilling of borings by others, where groundwater was encountered at depths of 12 to 15 feet bgs. However, all groundwater levels were measured at the time of the respective investigations and likely do not represent the stabilized groundwater level. Seasonal fluctuations in rainfall influence groundwater levels and may cause several feet of variation. The California Geological Survey, as part of their Seismic Hazards Zone Report (Palo Alto Quadrangle) reported the historic high groundwater level in this area on the order of 5 feet bgs, roughly corresponding to Elevation 11 feet.

5.0 REGIONAL SEISMICITY

The major active faults in the area include the San Andreas, Monte Vista-Shannon, San Gregorio, Hayward, and Calaveras faults. These and other active faults in the region are shown on Figure 3. For each of the active faults within 50 kilometers of the site, the distance from the site and estimated mean characteristic Moment magnitude[5] are summarized in Table 1 [2007 Working Group on California Earthquake Probabilities (WGCEP) (2008) and Cao et al. (2003)].

[5] Moment magnitude is an energy-based scale and provides a physically meaningful measure of the size of a faulting event. Moment magnitude is directly related to average slip and fault rupture area.

TABLE 1
Regional Faults and Seismicity

Fault Segment	Approximate Distance from Site (km)	Direction from Site	Mean Characteristic Moment Magnitude
Monte Vista-Shannon	5.4	Southwest	6.50
N. San Andreas - Peninsula	6.9	West	7.23
N. San Andreas (1906 event)	6.9	West	8.05
San Gregorio Connected	21	West	7.50
Total Hayward	24	Northeast	7.00
Total Hayward-Rodgers Creek	24	Northeast	7.33
Total Calaveras	33	East	7.03
N. San Andreas - Santa Cruz	39	Southeast	7.12
Mount Diablo Thrust	44	Northeast	6.70
N. San Andreas - North Coast	46	Northwest	7.51
Zayante-Vergeles	49	Southeast	7.00

Figure 3 also shows the earthquake epicenters for events with magnitude greater than 5.0 from January 1800 through August 2014. Since 1800, four major earthquakes have been recorded on the San Andreas Fault. In 1836 an earthquake with an estimated maximum intensity of VII on the Modified Mercalli (MM) scale (Figure 4) occurred east of Monterey Bay on the San Andreas Fault (Toppozada and Borchardt 1998). The estimated Moment magnitude, $M_{w,}$ for this earthquake is about 6.25. In 1838, an earthquake occurred with an estimated intensity of about VIII-IX (MM), corresponding to an M_w of about 7.5. The San Francisco Earthquake of 1906 caused the most significant damage in the history of the Bay Area in terms of loss of lives and property damage. This earthquake created a surface rupture along the San Andreas Fault from Shelter Cove to San Juan Bautista approximately 470 kilometers in length. It had a maximum intensity of XI (MM), an M_w of about 7.9, and was felt 560 kilometers away in Oregon, Nevada, and Los Angeles. The Loma Prieta Earthquake occurred on 17 October 1989, in the Santa Cruz Mountains with an M_w of 6.9, approximately 35 kilometers from the site.

In 1868 an earthquake with an estimated maximum intensity of X on the MM scale occurred on the southern segment (between San Leandro and Fremont) of the Hayward Fault. The estimated M_w for the earthquake is 7.0. In 1861, an earthquake of unknown magnitude (probably an M_w of about 6.5) was reported on the Calaveras Fault. The most recent significant earthquake on this fault was the 1984 Morgan Hill earthquake (M_w = 6.2). The most recent earthquake to be felt in the Bay Area occurred on 24 August 2014 south of Napa, with an M_w

of 6.0; the fault responsible for this quake is still being determined, but is believed to have occurred within the Napa fault system, with the epicenter located approximately 103 km from the site.

The 2014 WGCEP (2015 report) at the U.S. Geologic Survey (USGS) predicted a 72 percent chance of a magnitude 6.7 or greater earthquake occurring in the San Francisco Bay Area in 30 years. More specific estimates of the probabilities for different faults in the Bay Area are presented in Table 2.

TABLE 2
WGCEP (2015) Estimates of 30-Year Probability of a Magnitude 6.7 or Greater Earthquake

Fault	Probability (percent)
Hayward-Rodgers Creek	32
N. San Andreas	33
Calaveras	25
Green Valley	7
San Gregorio	6
Mount Diablo Thrust	4

6.0 SEISMIC HAZARDS

During a major earthquake, strong to violent ground shaking is expected to occur at the project site. Strong ground shaking during an earthquake can result in ground failure such as that associated with soil liquefaction[6], lateral spreading[7], cyclic densification[8], and fault rupture. Each of these conditions has been evaluated based on our literature review, field investigation, and analysis and are discussed in this section.

[6] Liquefaction is a transformation of soil from a solid to a liquefied state during which saturated soil temporarily loses strength resulting from the buildup of excess pore water pressure, especially during earthquake-induced cyclic loading. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits.

[7] Lateral spreading is a phenomenon in which surficial soil displaces along a shear zone that has formed within an underlying liquefied layer. Upon reaching mobilization, the surficial blocks are transported downslope or in the direction of a free face by earthquake and gravitational forces.

[8] Cyclic densification is a phenomenon in which non-saturated, cohesionless soil is densified by earthquake vibrations, causing ground-surface settlement.

6.1 Liquefaction

When saturated soil with little to no cohesion liquefies during a major earthquake, it experiences a temporary loss of shear strength as a result of a transient rise in excess pore water pressure generated by strong ground motion. Flow failure, lateral spreading, differential settlement, loss of bearing, ground fissures, and sand boils are evidence of excess pore pressure generation and liquefaction.

As noted in our preliminary geotechnical study, the site is within a zone designated with the potential for liquefaction, as identified by the California Geologic Survey in a map titled, "State of California Seismic Hazard Zones, Palo Alto 7.5-Minute Quadrangle," prepared by the California Geologic Survey (2006)." Specifically, the map shows the site is in an area "where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693 (c) would be required."

We generally followed the procedures presented in the 1996 NCEER and the 1998 NCEER/NSF workshops on the Evaluation of Liquefaction Resistance of Soils (Youd and Idriss 2001) for the evaluation of liquefaction triggering for the soils at the site. The level of ground shaking used in our liquefaction evaluation was based on the Maximum Considered Earthquake (MCE) mapped values. A modified peak geometric mean ground acceleration (PGA_M) of 0.68 times gravity was used in our analyses. This PGA was calculated using the procedures specified in the 2016 CBC, using site class D. A depth to groundwater of 5 feet bgs was used in our analyses.

As noted in Section 4.2, approximately 7 to 23 feet of loose to dense sand with varying fines content was encountered during our field investigation. Within this layer, loose to medium dense granular deposits up to four feet thick were encountered in several borings and CPTs. Based on the representative blow counts within these layers and low to moderate plasticity of the fines, we judge excess pore water pressure could be generated in these layers during a Maximum Considered Earthquake (MCE_R) event, causing them to liquefy.

We used the Tokimatsu and Seed (1987) method for evaluating earthquake-induced liquefaction settlement in the borings that could be expected during a major earthquake. Based on the results of our analyses, we estimate the layers that are potentially susceptible to liquefaction described above could experience post-earthquake settlements of up to about 2½ inches, where the layers are not removed as part of the excavation for the basement. Therefore we

estimate liquefaction-induced settlement of up to 2½ inches could occur outside of the building footprint, within the park and bridge areas. This settlement is expected to be erratic.

We anticipate the approximately 22 to 25 feet of soil will be excavated within the proposed building footprint to construct the planned basement levels, which will partially remove some of the soil susceptible to liquefaction. We estimate up to approximately one inch of settlement may occur in the soil that will remain beneath the proposed building footprint.

6.2 Lateral Spreading

Lateral spreading is a phenomenon in which a surficial soil displaces along a shear zone that has formed within a continuous underlying liquefied layer. The surficial blocks are transported downslope or in the direction of a free face, such as a channel, by earthquake and gravitational forces. Lateral spreading is generally the most pervasive and damaging type of liquefaction-induced ground failure generated by earthquakes.

The loose to medium dense sandy layers encountered at the site that are susceptible to liquefaction appear to be discontinuous. Additionally, the planned excavation will remove a portion of the soils within the building footprint that are susceptible to liquefaction. As a result, we conclude that the potential for lateral spreading to impact the proposed building foundation is low.

6.3 Cyclic Densification

Cyclic densification (also referred to as seismic densification and differential compaction) can occur during strong ground shaking in loose, granular deposits above the water table, resulting in ground surface settlement. The degree of susceptibility to cyclic densification is directly related to the relative density of the existing granular soils.

In general, the subsurface soils encountered at the site above the groundwater level are sufficiently dense and/or cohesive to resist significant cyclic densification. However, as noted in our preliminary geotechnical study, within the vicinity of CPT-2, approximately five feet of loose sand was encountered at a depth of about 5 feet. However, since CPT-2 is within the proposed building footprint, we anticipate that these soils will be removed as part of the excavation, and that no significant settlement from seismic densification during a major earthquake is anticipated.

6.4 Fault Rupture

Historically, ground surface displacements closely follow the traces of geologically young faults. The site is not within an Earthquake Fault Zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no known active or potentially active faults exist on the site. Therefore, we judge the risk of surface faulting at the site is low. However, in a seismically active area, the remote possibility exists for future faulting in areas where no faults previously existed; however, we conclude the risk of surface faulting and consequent secondary ground failure is low.

7.0 DISCUSSION AND CONCLUSIONS

We conclude that the proposed development is feasible from a geotechnical standpoint, provided the recommendations presented in this report are incorporated into the project plans and specifications, and implemented during construction.

Based on the subsurface conditions at the site, assumed building loads, and planned basement depth of about 24½ feet bgs, we conclude the primary geotechnical issues for this project include:

- selection of an appropriate foundation system to support the building loads and accommodate estimated static and seismic settlements;
- design criteria for foundations and basement walls, including hydrostatic pressures;
- dewatering and support for proposed excavations and adjacent improvements during construction
- providing a stable subgrade and adequate working surface at the base of the excavation, and
- potential for seismically induced ground settlement.

These and other geotechnical issues are discussed in the remainder of this section.

7.1 Foundations and Settlement

At the time this report was prepared, structural loads for the building were not available. Therefore, we have assumed a load of 250 pounds per square foot (psf) per floor for sustained gravity loading based on past experience. As a result, we anticipate an average total bearing pressure on the order of 2,000 psf including the weight of foundations. We conclude that the

building can be supported on a mat foundation provided the estimated long-term total and differential settlements from the building loads are acceptable.

Due to the anticipated depth of the excavation, rebound of soil at the bottom of the excavation is expected. Once the building is constructed, these soils will recompress under new building loads, resulting in settlement of the building. Because the weight of the soil removed for the proposed basement excavation is about equal to the weight of the building and will not result in a significant net change in overburden pressure, the vast majority of this settlement is expected to be from recompression. For a sustained bearing pressure of 2,000 psf applied at approximately at the bottom of the excavation, we estimate long-term total consolidation settlement of up to about 1½ inches and differential settlement of up to about half of the total settlement between the center and edges of the proposed building. As a result, no significant settlements are expected to occur outside of the building footprint. However, the above estimated settlements should be recalculated once the actual building loads and final planned excavation depth are available. As previously discussed, we anticipate that the excavation for the basement will remove some of the soil layers that are susceptible to seismically-induced settlement during a major earthquake. However, about 1-inch of liquefaction induced settlement could occur beneath the building. This settlement should be added in addition to the static settlement under the weight of the proposed building.

The soil at the bottom of the proposed excavation varies across the site and is anticipated to consist of medium dense to dense sand and stiff to very stiff moderately compressible clays. The soil exposed at the foundation level will be susceptible to disturbance under construction equipment loads. To help protect the soil subgrade a working pad could be constructed. The pad should consist of open graded crushed rock and should be underlain by a geotextile fabric. This layer of crushed rock can also be used as part of the dewatering system. A 3- to 4-inch thick mud slab can be placed on the crushed rock and then the waterproofing can be installed and the mat constructed. The need for the working pad should be evaluated during when the bottom of the excavation is reached; however, for budgeting purposes an allowance for the working pad should be included.

7.2 Excavation and Shoring Considerations

We anticipate soil to be excavated from the site can be removed with conventional earthmoving equipment such as excavators and backhoes; debris may be encountered within the fill layer. Currently the southeast corner of the site is occupied by a one-story building; the site was also previously occupied other structures that were demolished. Buried foundations

from previous structures and the existing one-story building may require the use of jackhammers or hoe-rams to break apart and remove.

We anticipate that an excavation on the order of 25 feet will be needed to construct the planned basement levels and will require the excavation to be shored to protect the surrounding improvements. There are several key considerations in selecting a suitable shoring system. Those we consider of primary concern are:

- protection of surrounding improvements, including roadways, utilities, and the nearby railroad tracks
- control of groundwater inflow
- the ability of the shoring system to reduce potential for ground movement
- penetration of shoring system into the dense/stiff soils below the bottom of the excavation
- cost

We judge the most economical shoring system for the project would consist of soldier piles, timber lagging, and tiebacks. Internal braces may be required if there are obstructions precluding the use of tiebacks or if extending them beyond property lines is not permitted. For a soldier beam-and-lagging system, steel soldier piles would be placed in predrilled holes and backfilled with lean and/or full-strength concrete prior to site excavation. Wood lagging would be placed between the soldier beams as the excavation proceeds. However, if sand with a low fines content is encountered within the zone of excavation, installation of lagging in the sand could be difficult. Drilling of the holes for the soldier piles will likely require casing and/or the use of drilling mud to prevent caving of sand and gravel layers. Alternatively, soldier piles may be installed by vibrating them, if they are not adjacent to existing improvements that are susceptible to vibration induced damage. If soldier piles are installed by vibration, vibration monitoring should be performed to evaluate the potential impact to adjacent improvements.

The shoring system is likely to deform during excavation of the basement, which could cause settlement of the adjacent railroad tracks. Furthermore, lowering the groundwater table outside of the excavation could also cause settlement to the tracks. This will need to be evaluated by the shoring designer. If the estimated ground movements near the tracks are unacceptable, it may be necessary to use a soil cement cutoff wall near the railroad tracks. Soil cement cutoff walls are stiffer than conventional soil pile and lagging systems and would reduce the potential for lowering the groundwater outside the excavation. However, a soil

cement cutoff wall is more expensive and also could impact the design of the basement since it is thicker than a conventional soil pile and lagging system. The need for a soil cement cutoff wall should be evaluated by the shoring designer. We can provide recommendations for a soil cement cutoff wall, if it is determined that they are needed.

7.3 Deflection and Settlement Monitoring

Shoring systems are expected to deflect during excavation. This lateral displacement could manifest itself as settlement or lateral movement of adjacent improvements. The magnitude of these movements is difficult to estimate because it depends on many factors, including the type of shoring system used and the contractor's skill in installing it. Clough and O'Rourke (1990) analyzed measured lateral displacements and associated ground settlements behind actual excavations in sand and concluded that both the lateral movements and settlements varied from 0.1 to 0.3 percent of the excavation depth. Therefore, for the anticipated excavation depths of about 25 feet, these empirical relationships would suggest the shoring will likely displace about ½ to 1 inch. The associated settlements predicted from the empirical data suggest ground surface settlements behind the shoring will have a similar magnitude as the lateral movement. This typically manifests itself as a settlement trough, with the greatest settlement occurring at a horizontal distance behind the shoring between ½ and 1 times the height of the excavation. Beyond this distance, settlement should decrease with distance from the wall, and should be very small at a distance twice the excavation depth. Therefore, we anticipate lateral displacements and associated settlements near the shoring will likely be about ½ to 1 inch. These estimates assume the quality of construction will meet or exceed that considered standard in the construction industry. Control of ground movement will depend as much on the timeliness of installation of lateral restraint as on the design. The shoring contactor should implement means and methods that will achieve the lower bound of the estimated range.

A monitoring program should be established prior to installing the shoring system to monitor and evaluate the effects of the construction on the adjacent improvements. The contractor should install survey points to monitor the movement of shoring and settlement of the adjacent building during excavation. The monitoring should provide timely data which can be used to modify the shoring system if needed. In addition, geotechnical instrumentation including inclinometers and piezometers should be installed to monitor movement of the shoring system and groundwater levels during excavation and construction.

As discussed in section 7.2, movements associated with a soldier pile and lagging system could adversely impact the adjacent improvements. Therefore, a stiffer shoring system may be required, such as a soil-cement mix wall or concrete diaphragm wall, where movements may adversely impact adjacent improvements. These systems are stiffer than a conventional soldier pile and lagging system and consequently, will deflect less. Recommendations for these types of shoring systems can be provided, if it is determined that the deflections from a tied-back soldier-pile-and-lagging system are not tolerable.

7.4 Groundwater Considerations

As noted in Section 4.2, groundwater was encountered during our site investigation between depths of about 10 to 12 feet, roughly corresponding to Elevations 6 and 4 feet, respectively. However, the reported historic high groundwater level in this area is at approximately 5 feet bgs, which corresponds to Elevation 11 feet. Therefore, we conclude that a groundwater depth of about 5 feet, roughly corresponding to Elevation 11 feet, is appropriate for design of the building. The building should be designed to resist hydrostatic uplift pressures resulting from this groundwater elevation.

The excavation to install the mat foundation for the building is anticipated to extend about 20 feet below the design groundwater table. To facilitate excavation and construction of the foundation, groundwater should be lowered to at least 3 feet below the bottom of the deepest planned excavation level, including excavation for waterproofing or subgrade stabilization.

If a soldier-pile-and-lagging shoring wall is installed, dewatering the excavation area will likely lower the groundwater near the railroad tracks. A performance specification should be provided as part of the shoring and dewatering bid documents to evaluate dewatering restrictions that may be imposed on the project due to the presence of the nearby railroad tracks.

Variables that will influence the performance of the dewatering system and the quantity of water produced include the shoring type installed, the number of wells, the depth and positioning of the wells, the interval over which each well is screened, and the rate at which each well is pumped. Different combinations of these variables can be used to successfully dewater the site. Selection of the shoring and dewatering systems should be coordinated to minimize overall costs. Groundwater testing and discharge fees should be anticipated.

8.0 RECOMMENDATIONS

Recommendations for site preparation, temporary shoring, dewatering, foundations, utilities, seismic design, permanent wall design, and other geotechnical aspects are presented in the following sections of this report.

8.1 Site Preparation

We understand the existing one-story commercial building in the southeast corner of the site and the existing concrete stormwater detention area will be demolished. In addition, existing pavements, abandoned utilities, and other obstructions including any buried foundations and slabs from previous structures, should be removed from areas to receive improvements. Where utilities to be removed extend off site, they should be capped or plugged with grout at the property line. It may be feasible to abandon utilities in-place, outside the proposed building footprint provided they will not interfere with future utilities, or building foundations or walls. If utilities are abandoned in-place, they should be completely filled with flowable cement grout over their entire length within the property limits. Existing utility lines, where encountered, should be addressed on a case-by-case basis. Voids resulting from the demolition activities should be properly backfilled with lean concrete or engineered fill as described below.

8.2 Temporary Shoring

The selection, design, construction, and performance of the shoring system should be the responsibility of the contractor. In particular, the shoring contractor should develop their own conclusions regarding the applicability of the selected shoring system, and provide alternative shoring types, if they deem necessary; however, any system should be reviewed and approved by the project design team. A registered civil engineer knowledgeable in this type of construction should be retained to design the shoring. We should review the final shoring plans and calculations to check that they are consistent with the recommendations presented in this report. In addition, a representative from our office should observe the installation and/or testing of the geotechnical aspects of the shoring.

If sand with a low fines content is encountered within the zone of excavation, lagging boards should be placed with every three feet of new excavation depth. If caving occurs, the lagging should be placed with every one foot of new excavation depth. Voids that result from caving soil behind wood lagging should be grouted before proceeding to the next row of lagging.

Where traffic occurs within 10 feet of the shoring depth, a uniform surcharge load of 100 psf acting over the top 10 feet should be included in the design. In addition, surcharge from existing buildings should be evaluated and accounted for in the design of the shoring walls as necessary. An increase in lateral design pressure for the shoring will also be required where heavy construction equipment or stockpiled materials are within a distance equal to the shoring depth. Construction equipment should not be allowed within five feet from the edge of the excavation unless the shoring is specifically designed for the appropriate surcharge. If cranes are planned outside of the proposed excavations, their foundations should be designed so as not to surcharge the shoring, or the shoring should be designed for the imposed surcharge. The increase in pressure should be computed after the surcharge loads are known. The anticipated deflections of the shoring system should be estimated by the shoring designer and provided to the design team and owner to check if they are acceptable.

8.2.1 Soldier-Pile and Lagging Walls

Tied-back soldier piles and lagging shoring should be designed using the lateral earth pressures presented on Figure 5. In developing the pressures shown on Figure 5, we assumed that groundwater will be lowered to a depth of at least three feet below the bottom of the excavation and not impose loads on the shoring system. The pressures presented on Figure 5 are for a level ground condition behind the shoring. Traffic or surcharge loads should be added to the active pressures. Both the passive resistance and active pressure are shown below the bottom of the excavation.

The shoring designer should evaluate the required penetration depth of the soldier piles. The soldier piles should have sufficient axial capacity to support the vertical load acting on the piles, if any. Vertical loads can be resisted by skin friction along the soldier piles. We recommend using an allowable skin friction of 1,000 psf in the soil on the perimeter of the piles below the excavation level. To compute the allowable skin friction (against the back side of the soldier piles) above the excavation level, we recommend an allowable friction coefficient of 0.3 times the horizontal component of the tieback force. End bearing of the soldier piles should be neglected.

8.2.2 Tiebacks

Temporary tiebacks may be used to restrain the shoring if encroachment agreements can be made with neighbors, if required, and there are no obstructions that cannot be avoided. Design criteria for tiebacks are presented on Figure 5.

Tiebacks should derive their load-carrying capacity from the soil behind an imaginary line sloping upward from a point H/5 feet away from the bottom of the excavation and sloping upwards at 60 degrees from the horizontal, where H is the wall height in feet. Tiebacks with bar and strand tendons should have a minimum unbonded length of 10 and 15 feet, respectively. The unbonded length should be created by placing an oversized rigid smooth plastic casing (i.e. PVC pipe) over the bars or strands; flexible plastic over the bars does not provide adequate bond-break for the unbonded zone. Clear spacing between tiebacks should be at least six times the grouted diameter of the bonded zone or four feet, whichever is greater. During installation of the shoring system, the bottom of the excavation should not extend more than two feet below a row of unsecured tiebacks.

Tieback allowable capacity will depend upon the drilling method, hole diameter, grout pressure, post-grouting, and workmanship. The use of solid-flight augers to install tiebacks in material susceptible to caving can result in loss of soil and settlement of existing improvements or the ground surface located above the tiebacks. Therefore, solid flight augers or Titan-type anchors should not be used for tieback installation. We recommend a smooth-cased tieback installation method (such as a Klemm type rig) be used. For estimating purposes, we recommend using the allowable skin friction value for post-grouted tiebacks shown on Figure 5, which includes a factor of safety of 1.5.

The contractor should be responsible for determining the actual length of tiebacks required to resist the lateral earth and water pressures imposed on the temporary retaining systems. Determination of the tieback length should be based on the contractor's familiarity with the chosen installation method. The computed bond length should be confirmed by a performance- and proof-testing program under our observation. Replacement tiebacks should be installed for tiebacks that fail the load tests.

8.2.3 Tieback Testing

Each tieback should be tested. The first two production tiebacks and two percent of the remaining tiebacks should be performance-tested to at least 1.25 times the design load. All other temporary tiebacks should be proof-tested to at least 1.25 times the design load. The performance tests will be used to determine the load carrying capacity of the tiebacks and the residual movement. The performance-tested tiebacks should be checked no sooner than 24 hours after initial lock off to confirm stress relaxation has not occurred. As the geotechnical engineer of record, we should evaluate the results of the performance tests and determine if creep testing is required and select the tiebacks that should be creep tested. If any tiebacks

fail to meet the proof-testing requirements, additional tiebacks should be added to compensate for the deficiency, as determined by the shoring designer.

During testing the maximum test load should not exceed 80 percent of the yield strength of the tendons or bars. The movement of each tieback should be monitored with a free-standing, tripod-mounted dial gauge during performance and proof testing.

8.2.3.1 Performance Tests

Performance tests will be used to determine the load carrying capacity and the load-deformation behavior of the tiebacks. They are also used to check that the designed unbonded length has been established. In the performance test, the load applied to the tieback and its corresponding movement is measured during several cycles of incremental loading and unloading. The maximum test load should be held for a minimum of 10 minutes, with readings taken at 1, 2, 3, 4, 5, 6 and 10 minutes. If the difference between the 1- and 10-minute readings is less than 0.04 inch during the loading, the test is discontinued. If the difference is more than 0.04 inch, the holding period is extended to 60 minutes, and the movements should be recorded at 15, 20, 25, 30, 45, and 60 minutes.

As the geotechnical engineer of record, we should evaluate the results of the performance tests and determine if creep testing is required and select the tiebacks that should be creep tested. Creep tests should be performed in accordance with provision of "Recommendations for Prestressed Rock and Soil Anchors" of Post-Tensioning Institute.

8.2.3.2 Proof Tests

A proof test is a simple test used to measure the total movement of the tiebacks during one cycle of incremental loading. The maximum test load should be held for a minimum of 10 minutes, with readings taken at 1, 2, 3, 4, 5, 6, and 10 minutes. If the difference between the 1- and 10-minute readings is less than 0.04 inch, the test is discontinued. If the difference is more than 0.04 inch, the load should be maintained and the observation is continued until the creep rate can be determined. The proof test results should be compared to the performance test results. Any significant variation from the performance test results will require performance testing on the tieback.

We should evaluate the results of performance and proof tests to check that the tiebacks can resist the design load. For any tiebacks that fail to meet the performance and proof testing requirements, additional tiebacks should be installed to compensate for the deficiency, as required by the shoring designer.

8.2.3.3 Acceptance Criteria

As the geotechnical engineer of record, we should evaluate the tieback test results and determine whether the tiebacks are acceptable. A performance- or proof-tested tieback with a ten-minute hold is acceptable if the tieback carries the maximum test load with less than 0.04 inch movement between one and ten minutes, and total movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length.

A performance- or proof-tested tieback with a 60-minute hold is acceptable if the tieback carries the maximum test load with a creep rate that does not exceed 0.08 inch/log cycle of time, and total movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length.

If the total movement of the tiebacks at the maximum test load does not exceed 80 percent of the theoretical elastic elongation of the unbonded length, the tieback should be replaced by the contractor.

8.3 Dewatering

The groundwater should be drawn down within the limits of the excavation so that the groundwater level is at least three feet below the bottom of the excavation. This level should be maintained until sufficient building weight and/or uplift capacity is available to resist the design hydrostatic uplift pressure. Elevator and sump pits can be locally dewatered. Drawdown is expected to occur outside of the excavation; adjacent site improvements should be monitored for vertical movement that could be caused by the dewatering. Recharge wells should be installed and used to restore groundwater to preconstruction levels should unacceptable settlement of adjacent structures be observed.

The structural engineer should evaluate and provide recommendations for when the dewatering system can be turned off. The number and depth of dewatering wells should be determined by a specialty dewatering contractor using the design groundwater level presented herein. The volume of water discharged should be monitored and a record of the amount should be submitted to the owner. The design of the dewatering system should be coordinated with the temporary shoring design and also provided for review by the design team.

The site dewatering system should be designed and implemented by an experienced dewatering contractor and its designer in conjunction with the shoring designer and contractor, who should be responsible for the success of their system.

8.4 Excavation, Subgrade Preparation, and Backfill

The majority of the site grading for the project will consist of excavation for the building. Prior to site grading, existing building foundations and the concrete stormwater detention area in the northwest portion of the site, as well as other obstructions, should be removed. Obstructions, if encountered, may have to be partially removed before the shoring can be installed. Such removal may require the use of a hoe-ram or other demolition or coring equipment to break up the material for disposal off-site; care should be taken to minimize vibrations when removing obstructions from the site.

If space permits, temporary excavations for localized, shallow excavations such as elevator pits can be sloped no steeper than 1.5 to 1 (horizontal to vertical).

8.4.1 Mat Foundation Preparation

As noted in Section 7.1, the subgrade exposed at the bottom of the proposed building excavation is anticipated to consist of medium dense to dense sand and stiff to very stiff moderately compressible clay. We conclude the mat foundation may bear on this material, provided any potentially liquefiable material encountered at the subgrade is over-excavated to suitable material and replaced with either lean concrete or engineered fill.

Because the excavation for the basement level will be below the groundwater level, the soil at subgrade level will be near saturation even after dewatering. To protect the subgrade, we recommend heavy construction equipment not be allowed within 3 feet of subgrade elevation and that final excavation be made with excavators or backhoes with smooth buckets. Without an extended period for drying, we judge the subgrade may not support even light equipment and foot traffic without experiencing excessive disturbance.

To help protect the subgrade if it is soft and/or saturated, we recommend overexcavating the site and constructing a working pad on which to construct the mat. The need for the working pad should be evaluated once the bottom of the excavation is reached. If needed, we anticipate an overexcavation of about 12 inches will suffice, if used in conjunction with a woven reinforcing fabric (geotextile), such as Mirafi 500x. After placing the reinforcing fabric on the

exposed subgrade, the overexcavation should be backfilled with clean one-inch minus crushed rock.

Because the proposed basement foundation will be below the design groundwater level, waterproofing the base of the mat is recommended. We recommend the waterproofing be placed directly on the crushed rock or on a mud slab (thin layer of lean concrete) and be covered by a mud slab. The mud slab covering should reduce the potential for damage to the waterproofing and provide a firm, smooth surface on which to place the reinforcing steel for the mat. We recommend the waterproofing be placed in accordance with the manufacturer's specifications. If they differ from our recommendations, the manufacturer's specification should be followed to preserve their warranty.

As discussed in Section 7.1, depending on the amount of water at the subgrade elevation, it may be desirable to use a crushed rock working pad as a temporary drainage blanket. To drain the crushed rock, four-inch diameter perforated PVC pipe should be placed near the bottom of the rock, spaced every 30 feet, to direct water trapped in the rock to a sump. The sump should be properly abandoned before the completion of construction. In addition, a perimeter drain within or below the working pad may be needed to control and redirect infiltrating and perched water away from the mat subgrade. Typically, the perimeter drain extends 12 to 24 inches below the subgrade and slopes down to a low point where the water can be pumped.

The subgrade should be free of standing water, debris, and disturbed materials prior to placing the working pad or mud slab. We should check the exposed subgrade after cleaning, but prior to placement of the working pad, mud slab or waterproofing.

8.4.2 At-Grade Improvements

Other areas that will receive improvements (e.g. sidewalks and exterior slabs and concrete flatwork) should be stripped of existing improvements. The surface exposed by stripping should be scarified to a depth of at least eight inches, moisture-conditioned to at least three percent above optimum moisture content and compacted to between 88 and 93 percent relative compaction[9]. If soft or loose soil is encountered, the unsuitable material should be removed and be replaced with suitable fill material that is properly compacted and moisture conditioned. The exposed ground surface should be kept moist during subgrade preparation.

[9] Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material, as determined by the ASTM D1557-07 laboratory compaction procedure.

We recommend new sidewalks and concrete flatwork (in non-vehicular traffic area) be underlain by at least four inches of Class 2 aggregate base material that has been compacted to at least 90 percent relative compaction.

8.4.3 Backfill Requirements

On-site soils, are generally suitable for reuse as backfill provided they are non-corrosive, acceptable from an environmental standpoint, and meet the requirements given below for general fill. Soil below the groundwater table will require drying by aeration prior to its reuse as compacted fill. All materials to be used as fill, including on-site soil, should have a low corrosion potential, be non-hazardous, free of organic material, contain no rocks or lumps larger than three inches in greatest dimension, and have a low to moderate expansion potential (defined by a liquid limit of less than 40 and a plasticity index lower than 12). On-site soil that does not meet these criteria should not be used as fill.

Fill should be moisture conditioned to above optimum moisture content, placed in lifts not exceeding eight inches in loose thickness, and compacted to at least 90 percent relative compaction. However, if the fill is thicker than 5 feet or contains less than 10 percent fines (percent passing the No. 200 sieve) the fill should be compacted to at least 95 percent relative compaction. Aggregate base used beneath vehicular pavements should be compacted to 95 percent relative compaction. During construction, we should check that the on-site and any proposed import material is suitable for use as fill. A flowable cement grout, lean concrete, or lightweight cell-crete may be used to backfill areas not accessible to compaction equipment.

Langan should approve all sources of fill at least three days before use at the site. The grading contractor should provide analytical test results or other suitable environmental documentation indicating the imported fill is free of hazardous materials at least three days before use at the site. If this data is not available, up to two weeks should be allowed to perform analytical testing on the proposed import material. A bulk sample of approved fill should be provided to the geotechnical engineer at least three working days before being imported or used at the site.

8.5 Mat Foundation

We conclude the proposed building can be supported on a mat foundation bottomed on firm native soil. As discussed in Section 7.1, we estimate total static settlement under the anticipated building loads will be up to about 1½ inches. Differential settlement of up to about

half of the total settlement is anticipated between the center and edges of the proposed building, although the actual differential settlement will depend on the rigidity of the mat.

To design the mat using the modulus of subgrade reaction method, we recommend a modulus of subgrade reaction of 15 kips per cubic foot. The modulus value is representative of the anticipated settlement under the building loads. After the mat analysis is completed, we should review the computed settlement and bearing pressure profiles to check that the modulus value is appropriate. The modulus value is applicable for allowable dead plus live loads up to about 4 kips per square foot.

In addition, the mat should be designed to accommodate the predicted seismic settlements discussed in Section 6. To account for potential liquefaction induced settlements we recommend the mat span an unsupported area of 5 feet in diameter in any location within the interior. The evaluation for areas of non-support is empirical and is not meant to model actual site performance; the purpose is to establish mat stiffness to control differential settlement.

Lateral forces can be resisted by a combination of passive resistance against the vertical face of the mat foundation and friction along the base of the mat. Passive resistance along the vertical face of the mat may be calculated using an equivalent fluid weight of 150 pounds per cubic foot (pcf). Friction along the bottom of the foundation will be affected by the type of waterproofing system used. The waterproofing manufacturer should provide a recommended friction coefficient based on testing of their product. For initial estimating, frictional resistance can be computed using a base friction coefficient of 0.2, which assumes a waterproofing membrane is placed below the mat. These values include a factor of safety of about 1.5 and may be used in combination without reduction.

The mat should be designed to resist hydrostatic pressure based on the design groundwater level.

8.6 Waterproofing

Because the building will extend below the groundwater level, waterproofing of the mat foundation and basement walls is recommended. Water stops should be placed across all construction joints. The waterproofing should be placed directly against the backside of the basement walls.

Waterproofing should be designed by an experienced waterproofing consultant and placed in accordance with the manufacturer's specifications. The use of a mud slab above and below

the waterproofing will reduce the potential for subgrade disturbance and protect the waterproofing from damage during mat construction, as discussed in Section 8.4.1. The mud slab should also provide a firm, smooth working surface for placement of reinforcing steel.

8.7 Tiedown Anchors

If the weight of the proposed building is not sufficient to overcome the hydrostatic uplift loads or if additional seismic uplift resistance is needed, the net upward pressure can be resisted by tiedowns. Tiedowns consist of relatively small-diameter, drilled, grout-filled shafts with steel bars or tendons embedded in the grout. The tiedowns develop their uplift resistance from friction between the perimeter of the shaft and the surrounding soil.

Tiedowns should be spaced at least four shaft diameters apart, with a minimum spacing of four feet. Because specialty contractors who install tiedowns use different installation procedures, the uplift capacity of the tiedowns will vary with the procedure. For planning purposes however, we recommend using an allowable friction of 1,000 psf for permanent uplift loads. For temporary/transient uplift loads, that value may be increased by one-third. Higher values can be obtained depending upon the installation techniques employed by the contractor and the results of pullout tests; anchors should be designed with factors of safety of at least 2.0 for permanent loads or 1.5 for transient loads.

Tiedowns will extend significantly below the bottom of the excavations and planned dewatering. Therefore, it is very likely the tiedowns will be subjected to a significant upgradient of groundwater pressure. The tiedown contractor should anticipate this condition and take the necessary precautions to reduce water flow along the tiedown interface, which can significantly impact tiedown installation, grout cover, and ultimate capacity of the tiedown.

Special attention should be given to waterproofing the connections between the tiedowns and the mat. If tiedowns are used they will be permanent and therefore we recommend they be double corrosion protected. Corrosion protection requirements for the bonded and unbonded length, and stressing anchorage are outlined below:

- encapsulations used to provide a corrosion protection layer over the tendon bond length should consist of a grout-filled, corrugated plastic sleeve, or grout-filled deformed steel tube; the prestressing steel can be grouted inside the encapsulation prior to inserting the tendon into the drill hole or after the tendon has been placed; centralizers or grouting techniques should provide a minimum of ½ inch of grout cover over the encapsulation

- a sheath filled with corrosion inhibiting compound or grout, or a heat shrinkable tube internally coated with a mastic compound should be used to provide corrosion protection of the unbonded length

- the trumpet should be sealed to the bearing plate and overlap the unbonded length corrosion protection by at least four inches; it should be completely filled with a corrosion inhibiting compound or grout

The tiedowns will be installed below the water table; therefore, the contractor should use an augercast system or be prepared to case the holes to prevent caving. High strength bars or strands may be used as tensile reinforcement in the anchors. For stressing, the steel bars and strands should have at least 10 and 15 feet of free length, respectively. If strands are used, a higher lock-off load will likely be required than if a steel bar is used. The lock-off load should be determined by the project structural engineer to limit elongation of the tiedown under the hydrostatic and/or transient loading.

The bond length should be at least 15 feet. The design capacity of the tiedowns should be confirmed by a performance- and proof-test program conducted under our observation. We recommend the first two production tiedowns and five percent of the remaining tiedowns be performance tested to two times the design load. The remainder should be proof tested to two times the design load. The test procedure and acceptance criteria described in Section 8.2.4 for tieback testing should also be used for tiedowns. Replacement tiedowns should be provided, as directed by the structural engineer, for tiedowns that fail the test. All tiedowns should be prestressed and locked off. The allowable amount of deformation after the tiedown is locked off should be determined by the structural engineer. The actual lock-off load should be determined after initial testing of the first few tiedowns.

8.8 Utilities and Utility Backfill

Underground utilities connecting to the proposed building should be designed to accommodate the predicted static settlements at the building perimeter. In addition, if it is desired to preserve utility connections during a major earthquake where they enter the building, the anticipated seismic settlements of the surrounding ground surface (up to about 2½ inches) should be considered. Where utilities enter and exit the buildings these settlements would need to be accommodated over a relatively short span using flexible connections. The decision to protect utility connections at the building perimeter during a major earthquake should consider that the utilities away from the site may experience significant movement and therefore not remain operational.

Utility trenches should conform to current OSHA requirements for slopes, shoring, and other safety concerns. The thickness and type of bedding material required for utility conduits will depend on the soil conditions at the utility trench bottom. Bedding and backfill material should follow the pipe manufacturer's recommendations. As a minimum, bedding should extend at least D/4 (with D equal to the outside pipe diameter) below the bottom of the pipe and should be at least four inches thick. After the pipes and conduits are tested, inspected (if required), and approved, they should be covered to a depth of at least six inches with sand or fine gravel, which should be mechanically tamped to at least 90 percent relative compaction. If backfill material with less than 10 percent fines is used, or if the trench is greater than 5 feet deep, the entire depth of the fill should be compacted to at least 95 percent relative compaction. Jetting of trench backfill should not be permitted. Special care should be taken when backfilling utility trenches in pavement areas. Poor compaction may cause excessive settlements resulting in damage to the pavement section. Utilities should be designed for potentially corrosive soil conditions.

8.9 Seismic Design

For seismic design in accordance with the provisions of 2016 California Building Code (CBC) we recommend the following:

- Risk-Targeted Maximum Considered Earthquake (MCE_R) S_s and S_1 of 1.712g and 0.79g, respectively;
- Site Class D;
- Site Coefficients F_a and F_v of 1.0 and 1.5;
- MCER spectral response acceleration parameters at short periods, S_{MS}, and at one-second period, S_{M1}, of 1.712g and 1.186g, respectively;
- Design Earthquake (DE) spectral response acceleration parameters at short period, S_{DS}, and at one-second period, S_{D1}, of 1.141g and 0.790g, respectively;
- PGAM of 0.68g.

8.10 Permanent Basement Walls

We recommend that basement walls be designed using the parameters presented in Table 3. Walls that are within 10 feet of the streets should be designed for an additional lateral pressure of 100 psf in the upper 10 feet. We should evaluate the magnitude of surcharge loads from adjacent buildings and the pressures should be accounted for in the basement wall design.

Because the site is in a seismically active area, the design of basement walls should be checked for static and seismic conditions to evaluate the governing condition. Under earthquake loading conditions, there will be a seismic increment that should be added to the active earth pressures. We used the procedures outlined in Sitar, et al. (2012) to compute the seismic increment. The more critical condition of either at-rest pressure or the active pressure plus seismic pressure increment should be used. The seismic increments for a Design Earthquake (DE) level for level backfill, are presented in Table 3.

TABLE 3
Basement Wall Design Earth Pressures

Elevation (feet)	Equivalent Fluid Weights for Static Conditions		Seismic Conditions[1]
	Unrestrained Walls (Active)	Restrained Walls (At rest)	Total Active Plus Seismic Pressure Increment[3]
Above Elevation 11 feet[2]	35 pcf	60 pcf	70 pcf
Below Elevation 11 feet	80 pcf	95 pcf	100 pcf

Notes:
1. The more critical condition of either at-rest pressure for static conditions or active pressure plus a seismic pressure increment for seismic conditions should be checked.
2. Based on the design groundwater level
3. Based on a design-level earthquake (PGA = 0.46g)

The lateral equivalent fluid weights given assume the walls are properly backdrained above the design groundwater table to prevent the buildup of hydrostatic pressure. If the walls are not drained above Elevation 11 feet, the full height of the wall should be designed for the equivalent fluid weights presented for below the ground water table. One acceptable method for backdraining the wall is to place a prefabricated drainage panel against the back of the wall. The drainage panel should extend down to a flat collector pipe at the design groundwater elevation. The pipe should be wrapped in filter fabric (Mirafi 140N or equivalent). We should check the manufacturer's specifications regarding the proposed prefabricated drainage panel material to verify it is appropriate for its intended use. The pipe should be connected to a suitable discharge point.

If backfill is required behind basement walls, the walls should be braced or hand-compaction equipment used to prevent unwanted surcharges on the walls.

8.11 Construction Monitoring

A monitoring program should be established to evaluate the effects of the construction on nearby buildings and improvements adjacent to the excavation. The contractor should install surveying points to monitor the movement of shoring and settlement of nearby structures and the ground surface during excavation. The monitoring should provide timely data which can be used to modify the shoring system if needed. In addition, geotechnical instrumentation including inclinometers and piezometers should be installed to monitor the effects of the dewatering and movement of the shoring system during excavation and construction. We recommend installing the instrumentation listed below:

Slope inclinometers: We recommend installing a minimum of three slope inclinometers adjacent to or within the proposed shoring system. Where possible, slope inclinometers should be installed behind the three shoring walls closest to the railroad tracks and extend to a depth of about two times the estimated excavation depth.

Piezometers: We recommend installing at least three piezometers along the walls closest to the railroad tracks. The upper five feet of the piezometers should be properly sealed with cement-bentonite mix to reduce surface water infiltration.

Survey points: Survey points should be installed on the shoring and on the streets and improvements adjacent to the proposed excavation. These points should be used to monitor the vertical and horizontal movements of the shoring and these improvements. These points should be selected with the help of the geotechnical engineer, so they can provide the most value to the project.

We should obtain inclinometer and piezometer readings regularly. Initially, depending upon the speed of excavation, the instrumentation should be read about every one to two weeks. The frequency of readings may, in the later stage of construction, be modified as appropriate. Results of survey monitoring should be submitted to us and the construction team in a timely manner for review.

In addition, the conditions of the existing railroad tracks adjacent to the site should be photographed and surveyed prior to the start of construction and monitored periodically during construction.

8.12 Site Drainage

Drainage control design should take into account the settlement of the building and surrounding improvements. It should include provisions for positive surface gradients so that surface runoff is not permitted to pond, particularly adjacent to structures, or on roadways or pavements. Surface runoff should be directed away from foundations to properly designed and installed drop inlets.

9.0 ADDITIONAL SERVICES DURING DESIGN, CONSTRUCTION DOCUMENTS, AND CONSTRUCTION QUALITY ASSURANCE

Prior to construction, we should review the project plans and specifications to check their conformance with the intent of our recommendations. During construction, our field engineer should provide on-site observation and testing during site preparation, grading, placement and compaction of fill, and installation of shoring and building foundations. These observations will allow us to compare actual with anticipated soil conditions and to check that the contractor's work conforms to the geotechnical aspects of the plans and specifications.

10.0 LIMITATIONS

The conclusions and recommendations provided in this report result from our interpretation of the geotechnical conditions existing at the site inferred from a limited number of borings and CPTs as well as information provided by Premia LLC. Actual subsurface conditions may vary. Recommendations provided are dependent upon one another and no recommendation should be followed independent of the others. Any proposed changes in structures or their locations should be brought to Langan’s attention as soon as possible so that we can determine whether such changes affect our recommendations. Information on subsurface strata and groundwater levels shown on the logs represent conditions encountered only at the locations indicated and at the time of investigation. If different conditions are encountered during construction, they should immediately be brought to Langan’s attention for evaluation, as they may affect our recommendations.

This report has been prepared to assist the Owner, architect, and structural engineer in the design process and is only applicable to the design of the specific project identified. The information in this report cannot be utilized or depended on by engineers or contractors who are involved in evaluations or designs of facilities on adjacent properties which are beyond the limits of that which is the specific subject of this report.

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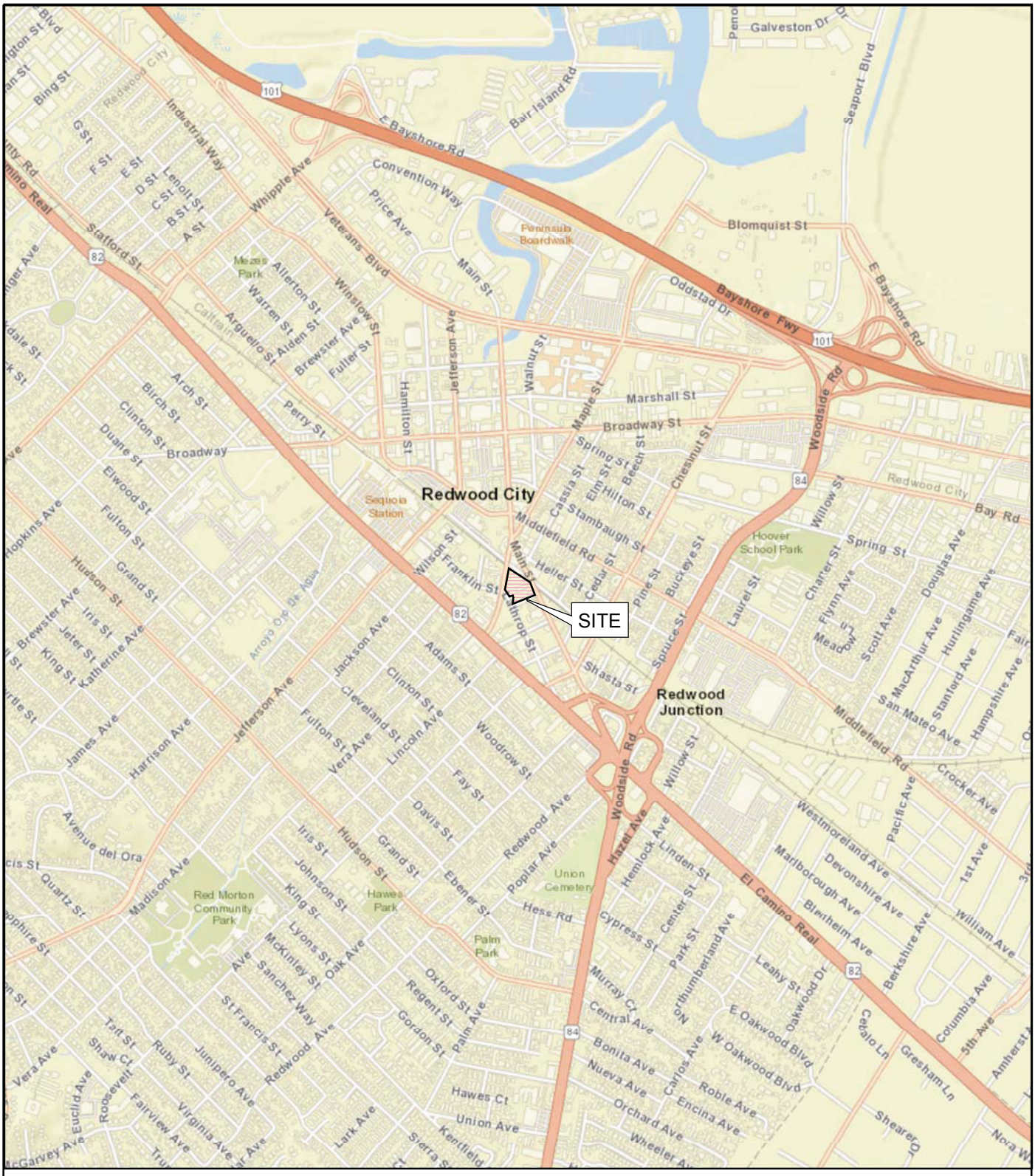
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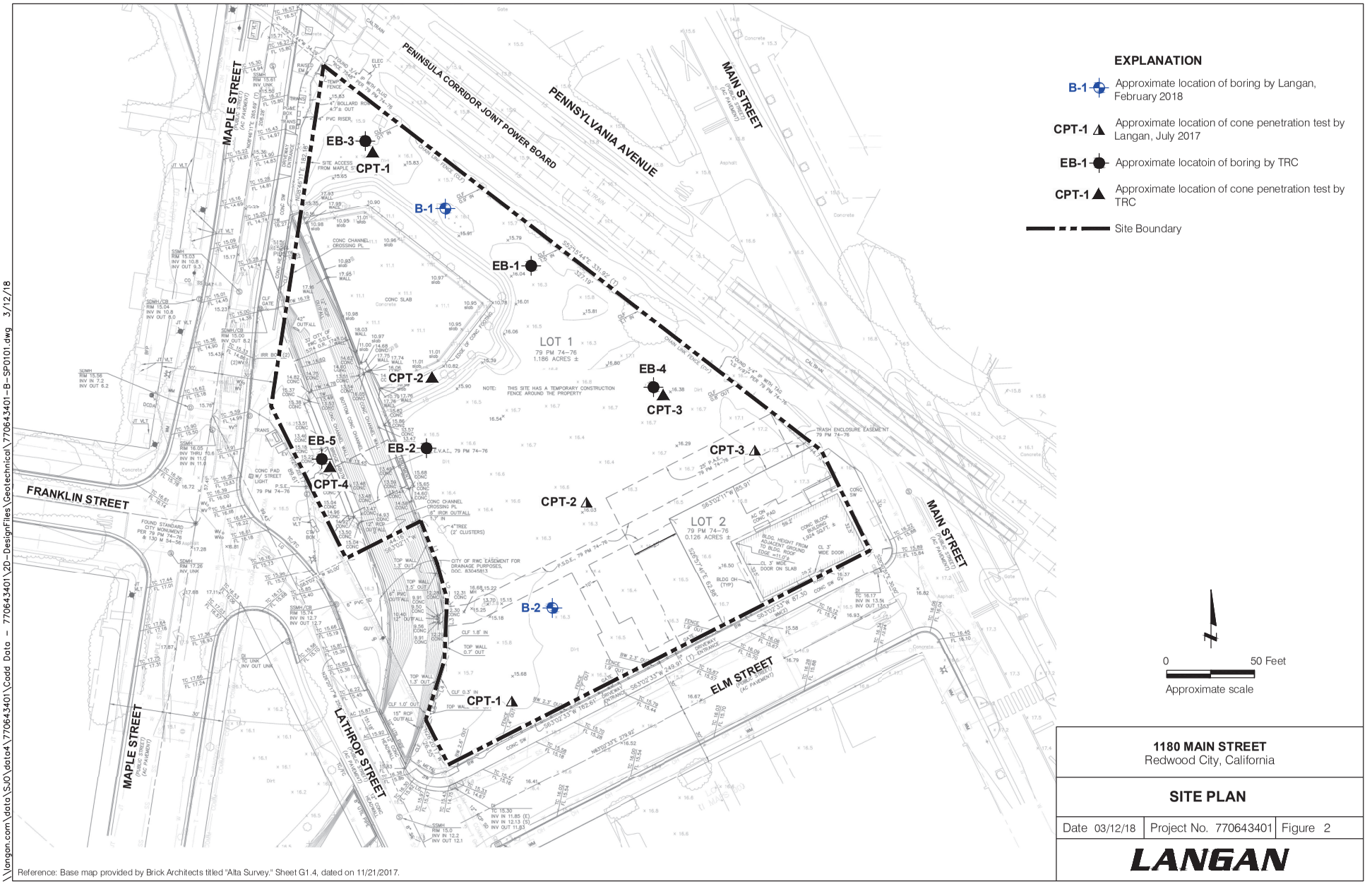
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FIGURES


SITE
Redwood City
Redwood Junction
Sequoia Station
Hoover School Park
Red Morton Community Park
Hawes Park
Palm Park
Union Cemetery
Peninsula Boardwalk
Meadow Park
Galveston Dr
Seaport Blvd
Bair Island Rd
E Bayshore Rd
Blomquist St
Bayshore Fwy
Oddstad Dr
Woodside Rd
Broadway St
Marshall St
Main St
Middlefield Rd
Jefferson Ave
El Camino Real
Convention Way
Veterans Blvd
Whipple Ave
Industrial Way
Stafford St
Redwood City
Bay Rd
Willow St
Spring St
Shasta St
Oak Ave
Union Ave
Hawes Ct
Central Ave
Bonita Ave
Nueva Ave
Orchard Ave
Roble Ave
W Oakwood Blvd
E Oakwood Blvd
Leahy St
Cetalo Ln
Gresham Ln
Shearer Dr
Nova Way
Columbia Ave
5th Ave
Amherst Ave
William Ave
1st Ave
Crocker Ave
Westmoreland Ave
Marlborough Ave
Devonshire Ave
Blenheim Ave
Berkshire Ave
Pacific Ave
San Mateo Ave
Stanford Ave
Hampshire Ave
Hurlingame Ave
Douglas Ave
Flynn Ave
Scott Ave
Laurel St
Buckeye St
Pine St
Spruce St
Cedar St
Heller St
Winthrop St
Franklin St
Wilson St
Middlefield Rd
Cassia St
Stambaugh St
Hilton St
Elm St
Beech St
Chestnut St
Maple St
Walnut St
Jefferson Ave
Hamilton St
Fuller St
Brewster Ave
Winslow St
Warren St
Allerton St
Alden St
Arguello St
Price Ave
Main St
Perry St
Arch St
Birch St
Clinton St
Duane St
Elwood St
Fulton St
Grand St
Hudson St
Iris St
Jeter St
King St
Katherine Ave
Hopkins Ave
Jackson Ave
Adams St
Clinton St
Cleveland St
Lincoln Ave
Vera Ave
Woodrow St
Fay St
Davis St
Redwood Ave
Poplar Ave
Hazel Ave
Hemlock Ave
Linden St
Center St
Park St
Cypress St
Hess Rd
Ebener St
Johnson St
Lyons St
McKinley St
Sanchez Way
St Francis St
Oxford St
Regent St
Gordon St
Palm Ave
Lark Ave
Kentfield
Sierra St
Wheeler Ave
Encina Ave
Carlos Ave
Northumberland Ave
Murray Ct
Dakwood Dr
Willow St
Woodside Rd
Harrison Ave
James Ave
Madison Ave
Avenue del Ora
Quartz St
Sapphire St
Tait St
Shaw Ct
Ruby St
Junipero Ave
Virginia Ave
Fairview Ave
Roosevelt
Euclid Ave
McGarvey Ave
Vera Ave
Arroyo Ojo de Agua
Caltrain
Mezes Park
Industrial Way
Whipple Ave
Veterans Blvd
Price Ave
Main St
Bair Island Rd
Seaport Blvd
Galveston Dr
Blomquist St
Oddstad Dr
Bayshore Fwy
E Bayshore Rd
Woodside Rd
Willow St
Redwood City
Bay Rd
Hoover School Park
Spring St
Charter St
Flynn Ave
Douglas Ave
Hurlingame



Reference: Base map provided by Brick Architects titled "Alta Survey." Sheet G1.4, dated on 11/21/2017.

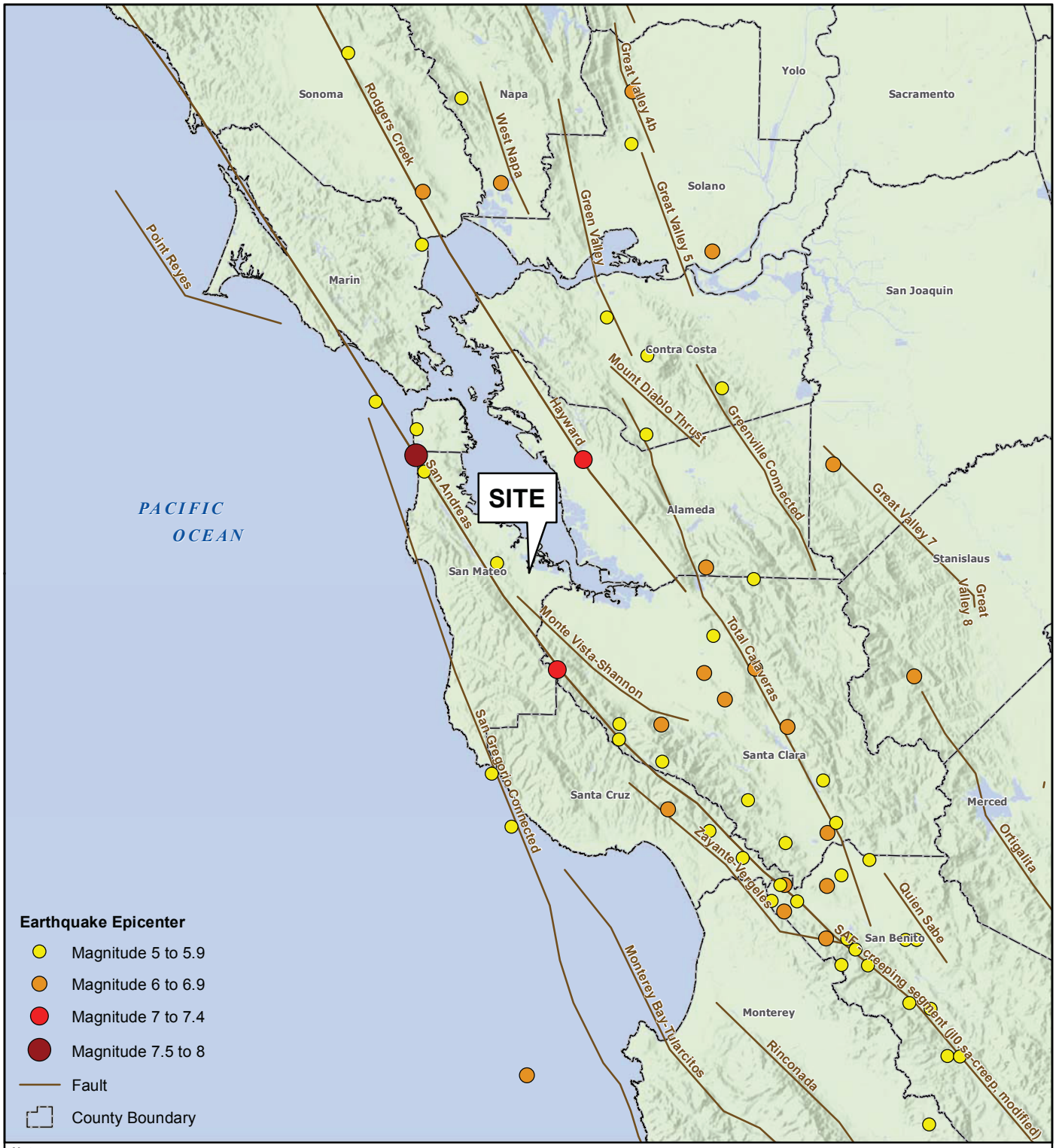
1180 MAIN STREET
Redwood City, California

SITE PLAN

Date 03/12/18	Project No. 770643401	Figure 2

LANGAN

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Notes:

1. Quaternary fault data displayed are based on a generalized version of U.S Geological Survey (USGS) Quaternary Fault and fold database, 2010. For cartographic purposes only.
2. The Earthquake Epicenter (Magnitude) data is provided by the USGS and is current through 08/26/2014.
3. Basemap hillshade and County boundaries provided by USGS and California Department of Transportation.
4. Map displayed in California State Coordinate System, California (Teale) Albers, North American Datum of 1983 (NAD83), Meters.

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MAP OF MAJOR FAULTS AND EARTHQUAKE EPICENTERS IN THE SAN FRANCISCO BAY AREA

Date 03/12/18	Project No. 770643401	Figure 3

I **Not felt by people, except under especially favorable circumstances. However, dizziness or nausea may be experienced.**
Sometimes birds and animals are uneasy or disturbed. Trees, structures, liquids, bodies of water may sway gently, and doors may swing very slowly.

II **Felt indoors by a few people, especially on upper floors of multi-story buildings, and by sensitive or nervous persons.**
As in Grade I, birds and animals are disturbed, and trees, structures, liquids and bodies of water may sway. Hanging objects swing, especially if they are delicately suspended.

III **Felt indoors by several people, usually as a rapid vibration that may not be recognized as an earthquake at first. Vibration is similar to that of a light, or lightly loaded trucks, or heavy trucks some distance away. Duration may be estimated in some cases.**
Movements may be appreciable on upper levels of tall structures. Standing motor cars may rock slightly.

IV **Felt indoors by many, outdoors by a few. Awakens a few individuals, particularly light sleepers, but frightens no one except those apprehensive from previous experience. Vibration like that due to passing of heavy, or heavily loaded trucks. Sensation like a heavy body striking building, or the falling of heavy objects inside.**
Dishes, windows and doors rattle; glassware and crockery clink and clash. Walls and house frames creak, especially if intensity is in the upper range of this grade. Hanging objects often swing. Liquids in open vessels are disturbed slightly. Stationary automobiles rock noticeably.

V **Felt indoors by practically everyone, outdoors by most people. Direction can often be estimated by those outdoors. Awakens many, or most sleepers. Frightens a few people, with slight excitement; some persons run outdoors.**
Buildings tremble throughout. Dishes and glassware break to some extent. Windows crack in some cases, but not generally. Vases and small or unstable objects overturn in many instances, and a few fall. Hanging objects and doors swing generally or considerably. Pictures knock against walls, or swing out of place. Doors and shutters open or close abruptly. Pendulum clocks stop, or run fast or slow. Small objects move, and furnishings may shift to a slight extent. Small amounts of liquids spill from well-filled open containers. Trees and bushes shake slightly.

VI **Felt by everyone, indoors and outdoors. Awakens all sleepers. Frightens many people; general excitement, and some persons run outdoors.**
Persons move unsteadily. Trees and bushes shake slightly to moderately. Liquids are set in strong motion. Small bells in churches and schools ring. Poorly built buildings may be damaged. Plaster falls in small amounts. Other plaster cracks somewhat. Many dishes and glasses, and a few windows break. Knickknacks, books and pictures fall. Furniture overturns in many instances. Heavy furnishings move.

VII **Frightens everyone. General alarm, and everyone runs outdoors.**
People find it difficult to stand. Persons driving cars notice shaking. Trees and bushes shake moderately to strongly. Waves form on ponds, lakes and streams. Water is muddied. Gravel or sand stream banks cave in. Large church bells ring. Suspended objects quiver. Damage is negligible in buildings of good design and construction; slight to moderate in well-built ordinary buildings; considerable in poorly built or badly designed buildings, adobe houses, old walls (especially where laid up without mortar), spires, etc. Plaster and some stucco fall. Many windows and some furniture break. Loosened brickwork and tiles shake down. Weak chimneys break at the roofline. Cornices fall from towers and high buildings. Bricks and stones are dislodged. Heavy furniture overturns. Concrete irrigation ditches are considerably damaged.

VIII **General fright, and alarm approaches panic.**
Persons driving cars are disturbed. Trees shake strongly, and branches and trunks break off (especially palm trees). Sand and mud erupts in small amounts. Flow of springs and wells is temporarily and sometimes permanently changed. Dry wells renew flow. Temperatures of spring and well waters varies. Damage slight in brick structures built especially to withstand earthquakes; considerable in ordinary substantial buildings, with some partial collapse; heavy in some wooden houses, with some tumbling down. Panel walls break away in frame structures. Decayed pilings break off. Walls fall. Solid stone walls crack and break seriously. Wet grounds and steep slopes crack to some extent. Chimneys, columns, monuments and factory stacks and towers twist and fall. Very heavy furniture moves conspicuously or overturns.

IX **Panic is general.**
Ground cracks conspicuously. Damage is considerable in masonry structures built especially to withstand earthquakes; great in other masonry buildings - some collapse in large part. Some wood frame houses built especially to withstand earthquakes are thrown out of plumb, others are shifted wholly off foundations. Reservoirs are seriously damaged and underground pipes sometimes break.

X **Panic is general.**
Ground, especially when loose and wet, cracks up to widths of several inches; fissures up to a yard in width run parallel to canal and stream banks. Landsliding is considerable from river banks and steep coasts. Sand and mud shifts horizontally on beaches and flat land. Water level changes in wells. Water is thrown on banks of canals, lakes, rivers, etc. Dams, dikes, embankments are seriously damaged. Well-built wooden structures and bridges are severely damaged, and some collapse. Dangerous cracks develop in excellent brick walls. Most masonry and frame structures, and their foundations are destroyed. Railroad rails bend slightly. Pipe lines buried in earth tear apart or are crushed endwise. Open cracks and broad wavy folds open in cement pavements and asphalt road surfaces.

XI **Panic is general.**
Disturbances in ground are many and widespread, varying with the ground material. Broad fissures, earth slumps, and land slips develop in soft, wet ground. Water charged with sand and mud is ejected in large amounts. Sea waves of significant magnitude may develop. Damage is severe to wood frame structures, especially near shock centers, great to dams, dikes and embankments, even at long distances. Few if any masonry structures remain standing. Supporting piers or pillars of large, well-built bridges are wrecked. Wooden bridges that "give" are less affected. Railroad rails bend greatly and some thrust endwise. Pipe lines buried in earth are put completely out of service.

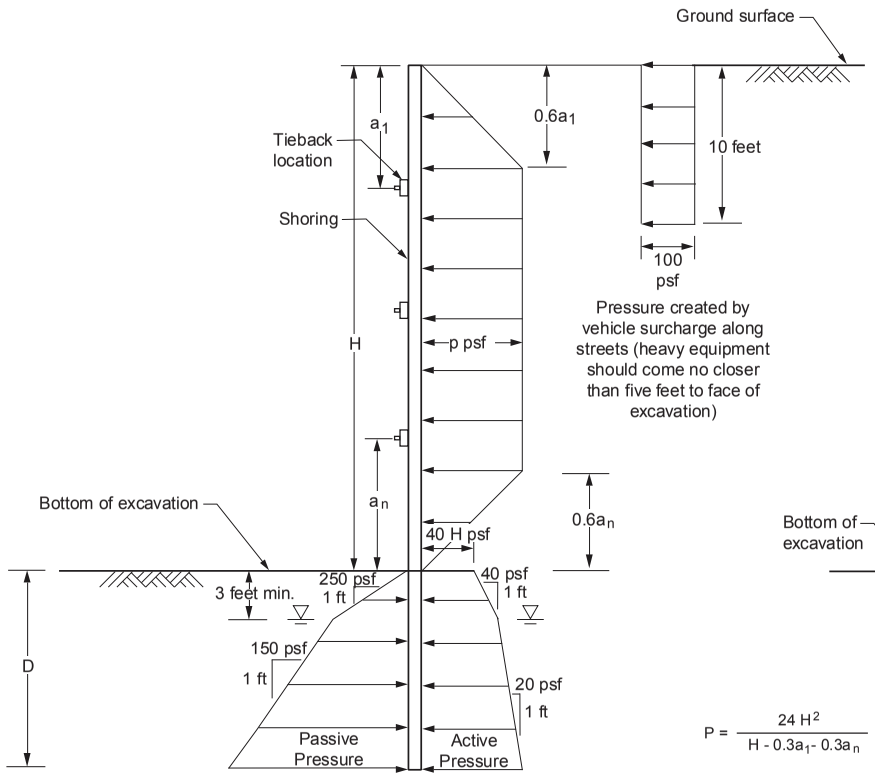
XII **Panic is general.**
Damage is total, and practically all works of construction are damaged greatly or destroyed. Disturbances in the ground are great and varied, and numerous shearing cracks develop. Landslides, rock falls, and slumps in river banks are numerous and extensive. Large rock masses are wrenched loose and torn off. Fault slips develop in firm rock, and horizontal and vertical offset displacements are notable. Water channels, both surface and underground, are disturbed and modified greatly. Lakes are dammed, new waterfalls are produced, rivers are deflected, etc. Surface waves are seen on ground surfaces. Lines of sight and level are distorted. Objects are thrown upward into the air.

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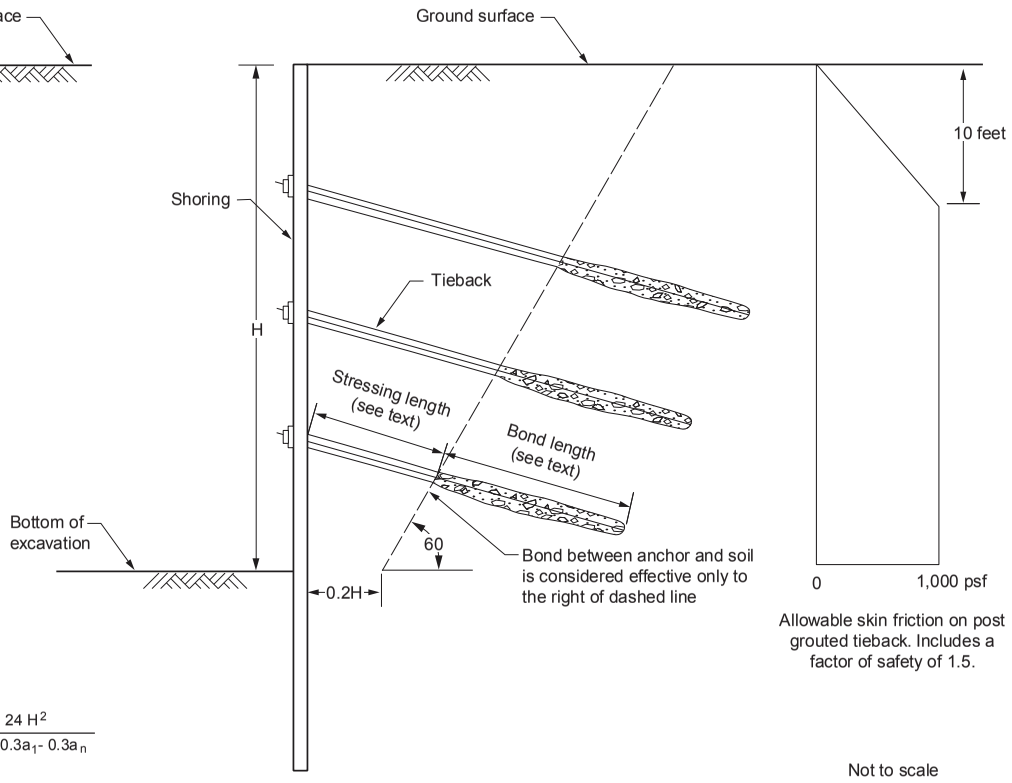
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MODIFIED MERCALLI INTENSITY SCALE

Date 03/12/18	Project No. 770643401	Figure 4



$$P = \frac{24\,H^2}{H - 0.3a_1 - 0.3a_n}$$



Notes:
1. Passive pressure includes a factor of safety of about 1.5.
2. Pressures assume site and surrounding ground are successfully dewatered at least 3 feet below the bottom of the excavation.
3. Passive pressure should be assumed to act over the pile spacing or three pile diameters, whichever is smaller.
4. Surcharge pressure due to construction equipment, if any, should be added to the above shoring pressure.
5. Penetration depth (D) required should be determined by the shoring designer.
6. Active pressure below the excavation should be assumed to act over one pile diameter
7. Actual number of tieback rows to be determined by shoring designer.

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DESIGN PARAMETERS FOR TIED-BACK SOLDIER-PILE-AND-LAGGING TEMPORARY SHORING SYSTEM

Date 03/27/18 | Project No. 770643401 | Figure 5

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APPENDIX A

DATA FROM PREVIOUS INVESTIGATIONS

APPENDIX A

FIELD INVESTIGATION

The field investigation consisted of a surface reconnaissance and a subsurface exploration program using truck-mounted, hollow-stem auger drilling and cone penetration test (CPT) equipment. Three 8-inch-diameter exploratory borings were drilled on February 25, 2009 to a maximum depth of 45 feet; Four CPTs were hydraulically-pushed on February 20, 2009 to a maximum depth of 90 feet. CPT data was obtained at 0.16 feet (5 centimeter) intervals and consisted of cone tip resistance, sleeve friction, dynamic pore pressure and other parameters. The approximate locations of the exploratory borings and CPTs are shown on Figure 2. Figure 2 also shows our two previous exploratory borings. The soils encountered were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D2488). The logs of the borings and CPTs, as well as a key to the classification of the soil, are included as part of this appendix.

The locations of borings and CPTs were approximately determined by pacing from existing site boundaries. Elevations of the borings were not determined. The locations of the borings and CPTs should be considered accurate only to the degree implied by the method used.

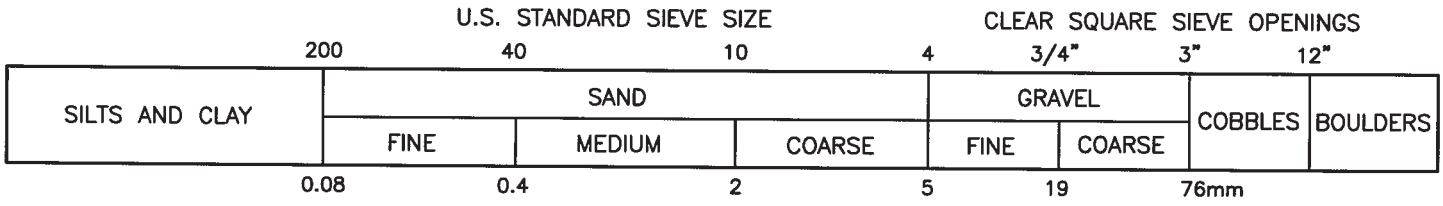
Representative soil samples were obtained from the borings at selected depths. All samples were returned to our laboratory for evaluation and appropriate testing. Penetration resistance blow counts were obtained by dropping a 140-pound hammer 30 inches. Modified California 3.0-inch outside diameter (O.D.) samples and Standard Penetration Test (SPT) 2-inch O.D. samples were obtained by driving the samplers 18 inches and recording the number of hammer blows for each 6 inches of penetration. Unless otherwise indicated, the blows per foot recorded on the boring logs represent the accumulated number of blows required to drive the samplers the last two 6-inch increments. When using the SPT sampler, the last two 6-inch increments is the uncorrected SPT measured blow count. Relatively undisturbed samples were also obtained with 2.875-inch inside diameter Shelby Tube sampler, which were hydraulically pushed. The various samplers are denoted at the appropriate depth on the boring logs and symbolized as shown on Figure A-1.

The attached boring and CPT logs and related information depict subsurface conditions at the locations indicated and on the date designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these boring and CPT locations. The passage of time may result in altered subsurface conditions due to environmental changes. In addition, any stratification lines on the logs represent the approximate boundary between soil types and the transition may be gradual.

* * * * * * * * * * * * *

PRIMARY DIVISIONS			SOIL TYPE		SECONDARY DIVISIONS
COARSE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (Less than 5% Fines)	GW		Well graded gravels, gravel–sand mixtures, little or no fines
			GP		Poorly graded gravels or gravel–sand mixtures, little or no fines
		GRAVEL WITH FINES	GM		Silty gravels, gravel–sand–silt mixtures, plastic fines
			GC		Clayey gravels, gravel–sand–clay mixtures, plastic fines
	SANDS — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (Less than 5% Fines)	SW		Well graded sands, gravelly sands, little or no fines
			SP		Poorly graded sands or gravelly sands, little or no fines
		SANDS WITH FINES	SM		Silty sands, sand–silt–mixtures, non–plastic fines
			SC		Clayey sands, sand–clay mixtures, plastic fines
FINE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT IS LESS THAN 50 %		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS — LIQUID LIMIT IS GREATER THAN 50 %		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT		Peat and other highly organic soils

DEFINITION OF TERMS



GRAIN SIZES



SAMPLERS

SAND AND GRAVEL	BLOWS/FOOT*
VERY LOOSE	0–4
LOOSE	4–10
MEDIUM DENSE	10–30
DENSE	30–50
VERY DENSE	OVER 50

RELATIVE DENSITY

SILTS AND CLAYS	STRENGTH+	BLOWS/FOOT*
VERY SOFT	0–1/4	0–2
SOFT	1/4–1/2	2–4
MEDIUM STIFF	1/2–1	4–8
STIFF	1–2	8–16
VERY STIFF	2–4	16–32
HARD	OVER 4	OVER 32

CONSISTENCY

*Number of blows of 140 pound hammer falling 30 inches to drive a 2–inch O.D. (1–3/8 inch I.D.) split spoon (ASTM D–1586).
+Unconfined compressive strength in tons/sq.ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D–1586), pocket penetrometer, torvane, or visual observation.

KEY TO EXPLORATORY BORING LOGS

Unified Soil Classification System (ASTM D–2487)

TRC

FIGURE A–1

EXPLORATORY BORING: EB-1

DRILL RIG: MOBILE B-40
BORING TYPE: 8 INCH HOLLOW-STEM AUGER
LOGGED BY: AC
START DATE: 5-15-08 FINISH DATE: 5-15-08

PROJECT NO: 166215
PROJECT: LATHROP PARC
LOCATION: REDWOOD CITY, CA
COMPLETION DEPTH: 30.0 FT.

This log is a part of a report by TRC, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
		SURFACE ELEVATION:						
	0	**SANDY LEAN CLAY (CL) [FILL]** very stiff, moist, brown, fine to coarse sand, some asphaltic concrete fragments, low plasticity	CL, FILL	15		20		
		FAT CLAY (CH) very stiff, moist, dark gray, some fine to coarse sand, high plasticity	CH	12		30	90	
	5	**LEAN CLAY WITH SAND (CL)** very stiff, moist, olive gray, fine to medium sand, moderate plasticity	CL	17		24	87	
				12		28	94	
	10	**FAT CLAY (CH)** very stiff, moist, gray, trace fine to coarse sand, high plasticity	CH					
		SANDY LEAN CLAY (CL) medium stiff, moist, brown, fine sand, low plasticity	CL	13		19	109	29
	15	**CLAYEY SAND (SC)** medium dense, wet, brown with gray mottles, fine sand	SC					
		POORLY GRADED SAND WITH CLAY (SP-SC) medium dense, wet, brown and gray, fine to coarse sand	SP-SC	29				
	20	**CLAYEY SAND (SC)** medium dense, wet, brown with gray mottles, fine to coarse sand	SC	11		27		35
		POORLY GRADED SAND WITH CLAY (SP-SC) medium dense, wet, brown and gray, fine to coarse sand, some fine subangular to subrounded gravel	SP-SC	27		12		6
	25			29				
		LEAN CLAY (CL) stiff, moist, brown, some fine to medium sand, low to moderate plasticity	CL	13				
	30	Bottom of Boring at 30 feet						

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 13.0 FEET

LA_CORP.GDT 4/29/09 MV* FL

TRC

EXPLORATORY BORING: EB-2

DRILL RIG: MOBILE B-40
BORING TYPE: 8 INCH HOLLOW-STEM AUGER
LOGGED BY: AC
START DATE: 5-15-08 FINISH DATE: 5-15-08

PROJECT NO: 166215
PROJECT: LATHROP PARC
LOCATION: REDWOOD CITY, CA
COMPLETION DEPTH: 50.0 FT.

This log is a part of a report by TRC, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
		SURFACE ELEVATION:						
	0	**SANDY LEAN CLAY (CL) [FILL]** very stiff, moist, brown, fine to coarse sand, some asphaltic concrete fragments, low plasticity	CL, FILL	18		27		
		FAT CLAY (CH) very stiff, moist, dark gray, some fine to coarse sand, high plasticity Plasticity Index = 52, Liquid Limit = 76	CH	16		28	92	
	5	**LEAN CLAY WITH SAND (CL)** hard, moist, olive gray with brown mottles, fine to medium sand, low to moderate plasticity		41		19	98	
	10	very stiff	CL	43		25	94	
		FAT CLAY (CH) medium stiff, moist, gray, fine sand, high plasticity		14		35	84	
	15							
	20		CH	7		26	99	
		POORLY GRADED SAND WITH CLAY (SP-SC) medium dense, wet, brown and gray, fine to coarse sand, some fine subangular to subrounded gravel		16		17		9
	25	dense	SP-SC	40				
				36				
	30	*Continued Next Page*						

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 12.5 FEET

LA_CORP.GDT 4/29/09 MV* FL

TRC

EXPLORATORY BORING: EB-2 Cont'd

DRILL RIG: MOBILE B-40
BORING TYPE: 8 INCH HOLLOW-STEM AUGER
LOGGED BY: AC
START DATE: 5-15-08 FINISH DATE: 5-15-08

PROJECT NO: 166215
PROJECT: LATHROP PARC
LOCATION: REDWOOD CITY, CA
COMPLETION DEPTH: 50.0 FT.

This log is a part of a report by TRC, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
	30		SP-SC					
	35	**SANDY LEAN CLAY (CL)** medium stiff, moist, light brown with gray mottles, fine sand, low plasticity	CL	24		25	98	
	40	**LEAN CLAY (CL)** stiff to very stiff, moist, gray with olive brown mottles, some fine to medium sand, low to moderate plasticity	CL	16		27	98	
	45		CL	11		28	96	
	50	Bottom of Boring at 50 feet		20		28	94	
	55							
	60							

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 12.5 FEET

LA_CORP.GDT 4/29/09 MV* FL

TRC

EXPLORATORY BORING: EB-3

DRILL RIG: MOBILE B-53
BORING TYPE: 8-INCH HOLLOW STEM AUGER
LOGGED BY: NB
START DATE: 2-25-09 FINISH DATE: 2-25-09

PROJECT NO: 166215
PROJECT: LATHROP PARC
LOCATION: REDWOOD CITY, CA
COMPLETION DEPTH: 36.0 FT.

This log is a part of a report by TRC, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
		SURFACE ELEVATION:						
	0	2½ inches of asphalt concrete over 3½ inches of aggregate base	CL-CH, FILL					
		LEAN CLAY TO FAT CLAY (CL-CH) [FILL] stiff, moist, dark brown, trace fine sand, some brick and concrete debris, moderate to high plasticity	CH	22		29		
		FAT CLAY (CH) stiff, moist, dark brown and dark gray, trace fine sand, high plasticity		26		31	87	
	5	**LEAN CLAY WITH SAND (CL)** very stiff, moist, olive brown fine sand, some silt, moderate plasticity	CL	48		24	93	
		LEAN CLAY (CL) very stiff, moist, grayish brown, some silt, trace fine subangular to subrounded gravel, moderate plasticity	CL	30		27	94	
	10	**SANDY LEAN CLAY (CL)** stiff, moist, olive, fine to medium sand, some fine subangular to subrounded gravel, low plasticity		21		22	104	
	15		CL					
		POORLY GRADED SAND WITH SILT (SP-SM) medium dense, wet, gray and brown, fine to coarse sand		15		21		
	20		SP-SM					
				25		12		12
	25	some fine to coarse subangular to subrounded gravel						
				28		12		10
	30							

Continued Next Page

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 12.0 FEET

LA_CORP.GDT 4/29/09 MV* AHT

TRC

EXPLORATORY BORING: EB-3 Cont'd

DRILL RIG: MOBILE B-53
BORING TYPE: 8-INCH HOLLOW STEM AUGER
LOGGED BY: NB
START DATE: 2-25-09 FINISH DATE: 2-25-09

PROJECT NO: 166215
PROJECT: LATHROP PARC
LOCATION: REDWOOD CITY, CA
COMPLETION DEPTH: 36.0 FT.

This log is a part of a report by TRC, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
	30		**POORLY GRADED SAND WITH SILT (SP-SM)** medium dense, wet, gray and brown, fine to coarse sand	SP-SM					
			LEAN CLAY WITH SAND (CL) medium stiff to stiff, moist, olive gray, fine sand, moderate plasticity	CL			25	99	
	35		Bottom of Boring at 36 feet						
	40								
	45								
	50								
	55								
	60								

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 12.0 FEET

LA_CORP.GDT 4/29/09 MV* AHT

TRC

EXPLORATORY BORING: EB-4

DRILL RIG: MOBILE B-53
BORING TYPE: 8-INCH HOLLOW STEM AUGER
LOGGED BY: NB
START DATE: 2-25-09 FINISH DATE: 2-25-09

PROJECT NO: 166215
PROJECT: LATHROP PARC
LOCATION: REDWOOD CITY, CA
COMPLETION DEPTH: 35.0 FT.

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ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
		SURFACE ELEVATION:						
	0	**SANDY LEAN TO FAT CLAY (CL-CH) [FILL]** stiff to very stiff, moist, dark brown fine to coarse sand, some fine to coarse subangular to subrounded gravel, moderate plasticity	CL-CH, FILL	24		16		
		FAT CLAY (CH) stiff to very stiff, moist, dark gray, high plasticity	CH	41		29	90	
	5	**LEAN CLAY (CL)** stiff to very stiff, moist, dark olive brown, trace fine sand, moderate plasticity	CL	24				
				21		25	90	
	10					24	100	
		medium stiff		49		24	99	18
	15	**SILTY SAND (SM)** dense, wet, gray and brown, fine to medium sand	SM					
		POORLY GRADED SAND (SP) medium dense, wet, gray and brown, fine to coarse sand, some fine subangular to subrounded gravel	SP	23		12		37
	20							
		SANDY LEAN CLAY (CL) medium stiff to stiff, moist, olive brown with light gray mottles, fine to coarse sand, low to moderate plasticity	CL	18		26	103	
	25							
	30							

Continued Next Page

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 14.5 FEET

LA_CORP.GDT 4/29/09 MV* AHT

TRC

EXPLORATORY BORING: EB-4 Cont'd

DRILL RIG: MOBILE B-53
BORING TYPE: 8-INCH HOLLOW STEM AUGER
LOGGED BY: NB
START DATE: 2-25-09 FINISH DATE: 2-25-09

PROJECT NO: 166215
PROJECT: LATHROP PARC
LOCATION: REDWOOD CITY, CA
COMPLETION DEPTH: 35.0 FT.

This log is a part of a report by TRC, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE	Undrained Shear Strength (ksf)
	30		**SANDY LEAN CLAY (CL)** medium stiff to stiff, moist, olive brown with light gray mottles, fine to coarse sand, low to moderate plasticity	CL						○ Pocket Penetrometer △ Torvane ● Unconfined Compression ▲ U-U Triaxial Compression 1.0 2.0 3.0 4.0
	35		Bottom of Boring at 35 feet							
	40									
	45									
	50									
	55									
	60									

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 14.5 FEET

LA CORP.GDT 4/29/09 MV* AHT

TRC

EXPLORATORY BORING: EB-5

DRILL RIG: MOBILE B-53
BORING TYPE: 8-INCH HOLLOW STEM AUGER
LOGGED BY: NB
START DATE: 2-25-09 FINISH DATE: 2-25-09

PROJECT NO: 166215
PROJECT: LATHROP PARC
LOCATION: REDWOOD CITY, CA
COMPLETION DEPTH: 45.0 FT.

This log is a part of a report by TRC, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
		SURFACE ELEVATION:						
	0	**LEAN TO FAT CLAY (CL-CH) [FILL]** stiff, moist, dark brown, fine to coarse sand, some fine subangular to subrounded gravel, moderate to high plasticity	CL-CH, FILL	21		29		
		FAT CLAY (CH) very stiff, moist, dark gray, moderate to high plasticity	CH	41		28	91	
	5	**LEAN CLAY (CL)** hard, moist, olive brown, some silt, moderate plasticity	CL	50/6"		19		
		LEAN CLAY WITH SAND (CL) stiff, moist, olive brown, fine to coarse sand, moderate plasticity	CL	33		27	91	
	10							
		SANDY LEAN CLAY (CL) stiff, moist, gray with brown mottles, fine to coarse sand, trace roots, low plasticity	CL	22		28	94	
▽	15							
		CLAYEY SAND (SC) medium dense, wet, gray, fine sand	SC	15		26		
	20	A layer of sandy clay		24		17		
	25	**SILTY SAND (SM)** medium dense to dense, wet, gray, fine to coarse sand, some fine subangular to subrounded gravel	SM	29		14		14
	30	*Continued Next Page*						

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 15.0 FEET

LA_CORP.GDT 4/29/09 MV* AHT

TRC

EXPLORATORY BORING: EB-5 Cont'd

DRILL RIG: MOBILE B-53
BORING TYPE: 8-INCH HOLLOW STEM AUGER
LOGGED BY: NB
START DATE: 2-25-09 FINISH DATE: 2-25-09

PROJECT NO: 166215
PROJECT: LATHROP PARC
LOCATION: REDWOOD CITY, CA
COMPLETION DEPTH: 45.0 FT.

This log is a part of a report by TRC, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

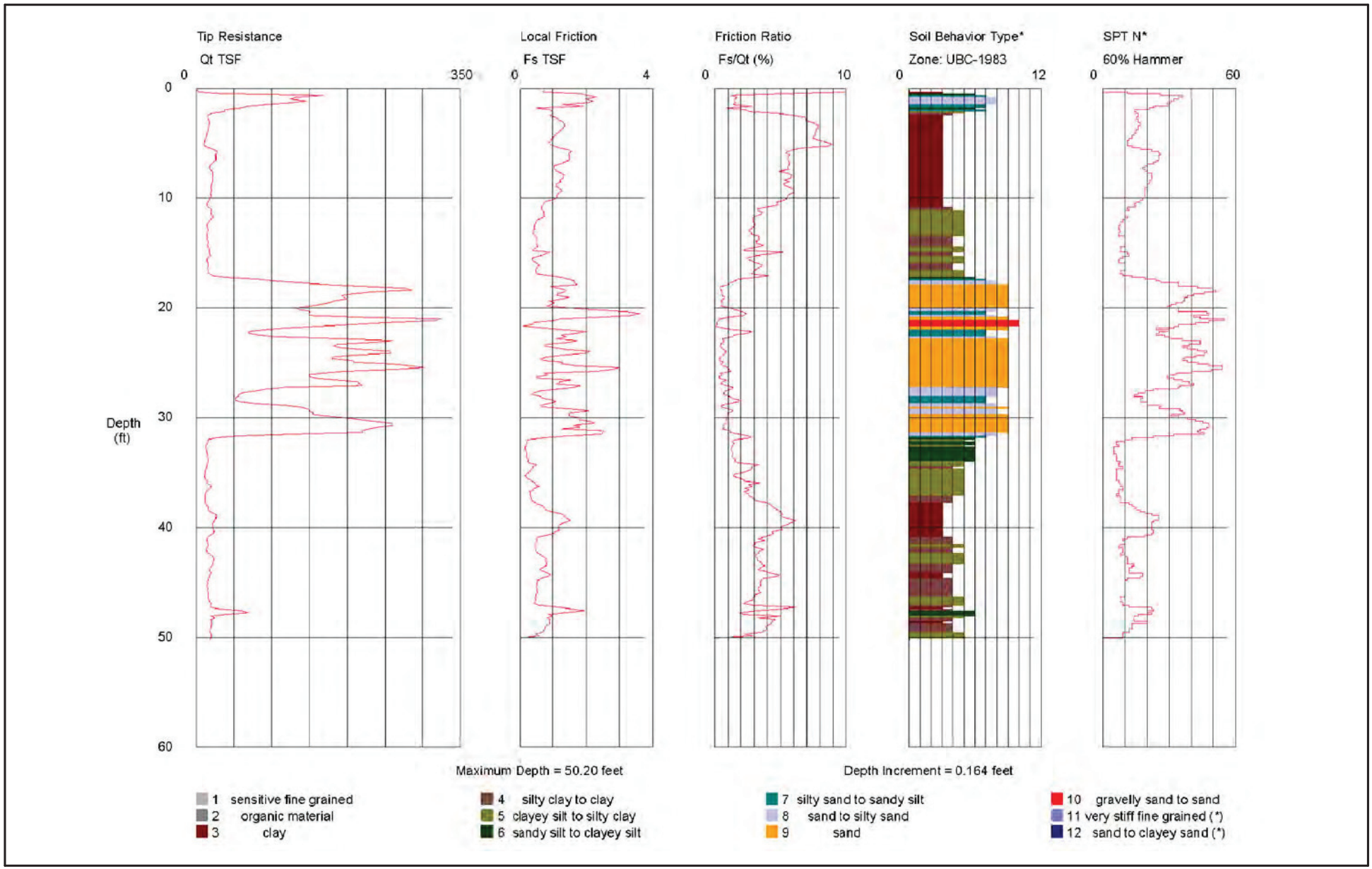
ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
	30		**SILTY SAND (SM)** medium dense to dense, wet, gray, fine to coarse sand, some fine subangular to subrounded gravel A layer of sandy clay very dense	SM	78/9"				
	35		**LEAN CLAY (CL)** stiff, moist, olive gray, moderate plasticity	CL	24		29	91	
	40				49		25	97	
	45		Bottom of Boring at 45 feet						
	50								
	55								
	60								

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
▽: FREE GROUND WATER MEASURED DURING DRILLING AT 15.0 FEET

LA_CORP.GDT 4/29/09 MV* AHT

TRC



3/09*EB

CONE PENETRATION TEST - CPT-1

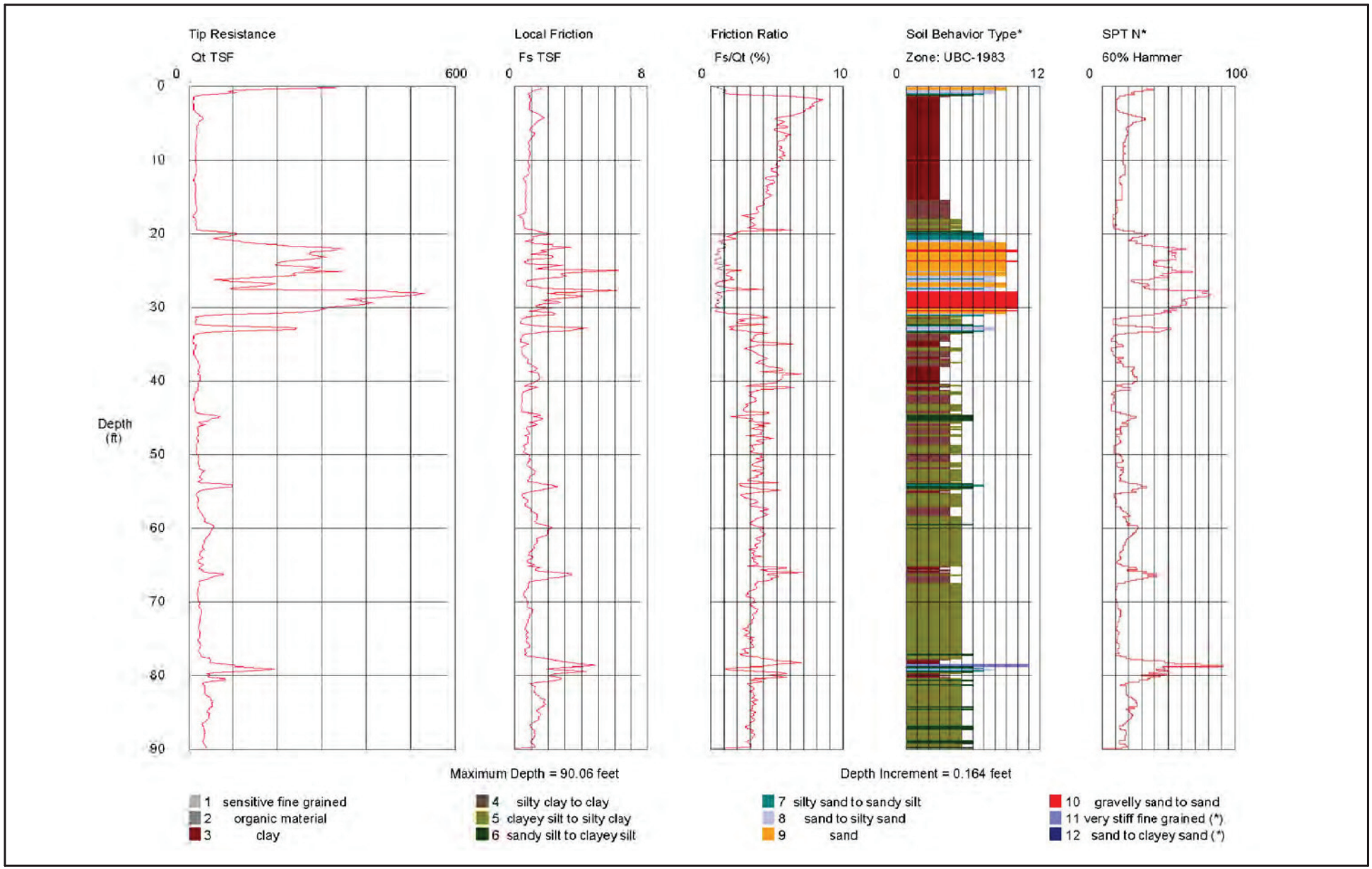
LATHROP PARC

Redwood City, California

TRC

CPT-1

166215



3/09*EB

CONE PENETRATION TEST - CPT-2

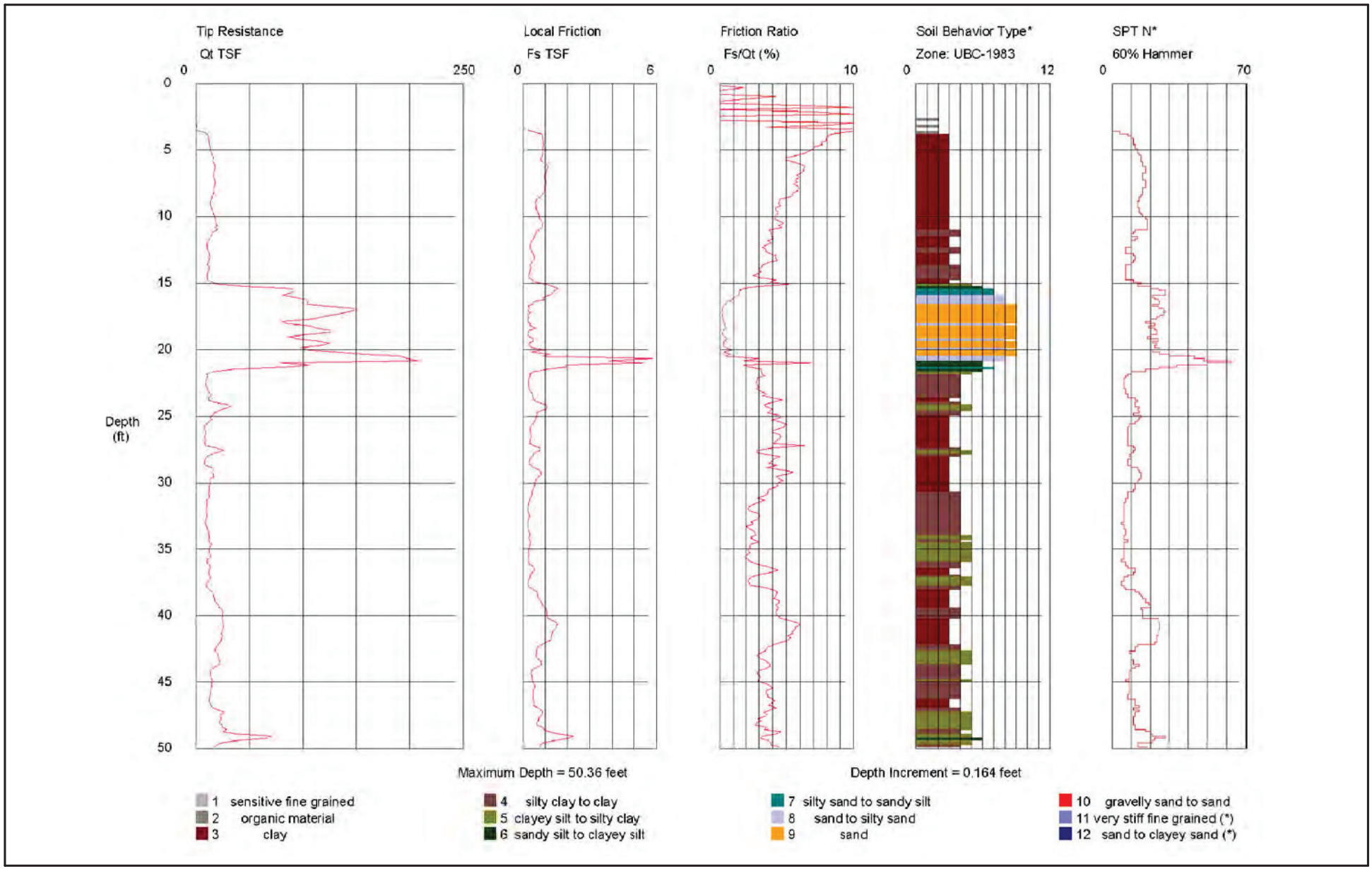
LATHROP PARC

Redwood City, California

TRC

CPT-2

166215



3/09*EB

CONE PENETRATION TEST - CPT-3

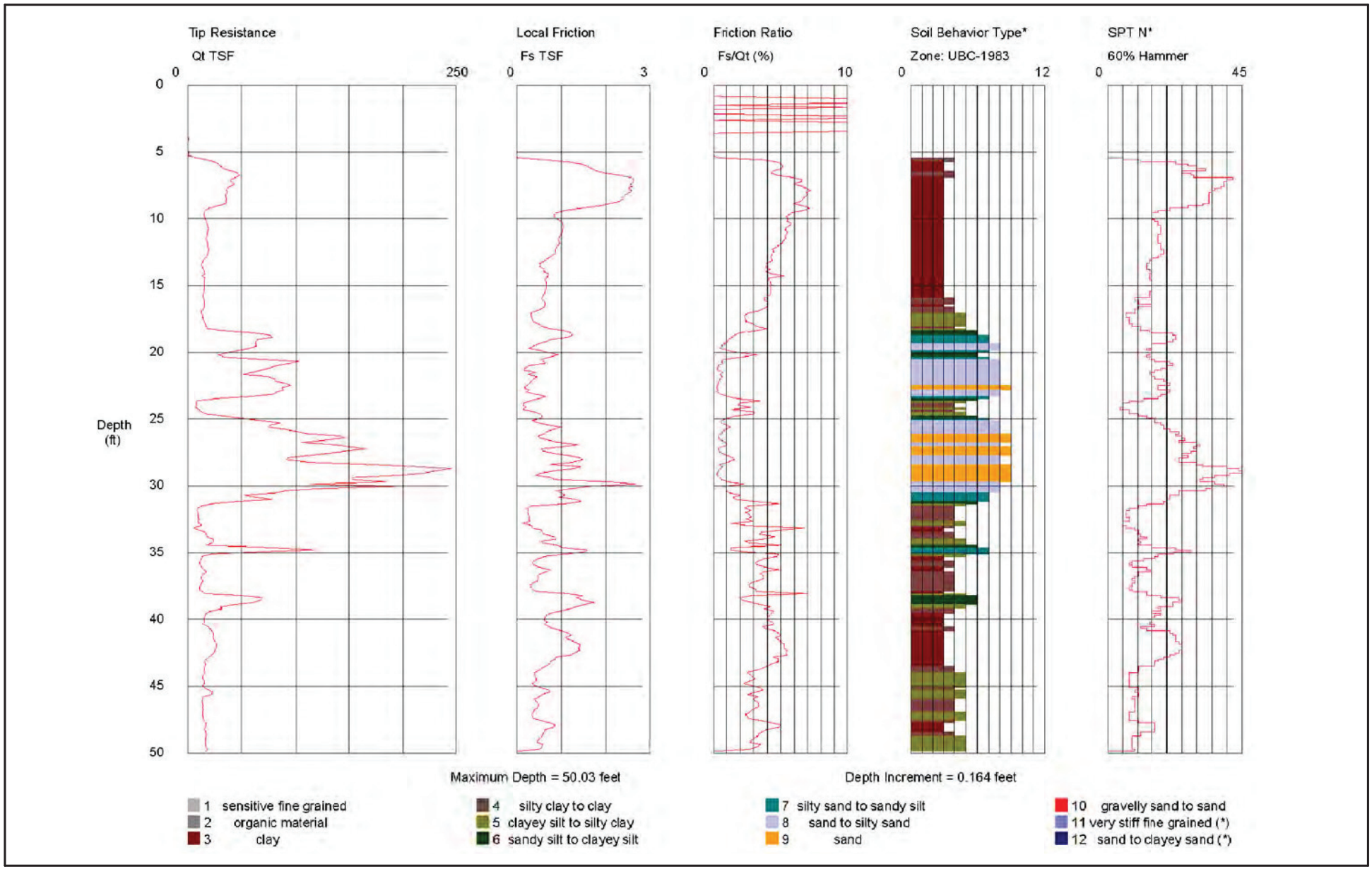
LATHROP PARC

Redwood City, California

TRC

CPT-3

166215



3/09*EB

CONE PENETRATION TEST - CPT-4

LATHROP PARC

Redwood City, California

TRC

CPT-4

166215

APPENDIX B
LABORATORY PROGRAM

The laboratory testing program was directed toward a quantitative and qualitative evaluation of the physical and mechanical properties of the soils underlying the site and to aid in verifying soil classification.

Moisture Content: The natural water content was measured (ASTM D2216) on 44 samples of the materials recovered from the borings. These water contents are recorded on the boring logs at the appropriate sample depths.

Dry Densities: In place dry density tests (ASTM D2937) were performed on 28 samples to measure the unit weight of the subsurface soils. Results of these tests are shown on the boring logs at the appropriate sample depths.

Plasticity Index: Plasticity Index (PI) tests (ASTM D4318) were performed on two samples of the subsurface soils to measure the range of water contents over which these materials exhibit plasticity. The PI was used to classify the soil in accordance with the Unified Soil Classification System and to evaluate the soil expansion potential. Results of these tests are presented on Figure B-1 and on the logs of the borings at the appropriate sample depths.

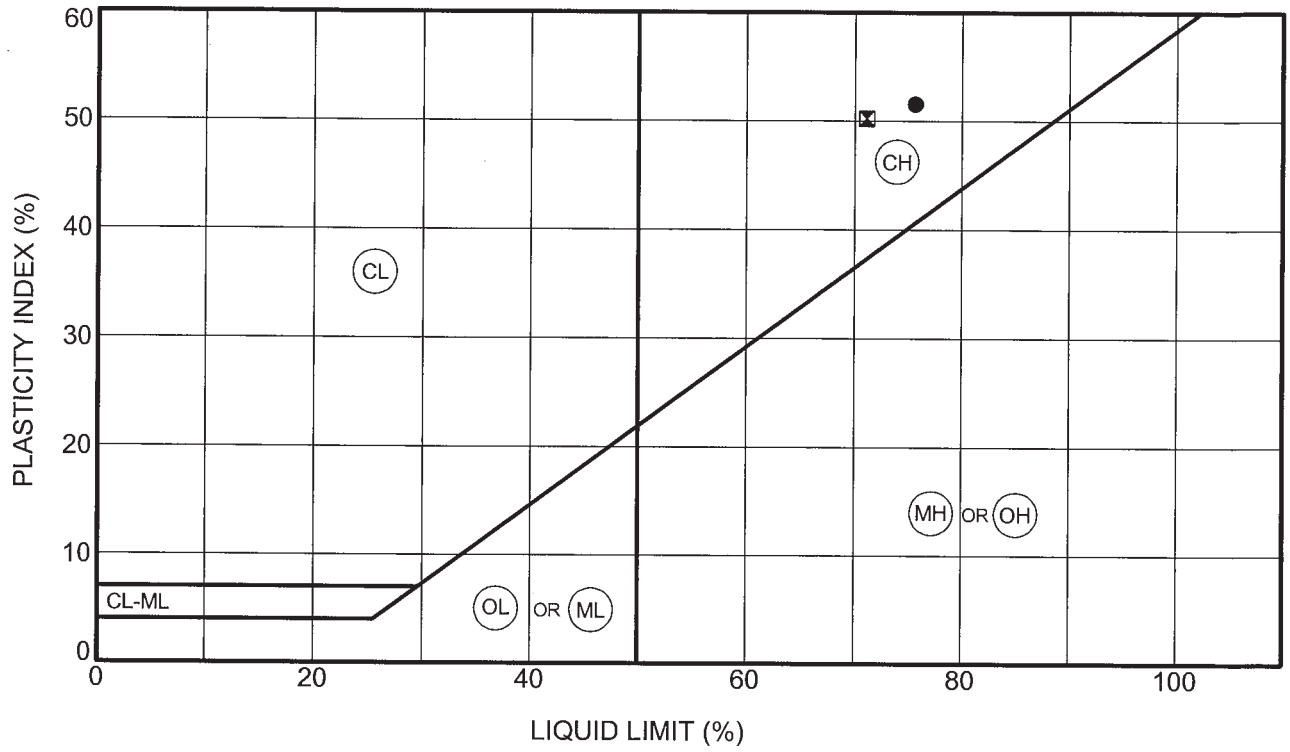
Washed Sieve Analyses: The percent soil fraction passing the No. 200 sieve (ASTM D1140) was performed on nine samples of the subsurface soils to aid in the classification of these soils. Results of these tests are shown on the boring logs at the appropriate sample depths.

Unconfined Compression: Unconfined compression tests (ASTM D2166) were performed on two undisturbed samples of the clayey subsurface soils to evaluate the undrained shear strengths of these materials. Samples tested had a diameter of 2.5 inches and a height-to-diameter ratio of at least 2. Failure was taken as the peak normal stress. Results of these tests are presented on the boring logs at the appropriate sample depths.

Consolidation: One consolidation test (ASTM D2435) was performed on a relatively undisturbed sample of the subsurface clayey soils to assist in evaluating the compressibility property of this soil. Results of the consolidation test are presented graphically on Figure B-2.

R-Value: An R-value resistance test (California Test Method No. 301) was performed on a representative sample of the near surface soils at the site to provide data for the pavement design. The test indicated an R-value of less than 5. The results of the test are presented on Figure B-3.

* * * * * * * * * * * * *



Symbol	Boring No.	Depth (ft.)	Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing No. 200 Sieve	Unified Soil Classification Description
●	**EB-2**	**2.0**	**27**	**76**	**24**	**52**		**FAT CLAY**
⊠	**EB-3**	**3.5**	**31**	**71**	**21**	**50**		**FAT CLAY**

TRC

PLASTICITY CHART AND DATA

Project: LATHROP PARC

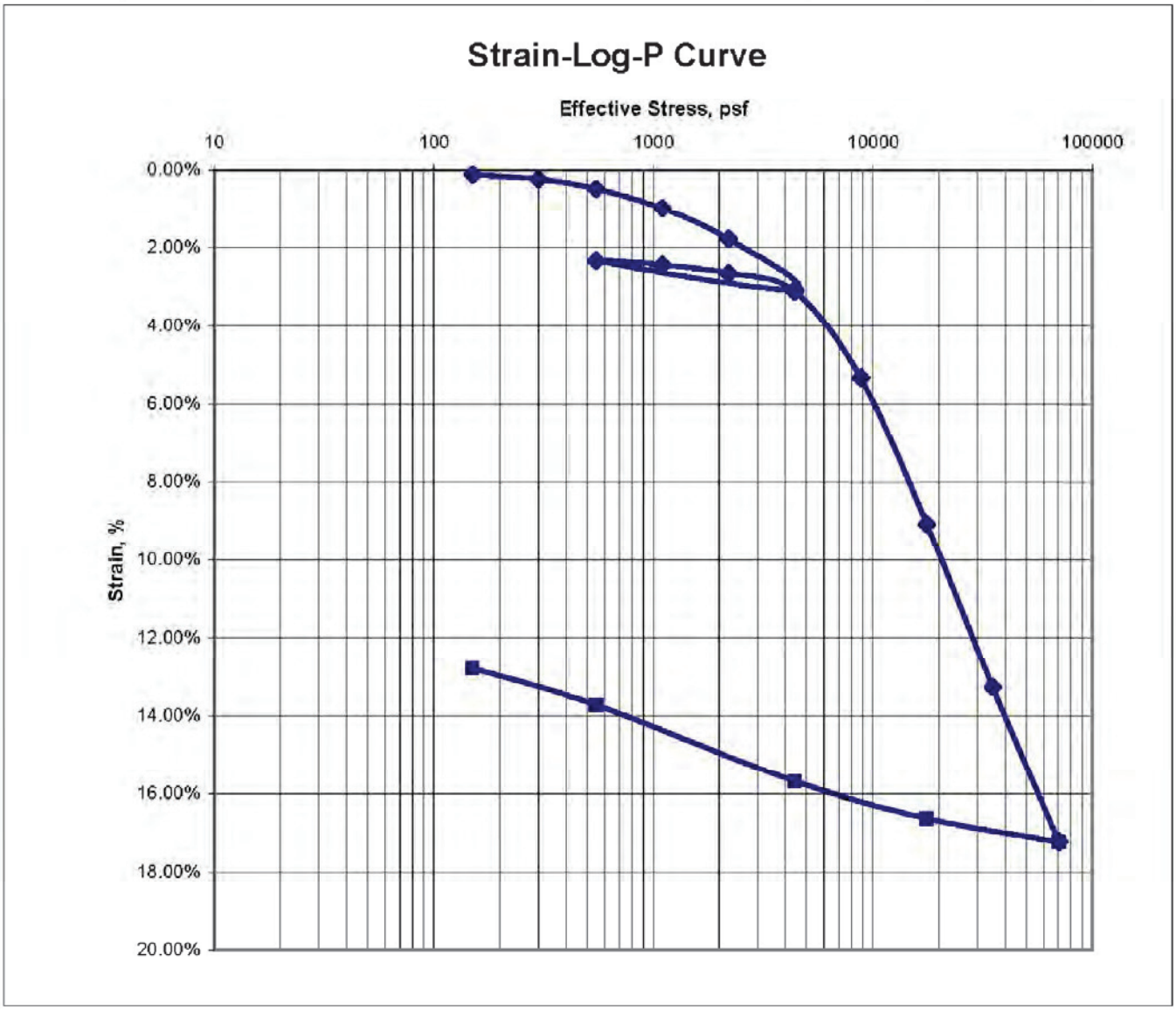
Location: REDWOOD CITY, CA

Project No.: 166215

FIGURE B-1

LA_CORP.GDT 4/29/09 MV* AHT

Job No.:	166215	Boring:	EB-4	Run By:	MD
Client:		Sample:	5A	Reduced:	PJ
Project:	Lathrop PARC	Depth, ft.:	11.0	Checked:	PJ/DC
Soil Type:	Olive Brown Lean CLAY (Silty)			Date:	3/18/2009



Ass. Gs = 2.75	Initial	Final
Moisture %:	24.0	18.6
Dry Density, pcf:	100.0	113.6
Void Ratio:	0.717	0.511
% Saturation:	91.9	100

Remarks:

CONSOLIDATION TEST

LATHROP PARC

Redwood City, California

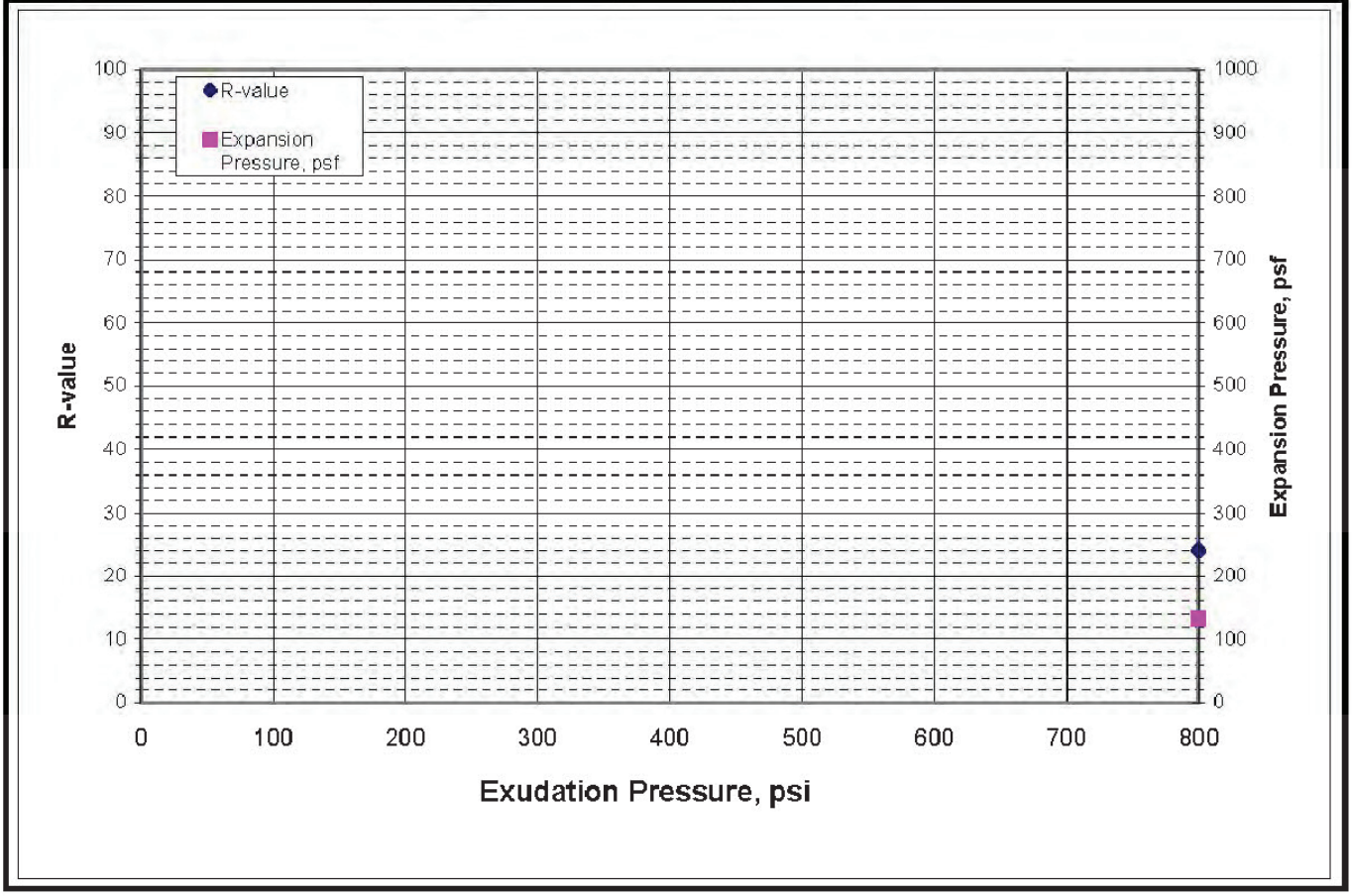
TRC

FIGURE B-2

166215

Job No.:	166215		Date:	03/04/09	Initial Moisture,	12.6%	
Client:			Tested	MD	R-value by Stabilometer	<5	
Project:	134 Maple St		Reduced	RU			
Sample	EB-4;Bulk		Checked	DC	Expansion Pressure	psf	
Soil Type:	Brown Clayey SAND, trace Gravel						

Specimen Number	A	B	C	D	Remarks:
Exudation Pressure, psi	800				Soil extruded from the mold giving a false exudation pressure. Per Caltrans, the R-Value test was terminated and an R-Value of less than 5 was reported.
Prepared Weight, grams	1200				
Final Water Added, grams/cc	60				
Weight of Soil & Mold, grams	3113				
Weight of Mold, grams	2102				
Height After Compaction, in.	2.35				
Moisture Content, %	18.2				
Dry Density, pcf	110.2				
Expansion Pressure, psf	133.3				
Stabilometer @ 1000					
Stabilometer @ 2000	112				
Turns Displacement	2.98				
R-value	24				



R-VALUE TEST

LATHROP PARC

Redwood City, California

TRC

FIGURE B-3

166215

APPENDIX B

LOG OF CPTS

PRESENTATION OF SITE INVESTIGATION RESULTS

1180 Main St

Prepared for:

Langan Engineering

CPT Inc. Job No: 17-56073

Project Start Date: 26-Jul-2017
Project End Date: 26-Jul-2017
Report Date: 27-Jul-2017



Prepared by:

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820 Aladdin Avenue
San Leandro, CA 94577

Tel: (510) 357-3677

Email: cpt@cptinc.com
www.cptinc.com

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Introduction

The enclosed report presents the results of the site investigation program conducted by CPT Inc. for Langan Engineering at 1180 Main St in Redwood City, CA. The program consisted of three cone penetration tests (CPT) performed on July 26, 2017.

Project Information

Project	
Client	Langan Engineering
Project	1180 Main St
CPT Inc. project number	17-56073

A map from Google Earth including the CPT test locations is presented below.



Rig Description	Deployment System	Test Type
CPT truck rig (C15)	30 ton rig cylinder	CPT

Coordinates		
Test Type	Collection Method	EPSG Reference
CPT	Consumer grade GPS	32610

Cone Penetration Test (CPT)	
Depth reference	Depths are referenced to the existing ground surface at the time of each test.
Tip and sleeve data offset	0.1 meter This has been accounted for in the CPT data files.
Additional plots	Standard – expanded range and advanced CPT plots are provided in the data release package.

Cone Penetrometers Used for this Project						
Cone Description	Cone Number	Cross Sectional Area (cm^2)	Sleeve Area (cm^2)	Tip Capacity (bar)	Sleeve Capacity (bar)	Pore Pressure Capacity (psi)
447:T1500F15U500	447	15	225	1500	15	500
Cone AD447 was used for all CPT soundings.						

CPT Calculated Parameters	
Additional information	The Normalized Soil Behavior Type (SBT Q_{tn}) classification chart (Robertson, 2009) was used to classify the soil for this project. A detailed set of calculated CPT parameters have been generated and are provided in Excel format files in the release folder. The CPT parameter calculations are based on values of corrected tip resistance (q_t), sleeve friction (f_s) and pore pressure (u_2). Soils were classified as either drained or undrained based on the Normalized Soil Behavior Type (SBT Q_{tn}) classification chart (Robertson, 2009). Calculations for both drained and undrained parameters were included for materials that classified as silt mixtures (zone 4).

Limitations

This report has been prepared for the exclusive use of Langan Engineering (Client) for the project titled "1180 Main St". The report's contents may not be relied upon by any other party without the express written permission of CPT Inc. CPT Inc. has provided site investigation services, prepared the factual data reporting, and provided geotechnical parameter calculations consistent with current best practices. No other warranty, expressed or implied, is made.

The information presented in the report document and the accompanying data set pertain to the specific project, site conditions and objectives described to CPT Inc. by the Client. In order to properly understand the factual data, assumptions and calculations, reference must be made to the documents provided and their accompanying data sets, in their entirety.

The cone penetration tests (CPTu) are conducted using an integrated electronic piezocone penetrometer and data acquisition system manufactured by Adara Systems Ltd. of Richmond, British Columbia, Canada.

CPT Inc.'s piezocone penetrometers are compression type designs in which the tip and friction sleeve load cells are independent and have separate load capacities. The piezocones use strain gauged load cells for tip and sleeve friction and a strain gauged diaphragm type transducer for recording pore pressure. The piezocones also have a platinum resistive temperature device (RTD) for monitoring the temperature of the sensors, an accelerometer type dual axis inclinometer and a geophone sensor for recording seismic signals. All signals are amplified down hole within the cone body and the analog signals are sent to the surface through a shielded cable.

The penetrometers are manufactured with various tip, friction and pore pressure capacities in both 10 cm^2 and 15 cm^2 tip base area configurations in order to maximize signal resolution for various soil conditions. The specific piezocone used for each test is described in the CPT summary table presented in the first appendix. The 15 cm^2 penetrometers do not require friction reducers as they have a diameter larger than the deployment rods. The 10 cm^2 piezocones use a friction reducer consisting of a rod adapter extension behind the main cone body with an enlarged cross sectional area (typically 44 mm diameter over a length of 32 mm with tapered leading and trailing edges) located at a distance of 585 mm above the cone tip.

The penetrometers are designed with equal end area friction sleeves, a net end area ratio of 0.8 and cone tips with a 60 degree apex angle.

All piezocones can record pore pressure at various locations. Unless otherwise noted, the pore pressure filter is located directly behind the cone tip in the "u_2" position (ASTM Type 2). The filter is 6 mm thick, made of porous plastic (polyethylene) having an average pore size of 125 microns (90-160 microns). The function of the filter is to allow rapid movements of extremely small volumes of water needed to activate the pressure transducer while preventing soil ingress or blockage.

The piezocone penetrometers are manufactured with dimensions, tolerances and sensor characteristics that are in general accordance with the current ASTM D5778 standard. Our calibration criteria also meet or exceed those of the current ASTM D5778 standard. An illustration of the piezocone penetrometer is presented in Figure CPTu.

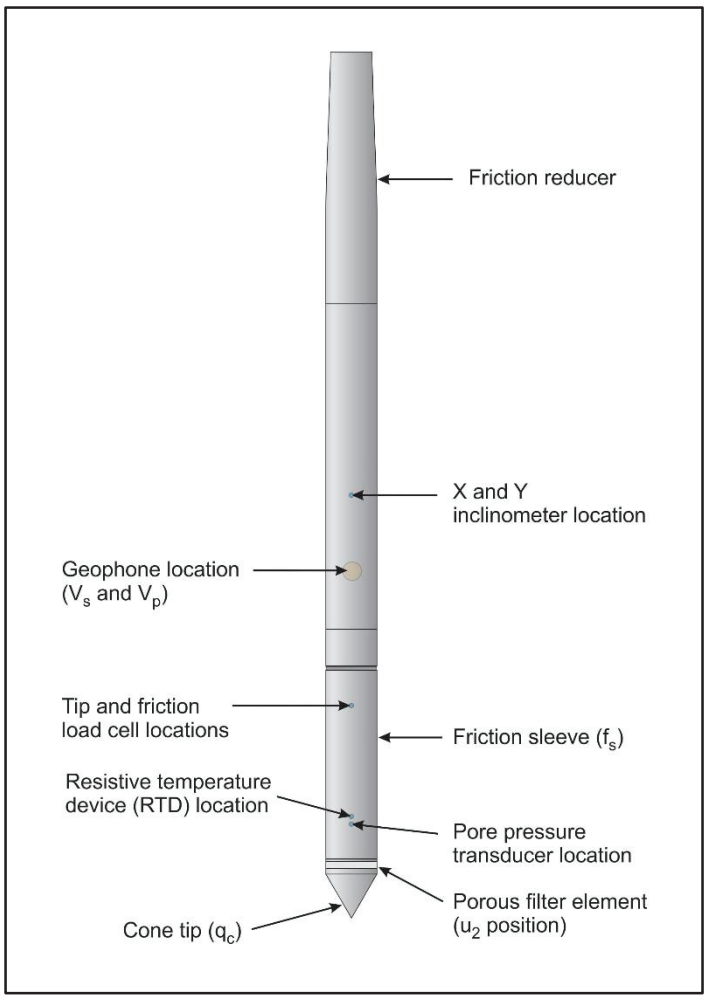


Figure CPTu. Piezocone Penetrometer (15 cm^2)

The data acquisition systems consist of a Windows based computer and a signal conditioner and power supply interface box with a 16 bit (or greater) analog to digital (A/D) converter. The data is recorded at fixed depth increments using a depth wheel attached to the push cylinders or by using a spring loaded rubber depth wheel that is held against the cone rods. The typical recording intervals are either 2.5 cm or 5.0 cm depending on project requirements; custom recording intervals are possible. The system displays the CPTu data in real time and records the following parameters to a storage media during penetration:

- Depth
- Uncorrected tip resistance (q_c)
- Sleeve friction (f_s)
- Dynamic pore pressure (u)
- Additional sensors such as resistivity, passive gamma, ultra violet induced fluorescence, if applicable

All testing is performed in accordance to CPT Inc.'s CPT operating procedures which are in general accordance with the current ASTM D5778 standard.

Prior to the start of a CPTu sounding a suitable cone is selected, the cone and data acquisition system are powered on, the pore pressure system is saturated with either glycerin or silicone oil and the baseline readings are recorded with the cone hanging freely in a vertical position.

The CPTu is conducted at a steady rate of 2 cm/s, within acceptable tolerances. Typically one meter length rods with an outer diameter of 1.5 inches are added to advance the cone to the sounding termination depth. After cone retraction final baselines are recorded.

Additional information pertaining to CPT Inc.'s cone penetration testing procedures:

- Each filter is saturated in silicone oil or glycerin under vacuum pressure prior to use
- Recorded baselines are checked with an independent multi-meter
- Baseline readings are compared to previous readings
- Soundings are terminated at the client's target depth or at a depth where an obstruction is encountered, excessive rod flex occurs, excessive inclination occurs, equipment damage is likely to take place, or a dangerous working environment arises
- Differences between initial and final baselines are calculated to ensure zero load offsets have not occurred and to ensure compliance with ASTM standards

The interpretation of the piezocone data and associated calculated parameters for this report are based on the corrected tip resistance (q_t), sleeve friction (f_s) and pore water pressure (u). The interpretation of soil type is based on the correlations developed by Robertson (1990) and Robertson (2009). It should be noted that it is not always possible to accurately identify a soil type based on these parameters. In these situations, experience, judgment and an assessment of other parameters may be used to infer soil behavior type.

The recorded tip resistance (q_c) is the total force acting on the piezocone tip divided by its base area. The tip resistance is corrected for pore pressure effects and termed corrected tip resistance (q_t) according to the following expression presented in Robertson et al, 1986:

$$q_t = q_c + (1\text{-}a) \bullet u_2$$

where: q_t is the corrected tip resistance
q_c is the recorded tip resistance
u_2 is the recorded dynamic pore pressure behind the tip (u_2 position)
a is the Net Area Ratio for the piezocone (0.8 for CPT Inc. probes)

The sleeve friction (f_s) is the frictional force on the sleeve divided by its surface area. As all CPT Inc. piezocones have equal end area friction sleeves, pore pressure corrections to the sleeve data are not required.

The dynamic pore pressure (u) is a measure of the pore pressures generated during cone penetration. To record equilibrium pore pressure, the penetration must be stopped to allow the dynamic pore pressures to stabilize. The rate at which this occurs is predominantly a function of the permeability of the soil and the diameter of the cone.

The friction ratio (Rf) is a calculated parameter. It is defined as the ratio of sleeve friction to the tip resistance expressed as a percentage. Generally, saturated cohesive soils have low tip resistance, high friction ratios and generate large excess pore water pressures. Cohesionless soils have higher tip resistances, lower friction ratios and do not generate significant excess pore water pressure.

A summary of the CPTu soundings along with test details and individual plots are provided in the appendices. A set of files with calculated geotechnical parameters were generated for each sounding based on published correlations and are provided in Excel format in the data release folder. Information regarding the methods used is also included in the data release folder.

For additional information on CPTu interpretations and calculated geotechnical parameters, refer to Robertson et al. (1986), Lunne et al. (1997), Robertson (2009), Mayne (2013, 2014) and Mayne and Peuchen (2012).

The cone penetration test is halted at specific depths to carry out pore pressure dissipation (PPD) tests, shown in Figure PPD-1. For each dissipation test the cone and rods are decoupled from the rig and the data acquisition system measures and records the variation of the pore pressure (u) with time (t).

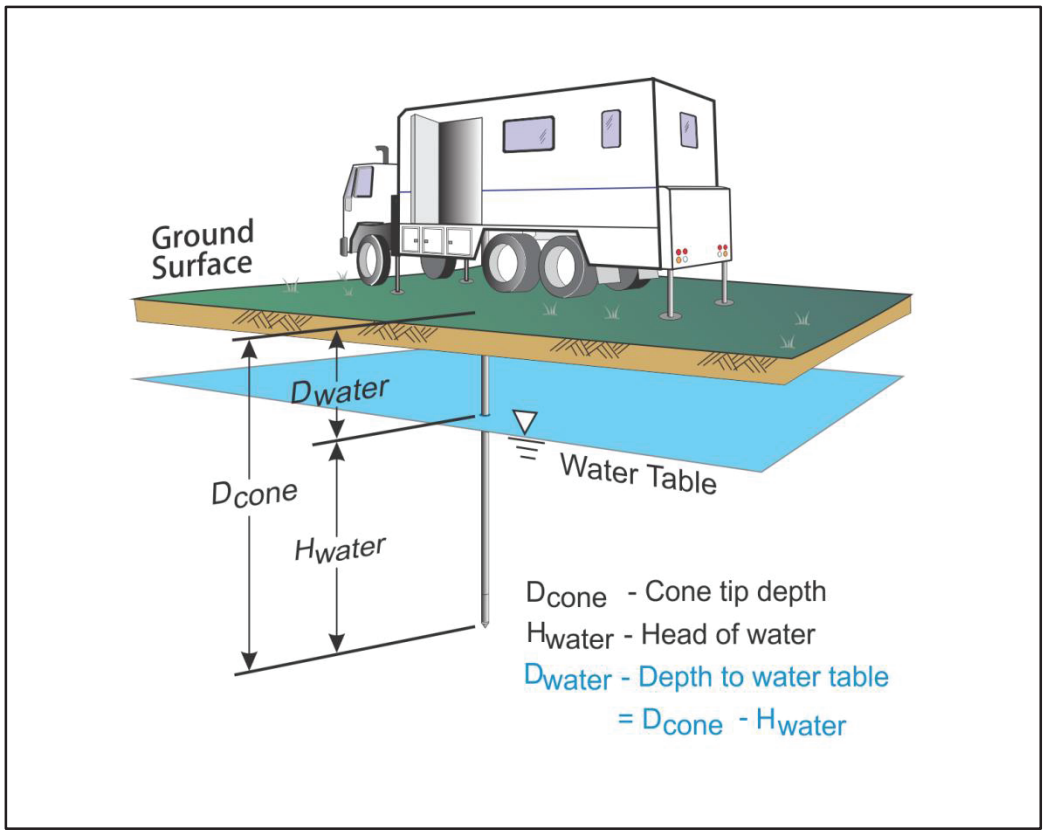


Figure PPD-1. Pore pressure dissipation test setup

Pore pressure dissipation data can be interpreted to provide estimates of ground water conditions, permeability, consolidation characteristics and soil behavior.

The typical shapes of dissipation curves shown in Figure PPD-2 are very useful in assessing soil type, drainage, in situ pore pressure and soil properties. A flat curve that stabilizes quickly is typical of a freely draining sand. Undrained soils such as clays will typically show positive excess pore pressure and have long dissipation times. Dilative soils will often exhibit dynamic pore pressures below equilibrium that then rise over time. Overconsolidated fine-grained soils will often exhibit an initial dilatory response where there is an initial rise in pore pressure before reaching a peak and dissipating.

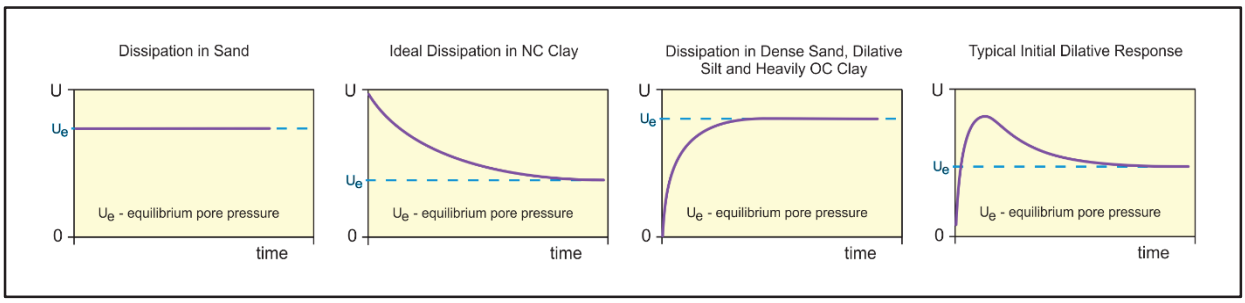


Figure PPD-2. Pore pressure dissipation curve examples

In order to interpret the equilibrium pore pressure (u_{eq}) and the apparent phreatic surface, the pore pressure should be monitored until such time as there is no variation in pore pressure with time as shown for each curve of Figure PPD-2.

In fine grained deposits the point at which 100% of the excess pore pressure has dissipated is known as t_{100}. In some cases this can take an excessive amount of time and it may be impractical to take the dissipation to t_{100}. A theoretical analysis of pore pressure dissipations by Teh and Houlsby (1991) showed that a single curve relating degree of dissipation versus theoretical time factor (T*) may be used to calculate the coefficient of consolidation (c_h) at various degrees of dissipation resulting in the expression for c_h shown below.

$$c_h = \frac{T^* \cdot a^2 \cdot \sqrt{I_r}}{t}$$

Where:

T* is the dimensionless time factor (Table Time Factor)
a is the radius of the cone
I_r is the rigidity index
t is the time at the degree of consolidation

Table Time Factor. T* versus degree of dissipation (Teh and Houlsby, 1991)

Degree of Dissipation (%)	20	30	40	50	60	70	80
T* (u_2)	0.038	0.078	0.142	0.245	0.439	0.804	1.60

The coefficient of consolidation is typically analyzed using the time (t_{50}) corresponding to a degree of dissipation of 50% (u_{50}). In order to determine t_{50}, dissipation tests must be taken to a pressure less than u_{50}. The u_{50} value is half way between the initial maximum pore pressure and the equilibrium pore pressure value, known as u_{100}. To estimate u_{50}, both the initial maximum pore pressure and u_{100} must be known or estimated. Other degrees of dissipations may be considered, particularly for extremely long dissipations.

At any specific degree of dissipation the equilibrium pore pressure (u at t_{100}) must be estimated at the depth of interest. The equilibrium value may be determined from one or more sources such as measuring the value directly (u_{100}), estimating it from other dissipations in the same profile, estimating the phreatic surface and assuming hydrostatic conditions, from nearby soundings, from client provided information, from site observations and/or past experience, or from other site instrumentation.

For calculations of c_h (Teh and Houlsby, 1991), t_{50} values are estimated from the corresponding pore pressure dissipation curve and a rigidity index (I_r) is assumed. For curves having an initial dilatory response in which an initial rise in pore pressure occurs before reaching a peak, the relative time from the peak value is used in determining t_{50}. In cases where the time to peak is excessive, t_{50} values are not calculated.

Due to possible inherent uncertainties in estimating I_r, the equilibrium pore pressure and the effect of an initial dilatory response on calculating t_{50}, other methods should be applied to confirm the results for c_h.

Additional published methods for estimating the coefficient of consolidation from a piezocone test are described in Burns and Mayne (1998, 2002), Jones and Van Zyl (1981), Robertson et al. (1992) and Sully et al. (1999).

A summary of the pore pressure dissipation tests and dissipation plots are presented in the relevant appendix.

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Burns, S.E. and Mayne, P.W., 1998, "Monotonic and dilatory pore pressure decay during piezocone tests", Canadian Geotechnical Journal 26 (4): 1063-1073.

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Mayne, P.W. and Peuchen, J., 2012, "Unit weight trends with cone resistance in soft to firm clays", Geotechnical and Geophysical Site Characterization *4,* Vol. 1 (Proc. ISC-4, Pernambuco), CRC Press, London: 903-910.

Robertson, P.K., 1990, "Soil Classification Using the Cone Penetration Test", Canadian Geotechnical Journal, Volume 27: 151-158.

Robertson, P.K., 2009, "Interpretation of cone penetration tests – a unified approach", Canadian Geotechnical Journal, Volume 46: 1337-1355.

Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.

Robertson, P.K., Sully, J.P., Woeller, D.J., Lunne, T., Powell, J.J.M. and Gillespie, D.G., 1992, "Estimating coefficient of consolidation from piezocone tests", Canadian Geotechnical Journal, 29(4): 551-557.

Sully, J.P., Robertson, P.K., Campanella, R.G. and Woeller, D.J., 1999, "An approach to evaluation of field CPTU dissipation data in overconsolidated fine-grained soils", Canadian Geotechnical Journal, 36(2): 369-381.

Teh, C.I., and Houlsby, G.T., 1991, "An analytical study of the cone penetration test in clay", Geotechnique, 41(1): 17-34.

The appendices listed below are included in the report:

- Cone Penetration Test Summary and Standard Cone Penetration Test Plots
- Standard Cone Penetration Test Plots – Expanded Range
- Advanced Cone Penetration Test Plots with Ic, Su(Nkt) and N1(60)
- Pore Pressure Dissipation Summary and Pore Pressure Dissipation Plots

Cone Penetration Test Summary and Standard Cone Penetration Test Plots

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Job No:	17-56073
Client:	Langan Engineering
Project:	1180 Main St
Start Date:	26-Jul-2017
End Date:	26-Jul-2017

CONE PENETRATION TEST SUMMARY

Sounding ID	File Name	Date	Cone	Assumed Phreatic Surface[1] (ft)	Final Depth (ft)	Northing[2] (m)	Easting (m)	Refer to Notation Number
CPT-01	17-56073_CP01	26-Jul-2017	447:T1500F15U500	10.2	51.837	4148567	568442	
CPT-02	17-56073_CP02	26-Jul-2017	447:T1500F15U500	11.9	52.001	4148598	568464	
CPT-03	17-56073_CP03	26-Jul-2017	447:T1500F15U500	11.9	51.837	4148600	568486	

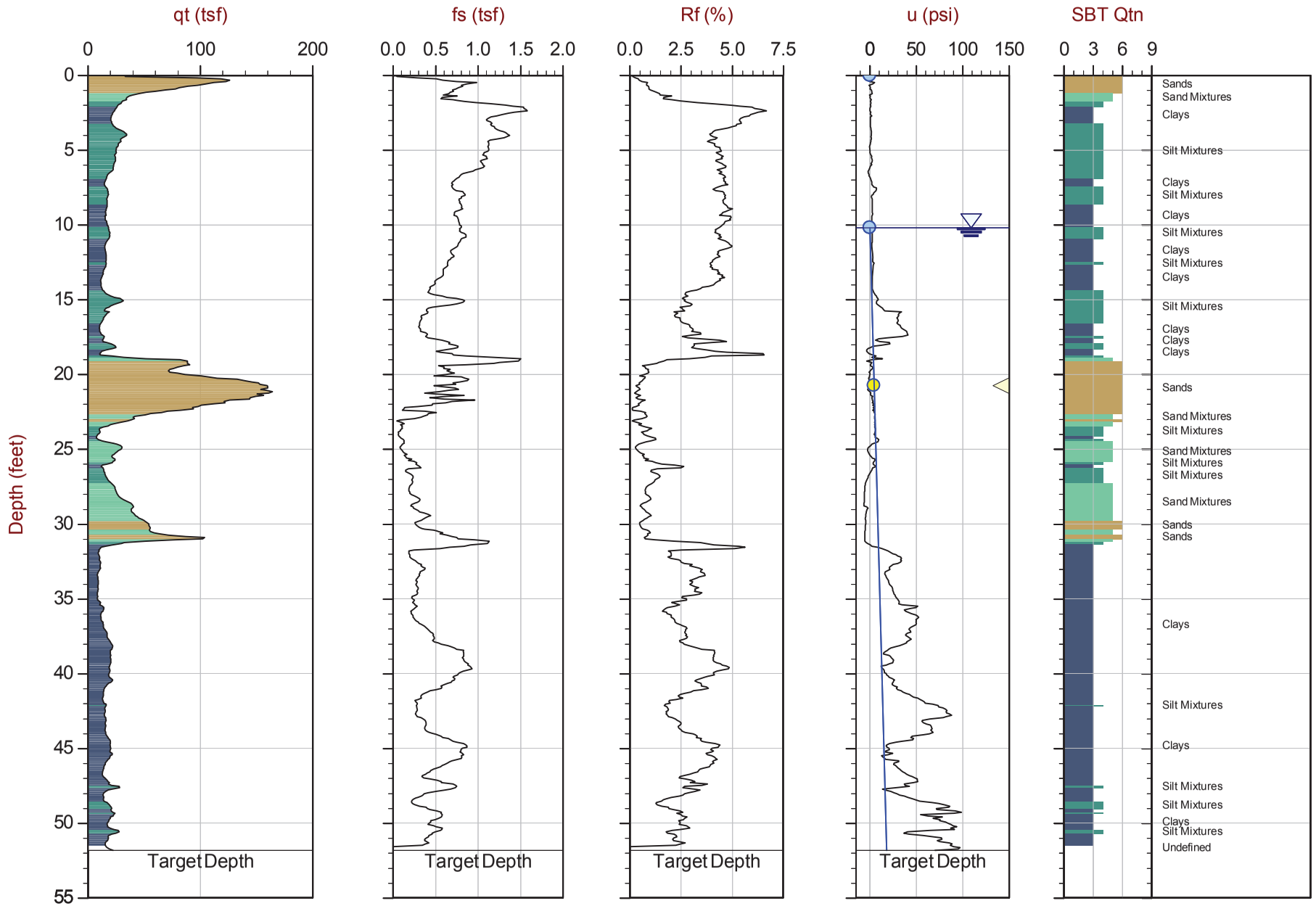
1. Assumed phreatic surface was based on pore pressure dissipation tests. Hydrostatic conditions were assumed for calculated parameters.
2. Coordinates were acquired using consumer grade GPS equipment with datum: WGS 1984 / UTM Zone 10 North.

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Langan Engineering

Job No: 17-56073
Date: 2017-07-26 12:54
Site: 1180 Main St

Sounding: CPT-01
Cone: 447:T1500F15U500



Max Depth: 15.800 m / 51.84 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 17-56073_CP01.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4148567m E: 568442m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) | Assumed Ueq | Dissipation, Ueq achieved | Dissipation, Ueq not achieved | Hydrostatic Line

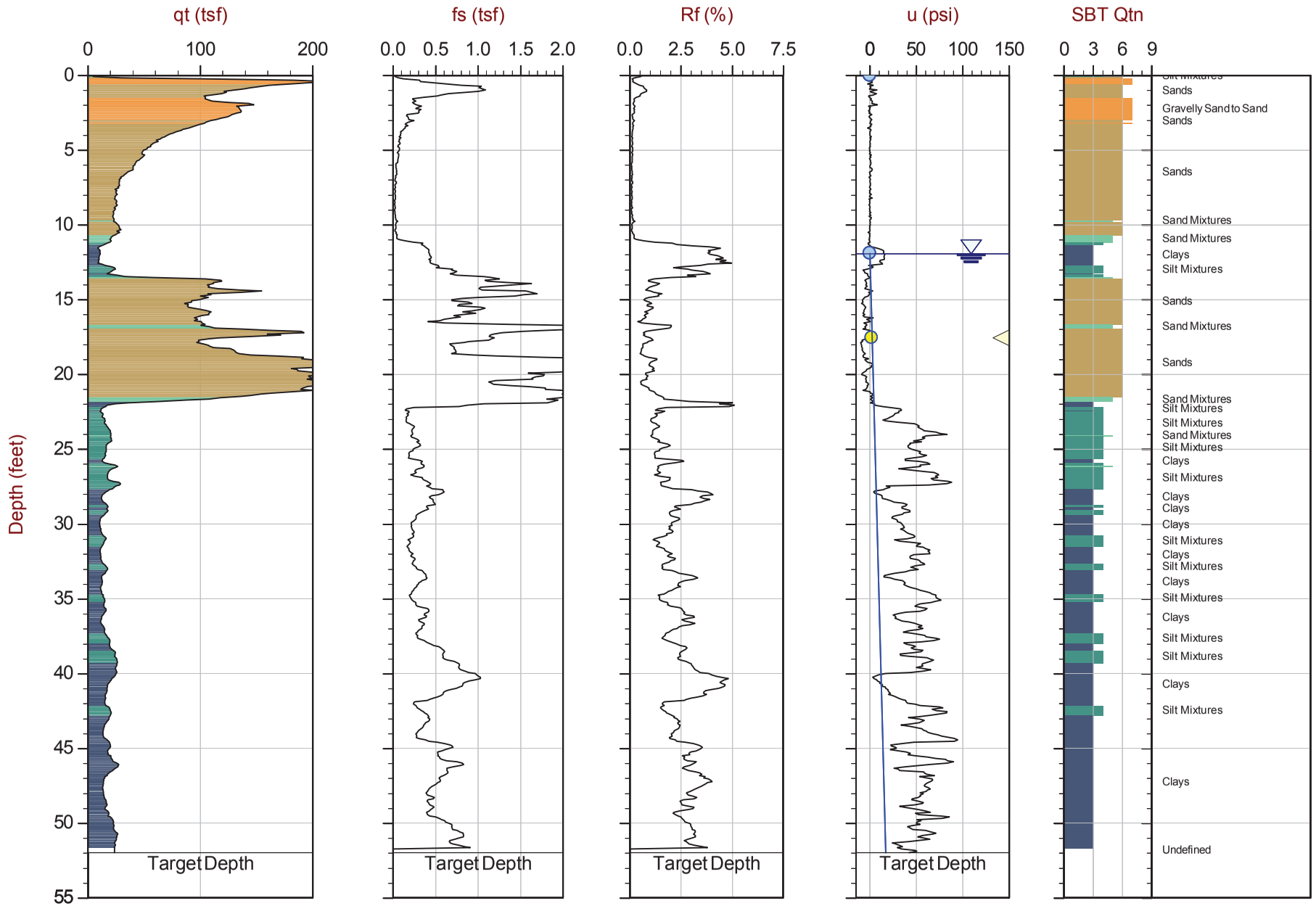
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Langan Engineering

Job No: 17-56073
Date: 2017-07-26 11:34
Site: 1180 Main St

Sounding: CPT-02
Cone: 447:T1500F15U500



Max Depth: 15.850 m / 52.00 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 17-56073_CP02.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4148598m E: 568464m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

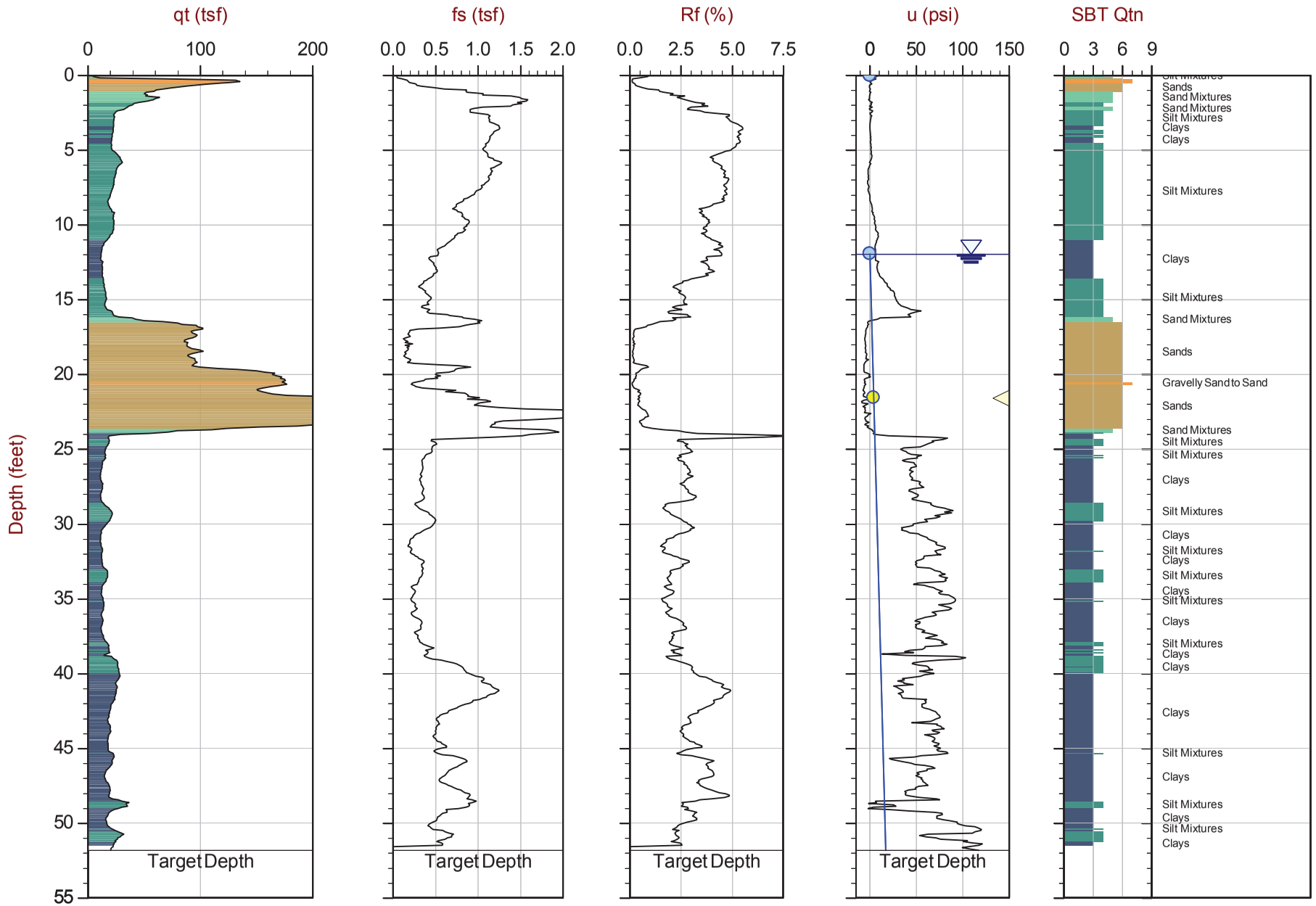
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Langan Engineering

Job No: 17-56073
Date: 2017-07-26 12:12
Site: 1180 Main St

Sounding: CPT-03
Cone: 447:T1500F15U500



Max Depth: 15.800 m / 51.84 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 17-56073_CP03.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N:4148600m E:568486m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) | Assumed Ueq | Dissipation, Ueq achieved | Dissipation, Ueq not achieved | Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

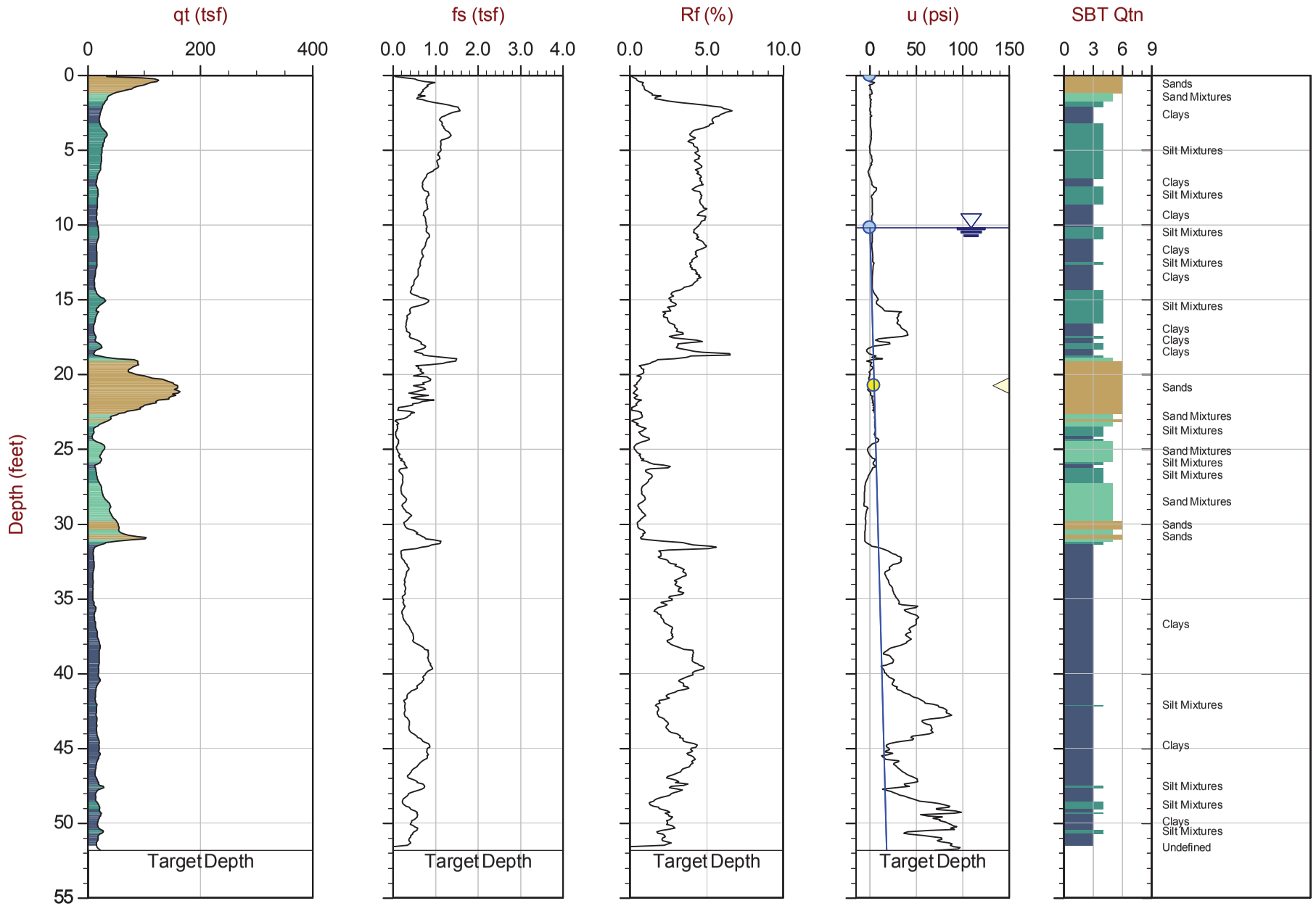
Standard Cone Penetration Test Plots – Expanded Range

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Langan Engineering

Job No: 17-56073
Date: 2017-07-26 12:54
Site: 1180 Main St

Sounding: CPT-01
Cone: 447:T1500F15U500



Max Depth: 15.800 m / 51.84 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 17-56073_CP01.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4148567m E: 568442m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) | Assumed Ueq | Dissipation, Ueq achieved | Dissipation, Ueq not achieved | Hydrostatic Line

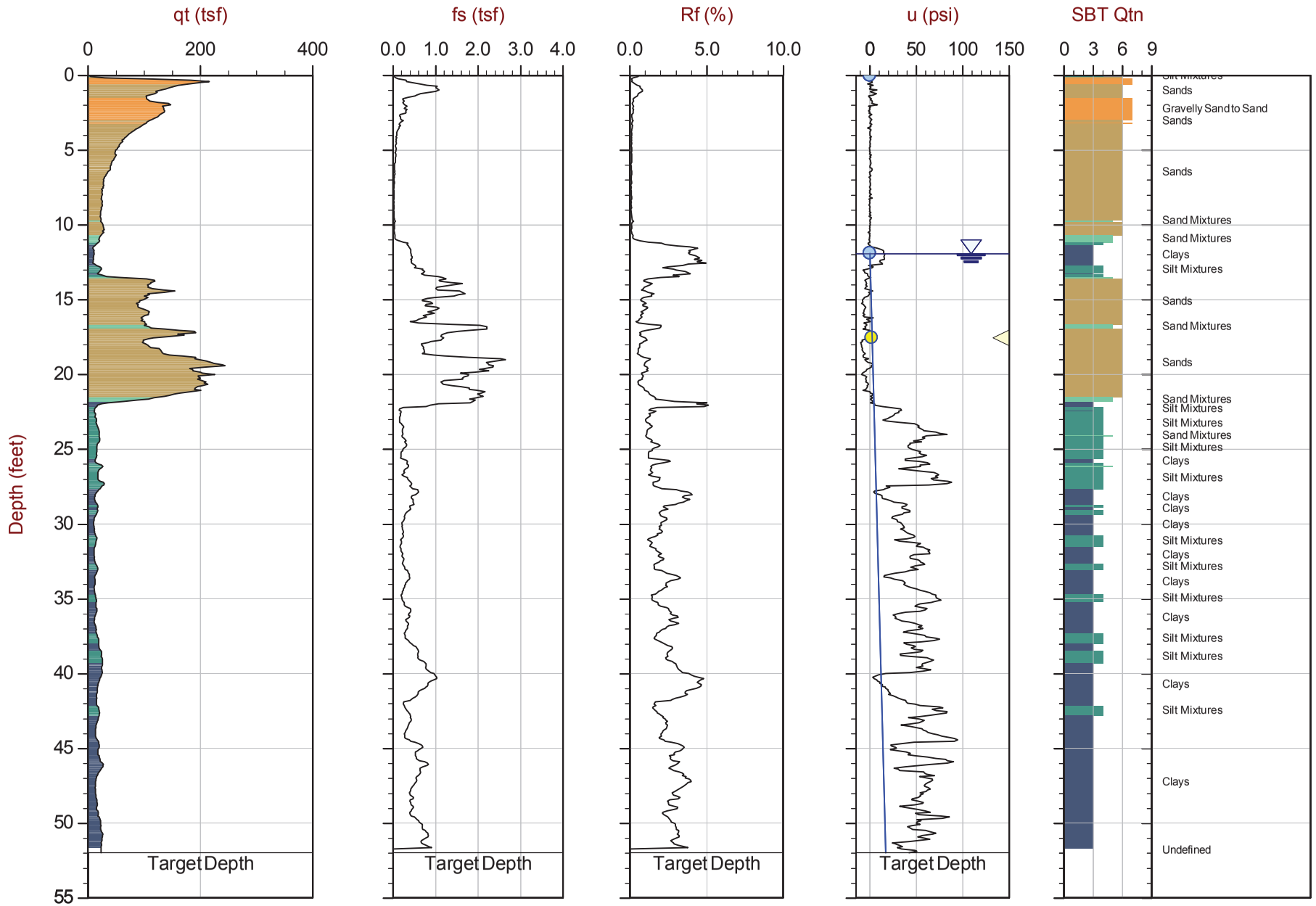
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Langan Engineering

Job No: 17-56073
Date: 2017-07-26 11:34
Site: 1180 Main St

Sounding: CPT-02
Cone: 447:T1500F15U500



Max Depth: 15.850 m / 52.00 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 17-56073_CP02.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4148598m E: 568464m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

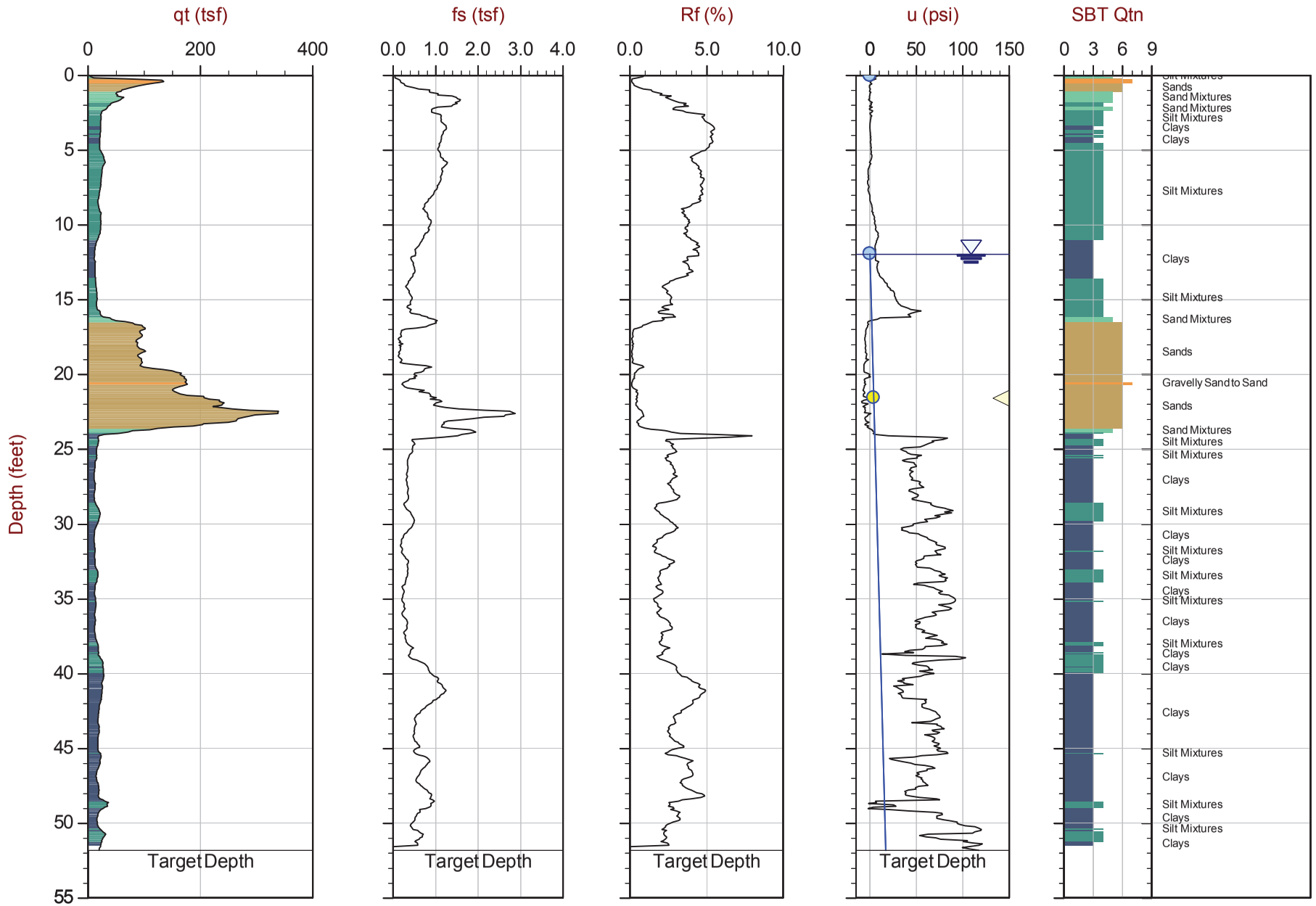
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Langan Engineering

Job No: 17-56073
Date: 2017-07-26 12:12
Site: 1180 Main St

Sounding: CPT-03
Cone: 447:T1500F15U500



Max Depth: 15.800 m / 51.84 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 17-56073_CP03.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N:4148600m E:568486m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) | Assumed Ueq | Dissipation, Ueq achieved | Dissipation, Ueq not achieved | Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

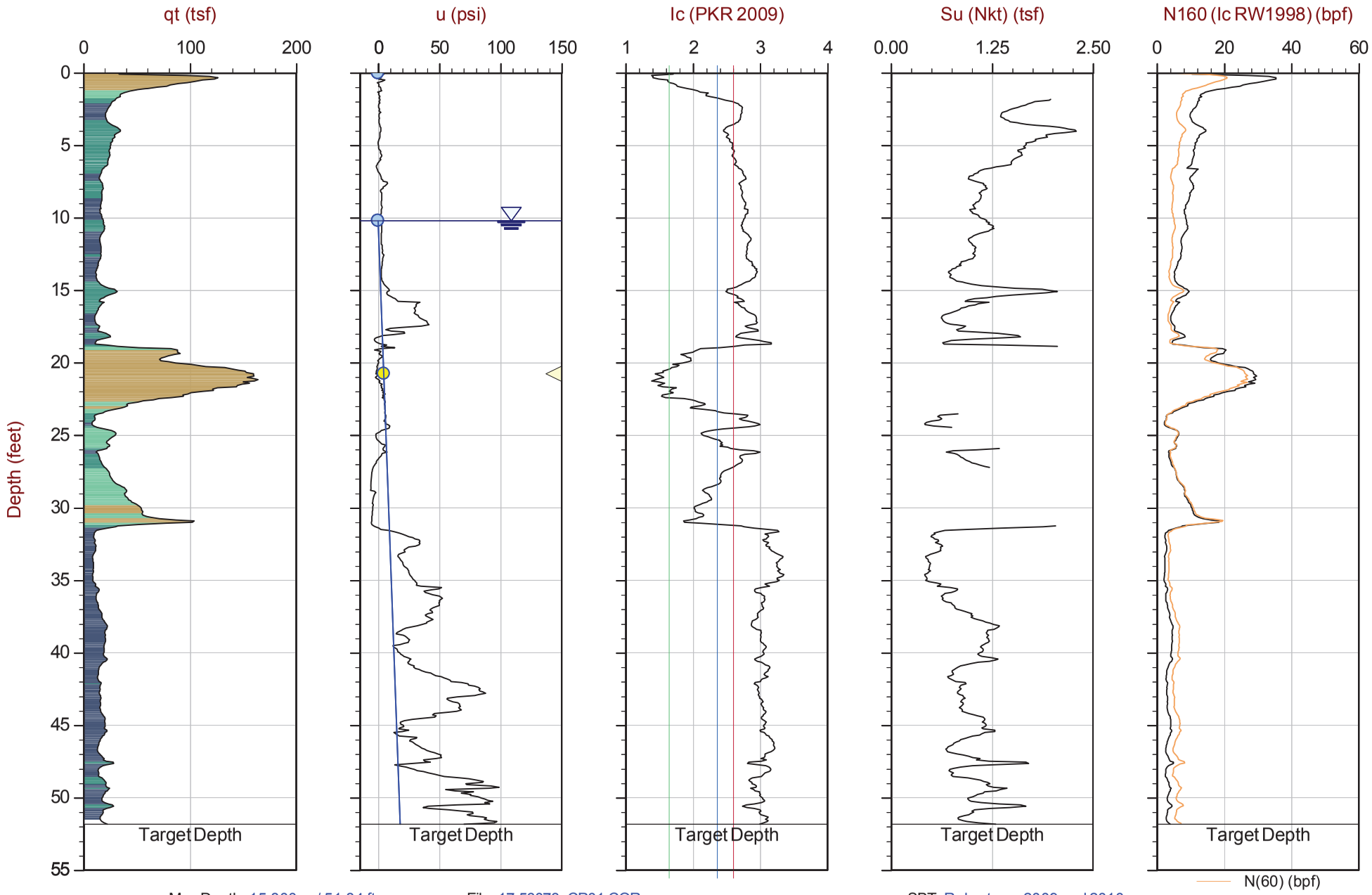
Advanced Cone Penetration Test Plots with Ic, Su(Nkt) and N1(60)

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Langan Engineering

Job No: 17-56073
Date: 2017-07-26 12:54
Site: 1180 Main St

Sounding: CPT-01
Cone: 447:T1500F15U500



Max Depth: 15.800 m / 51.84 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 17-56073_CP01.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4148567m E: 568442m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

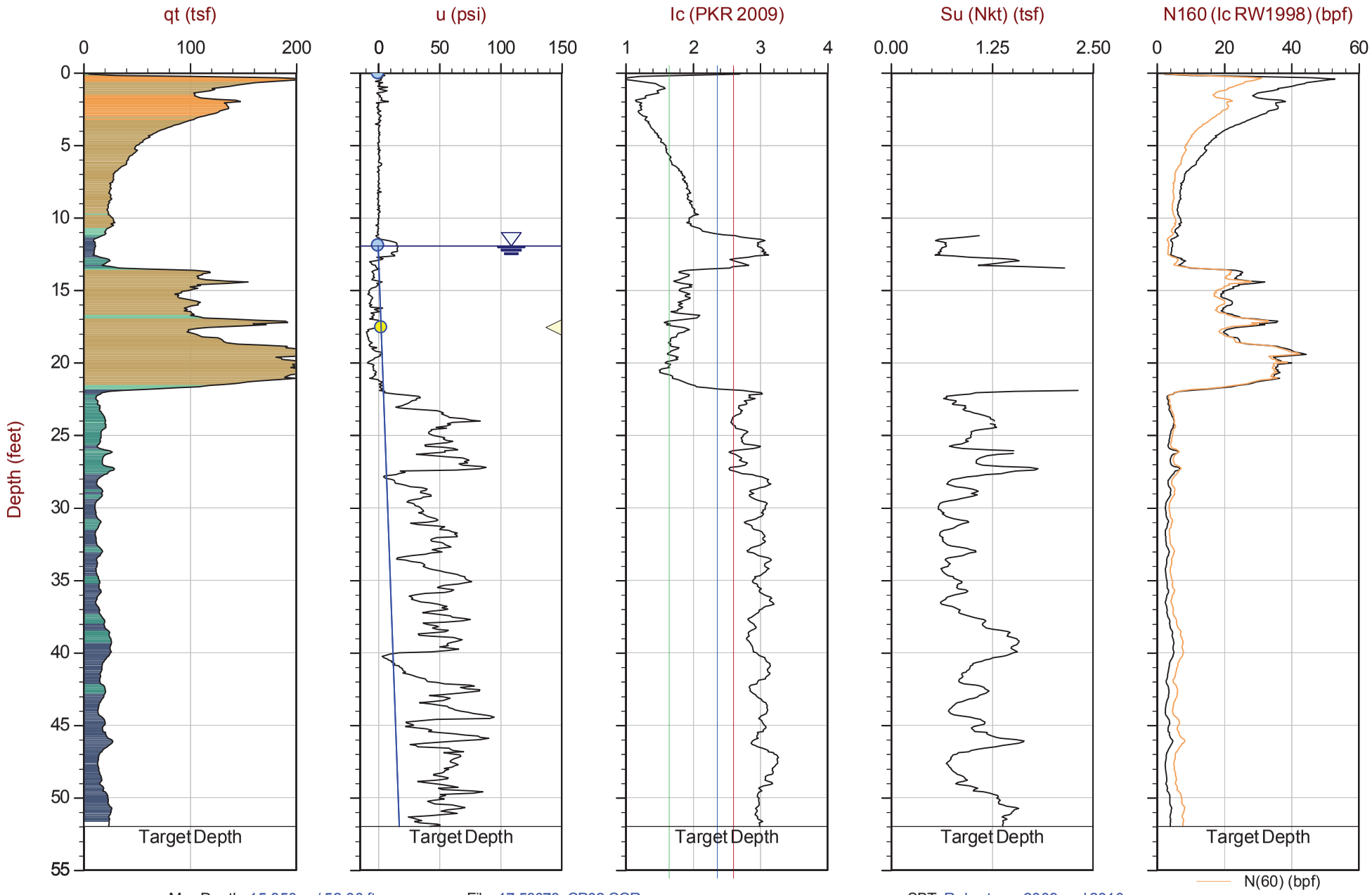
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Langan Engineering

Job No: 17-56073
Date: 2017-07-26 11:34
Site: 1180 Main St

Sounding: CPT-02
Cone: 447:T1500F15U500



Max Depth: 15.850 m / 52.00 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 17-56073_CP02.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4148598m E: 568464m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) | Assumed Ueq | Dissipation, Ueq achieved | Dissipation, Ueq not achieved | Hydrostatic Line

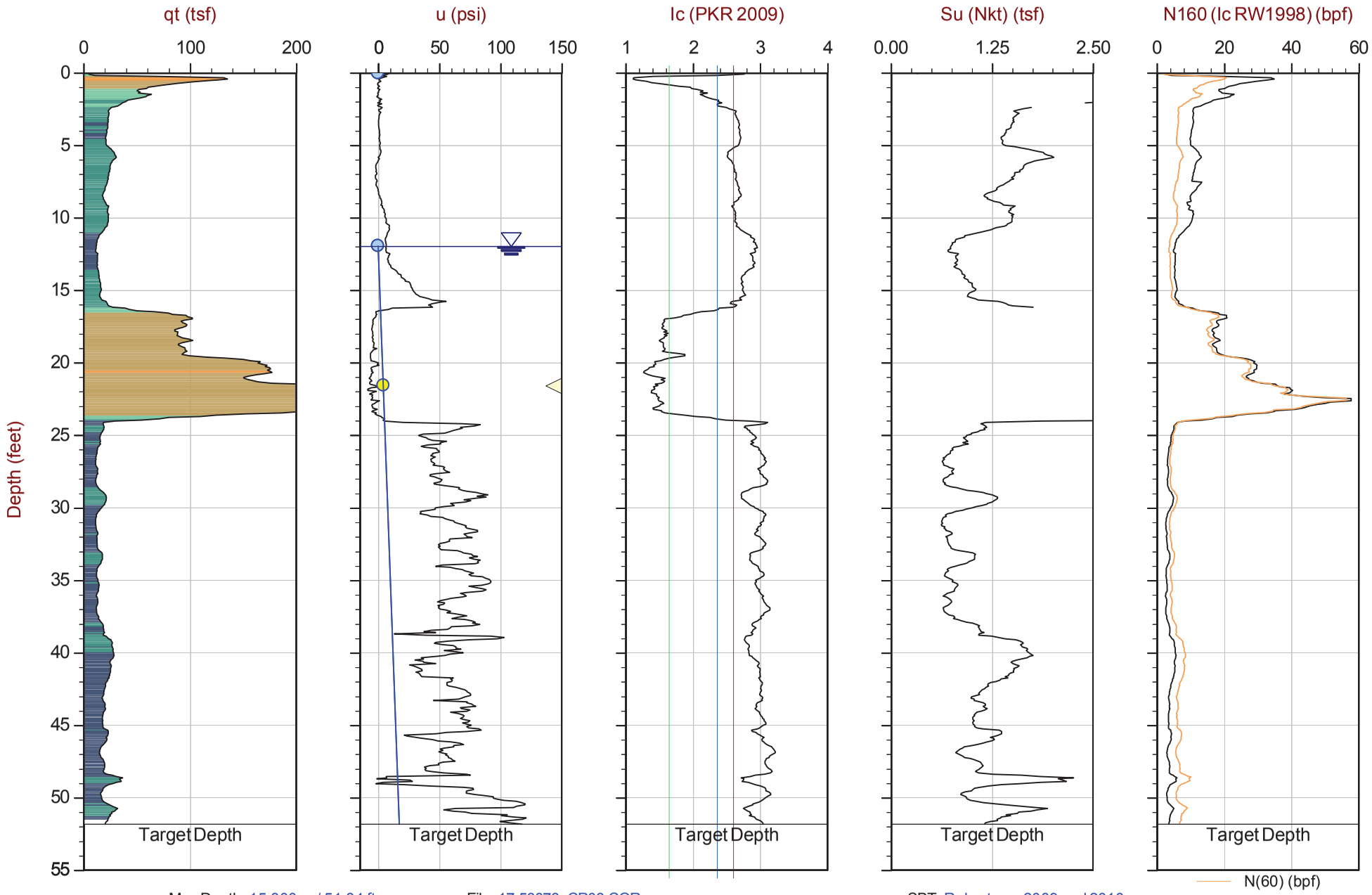
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Langan Engineering

Job No: 17-56073
Date: 2017-07-26 12:12
Site: 1180 Main St

Sounding: CPT-03
Cone: 447:T1500F15U500



Max Depth: 15.800 m / 51.84 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 17-56073_CP03.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10N N: 4148600m E: 568486m
Sheet No: 1 of 1

Equilibrium Pore Pressure (Ueq) Assumed Ueq Dissipation, Ueq achieved Dissipation, Ueq not achieved Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Pore Pressure Dissipation Summary and Pore Pressure Dissipation Plots

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Job No:	17-56073
Client:	Langan Engineering
Project:	1180 Main St
Start Date:	26-Jul-2017
End Date:	26-Jul-2017

CPTu PORE PRESSURE DISSIPATION SUMMARY

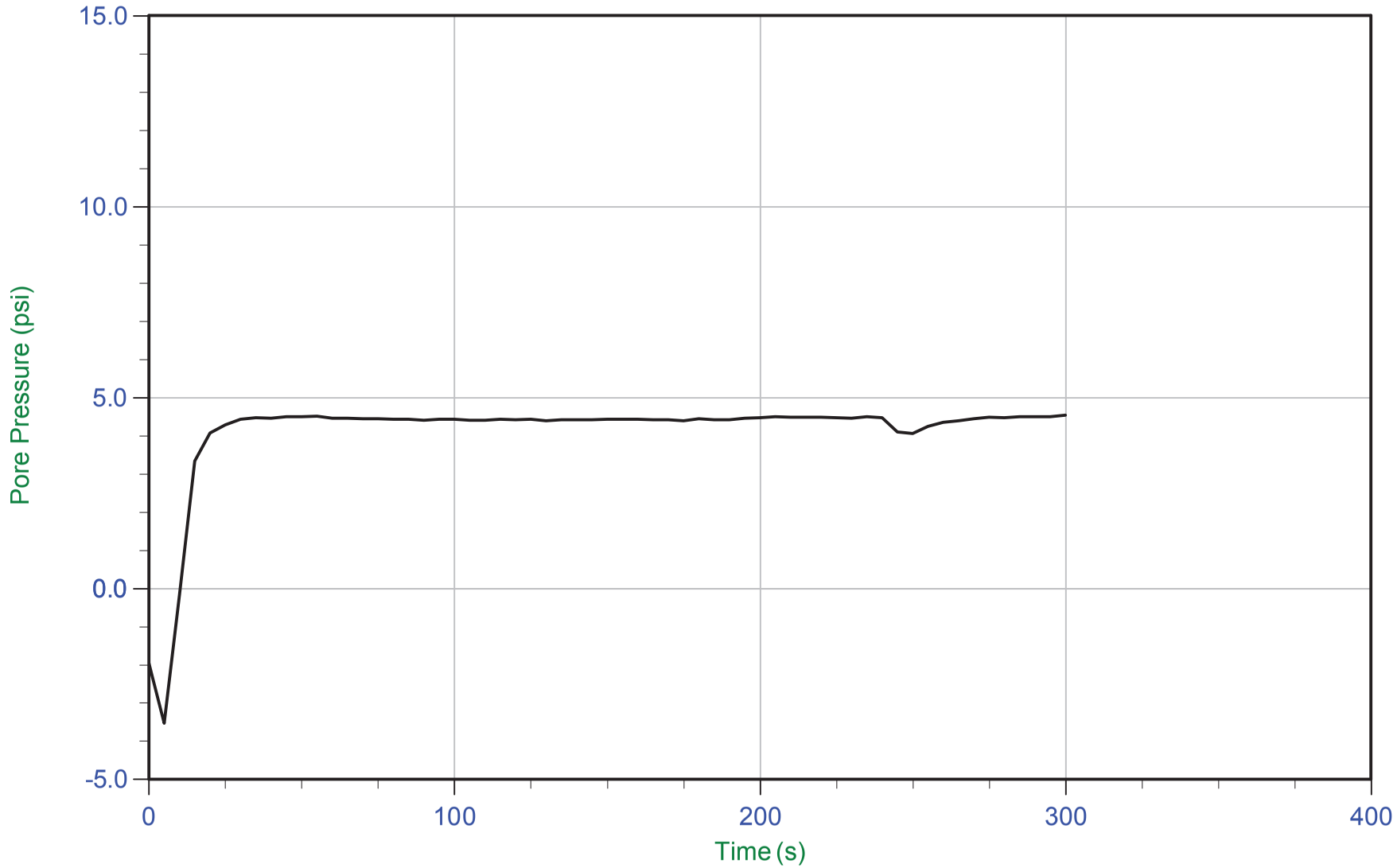
Sounding ID	File Name	Cone Area (cm^2)	Duration (s)	Test Depth (ft)	Estimated Equilibrium Pore Pressure U_{eq} (psi)	Calculated Phreatic Surface (ft)
CPT-01	17-56073_CP01	15	300	20.8	4.6	10.2
CPT-02	17-56073_CP02	15	300	17.6	2.4	11.9
CPT-03	17-56073_CP03	15	300	21.6	4.2	11.9

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Langan Engineering

Job No: 16-56073
Date: 07/26/2017 12:54
Site: 1180 Main St

Sounding: CPT-01
Cone: 447:T1500F15U500 Area=15 cm²



Trace Summary:

Filename: 17-56073_CP01.PPF
Depth: 6.325 m / 20.751 ft
Duration: 300.0 s

U Min: -3.5 psi
U Max: 4.5 psi

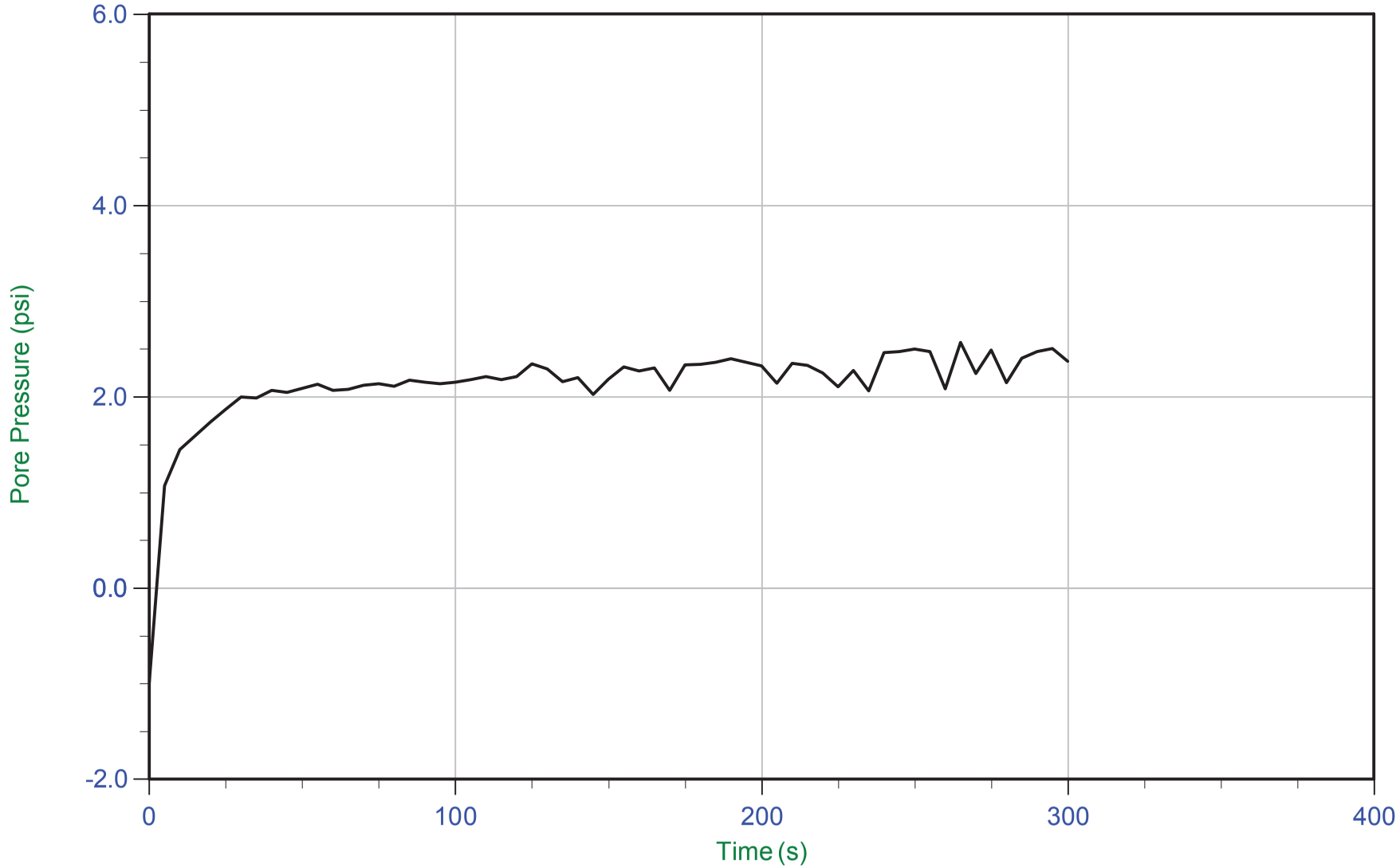
WT: 3.108 m / 10.197 ft
Ueq: 4.6 psi

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Langan Engineering

Job No: 16-56073
Date: 07/26/2017 11:34
Site: 1180 Main St

Sounding: CPT-02
Cone: 447:T1500F15U500 Area=15 cm²



Trace Summary:

Filename: 17-56073_CP02.PPF
Depth: 5.350 m / 17.552 ft
Duration: 300.0 s

U Min: -1.0 psi
U Max: 2.6 psi

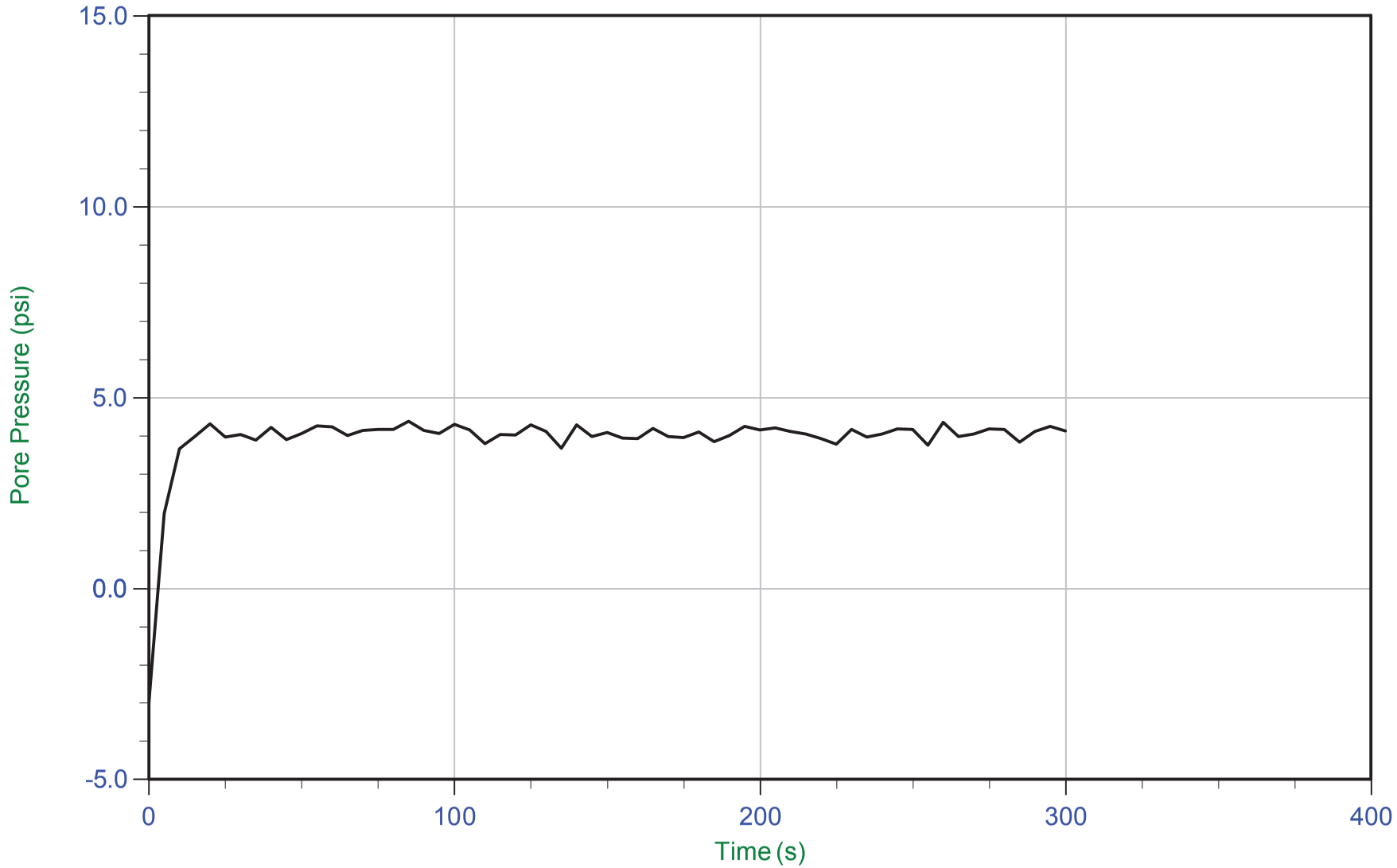
WT: 3.631 m / 11.913 ft
Ueq: 2.4 psi

CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

Langan Engineering

Job No: 16-56073
Date: 07/26/2017 12:12
Site: 1180 Main St

Sounding: CPT-03
Cone: 447:T1500F15U500 Area=15 cm²



Trace Summary:

Filename: 17-56073_CP03.PPF
Depth: 6.575 m / 21.571 ft
Duration: 300.0 s

U Min: -3.0 psi
U Max: 4.4 psi

WT: 3.642 m / 11.949 ft
Ueq: 4.2 psi

APPENDIX C

LOG OF BORINGS

PROJECT: **1180 MAIN STREET**
Redwood City, California

Log of Boring B-1

Boring location: See Site Plan, Figure 2 | Logged by: O. James

Date started: 2/8/18 | Date finished: 2/8/18

Drilling method: Rotary Wash

Hammer weight/drop: 140 lbs./30 inches | Hammer type: Automatic Trip

Samplers: Sprague & Henwood (S&H), Standard Penetration Test (SPT), Shelby Tube (ST)

LABORATORY TEST DATA

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
						Ground Surface Elevation: 16.0 feet[2]						
1–4	S&H		9 12 12	17	SP-SC	SAND with CLAY (SP-SC) olive-gray with light gray and dark brown mottling, medium dense, moist, fine- to coarse-grained FILL						
5–7	S&H		6 11 17	20	CL	CLAY (CL) olive-gray with yellow-brown mottling, very stiff, moist, trace fine-grained sand	PP		3,000			
8–9	S&H		3 7 10	12		stiff	PP		2,500		33.1	88
10–11	S&H		4 9 8	12			PP		2,250			
12–14												
15–16	ST			175 - 300 psi	CL	SANDY CLAY (CL) yellow-brown, soft, wet, fine-grained sand, trace silt Consolidation Test, see Figure D-1 Triaxial Test, see Figure D-3	TXUU	1,300	430		24.2 23.8	98 104
17–18	SPT		2 5 11	19	SC	CLAYEY SAND (SC) gray with yellow-brown mottling, wet, fine-grained, trace silt LL = 36, PI = 19, see Figure D-5						
19					CL	SANDY CLAY (CL) olive-gray with yellow-brown mottling, very stiff, wet, fine-grained, with silt				51.4	23.2	
20–21	S&H		5 15 16	22	SC-SM	CLAYEY SILTY SAND (SC-SM) gray-brown, medium dense, wet, fine-grained, trace silt LL = 26, PI = 5, see Figure D-5				19.7	20.5	
22–23	SPT		2 8 19	32	SP-SM	SAND with SILT (SP-SM) gray-brown, dense, wet, fine to coarse-grained						
24–26	SPT		10 5 4	11	SP-SC	SAND with CLAY and GRAVEL (SP-SC) gray-brown, medium dense, wet, fine- to coarse-grained, fine subangular gravel						
27–30												

LANGAN

Project No.: 770643401 | Figure: C-1a

TEST GEOTECH LOG 770643401 1180 MAIN ST.GPJ TR.GDT 3/27/18

PROJECT: **1180 MAIN STREET**
Redwood City, California

Log of Boring B-1

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
31	SPT		17 17 22	47	SP-SC	SAND with CLAY and GRAVEL (SP-SC) (continued) dense, trace coarse subangular gravel, increased clay content						
32												
33												
34					SC	CLAYEY SAND (SC) gray, medium dense, wet, fine- to medium-grained, trace silt LL = 24, PI = 8, see Figure D-5						
35			10									
36	SPT		11 11	26						19.4	14.2	
37			4		SM	SILTY SAND (SM) yellow-brown, dense, wet, fine-grained, with clay						
38	S&H		2 2	3		No recovery, slough present in hole; blow count not representative						
39												
40			11		CL	CLAY (CL) yellow-brown with orange-brown mottling, very stiff, wet, trace fine-grained sand						
41	S&H		12 20	22			PP		2,750			
42												
43												
44												
45												
46												
47												
48												
49												
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												

Boring terminated at a depth of 41.5 feet below ground surface.
Boring backfilled with cement grout.
Groundwater obscured by drilling method.
PP = pocket pentrometer.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.7 and 1.2, respectively to account for sampler type and hammer energy.
[2] Elevations based on Redwood City Datum.

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Project No.: 770643401
Figure: C-1b

TEST GEOTECH LOG 770643401 1180 MAIN ST.GPJ TR.GDT 3/27/18

PROJECT: **1180 MAIN STREET**
Redwood City, California

Log of Boring B-2

Boring location: See Site Plan, Figure 2 | Logged by: O. James

Date started: 2/8/18 | Date finished: 2/8/18

Drilling method: Rotary Wash

Hammer weight/drop: 140 lbs./30 inches | Hammer type: Automatic Trip

Samplers: Sprague & Henwood (S&H), Standard Penetration Test (SPT), Shelby Tube (ST)

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION (Ground Surface Elevation: 16.3 feet[2])	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
1						CLAY (CL) dark gray, moist, trace organics						
2	S&H		5 8 11	13	CL	stiff FILL	PP		2,250		32.3	87
3												
4												
5						CLAY (CL) stiff to very stiff yellow-brown, trace fine-grained sand						
6	S&H		5 10 12	15			PP		3,250			
7												
8	S&H		3 3 6	6		olive-brown with dark gray mottling, medium stiff	PP		1,250			
9												
10												
11	S&H		5 6 12	13		olive-gray, stiff, reduced sand content	PP		2,250			
12												
13												
14												
15												
16	ST			155 - 375 psi	SM	SILTY SAND (SM) gray-brown, wet, fine-grained						
17												
18					SP	SAND with GRAVEL (SP) gray-brown, wet, fine to coarse-grained, fine subangular gravel, trace silt						
19												
20												
21	SPT		2 1 1	2	SM	SILTY SAND (SM) gray-brown, very loose, wet, fine-grained, with clay, trace fine subangular gravel, non-plastic				33.2	24.3	
22												
23	S&H		2 1 2	2	SC	CLAYEY SAND (SC) gray, very loose, wet, fine-grained, with silt, trace organics				33.0	39.6	82
24												
25						SAND with CLAY and GRAVEL (SP-SC) gray-brown and yellow-brown, dense, wet, fine to coarse-grained, fine subangular gravel						
26	SPT		9 17 18	42	SP-SC							
27												
28												
29												
30					CL	CLAY (CL) (see following page for description)						

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Project No.: 770643401 | Figure: C-2a

TEST GEOTECH LOG 770643401 1180 MAIN ST.GPJ TR.GDT 3/27/18

PROJECT: **1180 MAIN STREET**
Redwood City, California

Log of Boring B-2

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
31	S&H		7 5 6	8		CLAY (CL), (continued) yellow-brown with orange-brown mottling, medium stiff to stiff, wet, trace fine-grained sand, trace coarse subangular gravel with maximum dimension of 2 inches	PP		1,000			
32												
33												
34												
35						trace fine sand, decreased gravel content					31.8	89
36	ST			175 - 225 psi	CL	Consolidation Test, see Figure D-2 Triaxial Test, see Figure D-4	TXUU	2,500	1,020		29.4	93
37												
38												
39												
40			8			olive-gray with orange-brown mottling, very stiff, wet, trace fine-grained sand						
41	S&H		11 12	16			PP		2,250		33.3	88
42												
43												
44												
45												
46												
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59												
60												

Boring terminated at a depth of 41.5 feet below ground surface.
Boring backfilled with cement grout.
Groundwater obscured by drilling method.
PP = pocket pentrometer.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.7 and 1.2, respectively to account for sampler type and hammer energy.
[2] Elevations based on Redwood City Datum.

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Project No.: 770643401
Figure: C-2b

TEST GEOTECH LOG 770643401 1180 MAIN ST.GPJ TR.GDT 3/27/18

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions		Symbols	Typical Names
Coarse-Grained Soils (more than half of soil > no. 200 sieve size)	Gravels (More than half of coarse fraction > no. 4 sieve size)	GW	Well-graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	Sands (More than half of coarse fraction < no. 4 sieve size)	SW	Well-graded sands or gravelly sands, little or no fines
		SP	Poorly-graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
Fine -Grained Soils (more than half of soil < no. 200 sieve size)	Silts and Clays LL = < 50	ML	Inorganic silts and clayey silts of low plasticity, sandy silts, gravelly silts
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
		OL	Organic silts and organic silt-clays of low plasticity
	Silts and Clays LL = > 50	MH	Inorganic silts of high plasticity
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic silts and clays of high plasticity
Highly Organic Soils		PT	Peat and other highly organic soils

GRAIN SIZE CHART

Classification	Range of Grain Sizes	
	U.S. Standard Sieve Size	Grain Size in Millimeters
Boulders	Above 12"	Above 305
Cobbles	12" to 3"	305 to 76.2
Gravel	3" to No. 4	76.2 to 4.76
coarse	3" to 3/4"	76.2 to 19.1
fine	3/4" to No. 4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.075
coarse	No. 4 to No. 10	4.76 to 2.00
medium	No. 10 to No. 40	2.00 to 0.420
fine	No. 40 to No. 200	0.420 to 0.075
Silt and Clay	Below No. 200	Below 0.075

Unstabilized groundwater level

Stabilized groundwater level

SAMPLE DESIGNATIONS/SYMBOLS

Sample taken with Sprague & Henwood split-barrel sampler with a 3.0-inch outside diameter and a 2.43-inch inside diameter. Darkened area indicates soil recovered

Classification sample taken with Standard Penetration Test sampler

Undisturbed sample taken with thin-walled tube

Disturbed sample

Sampling attempted with no recovery

Core sample

Analytical laboratory sample

Sample taken with Direct Push or Drive sampler

SAMPLER TYPE

C Core barrel

CA California split-barrel sampler with 2.5-inch outside diameter and a 1.93-inch inside diameter

D&M Dames & Moore piston sampler using 2.5-inch outside diameter, thin-walled tube

O Osterberg piston sampler using 3.0-inch outside diameter, thin-walled Shelby tube

PT Pitcher tube sampler using 3.0-inch outside diameter, thin-walled Shelby tube

S&H Sprague & Henwood split-barrel sampler with a 3.0-inch outside diameter and a 2.43-inch inside diameter

SPT Standard Penetration Test (SPT) split-barrel sampler with a 2.0-inch outside diameter and a 1.5-inch inside diameter

ST Shelby Tube (3.0-inch outside diameter, thin-walled tube) advanced with hydraulic pressure

1180 MAIN STREET
Redwood City, California

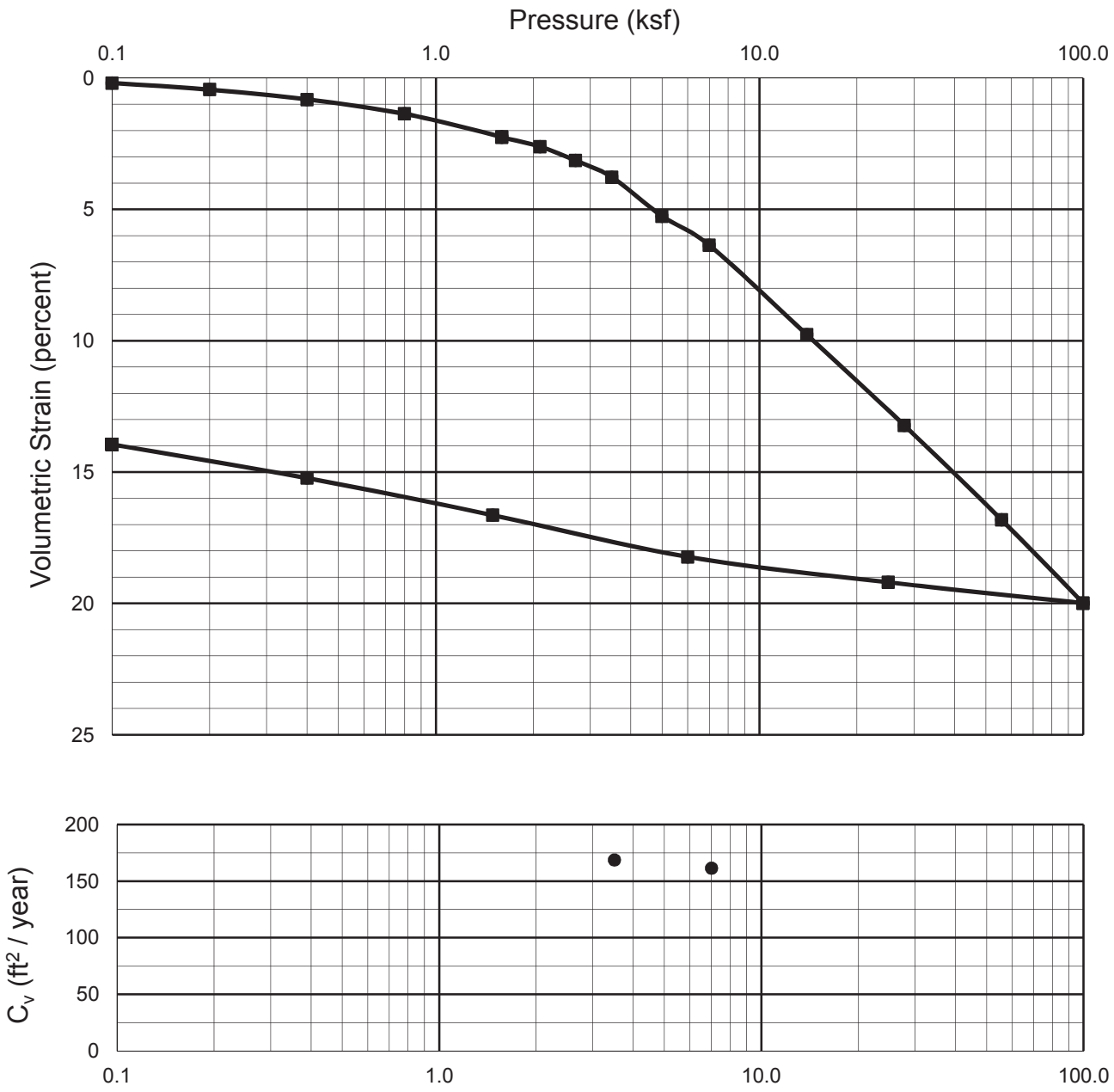
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CLASSIFICATION CHART

Date 03/27/18 | Project No. 770643401 | Figure C-3

APPENDIX D

LABORATORY TEST RESULTS



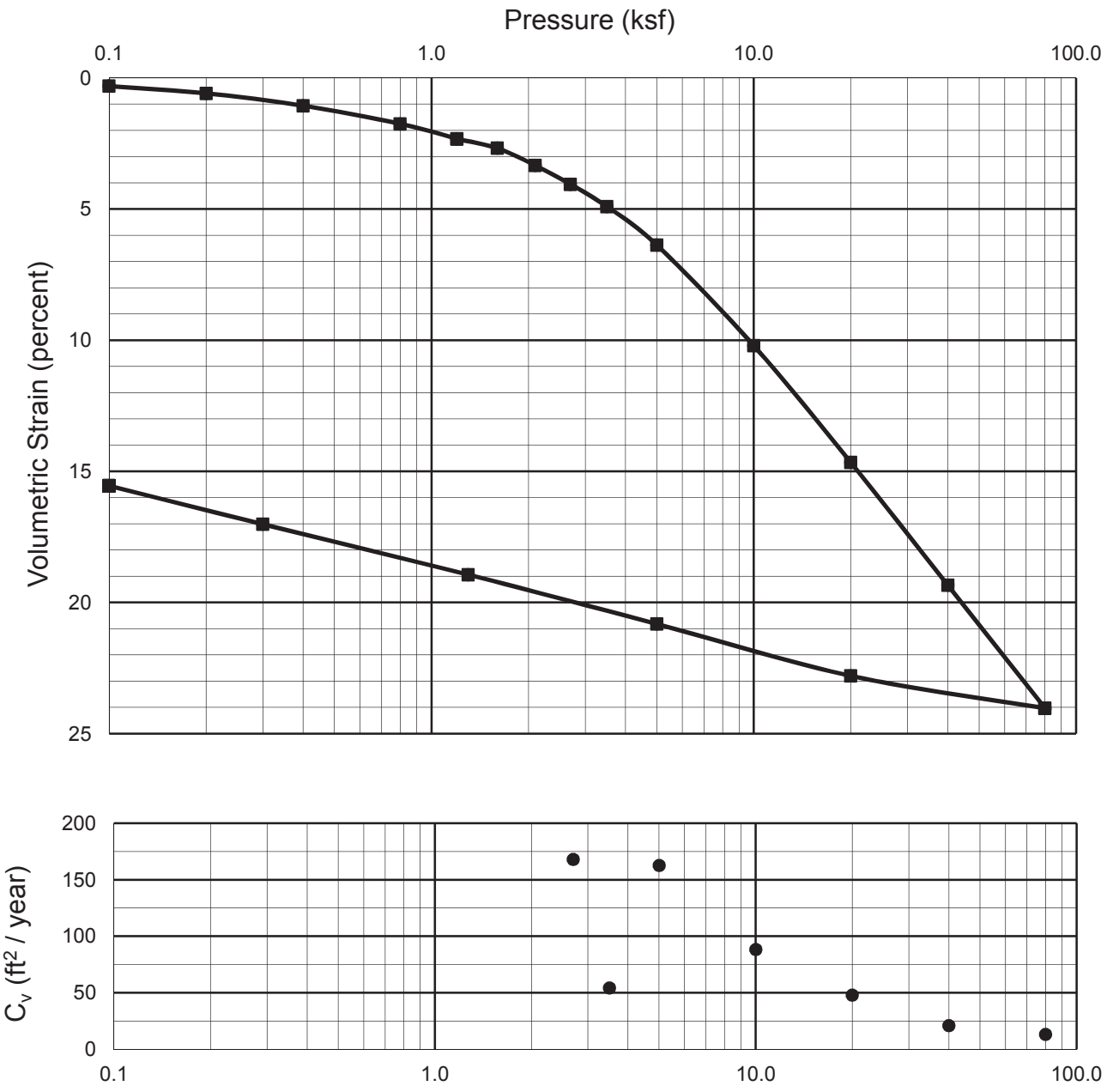
Sampler Type: Shelby Tube				Condition	Before Test			After Test	
Diameter (in)	2.42	Height (in)	1.00	Water Content	w_o	24.2	%	w_f	17.7 %
Overburden Pressure, p_o	1,480	psf		Void Ratio	e_o	0.72		e_f	0.48
Preconsol. Pressure, p_c	4,800	psf		Saturation	S_o	91	%	S_f	100 %
Compression Ratio, $C_{\varepsilon c}$	0.12			Dry Density	γ_d	98	pcf	γ_d	114 pcf
LL - -	PL - -			PI - -				G_s	2.70 (assumed)
Classification SANDY CLAY (CL), yellow-brown								Source: B-1 at 15 feet	

1180 MAIN STREET
Redwood City, California

CONSOLIDATION TEST REPORT

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Date 03/27/18 | Project No. 770643401 | Figure D-1



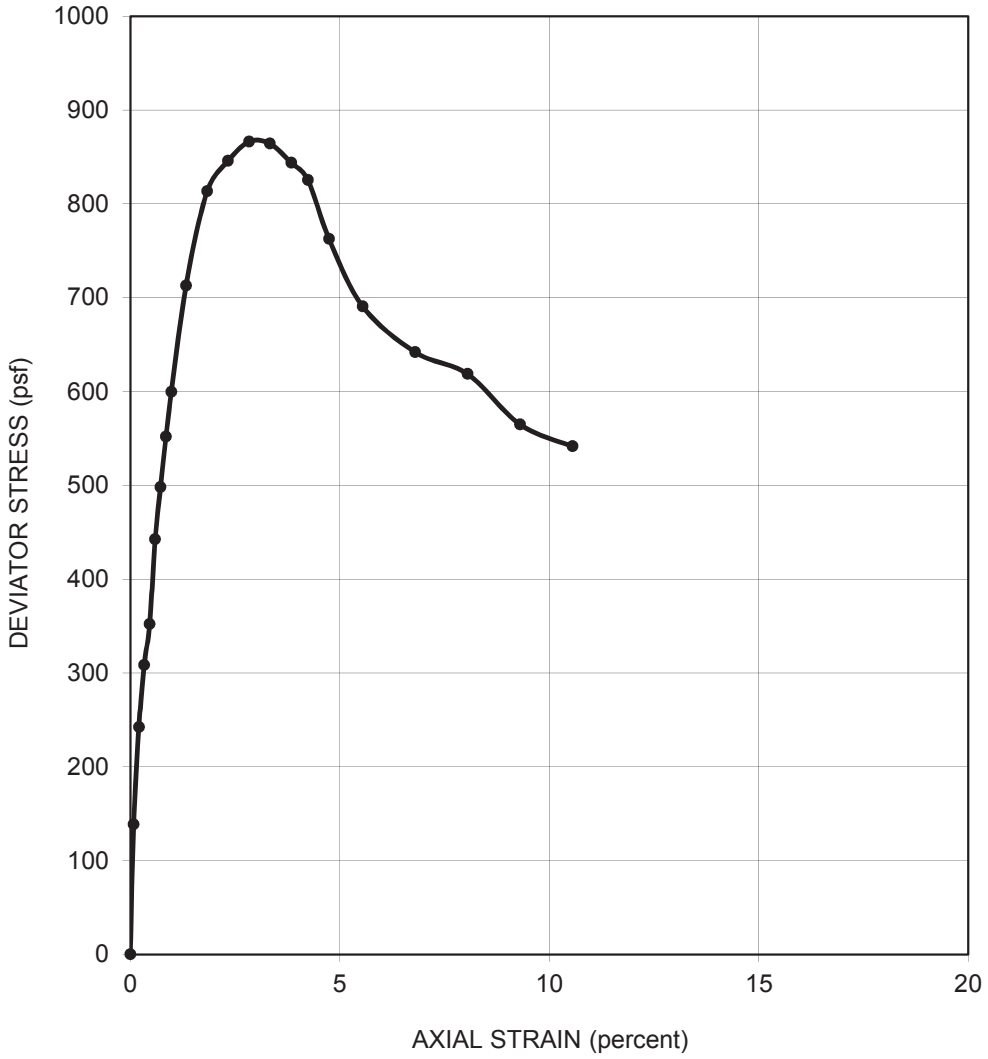
Sampler Type: Shelby Tube				Condition	Before Test			After Test	
Diameter (in)	2.42	Height (in)	1.00	Water Content	w_o	31.8	%	w_f	22.0 %
Overburden Pressure, p_o	2,580	psf		Void Ratio	e_o	0.89		e_f	0.59
Preconsol. Pressure, p_c	3,900	psf		Saturation	S_o	97	%	S_f	100 %
Compression Ratio, $C_{\varepsilon c}$	0.16			Dry Density	γ_d	89	pcf	γ_d	106 pcf
LL	- -	PL	- -	PI	- -			G_s	2.70 (assumed)
Classification CLAY (CL), yellow-brown with orange-brown mottling								Source: B-2 at 35 feet	

1180 MAIN STREET
Redwood City, California

CONSOLIDATION TEST REPORT

LANGAN

Date	03/27/18	Project No.	770643401	Figure	D-2



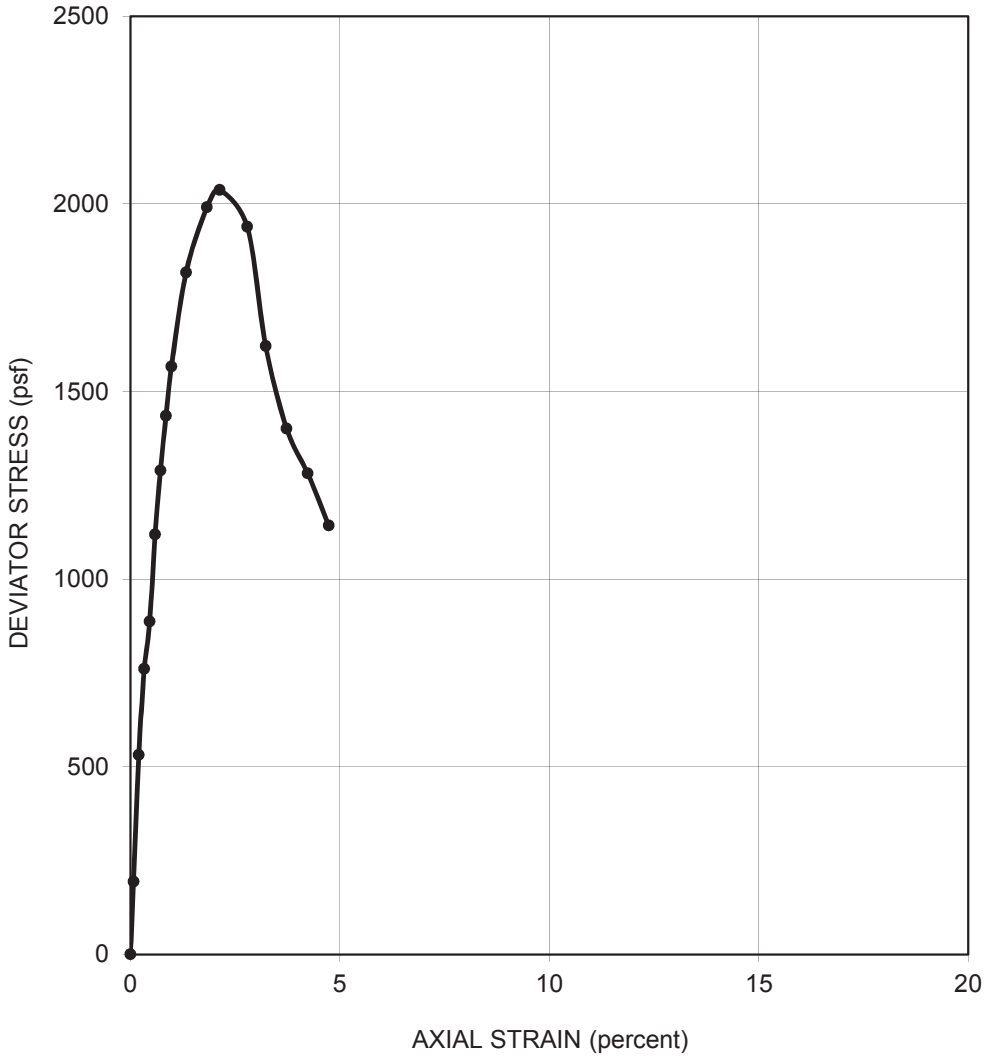
SAMPLER TYPE	Shelby Tube			SHEAR STRENGTH	430 psf
DIAMETER (in.)	2.86	HEIGHT (in.)	6.1	STRAIN AT FAILURE	2.8 %
MOISTURE CONTENT	23.8 %			CONFINING PRESSURE	1,300 psf
DRY DENSITY	104 pcf			STRAIN RATE	0.50 % / min
DESCRIPTION	SANDY CLAY (CL), yellow-brown			SOURCE	B-1 at 15 feet

1180 MAIN STREET
Redwood City, California

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

LANGAN

Date 03/27/18 | Project No. 770643401 | Figure D-3



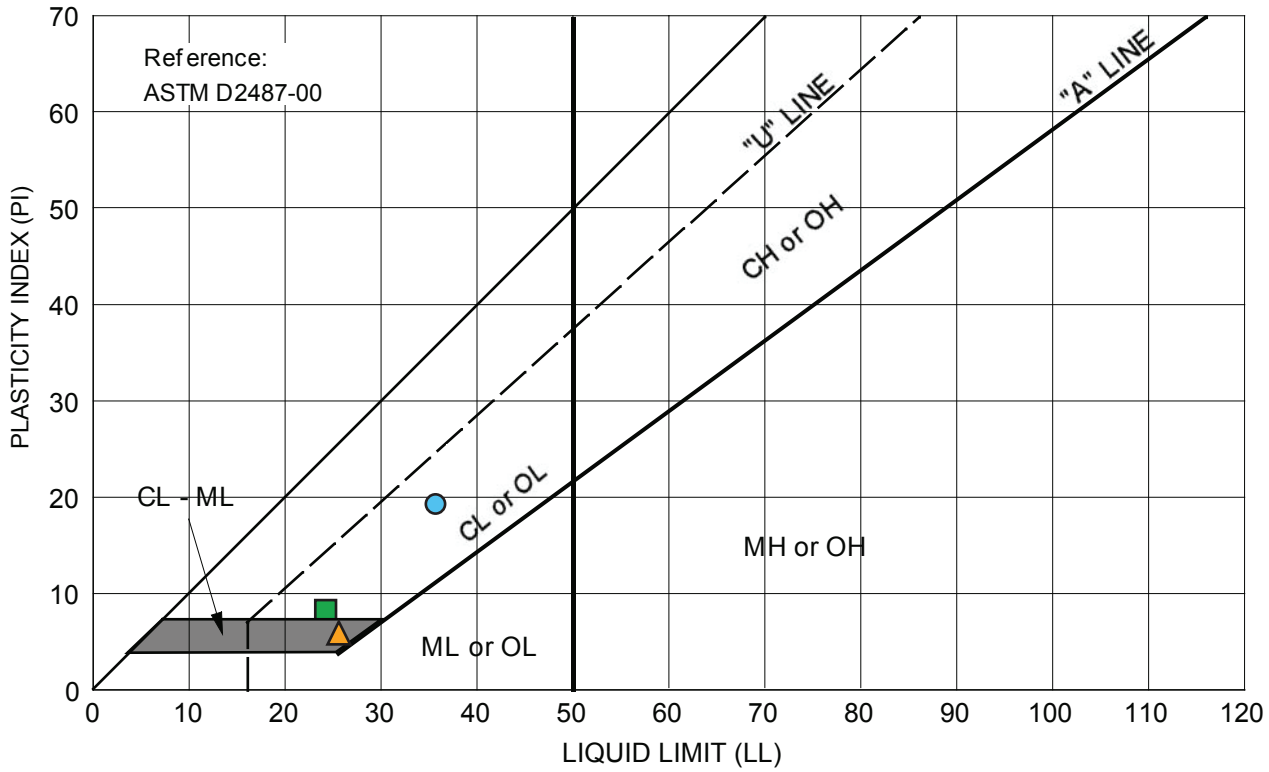
SAMPLER TYPE	Shelby Tube			SHEAR STRENGTH	1,020 psf
DIAMETER (in.)	2.86	HEIGHT (in.)	5.78	STRAIN AT FAILURE	2.1 %
MOISTURE CONTENT	29.4 %			CONFINING PRESSURE	2,500 psf
DRY DENSITY	93 pcf			STRAIN RATE	0.50 % / min
DESCRIPTION	CLAY (CL), yellow-brown with orange-brown mottling			SOURCE	B-2 at 35 feet

1180 MAIN STREET
Redwood City, California

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

LANGAN

Date	Project No.	Figure
03/27/18	770643401	D-4



NP = Non Plastic

Symbol	Source	Description and Classification	Natural M.C. (%)	Liquid Limit (%)	Plasticity Index (%)	% Passing #200 Sieve
○	B-1 at 17.5 feet	CLAYEY SAND (SC), gray with yellow-brown mottling	23.2	36	19	51.4
△	B-1 at 21 feet	CLAYEY SILTY SAND (SC-SM), gray-brown	20.5	26	5	19.7
□	B-1 at 35 feet	CLAYEY SAND (SC), gray	14.2	24	8	19.4

1180 MAIN STREET
Redwood City, California

PLASTICITY CHART

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Date 03/27/18 | Project No. 770643401 | Figure C-5

DISTRIBUTION

1 copy : Ms. Gloria Arteaga
Premia, LLC
801 Hamilton Street
Redwood City, California 94113

QUALITY CONTROL REVIEWER



Richard Rodgers, PE, GE732
Principal/Senior Consultant

Appendix G NOISE TECHNICAL MEMORANDUM

Stantec

Memo

To:	William Chui City of Redwood City	From:	Stantec
File:	1180 Main Street Office Project	Date:	January 31, 2019

Reference: Noise Technical Memo for 1180 Main Street Project

INTRODUCTION

NOISE TECHNICAL MEMO PURPOSE

The purpose of this Noise Technical Memo is to support the 1180 Main Street Project (proposed project) Initial Study Mitigated Negative Declaration (ISMND). This memo provides analyses of potential project-related impacts for exposure to excessive noise during construction and operation. This memo has been prepared to analyze the potential construction-related noise impacts generated form the proposed projects and estimate the potential operational noise conditions located at the project site. This memo will be used as a supplementary analysis to the ISMND.

Specifically, the purpose of this memo is to assess the existing ambient noise conditions at the nearest sensitive receptors and within the proposed project area. This memo includes an evaluation of the proposed noise-generating uses that could affect offsite noise-sensitive receptors as well as assessing the potential indoor noise conditions affecting occupants of the proposed project site.

One source of noise generation associated with commercial development projects is project construction activities. This includes site grading, construction of the building, and increased traffic related to worker trips and material delivery. Operational noise from a commercial development can be attributed to an increase of traffic count from employees as well as from fixed mechanical equipment used to operate the building.

PROJECT DESCRIPTION AND LOCATION

The 1.31-acre project site is located at 1180 and 1190 Main Street near the City's downtown area. The project site is adjacent to Elm Street, Lathrop Street, Maple Street, Main Street, and the Caltrain corridor. The project site is approximately 0.5 mile west of the Redwood City Caltrain station on James Avenue. Regional access is provided to by U.S. Highway 101, approximately 1 mile north, and Highway 84 located approximately 0.5 mile east of the project site.

The proposed project would demolish the existing vacant one-story commercial building and a concrete foundation totaling approximately 7,623 square feet and redevelop the site with a three-story commercial office building of 109,375 square feet with a two-level underground parking garage of 70,619 square feet. In addition, the proposed project would complete the existing bridge crossing with the construction of a 64-foot wide bridge over the drainage channel. The proposed bridge would provide access to the building's main entrance and include a public park of 10,000 square feet. The proposed project would also include an onsite shipping container café of 325 square feet.

Reference: **Noise Technical Memo for 1180 Main Street Project**

NOISE FUNDAMENTALS AND TERMINOLOGY

Noise is generally defined as unwanted sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health. Because noise is an environmental pollutant that can interfere with human activities, evaluation of noise is necessary when considering the environmental impacts of a proposed project.

Sound is mechanical energy transmitted by pressure waves over a medium such as air or water. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient (existing) sound level. Although the decibel (dB) scale, a logarithmic scale, is used to quantify sound intensity, it does not accurately describe how sound intensity is perceived by human hearing. The perceived loudness of sound is dependent upon many factors, including sound pressure level and frequency content. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called A-weighting, written as dB(A) and referred to as A-weighted decibels. There is a strong correlation between A-weighted sound levels and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. Table 1 defines sound measurements and other terminology used in this memo, and Table 2 summarizes typical A-weighted sound levels for different noise sources.

With respect to how humans perceive and react to changes in noise levels, a 1dB(A) increase is imperceptible, a 3 dB(A) increase is barely perceptible, a 6 dB(A) increase is clearly noticeable, and a 10 dB(A) increase is subjectively perceived as approximately twice as loud (Egan 2007). These subjective reactions to changes in noise levels were developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise and to changes in levels of a given noise source. These statistical indicators are thought to be most applicable to noise levels in the range of 50 to 70 dBA, as this is the usual range of voice and interior noise levels. The number of agencies and municipalities have developed or adopted noise level standards, consistent with these and other similar studies, to help prevent annoyance and to protect against the degradation of the existing noise environment.

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (Leq), the minimum and maximum sound levels (Lmin and Lmax), percentile-exceeded sound levels (such as L10, L20), the day-night sound level (Ldn), and the community noise equivalent level (CNEL). Ldn and CNEL values typically differ by less than 1 dB. As a matter of practice, Ldn and CNEL values are considered to be equivalent and are treated as such in this assessment.

For a point source such as a stationary compressor or construction equipment, sound attenuates based on geometry at rate of 6 dB per doubling of distance. For a line source such as free flowing traffic on a freeway, sound attenuates at a rate of 3 dB per doubling of distance (Federal Highway Administration 2011). Atmospheric conditions including wind, temperature gradients, and humidity can change how sound propagates over distance and can affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive surface, such as grass, attenuates at a greater rate than sound that travels over a hard surface, such as pavement. The increased attenuation is typically in the range of 1–2 dB per doubling of distance. Barriers such as buildings and topography that block the line of sight between a source and receiver also increase the attenuation of sound over distance.

Reference: **Noise Technical Memo for 1180 Main Street Project**

Table 1: Definition of Sound Measurement

Sound Measurements	Sample Heading
Decibel (dB)	A unit-less measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals.
A-Weighted Decibel (dB(A))	An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
C-Weighted Decibel (dB(C))	The sound pressure level in decibels as measured using the C- weighting filter network. The C-weighting is very close to an unweighted or flat response. C-weighting is only used in special cases when low-frequency noise is of particular importance. A comparison of measured A- and C-weighted level gives an indication of low frequency content.
Maximum Sound Level (Lmax)	The maximum sound level measured during the measurement period.
Minimum Sound Level (Lmin)	The minimum sound level measured during the measurement period.
Equivalent Sound Level (Leq)	The equivalent steady state sound level that in a stated period of time would contain the same acoustical energy.
Percentile-Exceeded Sound Level (Lxx)	The sound level exceeded xx % of a specific time period. L10 is the sound level exceeded 10% of the time. L90 is the sound level exceeded 90% of the time. L90 is often considered to be representative of the background noise level in a given area.
Day-Night Level (Ldn)	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Community Noise Equivalent Level (CNEL)	The energy average of the A-weighted sound levels occurring during a 24-hour period with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Peak Particle Velocity (Peak Velocity or PPV)	A measurement of ground vibration defined as the maximum speed (measured in inches per second) at which a particle in the ground is moving relative to its inactive state. PPV is usually expressed in inches/second.
Frequency: Hertz (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure.
Source: Federal Highway Administration 2006a	

Reference: **Noise Technical Memo for 1180 Main Street Project**

Table 2: Typical A-Weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	-110	Rock band
Jet flyover at 1,000 Feet		
	-100-	
Gas lawnmower at 3 Feet		
	-90-	
Diesel truck at 50 Feet at 50 MPH		Food blender at 3 Feet
Noisy urban area, daytime	-80-	Garbage Disposal at 3 Feet
Gas lawnmower, 100 Feet		
Commercial area	-70-	Vacuum Cleaner at 10 Feet
Heavy traffic at 300 Feet		Normal Speech at 3 Feet
	-60-	
Quiet urban daytime		Large business office
	-50-	Dishwasher in next room
Quiet urban nighttime		
Quiet suburban nighttime	-40-	Theater, large conference room (Background)
Quiet rural nighttime	-30-	Library
	-20-	Bedroom at night, concert hall (Background)
	-10-	Broadcast/recording studio
	-0-	

Decibel Addition

Because decibels are logarithmic units, sound pressure levels cannot be added or subtracted through ordinary arithmetic. On the dB scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, their combined sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one source produces a sound pressure level of 70 dB(A), two identical sources would not produce 140 dB(A)—rather, they would combine to produce 73 dB(A). The cumulative sound level of any number of sources can be determined using decibel addition.

Vibration

Operation of heavy construction equipment, particularly pile driving and other impact devices such as pavement breakers, create seismic waves that radiate along the surface of the earth and downward into the earth. These surface waves can be felt as ground vibration. Vibration from operation of this equipment can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance will result in different vibration levels containing different frequencies and displacements. In all cases, vibration amplitudes will decrease with increasing distance.

Reference: **Noise Technical Memo for 1180 Main Street Project**

Perceptible groundborne vibration is generally limited to areas within a few hundred feet of construction activities. As seismic waves travel outward from a vibration source, they excite the particles of rock and soil through which they pass and cause them to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second) at which these particles move is the commonly accepted descriptor of the vibration amplitude, referred to as the peak particle velocity (PPV). Table 3 summarizes typical vibration levels generated by construction equipment (Federal Transit Administration 2006b).

Table 3: Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 Feet
Pile driver (impact)	0.644 to 1.518
Pile drive (sonic/vibratory)	0.170 to 0.734
Vibratory roller	0.210
Hoe ram	0.089
Large bulldozer	0.089
Caisson drilling	0.089
Loaded trucks	0.076
Jackhammer	0.035
Small bulldozer	0.003
Source: Federal Transit Administration 2006b	

Vibration amplitude attenuates over distance and is a complex function of how energy is imparted into the ground and the soil conditions through which the vibration is traveling. The following equation can be used to estimate the vibration level at a given distance for typical soil conditions (Federal Transit Administration 2006b). PPVref is the reference PPV from Table 3.

PPV = PPVref x (25/Distance) 1.5

Table 4 summarizes guidelines vibration annoyance potential criteria suggested by Caltrans (California Department of Transportation 2004).

Table 4: Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Sources
Severe	2.0	0.4
Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. Source: California Department of Transportation 2004.		

Table 5 summarizes guideline vibration damage potential criteria suggested by Caltrans (California Department of Transportation 2004).

Table 5: Guideline Vibration Damage Potential Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structure	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5
Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. Source: California Department of Transportation 2004.		

REGULATORY SETTING

CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN)

The 2016 California Green Building Standards Code (CalGreen), Section 5.507 “Environmental Comfort”, states the following:

5.507.4.1 Exterior noise transmission. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport

Exceptions:

1. Ldn or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.

2. Ldn or CNEL for other airports and heliports for which a land use plan that has not been developed shall be determined by the local general plan noise element.

3. Within the 65 CNEL or Ldn noise contour of a freeway or expressway, railroad, industrial source or fxed-guideway notice source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB Leq-1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq -1Hr) of 50 dBA in occupied areas during any hours of operations

5.507.4.2.1 Site features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of compliance. An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record.

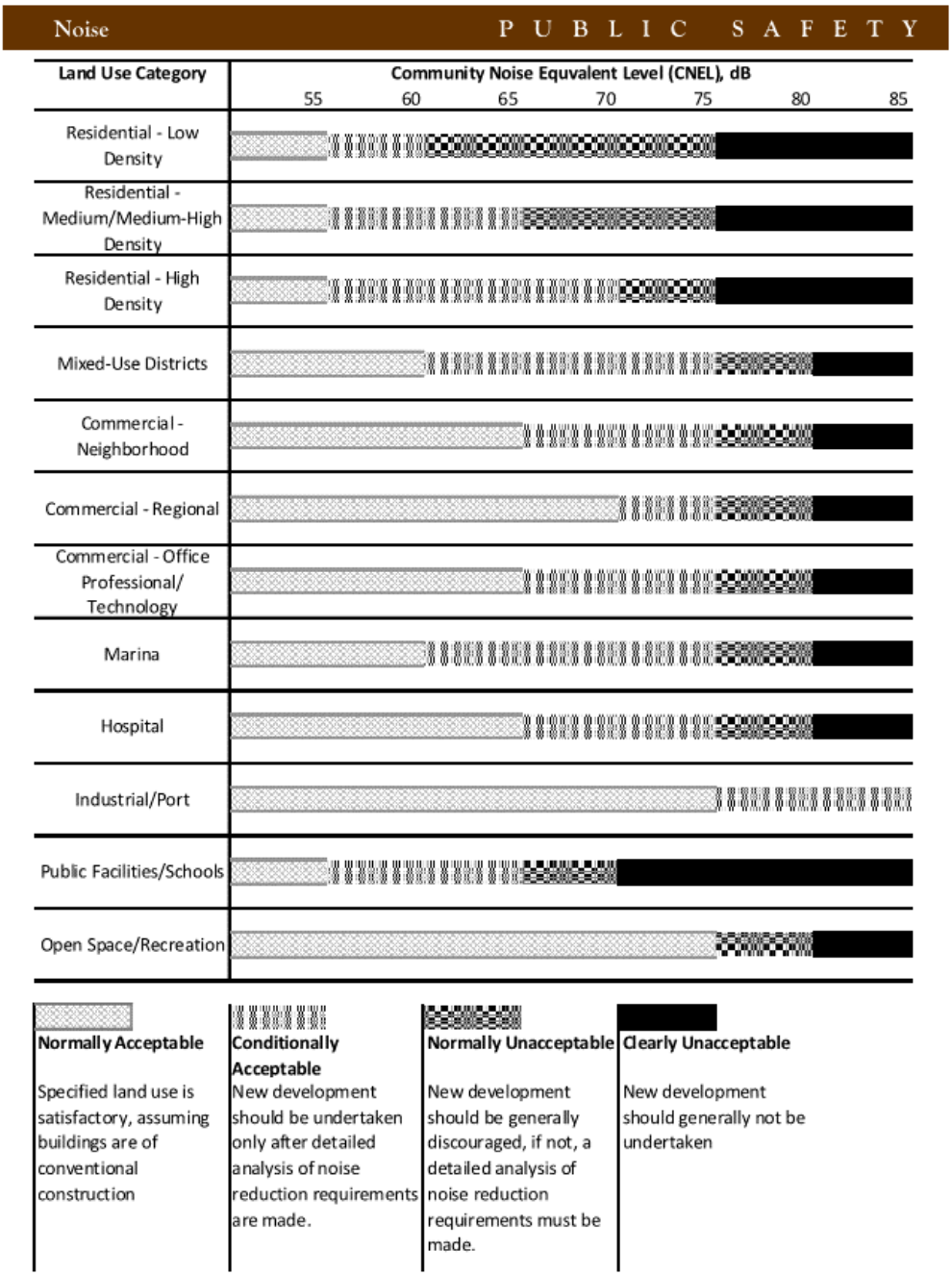
5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

REDWOOD CITY GENERAL PLAN

The Public Safety Element within the Redwood City General Plan addresses those public safety issues that affect Redwood City, including noise concerns. The Noise Element aims to “partner with and embrace neighborhoods to improve health, safety, and well-being for all”. The Element identifies land use compatibility noise standards for noise-sensitive land uses affected by transportation and non-transportation noise sources. As shown in Figure 1, for commercial office buildings that are affected by transportation noise sources, the “normally acceptable” exterior noise level is 50-65 dB(A) CNEL. Exterior noise levels up to 75 dB(A) CNEL are considered “conditionally acceptable” and should be undertaken only after a detailed analysis of the noise reduction requirements are made. Exterior noise levels between 75 dB(A) and 80 dB(A) CNEL are considered “normally unacceptable” and those above 80 dB(A) are “clearly unacceptable”. New construction with exterior noise levels in this range would require a detailed analysis of the noise reduction requirements and noise insulation features to be incorporated in the project to maintain “normally acceptable” interior noise levels.

Reference: **Noise Technical Memo for 1180 Main Street Project**

Figure 1: Redwood City Noise Guidelines for Land Use Planning



Specific Policies with the Noise Element include the following:

- Policy PS-13.6: Require all exterior noise sources (construction operations, air compressors, pumps, fans, and leaf blowers) to use available noise suppressions devices and techniques to bring exterior noise down to acceptable levels that are compatible with land uses.
- Policy PS-13.8: Implement appropriate standard construction noise controls for all construction projects.
- Policy PS-13.9: Require noise created by new non-transportation noise sources to be mitigated so as not to exceed acceptable interior and exterior noise level standards.
- Policy PS-14.1: Consult with responsible federal and State agencies to minimize the impact of transportation-related noise, including noise associated with freeways, major arterials, rail lines, and airports.
- Policy PS-14.4: Require development that is or will be affected by railroad noise and/or vibration to include appropriate measures to minimize adverse noise effects on residents and business persons.

REDWOOD CITY MUNICIPAL CODE

Chapter 24 “Noise Regulation” of the Redwood City Municipal Code states the following:

Sec. 24.30. - EXCESSIVE AND UNREASONABLE NOISES:

The following are deemed to be excessive and unreasonable noises:

A. Noise levels generated by construction activities, including demolition, alteration, repair or remodeling of or to existing structures and construction of new structures on property within the City, at more than 110 dB measured at any point within a residential district of the City and outside of the plane of said property;

B. Noise levels generated by an individual item of machinery, equipment or device used during construction activities, including demolition, alteration, repair or remodeling of or to existing structures and construction of new structures on property within the City, at more than 110 dB measured within a residential district of the City at a distance of twenty-five feet (25′) from said machinery, equipment or device. If said machinery, equipment or device is housed within a structure on the property, then the measurement shall be made at a distance as near to twenty-five feet (25′) from said machinery, equipment or device as possible.

Sec. 24.31. - PROHIBITED NOISE LEVELS:

It shall be unlawful for any person to suffer or allow noise levels to be generated by:

A. Construction activities, including demolition, alteration, repair or remodeling of or to existing structures and construction of new structures on property within the City, at more than 110 dB measured at any point within a residential district of the City and outside of the plane of said property;

B. An individual item of machinery, equipment or device used during construction activities, including demolition, alteration, repair or remodeling of or to existing structures and construction of new

structures on property within the City, at more than 110 dB measured within a residential district of the City at a distance of twenty-five feet (25′) from said machinery, equipment or device. If said machinery, equipment or device is housed within a structure on the property, then the measurement shall be made at a distance as near to twenty-five feet (25′) from said machinery, equipment or device as possible.

Sec. 24.32. - TIME LIMITATIONS:

Notwithstanding the provisions in this Division to the contrary, it shall be unlawful for any person to engage in construction activities, including demolition, alteration, repair or remodeling of or to existing structures and the construction of new structures on property in a residential district or within five hundred feet (500′) of a residential district in the City, between the hours of eight o'clock (8:00) P.M. and seven o'clock (7:00) A.M. the following day, Monday through Friday of any week or at any time on Saturdays, Sundays or holidays if the noise level generated by any such activity exceeds the local ambient measured at any point within the residential district and outside of the plane of said property.

Sec. 24.33. - CONSTRUCTION SITE NOTICE:

A. Generally: The owner of any property in a residential district of the City or of any property located within five hundred feet (500′) of any such district upon which construction activities, including demolition, alteration, repair or remodeling of or to existing structures, and construction of new structures are proposed to occur, shall post a sign at all entrances to the work site prior to commencement of the work for the purpose of informing all contractors and subcontractors, their employees, agents, materialmen and all other persons at the property of the basic limitations upon noise and construction activities provided in this Division. Said sign(s) shall be posted at least five feet (5′) above ground level and shall be on a white background with black lettering, which lettering shall be a minimum of one and one-half inches (1 ½″) in height.

B. Sign Text: Said sign(s) shall read as follows:

   NOISE LIMITATIONS UPON WORK ON PROPERTIES IN OR NEAR RESIDENTIAL DISTRICTS

   (Includes any and all deliveries)

   NOISE PROHIBITED

   MONDAYS through FRIDAYS ..... 8:00 p.m. to 7:00 a.m.

   SATURDAYS, SUNDAYS and HOLIDAYS ..... ALL DAY

   During the foregoing periods, no noise above the local ambient level in Residential Districts shall be generated by construction work or activities.

   WORK NOISE LIMITS AT ALL OTHER TIMES:

   1. No individual item of machinery, equipment, or device used in or near a residential district shall produce sound in excess of 110 dBA, measured twenty-five feet (25′) from such machinery, equipment, or device; 2. Work noise level at any point outside of the construction site property plane shall not exceed 110 dBA within any part of a residential district.

2. The foregoing provisions are requirements of the Noise Regulations of the City, violations of which are punishable pursuant to the provisions of this Chapter.

Sec. 24.34. - EXCEPTIONS; PERMITS:

Upon a showing by a property owner to the enforcement officer that a diligent investigation of available noise abatement techniques indicates that compliance with the requirements of this Division would be impracticable or unreasonable, the enforcement officer may issue a permit allowing an exception to the provisions contained in all or any portion of this Division subject to such reasonable and appropriate conditions as the enforcement officer may impose, including, but not limited to, a compliance schedule, restrictions upon construction methods or use of machinery, equipment or devices, permission to engage in construction activities on Saturdays, Sundays, and holidays only between the hours of nine o'clock (9:00) A.M. and eight o'clock (8:00) P.M., or implementation of such other practices as the enforcement officer deems appropriate. Any such permit shall be effective for a period not to exceed six (6) months and shall be of such reasonably short duration as the enforcement officer shall determine giving due regard to the extent and the complexity of the construction to which it pertains.

Any person aggrieved by the decision of the enforcement officer in issuing or denying the issuance of a permit pursuant to this Section may appeal the enforcement officer's decision to the Community Development Director. Such appeal shall be filed, processed and heard in accordance with the provisions of Chapter 1 of this Municipal Code.

Sec. 24.35. - EXEMPTIONS:

Noise levels generated by construction activities, including demolition, alteration, repair or remodeling of or to existing structures and the construction of new structures on property within the City: a) in the course or within the scope of emergency work; and b) in the course of work performed personally by the owner or resident of a dwelling unit with respect to said unit on Mondays through Fridays between the hours of seven o'clock (7:00) A.M. and eight o'clock (8:00) P.M. and on Saturdays, Sundays, and holidays between the hours of nine o'clock (9:00) A.M. and eight o'clock (8:00) P.M., are exempt from the provisions of this Division.

EXISTING AMBIENT NOISE LEVELS

The existing noise environment in a project area is characterized by the area's general level of development due to the high correlation between the level of development and ambient noise levels. Areas which are not urbanized are relatively quiet, while areas which are more urbanized are noisier as a result of roadway traffic, industrial activities, and other human activities.

The City of Redwood City is exposed to several sources of noise, including traffic on major highways, such as US-101, California Route 84 (Woodside Road), and California Route 82 (El Camino Real), and noise from railways, such as the Caltrain tracks. Traffic noise depends primarily on traffic speed (tire noise increases with speed), proportion of medium and large truck traffic (trucks generate engine, exhaust, and wind noise in addition to tire noise), and number of speed control devices, such as traffic lights (accelerating and decelerating vehicles and trucks can generate more noise).

Changes in traffic volumes can also have an impact on overall traffic noise levels. For example, it takes 25 percent more traffic volume to produce an increase of only 1 dB(A) in the ambient noise level. For roads already heavy with traffic volume, an increase in traffic numbers could even reduce noise because the heavier

volumes could slow down the average speed of the vehicles. A doubling of traffic volume results in a 3 dB(A) increase in noise levels.

The loudest source of noise at the site is the Caltrain tracks which border the northeast edge of the site (along Pennsylvania Avenue). The total number of trains passing the site is approximately two (2) per hour, except for morning and evening rush hour times, when the total train count can be up to four (4) per hour. Noise from the trains includes general noise from the interaction of the train wheels on the tracks, warning horns from the train engine, and alarms from the traffic control bars.

Traffic noise in the area is sparse with Main Street being the busiest street. The traffic on Main Street is comprised of primarily vehicles, but also contains medium trucks, company trucks, and construction vehicles. There is very little traffic on Elm and Maple Streets. Other sources of noise at the project site include intermittent construction activity on Lathrop Street, including one (1) backhoe, one (1) truck, and two (2) workers, sidewalk activity, and nature-based noises.

A noise survey was conducted between Tuesday, November 20 and Wednesday, November 21, 2018 to establish the existing baseline condition for the project. The survey involved securing a calibrated Larson Davis LxT sound level meter to the fence near the corner of Maple and Main Streets (within the red circle in Photo 1 and shown as a blue pin in Figure 3.12-2). The microphone was extended approximately 6' above the ground and directly faced the Caltrain tracks. The microphone was located about 23' from the edge of the closest railroad track.



Photo 1: Microphone at Long-Term Measurement Location

The unattended meter collected data continuously between Tuesday and Wednesday for a minimum of 24-hours. The highest one-hour Leq sound pressure level measured at this location during anticipated business hours (8:00 AM to 6:00 PM) was 82.1 dB(A). The average one-hour Leq sound pressure level measured during anticipated business hours was 77.7 dB(A). Average one-hour sound pressure levels measured at the site are shown in Chart 1. The 24-hour measurement location is shown as a blue pin in Figure 2. Both Chart 1 and Figure 2 are attached to the end of this memo.

Based on the June 27, 2018 Planning Application Drawing Set, the edge of the project building will be located approximately 32'-3" from the edge of the closes railroad tracks. Using typical line source attenuation, an additional 2 dB(A) of attenuation is expected between the measurement location and the project building façade. Therefore, the highest one-hour Leq sound pressure level expected at the project building façade during anticipated business hours is 80.1 dB(A).

SENSITIVE RECEPTORS

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are considered to be more sensitive to noise intrusion than are commercial or industrial activities. Ambient noise levels can also affect the perceived desirability or livability of a development.

The project site is surrounded by a mix of land uses, including commercial spaces and a church to the north, apartments to the west, and commercial spaces to the southeast. The sensitive receivers (in red pins in

Figure 2) are considered to be the San Jose Obrero Catholic Church across Pennsylvania Avenue and the Franklin Street Apartments across Maple Street.

METHODOLOGY

Results from the long-term site measurements were used to provide baseline noise conditions at nearby sensitive receptors and within the project site vicinity. For the purpose of this analysis, potential sensitive receptors were determined by reviewing current aerial photography and by walking the project site.

Impacts from future project-related traffic were estimated using predicted traffic counts from the October 2018 1180 and 1190 Main Street Transportation Impact Analysis report prepared by Kimley Horn.

Short-term site noise data were used as an input to the Federal Highway Administration Roadway Construction Noise Model (RCNM) as the existing ambient noise level input. The RCNM is used as the Federal Highway Administration's national standard for predicting noise generated from construction activities. The RCNM analysis includes the calculation of noise levels (Lmax and Leq) at incremental distances for a variety of construction equipment. The spreadsheet inputs include acoustical use factors, Lmax values, and Leq values at various distances depending on the ambient noise measurement location. For this analysis, it was assumed that a worst-case noise scenario for construction activity would entail the operation of three noisiest pieces of equipment (grader, dozer, and compactor) simultaneously.

ENVIRONMENTAL IMPACT ANALYSIS

EXTERIOR TRAFFIC NOISE LEVEL IMPACTS

To describe future noise levels due to traffic added from the peak hour project, a.m. and p.m. peak hour traffic counts with and without the project provided by Kimley Horn were used to determine the percentage increase of traffic on the roads adjacent to the project site and adjacent sensitive receivers.

Table 6 shows the cumulative peak hour counts associated with traffic on the local roadway network both with and without the project. The last columns in the table show the overall percentage change and the estimated difference in peak hour noise level.

Table 6 Traffic Peak Hour Counts and Estimated Noise Increase

Roadway	Cumulative Peak Hour Traffic Count	Cumulative Peak Hour Traffic Count with Project	Percentage Change	Estimated dB(A) Change
Maple Street	386 (519)	433 (572)	12% (10%)	0.5 (0.4) dB(A)
Lathrop Street	145 (250)	204 (314)	41% (26%)	Still 1 dB(A) or Less
Main Street	475 (703)	506 (727)	7% (3%)	0.3 (0.1) dB(A)
Elm Street	58 (76)	89 (98)	53% (29%)	Still 1 dB(A) or Less

Notes:

1. Numbers in parenthesis are p.m. peak hour traffic volumes.

The project is expected to minimally increase traffic counts along the busiest roads surrounding the project site; Maple Street and Main Street. There will be essentially no change in traffic noise expected along these streets and there will be no impact.

Reference: **Noise Technical Memo for 1180 Main Street Project**

Peak hour traffic counts are expected to significantly increase with the project along Lathrop and Elm Streets. Even though the percentage of traffic is expected to increase, the overall traffic counts are still very low. The peak hour traffic counts along Lathrop and Elm Streets will still be substantially less than the existing traffic counts (without the project) on both Maple and Main Streets. Therefore, future noise levels on Lathrop and Elm Streets with the project are not expected to significantly increase over the current conditions.

Therefore, the project should not cause increased traffic noise levels over the baseline conditions at the neighboring sensitive receivers and this would be a less than significant impact relative to this topic.

INTERIOR TRAFFIC AND TRAIN NOISE LEVEL IMPACTS

The June 27, 2018 Planning Application drawing set indicates the project will involve a new three-story office building with two (2) levels of below-grade parking. 2016 CalGreen states if the building is exposed to a noise level of 65 dB(A) Leq-1-hr during any hour of operation, the exterior façade design shall incorporate noise reduction features. Exterior ambient noise measurements indicate the façades of the building facing the rail lines would be exposed to 1-hr Leq noise levels up to 78.7 dB(A) and would be subject to this requirement.

In particular, exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30) shall be used in all affected areas or wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq -1Hr) of 50 dBA in occupied areas during any hours of operations.

Therefore, the exterior façade design of the building would incorporate Mitigation Measure MM NOI-1 and be designed with incorporating measures, such as laminated windows systems, as necessary to reduce noise levels on the interior of the building to a maximum of 50 dB(A) Leq during normal operating hours.

- **MM-NOI-1: Interior Traffic Noise.** All facades of the building which have exposure to the rail lines shall be constructed to meet the requirements of the 2016 California Green Building Standards Code (CalGreen), Section 5.507 “Environmental Comfort”. In particular, exterior wall and roof-ceiling assemblies exposed to the rail line shall meet a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30). Or, the services of a qualified acoustical consultant may be obtained to conduct a detailed noise study to help design the exterior façade such that the interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq -1Hr) of 50 dBA in occupied areas during any hours of operations.

PROJECT FIXED-SOURCE NOISE IMPACTS

Typical commercial building construction will involve new rooftop mechanical equipment, air handling units, exhaust fans, and potentially chillers and cooling towers. This equipment will generate noise that will radiate to the neighboring properties. Chapter 24 “Noise Regulation” does not currently have any specific noise restrictions for exterior mechanical equipment to neighboring properties. The code section only addresses noise from an assembly of three (3) or more people between the hours of 8:00 PM and 7:00 PM on weekdays or anytime on weekends and holidays and noise from construction. Therefore, the impact of fixed-source noise to the neighboring properties would be less than significant.

Reference: **Noise Technical Memo for 1180 Main Street Project**

SHORT-TERM CONSTRUCTION NOISE IMPACTS

Two types of short-term noise impacts could occur during construction of the proposed project. First, construction crew commutes and the transport of construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the project site. This increased traffic would be composed of vehicles, medium trucks, and heavy trucks.

Existing traffic on Main Street and Maple Street already includes a component of construction vehicles and trucks to service the existing commercial facilities, such as PRENAV, Inc. and Cooks Collision. Noise levels along these streets are not expected to increase due to project-related construction traffic.

The second type of short-term noise impact is related to noise generated during construction. Construction activities would include excavation activities and grading, foundation work, building construction, and paving. Each construction stage has its own mix of equipment and, consequently, its own noise characteristics. These various construction operations would change the character of the noise generated at the project site and, therefore, the ambient noise level as construction progresses. The loudest phases of construction include excavation, building construction, and grading phases, as the noisiest construction equipment is earthmoving and grading equipment. Table 3.12-2 below lists types of construction equipment that may be used throughout construction and the maximum and average operational noise level as measured at 100 feet from the operating equipment. The 100-foot distance represents the distance between the northwest edge of the project site and the existing Franklin Street Apartment buildings across Maple Street.

Table 7: Summary of Federal Highway Administration Roadway Construction Noise Model at Existing Apartment Receiver

Source	Distance to Nearest Sensitive Receptor	Sound Level at Apartments		
		Lmax, dB(A)	Acoustical Use Factor (%)	Leq, dB(A)
Backhoe	100 feet	71.5	40	67.6
Compactor (ground)	100 feet	77.2	20	70.2
Crane	100 feet	74.5	16	66.6
Concrete Mixer Truck	100 feet	72.8	40	68.8
Compressor (air)	100 feet	71.6	40	67.7
Bulldozer	100 feet	75.6	40	71.7
Excavator	100 feet	74.7	40	70.7
Front End Loader	100 feet	73.1	40	69.1
Flat Bed Truck	100 feet	68.2	40	64.3
Generator	100 feet	74.6	50	71.6
Grader	100 feet	79.0	40	75.0
Paver	100 feet	71.2	50	68.2

Reference: **Noise Technical Memo for 1180 Main Street Project**

Source	Distance to Nearest Sensitive Receptor	Sound Level at Apartments		
		Lmax, dB(A)	Acoustical Use Factor (%)	Leq, dB(A)
Pickup Truck	100 feet	69.0	40	65.0
Pneumatic Tools	100 feet	79.2	50	76.1
Welder / Torch	100 feet	68.0	40	64.0
Tractor	100 feet	78.0	40	74.0

Source: FHWA 2006, AQ/GHG assumptions (Appendix A)

A reasonable worst-case noise condition for general construction activity is that a grader, pneumatic tools, and a tractor would operate simultaneously at the same location. This represents a conservative scenario, as it assumes that all three pieces of equipment would be operating at the same time and same place. Construction would occur in sequential phases, thus in reality, it is not likely the three loudest pieces of equipment would be operating simultaneously at the exact location of the project site closest to the nearest noise-sensitive receiver. Nevertheless, the RCNM calculated that this scenario would result in a combined noise level of 83.5 dB(A) Lmax and 79.9 dB(A) Leq at the existing apartments 100 feet from the project site. The construction noise modeling output results are attached to this memo in Figure 3.

Although noise levels could range into the "clearly unacceptable" ranges, as defined in the City of Redwood City General Plan, construction activities and increases in noise levels from construction activities would be temporary and construction activities would be limited to the restrictions set by Chapter 24 "Noise Regulation", Division 3 "Construction" of the Redwood City Municipal Code.

In addition to the restrictions listed in the Redwood City Municipal Code, Program PS-63 in the Redwood City General Plan and the Federal Transit Administration offers construction mitigation measures listed in Section 12.1.3 "Mitigation of Construction Noise" in the Transit Noise and Vibration Impact Assessment document (FTA-VA-90-1003-06 May 2006). In conclusion, construction noise would be short-term and intermittent. Furthermore, implementation of Mitigation Measure NOI-2 would ensure compliance with the City's construction noise standards; therefore, impacts would be less than significant with mitigation incorporated.

- **MM NOI-2: Construction Noise Reduction.** Implementation of the following multi-part mitigation plan is required to reduce the potential construction period noise impacts.
    - Follow all construction noise requirements listed Section 24, Division 3 "Construction" of the Redwood City Municipal Code and Program PS-63 "Enforcing Construction and Maintenance Noise Regulations" in the Redwood City General Plan.
    - Minimize noise from construction activities by enforcing construction hours, including vehicle start-up and preparation.
    - Limit construction to the hours of 8:00 AM to 5:00 PM on weekdays and 9:00 AM to 5:00 PM on Saturdays, with no noise-generating construction on Sundays or holidays.
    - Control noise from construction worker's radios to the point where they are not audible at existing residences that border the project site.
    - Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.

- Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction area.
- Utilize "quiet" air compressors and other stationary noise sources where technology exists.
- The construction contractor would prohibit unnecessary idling of internal combustion engines.
- Notify residents adjacent to the project site of the construction schedule in writing.

SHORT-TERM CONSTRUCTION VIBRATION IMPACTS

During construction of the project, equipment such as cranes, excavators, graders, loaders, backhoes, and bulldozers may be used as close as 100 feet from the nearest sensitive receptor. Construction equipment that would be used during project construction would generate vibration levels between 0.003 PPV and 0.089 PPV at 25 feet, as shown below in Table 8. All the groundborne vibration levels are below the Federal Transit Administration vibration threshold at which human annoyance could occur of 0.10 PPV. Additionally, construction activities would be temporary in nature and would likely occur during normal daytime working hours as per the Redwood City General Plan. Therefore, construction vibrations are not predicted to cause damage to existing buildings or cause annoyance to sensitive receptors. As such, implementation of the project would have a less than significant impact related to vibration.

Table 8: Vibration Source Levels for Construction Equipment

Type of Equipment	Peak Particle Velocity at 25 Feet	Peak Particle Velocity at 50 Feet	Peak Particle Velocity at 100 Feet	Threshold at which Human Annoyance Could Occur	Potential for Project to Exceed Threshold
Large Bulldozer	0.089	0.031	0.011	0.10	None
Loaded Trucks	0.076	0.027	0.010	0.10	None
Small Bulldozer	0.003	0.001	0.000	0.10	None
Auger/Drill Rigs	0.089	0.031	0.011	0.10	None
Jackhammer	0.035	0.012	0.004	0.10	None
Vibratory Hammer	0.070	0.025	0.009	0.10	None

Source: FTA 2006

RAIL LINE VIBRATION IMPACTS

Impacts due to vibration from the adjacent Caltrain railroad lines are addressed in the February 23, 2018 "1180 Main St, Redwood City Vibration Study" report prepared by Mei Wu Acoustics. The study measured ground vibration levels on the foundation of the existing building on the eastern corner of the site; approximately 41' from the centerline of the nearest railroad track, for a minimum of 24 hours. All measurements were then compared to the limits in the Federal Transit Administration (FTA) "Transit Noise and Vibration Impact Assessment" document FTA-VA-90-1003-06, Table 8.1 as a guideline to assess

vibration impacts. The Mei Wu Study concluded all measured events were considered acceptable by the FTA guidelines, except for two very short intermittent events that exceeded 83 VdB and only one of these events occurred during the day when the building would be occupied. Therefore, the impact from rail line vibration would be less than significant and no further mitigation measures were recommended.

Please refer to the report for further discussion of the vibration measurements and results.

AIRPORT NOISE IMPACTS

The nearest public airport to the project site is the San Carlos Airport, located approximately 2.21 miles northwest of the project site. The project site falls well outside the 55 dBA CNEL contour line for the San Carlos Airport as shown in Figure PS-9 in the Redwood City General Plan. Therefore, this would be a less than significant impact.

CONCLUSION

Noise generation associated with the proposed development is typically attributed to the project construction activities. These include site grading, construction of the building and apparatuses, and the increase traffic related to facility use. Operational noise generation can be attributed to the slight increase in traffic counts from employees as well as from typical commercial fixed mechanical equipment.

Based on the FHWA RCNM the proposed project can generate, high levels of construction noise, which are temporary and will not result in long-term impacts from construction. While the noise level impacts presented for each phase of construction are a “worst-case” scenario and may at times be audible over traffic-related noise level impacts surrounding the area, these high levels are not expected to be continuous. Moreover, these noise levels will occur only during the hours allowed by the City's Municipal Code and will be reduced by the application of noise control techniques affecting and controlling the construction noise at the source. Noise control techniques would be implemented to ensure that noise generated from temporary construction activities would not exceed the Redwood City guidelines at nearby sensitive receptors. Furthermore, the exterior façade of the project building would be designed to reduce noise from existing roadways and railways to achieve Code requirements.

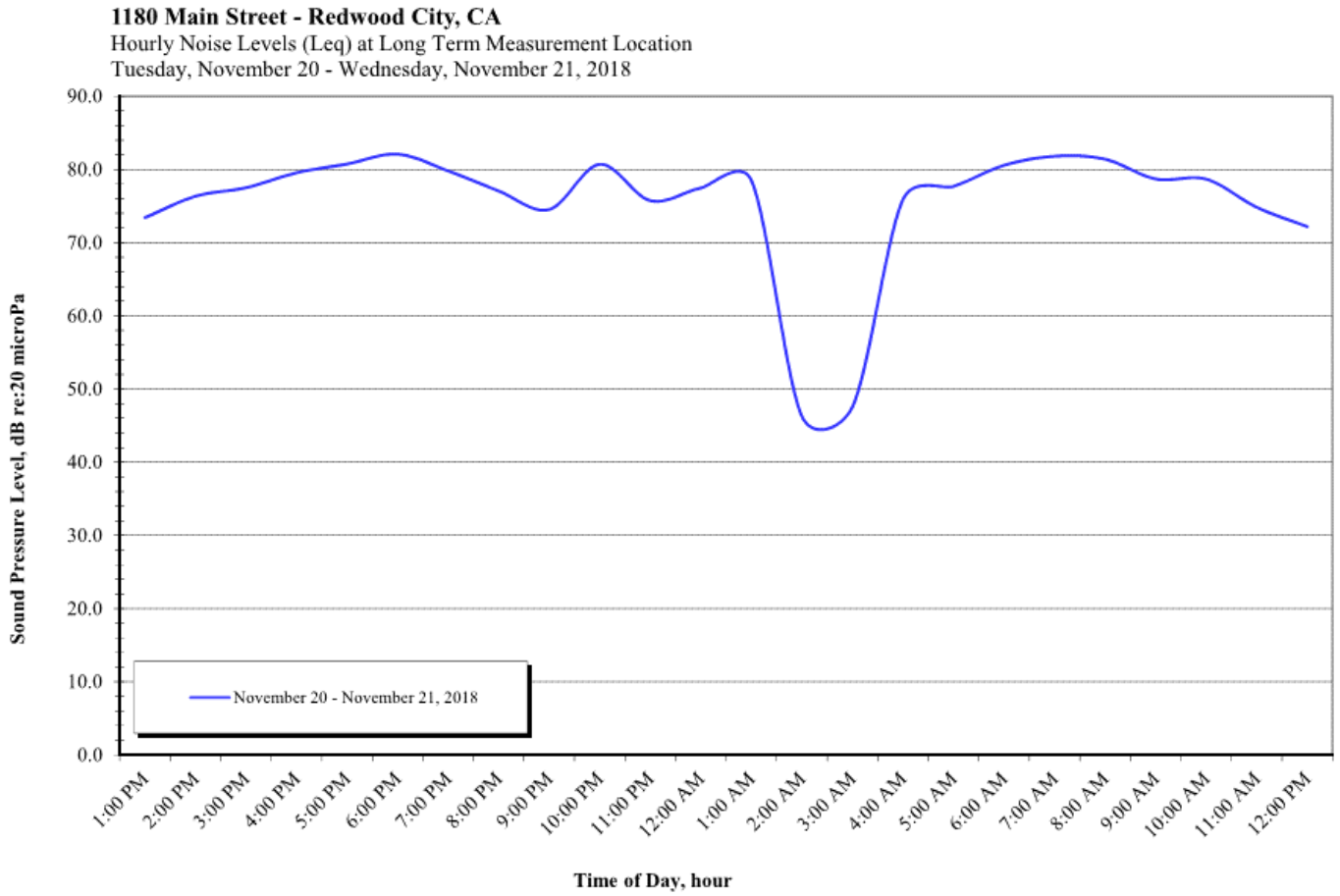
Stantec Consulting Services Inc.

Tracie J. Ferguson

Tracie Ferguson
Senior Associate - Acoustics
Phone: 415-518-0835
Tracie.Ferguson@stantec.com

Reference: **Noise Technical Memo for 1180 Main Street Project**

Chart 1: Measured Hourly Ambient Noise Levels at Project Site



Reference: **Noise Technical Memo for 1180 Main Street Project**

Figure 2: Measurement Locations and Sensitive Receiver Locations



Reference: **Noise Technical Memo for 1180 Main Street Project**

Figure 3: Roadway Construction Noise Model Output Results

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/17/2019
Case Description: Construction Noise to Franklin Street Apartments Across Maple Street

		---- Receptor #1 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Franklin Street Apartments	Residential	77.7	71.1	71.1

			Equipment Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Grader	No	40	85		100	0
Pneumatic Tools	No	50		85.2	100	0
Tractor	No	40	84		100	0

		Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pneumatic Tools	79.2	76.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	78	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	83.5	79.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

brick.

Exhibit B

1180 Main Street
Redwood City, CA 94063

Vibration Study

brick.
1266 66th street, suite 1
emeryville, ca 94608
www.brick-inc.com

Mei Wu Acoustics

Experts in acoustics, noise and vibration

To:	**Gloria Arteaga**	**Premia 1180 Main, LLC**	**gloria@premiallc.com**
From:	**William Rosentel**	**Mei Wu Acoustics**	**william@mei-wu.com**
	Mei Wu	**Mei Wu Acoustics**	**meiwu@mei-wu.com**
Date:	**February 23, 2018**		
Subject:	**1180 Main St, Redwood City Vibration Study**		
	MWA Project - 18008		

Mei Wu Acoustics (MWA) is pleased to submit this report regarding the ground vibration study conducted for 1180 Main St in Redwood City.

This project proposes a multi-level mixed-use (office/retail) building in downtown redwood city. This site-specific vibration study was conducted to measure the ground-borne vibration levels generated by train pass-by events on the nearby Caltrain Railroad line.

MWA personnel measured ground vibration levels at the project site for a period of 24 hours. The measured ground-borne vibration levels exceeded the FTA guideline of 83 VdB for infrequent events during two events.

1. Project Overview

The project site is located adjacent to the Caltrain Railroad line in redwood city. The project proposes the development of a three-story office building with two levels of subterranean parking. The future façade of the building is to be located approximately 41’ from the centerline of the nearest railroad track.

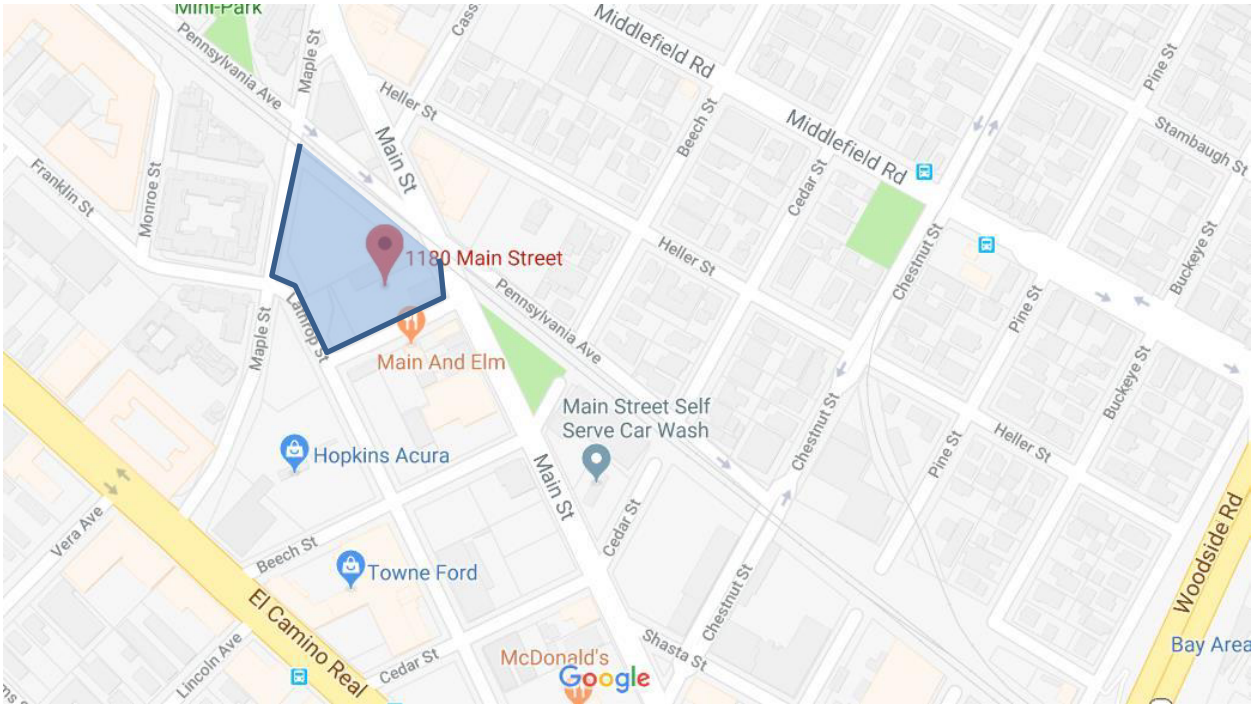


Figure 1: Project Site Overview - 1180 Main St

2. Vibration Criteria

As stated in the Redwood City General Plan Environmental Impact Report (Figure 2), there are no code requirements regarding ground vibration levels. Rather, guidelines developed by the Federal Transit Administration (FTA) are used to assess potential vibration impacts.

> **Vibration Criteria**
>
> **Presently, the City does not have any established vibration criteria or vibration limitations that can be used to evaluate the compatibility of sensitive land uses with respect to groundborne vibration related to railroads. While there are no City established vibration standards, both the U.S. Department of Transportation's Federal Railroad Administration (FRA) and the U.S. Department of Transportation's Federal Transit Administration (FTA) have developed vibration impact assessment criteria for evaluating vibration impacts associated with transit projects, which are based on maximum overall levels for a single event (i.e., a train passing by).**

Figure 2: Redwood City General Plan Environmental Impact Report - Excerpt from Section 4.10-13

The FTA guidelines for vibration levels are based on the building type (occupancy usage) and the number of vibration events per day. The guidelines are reproduced below as Table 1.

Table 8-1. Ground-Borne Vibration (GBV) and Ground-Borne Noise (GBN) Impact Criteria for General Assessment

Land Use Category	GBV Impact Levels (VdB re 1 micro-inch /sec)			GBN Impact Levels (dB re 20 micro Pascals)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB[4]	65 VdB[4]	65 VdB[4]	N/A[4]	N/A[4]	N/A[4]
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

Notes:

1. "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.
2. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.
3. "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.
4. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
5. Vibration-sensitive equipment is generally not sensitive to ground-borne noise.

Table 1: FTA Ground-borne Vibrations Guidelines[1]

The criteria are specified in vibration decibels (VdB) with respect to one-micro-inch per second (µin/s); the vibration velocities are specified as the one-second root-mean-square (RMS) averages. This project is a Category 3 type building; the applicable guidelines (highlighted in the table above) are 75 VdB for frequent events (more than 70 per day), 78 VdB for occasional events (30 to 70 events per day), and 83 VdB for infrequent events (less than 30 per day).

[1] FTA-VA-90-1003-06 - Transit Noise and Vibration Impact Assessment - Table 8-1, Page 8-3.

3. Vibration Measurement Description

MWA personnel visited the site on February 20th to measure ground vibration levels. The major source of ground-borne vibrations at the site is train pass-by events on the adjacent Caltrain Railroad line.

Measurements were conducted using a National Instruments NI-9234 DAQ equipped with PCB Piezotronics 393B12 ICP accelerometers. The acceleration data was captured and stored on a HP Pavilion DM4 laptop computer running National Instruments LabVIEW SignalExpress with the Sound and Vibration Assistant software.

The ground vibration levels were measured by an accelerometer on the foundation of the existing building at the eastern corner of the site. The accelerometer was located approximately 41' from the centerline of the nearest railroad track (southbound CalTrain), which is the proposed distance of the future building façade from the railroad track (Figure 3).

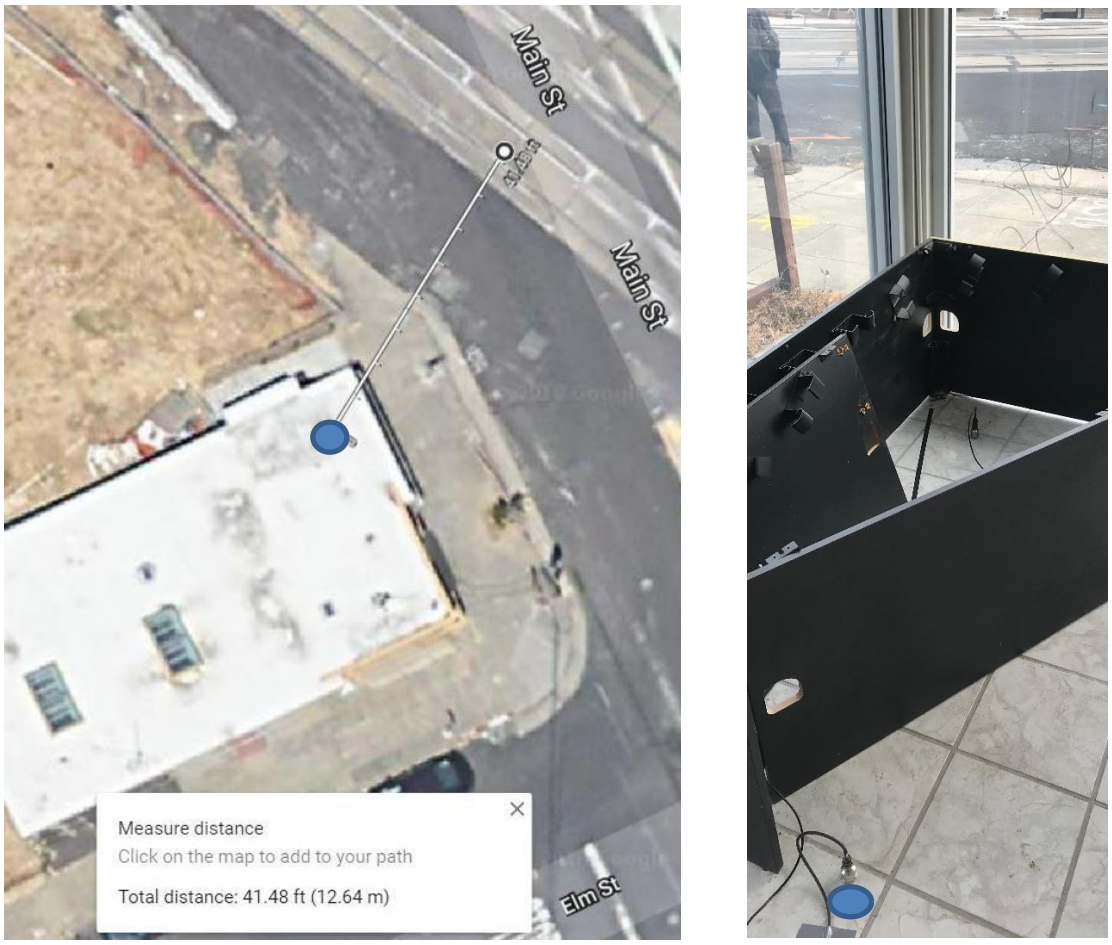


Figure 3: Vibration Measurement Location and Distance to the Railroad Track

As the vibration levels were measured on a building foundation slab, we expect that vibration levels on a similar foundation 41 ft away from the railroad track would also be similar to the measured levels. The measured vibration levels are representative of vibration levels on the ground floor only; vibration levels on floors of different elevations may vary.

4. Measurement Results

Vibration levels were measured at the site for a 24-hour period; shown in 8 hour periods in the three graphs below. The vibration acceleration was converted to vibration velocity with a one-second RMS average. All vibration levels are compared to vibration decibels (VdB) with respect to 1 micro-inch per second, per the FTA guidelines.

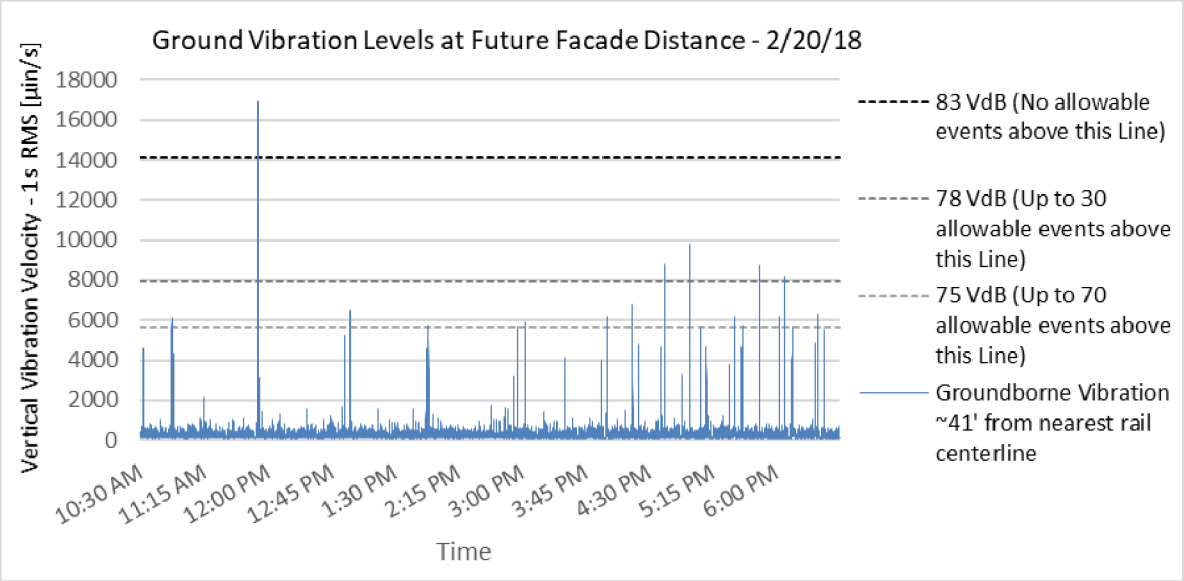


Figure 4: Ground Vibration Levels - 2/20/18 Daytime

There was an event at 11:53AM that exceeded the FTA guidelines of 83 VdB (or 14,125 µin/s); the level measured was 85 VdB (~17,000 µin/s) as seen on Figure 4.

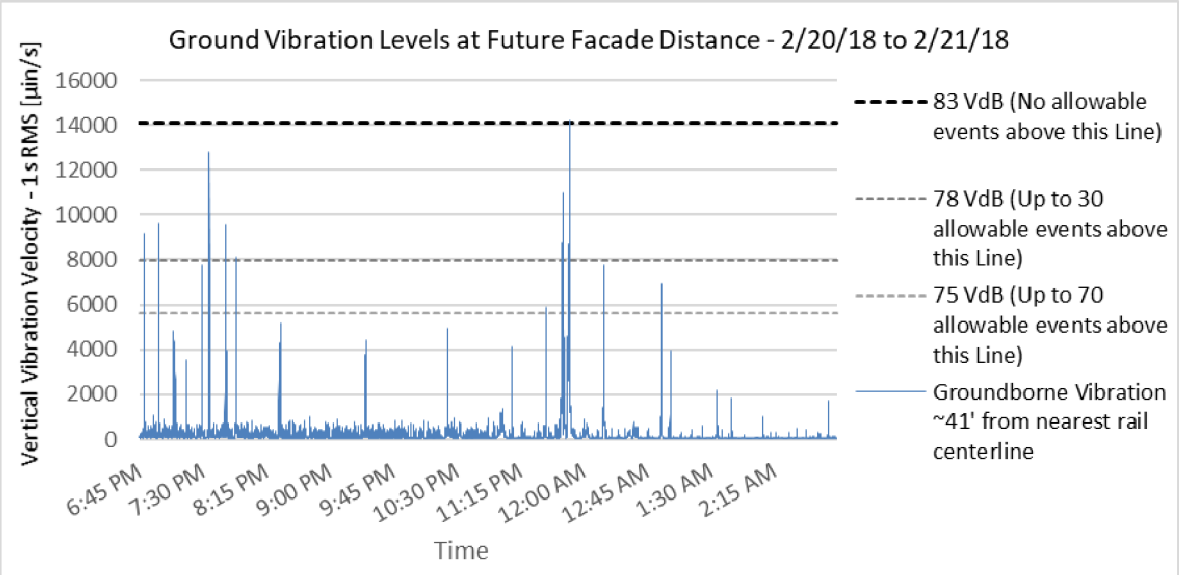


Figure 5: Ground Vibration Levels - 2/20/18 to 2/21/18 Nighttime

There was an event at 11:50PM that was equivalent to the FTA guideline of 83 VdB (or 14,125 µin/s); the level measured was 83 VdB (~14,200 µin/s) (Figure 5).

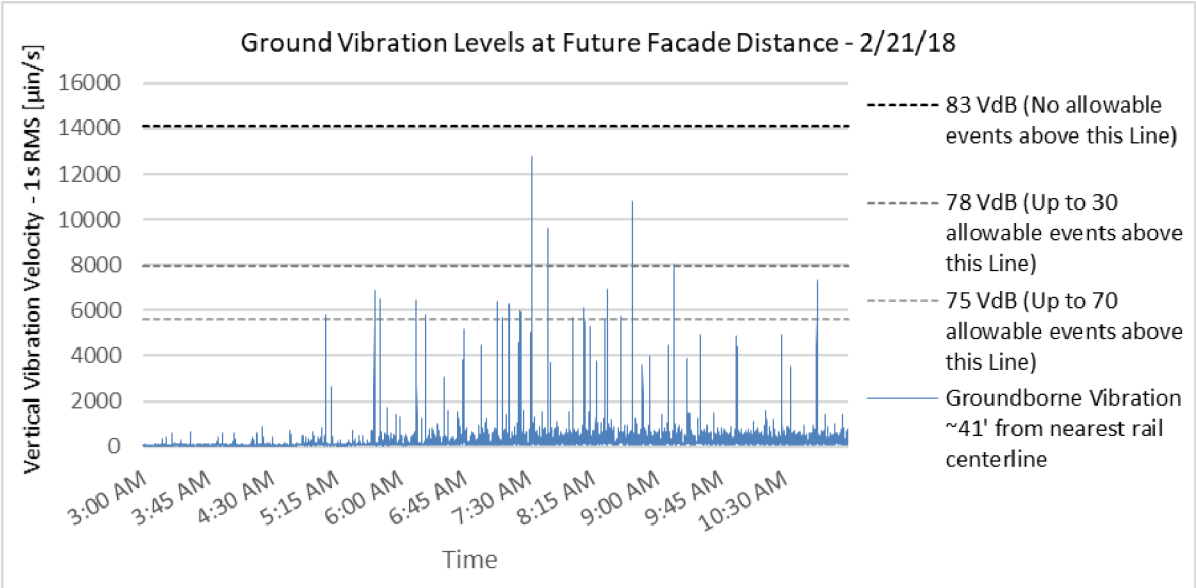


Figure 6: Ground Vibration Levels - 2/21/18 Morning

There were no events measured during the morning hours on 2/21/18 that exceeded 83 VdB.

Over the 24-hour period, there were two (2) events that exceeded 83 VdB, fifteen (15) events that exceeded 78 VdB, and forty-three (43) events that exceeded 75 VdB.

All of the measured events are considered acceptable by the FTA guidelines, except for the two events that exceeded 83 VdB. Only one of these events occurred during the day when the building would be occupied.

* * *

This concludes our report regarding the ground vibration measurements for 1180 Main St in Redwood City. Please contact Mei Wu Acoustics if you have any questions or comments.

Appendix H TRAFFIC IMPACT ANALYSIS REPORT

TRANSPORTATION IMPACT ANALYSIS

1180 & 1190 Main Street

PREPARED FOR:

CITY OF REDWOOD CITY

DECEMBER 2018 | FINAL

Prepared By:

Kimley»Horn

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EXECUTIVE SUMMARY

The 1180 and 1190 Main Street Project ("Project"), is a development which will merge two parcels at 1180 and 1190 Main Street and construct a 112,113-square foot office building.

This traffic study was prepared to determine potential impacts related to the project based on standards and methodologies set forth by the City of Redwood City (City) and the San Mateo City/Council Association of Governments (C/CAG). This study includes evaluations during the AM and PM peak hour traffic conditions for 19 intersections. This study also addresses the potential transportation effects of the proposed project to assist the City with project planning and the identification of potential conditions of approval for the project.

PROJECT TRIP ESTIMATES

Trips generated by the proposed project were based on the average rates for ITE Land Use 710 (General Office Building) from the Institute of Transportation Engineer's (ITE) publication, Trip Generation, 10th Edition. Due to the project's proximity to the Redwood City Caltrain's station and downtown area, transit and mixed-use reductions were applied. The proposed project will generate a 105 vehicle trips in the AM peak hour and a 97 vehicle trips in the PM peak hour.

It should be noted that the C/CAG's 2014 *Guidelines for Implementing the Land Use Component of the Congestion Management Program* requires development that generates 100 or more net new peak hours trips to implement a Transportation Demand Management (TDM) plan to reduce vehicle trips. However, to be conservative, no TDM reductions were assumed.

PROJECT IMPACTS AND RECOMMENDED MITIGATION

Project impacts were determined by comparing conditions with the proposed project to those without the proposed project. Potential significant impacts for study intersection are created when LOS criteria are met. Additional potential significant impacted are created if the proposed project would conflict with existing City's plans and policies. **Table E1** summaries impacts and mitigations associated with the proposed project.

LATHROP CLOSURE ANALYSIS

A supplemental analysis was conducted to evaluate the potential effects of closing a segment of Lathrop Street between Maple Street and Elm Street to vehicle access, except for emergency medical services. Project impacts were determined for this scenario. **Table E2** summaries impacts and mitigations associated with the proposed project.

Table E1 - Summary of Project Impact and Mitigation

Impact #	Location	Scenarios	Mitigation	Impact Significance
TRANS-1	El Camino Real / Beech Street	Cumulative Plus Project PM Peak Hour	Restrict Left-Turns	Mitigated to Less than Significant
TRANS-2	Main Street / Chestnut Street	Cumulative Plus Project PM Peak Hour	Optimize Signal Timing	Mitigated to Less than Significant
TRANS-3	Main Street / Pine Street-SR 84 Ramps	Cumulative Plus Project PM Peak Hour	Install All-way Stop Control	Mitigated to Less than Significant
TRANS-4	Project Site	All	Construct following pedestrian improvements: • Install marked crosswalks at Maple Street/ Franklin Street-Lathrop Street • Install LOOK (R15-8) sign for pedestrian railroad crossing at Maple Street and Main Street. • Install two-stage crosswalk at Maple Street / Main Street and sidewalk improves along the east side of Maple street between Main Street and railroad tracks	Mitigated to Less than Significant
TRAN-5	Project Site	All	Install Class III “Sharrows” along Lathrop Street and pay fair share towards other bicycle improvements within the area	Mitigated to Less than Significant

Table E2 - Summary of Project Impact and Mitigation for Lathrop Closure Analysis

Impact #	Location	Scenarios	Mitigation	Impact Significance
TRANS-S1	El Camino Real / Beech Street	Cumulative Plus Project AM Peak Hour Cumulative Plus Project PM Peak Hour	Restrict Left-Turns	Mitigated to Less than Significant
TRANS-S2	Main Street / Chestnut Street	Cumulative Plus Project PM Peak Hour	Optimize Signal Timing	Mitigated to Less than Significant
TRANS-S3	Main Street / Pine Street-SR 84 Ramps	Cumulative Plus Project PM Peak Hour	Install All-way Stop Control	Mitigated to Less than Significant
TRANS-S4	Project Site	All	Construct following pedestrian improvements: • Install marked crosswalks at Maple Street/ Franklin Street-Lathrop Street • Install LOOK (R15-8) sign for pedestrian railroad crossing at Maple Street and Main Street. Install two-stage crosswalk at Maple Street / Main Street and sidewalk improves along the east side of Maple street between Main Street and railroad tracks	Mitigated to Less than Significant
TRAN-S5	Project Site	All	Install Class III “Sharrows” along Lathrop Street and pay fair share towards other bicycle improvements within the area	Mitigated to Less than Significant

1. INTRODUCTION

This report presents the results of the transportation impact analysis (TIA) for a proposed 3-story office building located in the City of Redwood City, California. The proposed project ("Project") will merge two parcels at 1180 and 1190 Main Street and construct a 112,113-square foot office building.

Figure 1 illustrates the location of the project site in relation to the adjacent roadway network. Pedestrians may access the building at entrances on Main Street and Lathrop Street. Vehicles may enter the underground parking off Elm Street.

This traffic study was prepared to determine potential impacts related to the project based on standards and methodologies set forth by the City of Redwood City (City) and the San Mateo City/Council Association of Governments (C/CAG). This study includes evaluations during the AM and PM peak hour traffic conditions for 19 intersections. This study also addresses the potential transportation effects of the proposed project to assist the City with project planning and the identification of potential conditions of approval for the project.

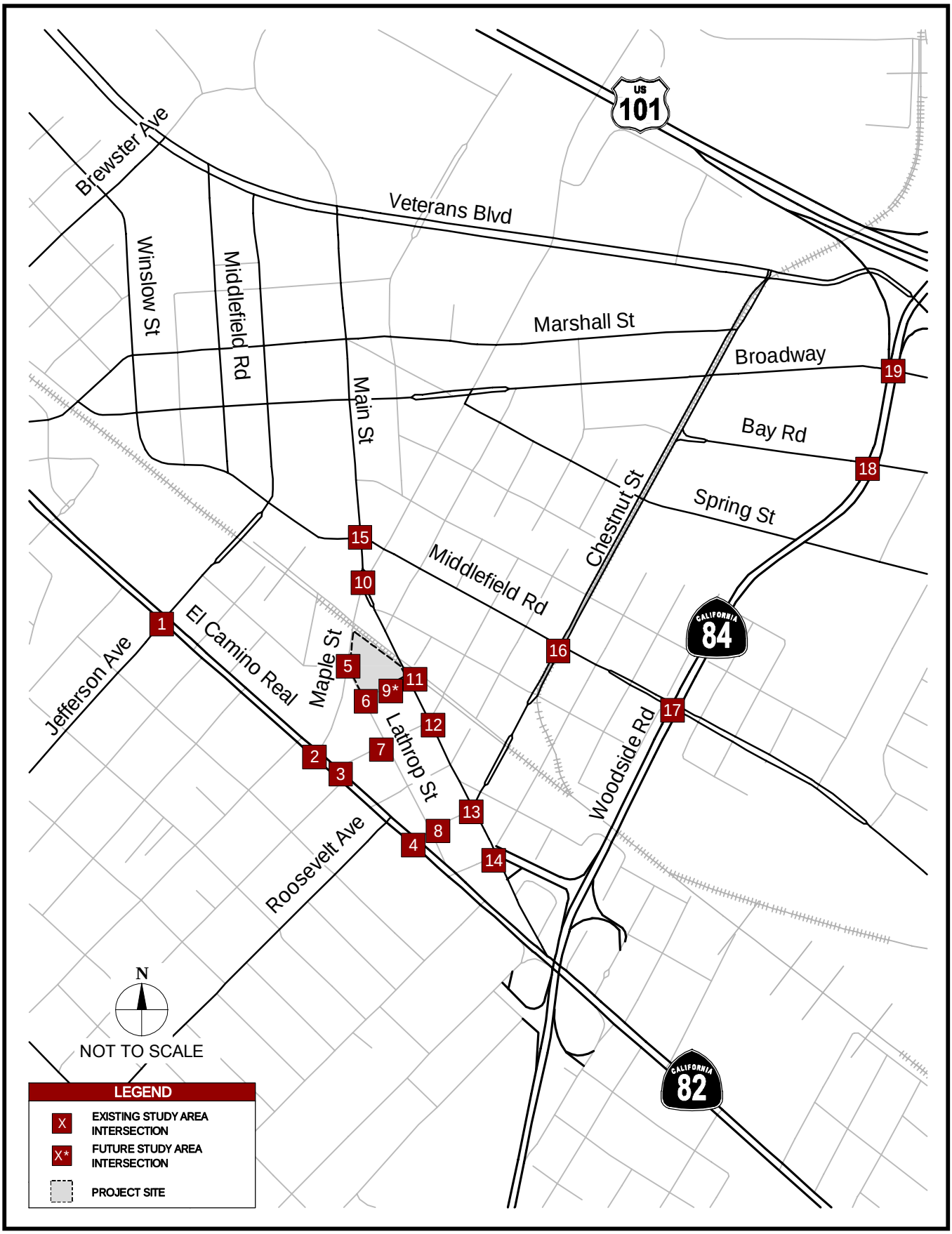
STUDY AREA

The proposed project will generate new vehicular trips that will increase traffic volumes on the nearby street network. To assess changes in traffic conditions associated with the proposed project, the following intersections were studied, as shown in **Table 1**. Study intersections were selected in adherence with the City/Council Association of Governments of San Mateo County (C/CAG) threshold of 50 or more net new peak hour trips per intersection generated by the project. **Figure 1** illustrates the intersection locations.

TRAFFIC CONDITIONS

This TIA evaluates the following traffic scenarios:

- Existing Conditions – Based on traffic counts taken in March 2016, April 2017, and May 2018 and existing roadway geometry and traffic control in 2018.
- Existing Plus Project Conditions – Based on traffic generated by the proposed project added to existing traffic volumes. Existing roadway geometry with proposed project roadway improvements and traffic controls are assumed for this scenario.
- Background Condition – Based on traffic from approved projects in the study area (provided by City staff and dated June 2018) added to existing traffic volumes.
- Background Plus Project Conditions – Based on traffic from approved projects in the study area and traffic generated by the proposed project added to existing traffic volumes.
- Cumulative Conditions – Based on traffic from approved and pending projects in the study area (provided by City staff and dated June 2018) added to existing traffic volumes.
- Cumulative Plus Project Conditions – Based on future cumulative year traffic projections and traffic generated by the proposed project.



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FIGURE 1

PROJECT LOCATION AND STUDY INTERSECTIONS

Table 1 - Study Intersections

#	Intersection	Existing or Future Intersection
1	El Camino Real / Jefferson Avenue	Existing
2	El Camino Real / Maple Street	Existing
3	El Camino Real / Beech Street	Existing
4	El Camino Real / Chestnut Street	Existing
5	Franklin Street-Lathrop Street / Maple Street	Existing
6	Lathrop Street / Elm Street	Existing
7	Lathrop Street / Beech Street	Existing
8	Lathrop Street / Chestnut Street	Existing
9	Elm Street / Project Driveway	Future
10	Main Street / Maple Street	Existing
11	Main Street / Elm Street	Existing
12	Main Street / Beech Street	Existing
13	Main Street / Chestnut Street	Existing
14	Main Street / Pine Street-SR 84 Ramp	Existing
15	Middlefield Road / Main Street	Existing
16	Middlefield Road / Chestnut Street	Existing
17	Woodside Road (SR 84) / Middlefield Road	Existing
18	Woodside Road (SR 84) / Bay Road	Existing
19	Woodside Road (SR 84) / Broadway	Existing

STUDY METHODOLOGY

Analysis of significant environmental impacts at intersections and freeway segments was based on the methodology of level of service (LOS). The LOS of an intersection is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of service for this study were determined using methods defined in the *Highway Capacity Manual, 2000* (HCM) for signalized intersections and *Highway Capacity Manual, 2010* (HCM 2010) for unsignalized intersections.

INTERSECTION LEVEL OF SERVICE

The HCM includes procedures for analyzing side-street stop-controlled (SSSC) and signalized intersections. The SSSC procedure defines LOS as a function of average control delay for each minor street approach movement and major street left-turns. **Table 2** relates the operational characteristics associated with each LOS category for signalized and unsignalized intersections[1].

[1] Transportation Research Board, *Highway Capacity Manual 2010*, National Research Council, 2000

Table 2 - Intersection Level of Service Definitions

Level of Service	Description	Signalized (Avg. control delay per vehicle sec/veh.)	Unsignalized (Avg. control delay per vehicle sec/veh.)
A	Free flow with no delays. Users are virtually unaffected by others in the traffic stream	delay ≤ 10.0	delay ≤ 10.0
B	Stable traffic. Traffic flows smoothly with few delays.	10.0 < delay ≤ 20.0	10.0 < delay ≤ 15.0
C	Stable flow but the operation of individual users becomes affected by other vehicles. Modest delays.	20.0 < delay ≤ 35.0	15.0 < delay ≤ 25.0
D	Approaching unstable flow. Operation of individual users becomes significantly affected by other vehicles. Delays may be more than one cycle during peak hours.	35.0 < delay ≤ 55.0	25.0 < delay ≤ 35.0
E	Unstable flow with operating conditions at or near the capacity level. Long delays and vehicle queuing.	55.0 < delay ≤ 80.0	35.0 < delay ≤ 50.0
F	Forced or breakdown flow that causes reduced capacity. Stop and go traffic conditions. Excessive long delays and vehicle queuing.	delay > 80	delay > 50

THRESHOLD OF SIGNIFICANCE

Project impacts were determined by comparing conditions with the proposed project to those without the proposed project. Significant impacts for unsignalized and signalized intersections are created when traffic from the proposed project causes the LOS to fall below a specific threshold.

City of Redwood City

The LOS standard for City of Redwood City intersections is LOS D except for C/CAG designated Congestion Management Program (CMP) intersections, which allows for a minimum level of service of LOS E. Project impacts at City of Redwood City signalized intersections would be considered significant if one of the following criteria is met:

1. If the intersection operates at an acceptable LOS (i.e. LOS A, B, C, or D for City intersections and LOS A, B, C, D or E for CMP intersections) without the project and degrades to an unacceptable LOS (i.e. LOS E, or F) with the project; or
2. If the intersection operates at an unacceptable LOS (i.e. LOS E, or F for City intersections or LOS F for CMP intersections) without the project and the project increases the delay by five (5) or more seconds.

Project impacts at City of Redwood City unsignalized intersections would be considered significant if one of the following criteria is met:

1. If the intersection operates at an acceptable LOS (i.e. LOS A, B, C, or D) without the project and degrades to an unacceptable LOS (i.e. LOS E, or F) with the project and the traffic volumes at the intersection satisfy the California Manual of Uniform Traffic Control Devices (CA MUTCD) Peak Hour Volume warrant for traffic signal installation; or
2. If the intersection operates at an unacceptable LOS (i.e. LOS E, or F) without the project and the project increases the delay by five (5) or more seconds and the traffic volumes at the intersection satisfy the California Manual of Uniform Traffic Control Devices (CA MUTCD) Peak Hour Volume warrant for traffic signal installation.

Mitigation for intersections with a significant impact must improve the LOS back to without Project conditions or better.

SIGNAL WARRANTS

Traffic signals may be justified when traffic operations fall below acceptable LOS standards and when one or more signal warrants are satisfied. Traffic volumes at the unsignalized study intersections were compared against the peak hour warrant in the 2014 California Manual on Uniform Traffic Control Devices (CA MUTCD)[2]. *Traffic Signal Warrant #3 – Peak Hour Volume Warrant* is satisfied when traffic volumes on the major and minor approaches exceed thresholds for one hour of the day. The Peak Hour Warrant is generally the first warrant to be satisfied. Other warrants such as those for minimum vehicle volumes, interruption of continuous traffic, and traffic progression were not evaluated because they generally require higher traffic volumes to be satisfied.

QUEUING

The effects of vehicle queuing were analyzed and the 95th percentile queue is reported for all study intersections. The 95th percentile queue length represents a condition where 95 percent of the time during the peak hour, traffic volumes will be less than or equal to the queue length determined by the analysis. This is referred to as the "95th percentile queue."

Queues that exceed the turn pocket length can create potentially hazardous conditions by blocking or disrupting through traffic in adjacent travel lanes. However, these potentially hazardous queues are generally associated with left-turn movements. Locations where the right turn pocket storage is exceeded are not considered potentially hazardous because the right turn movement typically goes at the same time as the through movement and the additional vehicles that spill out of the turn pocket will likely not hinder nor disrupt the adjacent through traffic, as would be the case in most left turn pockets.

The City of Redwood City does not have specified standards for queuing in its policy guidelines. Thus, for purposes of this analysis, queuing deficiencies were considered to occur under conditions where project traffic causes the queue in a left turn pocket to extend beyond the turn pocket by 25 feet or more (i.e., the length of one vehicle) into adjacent traffic lanes that operate (i.e., move) separately from the left turn lane. Where the vehicle queue already exceeds that turn pocket length under pre-project conditions, a queuing deficiency would occur if project traffic lengthens the queue by 25 feet or more.

[2] *California Manual on Uniform Traffic Control Devices,* (FHWA's MUTCD 2009 Edition, as amended for use in California), November 7, 2014

REPORT ORGANIZATION

The remainder of the report is divided into the following chapters:

- Chapter 2: Existing Conditions – describes existing conditions on the roadway network, transit system, pedestrian facilities, and bicycle facilities.
- Chapter 3: Existing Plus Project Conditions – describes the proposed project, trip generation, and estimated impact on the transportation system under Existing Plus Project Conditions.
- Chapter 4: Background Traffic Conditions – describes the traffic conditions under Background Conditions with and without the proposed project.
- Chapter 5: Cumulative Traffic Conditions – describes the traffic conditions under Cumulative Conditions with and without the proposed project.
- Chapter 6: Intersection Vehicle Queuing and Site Access and Circulation - describes vehicle queuing analysis at the study intersections and site access and circulation for the proposed Project. This chapters also includes potential effects the proposed project may have on the transit system, pedestrian facilities, and bicycle facilities.
- Chapter 7: Summary of Impacts and Recommended Mitigation – summarizes potential impacts of the proposed project and mitigations, if necessary.
- Chapter 8: Supplemental Analysis - Lathrop Street Closure – summarizes supplemental analysis conducted to evaluate the potential impacts associated with the closure of Lathrop Street between Maple Street and Elm Street.

2. EXISTING CONDITIONS

This chapter describes the existing conditions of the roadway network, transit service, pedestrian facilities, and bicycle facilities within the vicinity of the project site. The chapter also presents existing turning movement volumes and intersection levels of service.

EXISTING ROADWAY NETWORK

This section provides a description of the specific roadways included in this study.

EL CAMINO REAL (STATE ROUTE 82)

El Camino Real, State Route 82 (SR 82), is a four-lane north-south boulevard. El Camino Real runs parallel to US 101 and connects multiple cities in the Bay Area from Daly City to the north and Santa Clara to the south. The posted speed limit on El Camino Real within the study area is 35 mph.

BAY ROAD

Bay Road begins as a residential two-lane roadway in the west at Beech Street and continues east as a four-lane industrial street, serving commercial and industrial land uses within the study area. The speed limit on Bay Road is 30 miles per hour.

BEECH STREET

Beech Street is a two-lane local road with on-street parking. Within the study area, Beech Street begins at El Camino Real and terminates just south of the railroad tracks serving industrial land uses. Beech Street continues north of the railroad tracks and serves residential land uses. Within the study area, the speed limit on Beech Street is 25 miles per hour.

BROADWAY

Broadway is an east-west industrial street, which runs between Hopkins Avenue and Fifth Avenue. Between Hopkins Avenue and El Camino Real, Broadway is a two-lane roadway with bicycle lanes that serves residential land uses. Within the downtown area, between El Camino Real and Woodside Road, there are two to four lanes along Broadway with either on-street parking or bicycle lanes. East of Woodside Road, Broadway is a four-lane road with a two-way left-turn lane (TWLTL) and shared bicycle lanes (sharrows) or bicycle lanes. West of Woodside Road, the posted speed limit on Broadway is 25 miles per hour and 30 miles per hour east of Woodside Road.

CHESTNUT STREET

Chestnut Street is a two-lane, local street with on-street parking. There is an at-grade crossing with the railroad tracks near the Pennsylvania Avenue. Within the study area, Chestnut Street, serves industrial land uses and serves residential and commercial land uses north of the railroad tracks. Chestnut Street connects with Veterans Boulevard to the north and El Camino Real to the south. Within the study area the speed limit on Chestnut Street is 25 miles per hour.

ELM STREET

Elm Street is a two-lane local street with on-street parking. Elm Street runs between Lathrop Street and Main Street. Left turns from Elm Street onto Main Street are prohibited. Entrance to the Project's garage is located off Elm Street. The speed limit on Elm Street is 25 miles per hour.

FRANKLIN STREET

Franklin Street is a two-lane local street with on-street parking that serves residential uses. Franklin Street begins at Jefferson Avenue and becomes Lathrop Street at Maple Street. The speed limit on Franklin Street is 25 miles per hour.

JEFFERSON AVENUE

Jefferson Avenue is a connector street that connects the residential and downtown area in Redwood City. West of Middlefield Road, Jefferson Avenue is a four-lane roadway with on-street parking and shared bicycle lanes and a speed limit of 30 miles per hour. East of Middlefield Road, Jefferson Avenue becomes a two-lane roadway with on-street parking and a speed limit of 25 miles per hour.

LATHROP STREET

Lathrop Street is a two-lane local roadway with on-street parking, that serves industrial land uses. Lathrop Street connects with El Camino Real and turns into Franklin Street at Maple Street. The speed limit on Lathrop Street is 25 miles per hour.

MAIN STREET

Main Street is a two-way roadway that runs between El Camino Real and Veterans Boulevard. Within the study area Main Street is designated as a local street with on-street parking and serves industrial land uses. North of Middlefield Road, Main Street is designated as a pedestrian street with on-street parking and a TWLTL in some segments. There is a median island on Main Street from the railroad tracks towards Elm Street to prevent cars heading downtown from accessing the tracks when the gate arms are down. Within the study area the speed limit on Main Street is 30 miles per hour. There is an at-grade crosswalk with the railroad tracks, just north of Elm Street.

MAPLE STREET

Maple Street is north-south roadway that runs from Redwood Creek to El Camino Real. Within the study area south of Main Street, it is designated in the General Plan as a two-lane pedestrian street and as a Neighborhood Main Street in RWCmoves. Maple Street has Class II bike lanes and a speed limit of 25 miles per hour that serves residential purposes. North of Main Street, Maple Street is predominantly a two-lane street with on-street parking, and a speed limit of 25 miles per hour. From Main Street to Middlefield Road, Maple Street is one-way in the southbound direction with on-street parking. North of Marshall Street, there is no on-street parking and the posted speed limit is 30 miles per hour.

MIDDLEFIELD ROAD

Middlefield Road is an east-west connector street which connects the residential and downtown areas. East of Maple Street, Middlefield Road is a two-lane roadway with a two-way left-turn lane, on street parking,

and Class II bicycle lanes with a speed limit of 30 miles per hour. West of Maple Street, Middlefield Road is primarily a two-lane roadway with on-street parking and a speed limit of 25 miles per hour.

WOODSIDE ROAD

Woodside Road, is a north-south, designated boulevard that connects to I-280 and US-101. Within the study area, Woodside Road is a four to five-lane roadway. South of US-101, Woodside Road is designated as State Route 84 (SR 84). The posted speed limit is 35 miles per hour.

EXISTING TRANSIT FACILITIES

SamTrans and Caltrain provide transit services within Redwood City and other cities in San Mateo County. The existing transit services within the study area are shown in **Figure 2** and described in this section. **Table 3** provides of a summary of the existing transit service in the study area.

SAMTRANS BUS SERVICES

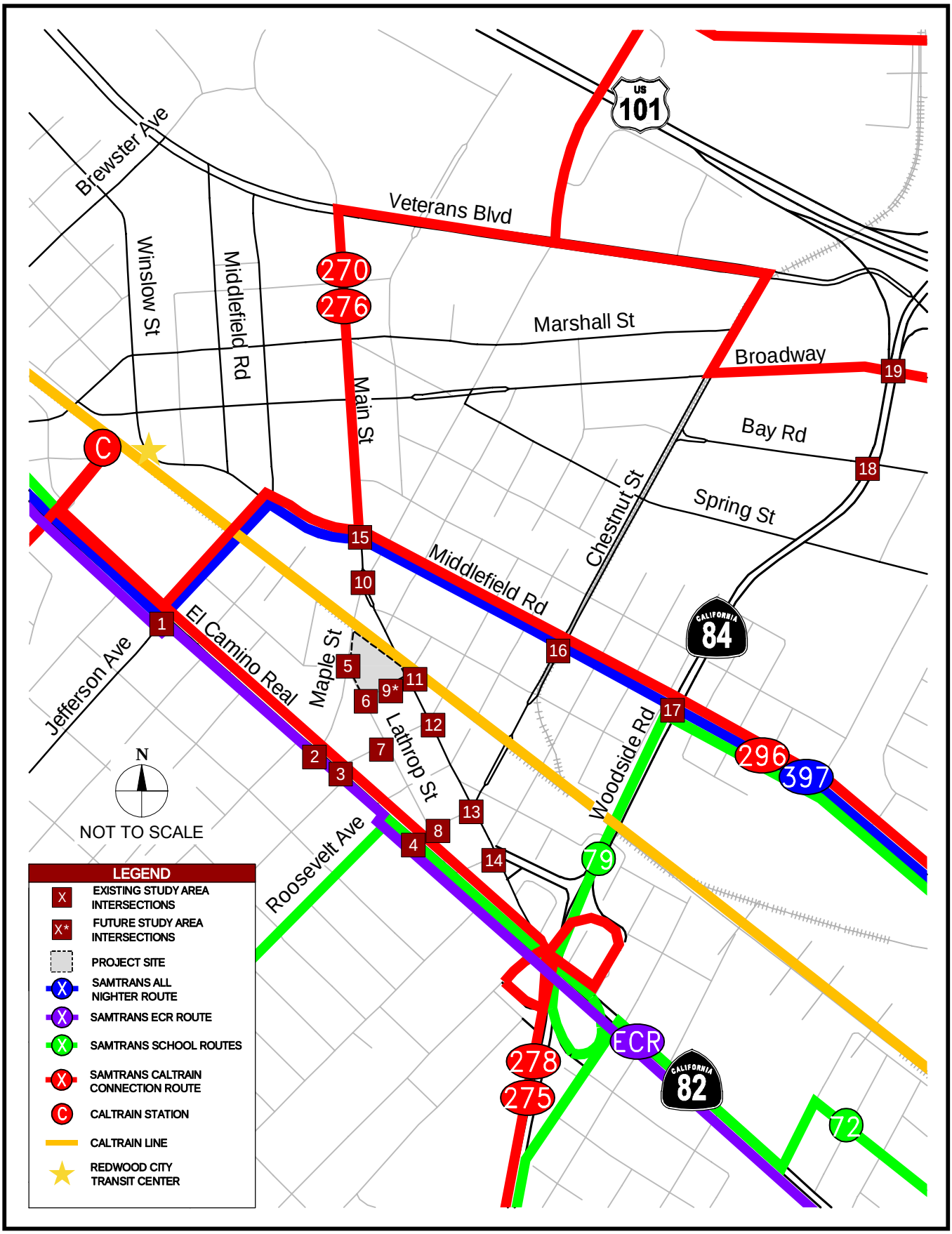
SamTrans has multiple bus routes near the project site and in the vicinity of Redwood City. Many routes (such as Routes 73, 78, 87, 296, 398, etc.) operate within the study area, but do not run near the proposed site; therefore, only routes that service the nearby area of the proposed project are described in this section.

Route 79 is a limited local bus service for that operates between Kennedy Middle School and the intersection of Florence Street and 17th Avenue only on school days. During the AM peak, there are three buses that run between 7:03 AM to 8:08 AM on approximately 5- to 30-minute headways. During the afternoon dismissal period, there are three buses that depart Kennedy Middle School between 3:14 PM and 4:15 PM. On Thursday afternoons, there are two buses that depart the middle school at 2:00 PM and 2:03 PM. In the vicinity of the project site, Route 79 runs on Roosevelt Avenue, El Camino Real, Woodside Road, and Middlefield Road with the nearest bus stop at El Camino Real and Roosevelt Avenue.

Route 274 is a local bus service that operates between Cañada College and the Redwood City Transit Center. Route 274 operates during the weekdays between 6:05 AM and 10:45 PM on 30- to 60-minute headways. In the vicinity of the project site, Route 274 runs on El Camino Real and Woodside Road. There is no weekend service, and the nearest bus stop is at El Camino Real and Oak Avenue.

Route 275 is a local bus service that operates on weekdays between the Redwood City Transit Center and the intersection of Woodside Road and Alameda de las Pulgas. It operates from 6:00 AM to 7:14 PM on 30-minute headways. In the vicinity of the project site, the route runs along Woodside Road and El Camino Real, with the nearest bus stop at El Camino Real and Cedar Street.

Route 278 is a local bus service that operates between Cañada College and the Redwood City Transit Center. Route 278 only operates on Saturday between 7:30 AM and 7:29 PM on 60-minute headways. In the vicinity of the project site, Route 278 runs on El Camino Real and Woodside Road, with the nearest bus stop at El Camino Real and Cedar Street.



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FIGURE 2
EXISTING TRANSIT FACILITIES

Table 3 - Existing Transit Service

Route	From	To	Weekdays			Weekends	
			Operating Hours[1]	Headway[2] (minutes)		Operating Hours[1,3]	Headway[2] (minutes)
				Peak	Off-Peak		
SamTrans							
79	Kennedy Middle School	Florence St. and 17th Ave.	7:05 AM to 4:40 PM[4]	5-35	-	No weekend service	-
274	Redwood City Transit Center	Cañada College	6:05 AM to 10:25 PM	30	60	No weekend service	-
275	Redwood City Transit Center	Woodside Road and Alameda de las Pulgas	6:00 AM to 7:15 PM	30	30	No weekend service	-
278	Redwood City Transit Center	Cañada College	No weekday service	-	-	7:30 AM to 7:30 PM	60
296	Redwood City Transit Center	Palo Alto Transit Center	All hours[5]	15	60	All hours[6]	30-90
397	San Francisco	Palo Alto Transit Center	12:45 AM to 6:25 AM	-	60	12:45 AM to 6:25 AM	60
ECR	Daly City BART station	Palo Alto Transit Center	4:20AM to 1:44 AM	10	20-60	5:00 AM to 2:05 AM	15

Notes:
[1] Operating Hours rounded to the nearest 5 minutes for weekdays and weekends.
[2] Headways are defined as the time between transit vehicles on the same route. Listed headways are the modes of the headways and rounded to the nearest 5 minutes.
[3] Operating hours for Sundays may have different schedule or flexible schedule compared to Saturdays.
[4] Route 79 operates on school days only. Buses heads towards Kennedy Middle School between 7:05 AM and 8:10 AM and departs from Kennedy Middle School between 3:15 PM and 4:40 PM (2:00 PM and 4:40 PM on Thursdays).
[5] Route 296 operates from 6:05 AM to 2:45 AM the next day for the eastbound direction and from 3:45 AM to 12:25 AM the next day for the westbound direction.

Route 296 is a local bus service that runs between the Redwood City Transit Center and the Palo Alto Transit Center. On weekdays, the route operates from 6:05 AM to 2:44 AM the next day for the eastbound direction and 3:46 AM to 12:23 AM the next day for the westbound direction on approximately 15- to 60-minute headways. On weekends, the route operates from 6:43 AM to 2:20 AM the next day for the eastbound direction and from 3:45 AM to 12:26 PM the next day for the westbound direction on approximately 30- to 60-minute headways. In the vicinity of the project side, Route 296 runs on Middlefield Road, Jefferson Avenue, and El Camino Real, with the nearest bus stop at Middlefield Road and Cassia Street.

Route 397 is an all-nighter bus service that operates between downtown San Francisco and the Palo Alto Transit Center. On weekdays and weekends, there are three buses that operate to San Francisco at 12:46 AM, 1:46 AM, and 2:46 AM and four buses that operate to Palo Alto Transit Center at 1:06 AM, 2:06 AM, 3:06 AM, and 4:06 AM. In the vicinity of the project site, Route 397 runs along Middlefield Road and El Camino Real, with the nearest bus stop at Middlefield Road and Cassia Street.

Route ECR RAPID is a rapid bus service that runs along El Camino Real from the Daly City BART station to the Palo Alto Transit Center. This route only has twelve stops, many are either Caltrain stations or transit centers, along provides riders, which faster travel times along El Camino Real. The route operates within Redwood City between 4:22 AM and 1:44 AM the next day on the weekdays with headways approximately 20 minutes during peak hours, 60 minutes during late night service. On Saturdays, the route operates

within Redwood City between 5:02 AM and 2:06 AM the next day with headways between 10 to 30 minutes throughout the day and 60 minutes during late night service. On Sundays, the route operates within Redwood City between 5:05 AM and 2:02 AM the next day with headways approximately 30 minutes. In the vicinity of the project site, Route ECR RAPID runs on El Camino Real along Jefferson Avenue and Woodside Road, with the nearest bus stop at Redwood City Transit Center.

CALTRAIN

Caltrain provides commuter-heavy rail services between San Francisco County and Santa Clara County.

The Redwood City Caltrain station is located on James Avenue, approximately 2,000 feet west of the project site. During the weekday AM peak, the station is served by three northbound limited-stop trains, two northbound baby bullet trains, six southbound limited-stop trains, and two southbound baby bullet trains. During the weekday PM peak, the station is served by four northbound limited-stop trains, three northbound baby bullet trains, three southbound limited-stop trains, and two southbound baby bullet train. Those taking Caltrain may transfer to SamTrans bus routes ECR, 95, 274, 275, 276, 278, 295, 296, 397, 398 and RAPID.

EXISTING PEDESTRIAN FACILITIES

Sidewalks and crosswalks are mostly provided throughout the study area in Redwood City to allow pedestrians to access nearby transit stops, residential uses, and commercial uses. There are existing sidewalks present for the majority of the area surrounding the project site, except adjacent to the project site along Lathrop Street and Maple Street. There are no marked crosswalks directly adjacent to the project site.

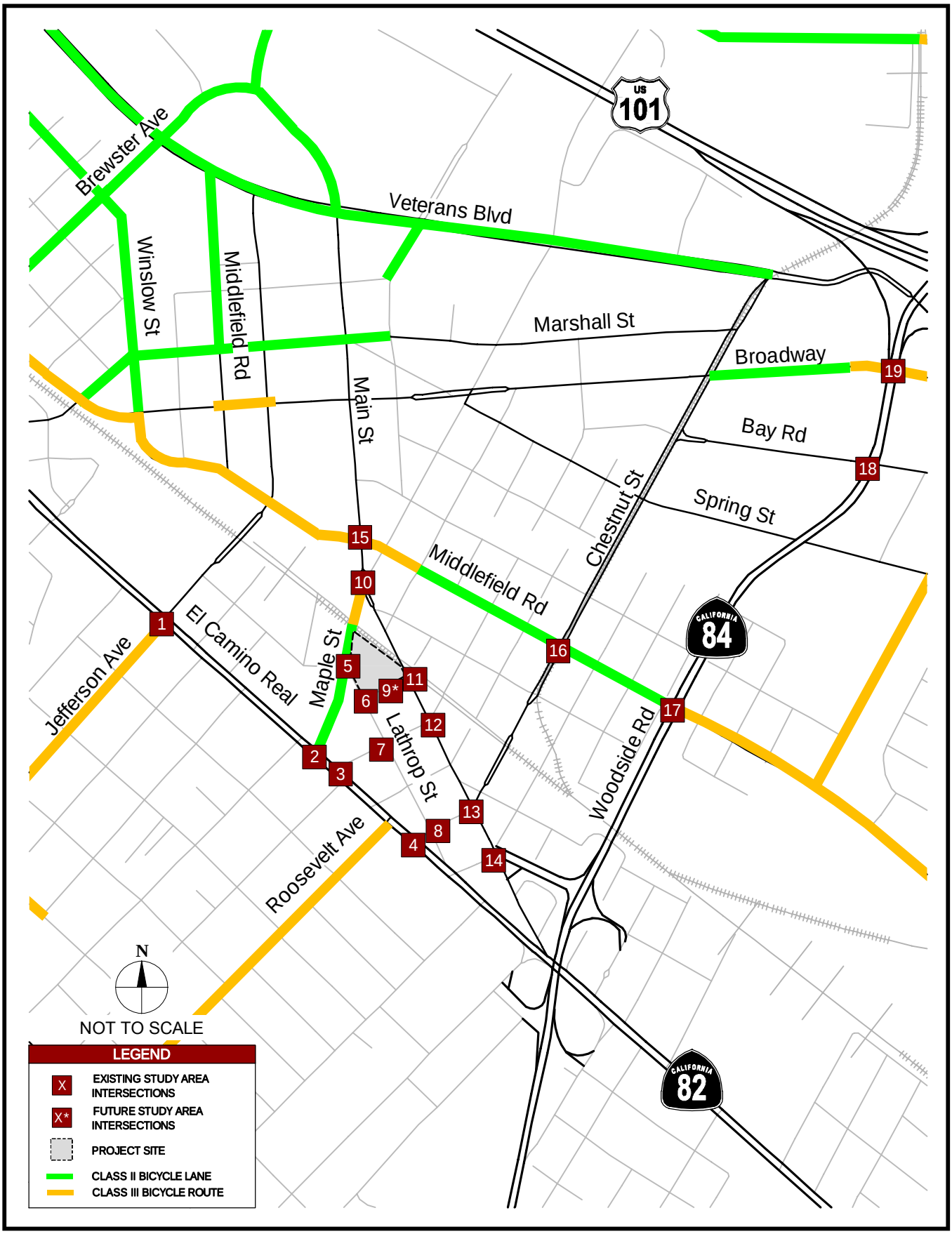
Caltrain tracks are located immediately north of the project site. Pedestrians may cross the Caltrain railroad tracks on the east side of Main Street or on either side of Maple Street. A project is currently under construction that will install an at-grade pedestrian crossing on the west side of Main Street.

EXISTING BICYCLE FACILITIES

Figure 3 shows existing bicycle facilities within the study area.

Class II bicycle lanes are located throughout the City of Redwood City. The following is a list of the Class II bicycle lanes near the study area:

- Brewster Avenue between Perry Street and Main Street
- Broadway between Chestnut Street and Woodside Road
- Main Street between Convention Way and Veterans Boulevard
- Maple Street between El Camino Real and Pennsylvania Avenue
- Marshall Street between Arguello Street and Walnut Street
- Middlefield Road between Marshall Street and Veterans Boulevard and between Cassia Street and Woodside Road
- Veterans Boulevard between Whipple Avenue and Chestnut Street
- Walnut Street from Bradford Street to Veterans Boulevard
- Winslow Street from Broadway and Howland Street



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FIGURE 3
EXISTING BICYCLE FACILITES

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Class III bicycle routes are located throughout the City of Redwood City. The following is a list of the Class III bicycle routes near the study area:

- Arguello Street between Brewster Avenue and Broadway
- Broadway between Winslow Street and Marshall Street and between Woodside Road and Charter Street
- Charter Street between Broadway and Middlefield Road
- Jefferson Avenue between Alameda de las Pulgas and El Camino Real
- Maple Street between Pennsylvania Avenue and Main Street
- Middlefield Road/Winslow Street between Broadway and Cassia Street
- Middlefield Road between Woodside Road and Douglas Avenue
- Roosevelt Avenue between Upton Street and El Camino Real

EXISTING PLANS AND POLICES

The City of Redwood City has many plans and policies which provides guidance, direction, and recommendation on transportation-related issues within the City. Some of these plans and polices include the City's General Plan, Redwood City Moves (RWCMoves), El Camino Real Corridor Study, and Grade Separate Footprint Study.

REDWOOD CITY GENERAL PLAN

In 2010, the City adopted its most recent General Plan which includes goals, policies, and actions for developing the transportation network in Redwood City. Resulting from the goals, policies, and actions from the General Plan are transportation improvement projects that will help mitigate the increased vehicular demand on the network. The following is a list of relevant goals, policies, and implementation programs regulating development in the City of Redwood City:

- **Goal BE-25:** Maintain a local transportation system that balances the needs of bicyclist, pedestrian, and public transit with those of private cars.
- **Policy BE-25.6**: Ensure that the City's transportation impact fee program provides adequate funding for necessary transportation improvements that will benefit all travel modes, while also incentivizing development that is less dependent on expensive new transportation infrastructure.
- **Policy BE-26.6:** Require new development projects to provide pedestrian, bicycle, and electric bicycle/scooter facilities that connect to existing and planned pedestrian and bicycle facilities; and require large parking facilities to accommodate pedestrian, bicycle and electric bicycle/scooter circulation.
- **Implementation Program BE-38: Transportation Impact Fee.** Review and, if necessary, update the City's transportation impact fee program to ensure that funding is provided for necessary transportation improvements that will benefit all travel modes.

REDWOOD CITY MOVES (RWCMOVES)

In 2016, the City recognized substantial changes within Redwood City that would affect transportation and began developing a citywide transportation plan, Redwood City Moves (RWCMoves). The plan presents existing transportation trends and data for the City as well as serving as a guiding document by identifying and prioritizing transportation projects and programs. RWCMoves was adopted on July 23, 2018.

The vision of the RWCMoves is to "Promote the best experience possible for everyone in Redwood City by creating and maintaining a safe, multimodal, and accessible transportation network." The plan also consists of the following six goals:

1. Eliminate traffic fatalities and severe injuries for all modes by 2030
2. Create a walking and bicycling-friendly community that provides a safe, balanced, and convenient transportation system
3. Provide seamless connection and improve street access to all areas within the City, but especially along mixed-use corridors designated in the General Plan and Citywide Transportation Plan
4. Embrace innovation in all forms of emerging technologies especially in ways to creatively manage congestion and the transportation system
5. Reach over 50% of all trips being by non-driving modes by 2040, remaining automobile trips should be zero emission trips
6. Invest in projects that support a resilient, equitable and sustainable transportation system.

RWCMoves identifies and prioritizes many transportation projects for the City. **Table 4** presents improvement projects within the study area. The following projects are under construction:

- Bicycle lanes on Middlefield Road between Maple Street and Woodside Road
- Pedestrian safety improvements at Middlefield Road and Woodside Road
- Railroad safety improvements at Main Street

EL CAMINO REAL CORRIDOR PLAN

The El Camino Real Corridor Plan is a policy document that was adopted by City Council on December 4, 2017. The plan includes visions, goals, and strategies for street improvements along the El Camino Real within Redwood City to make the corridor more pedestrian-, bicycle-, and transit-friendly and support uses along the corridor. The plan focuses on four main topics: 1) Mobility, 2) Economic Vitality, 3) Housing, and 4) Place-Making.

The El Camino Real Corridor Plan identifies transportation improvements within the study area, which includes:

- Intersection improvements at Jefferson Avenue, Roosevelt Avenue, Redwood Road, and Main Street
- Installing Class IV protected bicycle facilities
- Restrict left-turn during peak commute hours to improve traffic flow along El Camino Real

GRADE SEPARATION FOOTPRINT STUDY PROGRAM

In 2009, the Grade Separation Footprint Study was conducted to identify the impacts and alternatives to grade separations at several Caltrain grade crossings within the City of Redwood City. The Footprint Study Program assists with other studies in identifying which alternatives are the most feasible based on the impacts and cost of each alternative.

The plan found that the feasible alternatives for grade-separated crossings at the rail tracks at both Maple Street and Main Street would consist of the railroad remaining at grade, with Maple Street or Main Street going over or under the tracks. The plan also found that if all crossings were grade separated via elevated railroad tracks, both Maple Street and Main Street would have to be depressed under the partially elevated tracks.

Table 4 - RWCMoves Improvements Projects within the Study Area

#	Title	Project Description
2	El Camino Real Bike Facilities	Design and pilot protected bike lanes (Class IV) along the entire length of El Camino Real
6	Main Street and Maple Street Cycle Track	Design and install cycle track (Class IV) along Main Street and Maple Street between Convention Way and El Camino Real
9	Lathrop Street Bicycle Boulevard	Design and install bicycle boulevard (Class III) along Lathrop Street between Maple Street and El Camino Real
24	Wayfinding Signage	Develop and install citywide wayfinding signage network to popular destinations, such as Redwood City Transit Center & Station, Downtown, SR 84, parking area, etc.
27	Pedestrian Countdown Signals	Retrofit existing traffic signals to ensure that all are equipped with countdown pedestrian signals
29	El Camino Real Corridor Plan Implementation – Short and Long Term Projects	Implement of short and long-term transportation improvement project identified in the El Camino Real Corridor Plan
35	Middlefield Road (between Main Street and Woodside Road) Corridor Improvements	Consider transit service improvement along Middlefield Road
40	Jefferson Avenue Complete Street Corridor Design	Develop complete street corridor design for Jefferson Avenue to better accommodate bike, pedestrian, and transit facilities
41	Maple Street Corridor Improvements	Construct improvements along Maple which include: - Add crosswalks at Maple Street / Franklin Street - Install sidewalks to bridge over creek on Lathrop Street - Sign Maple as Class III bicycle facility between Middlefield to Marshall Street - Enhance multimodal connection over US 101 between Veterans Boulevard and Blomquist Street
71	US 101 and Woodside Road Interchange Improvement	Construct US 101 and Woodside interchange improvements.
72	El Camino Real Adaptive Signal Coordination	Evaluated and install adaptive signal coordination along El Camino Real
73	Middlefield Road Adaptive Signal Coordination	Evaluated and install adaptive signal coordination along Middlefield Road
77	El Camino Real Traffic Flow Improvements	Prioritize design and install timed signal and restrict some left-turn movements during commute hours to manage congestion and improve traffic flow along El Camino Real
80	El Camino Real Signal Relocations	Evaluate and consider relocation existing traffic signals along El Camino Real
95	Main Street Railroad Grade Separation	Support construction of Main Street and railroad grade separation
97	Chestnut Street Railroad Grade Separation	Support construction of Chestnut Street and railroad grade separation
98	Maple Street Railroad Grade Separation	Support construction of Maple Street and railroad grade separation

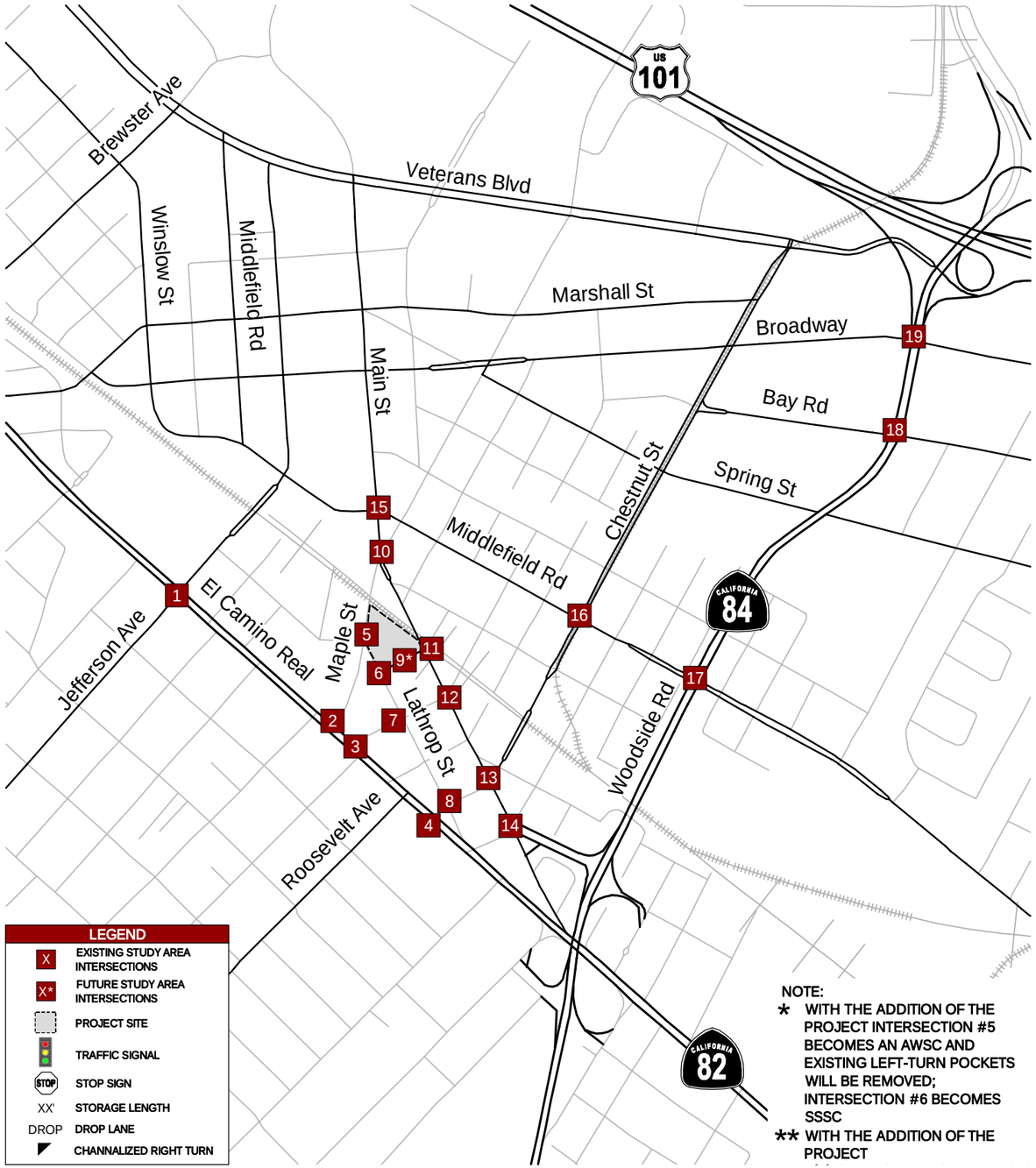
EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL

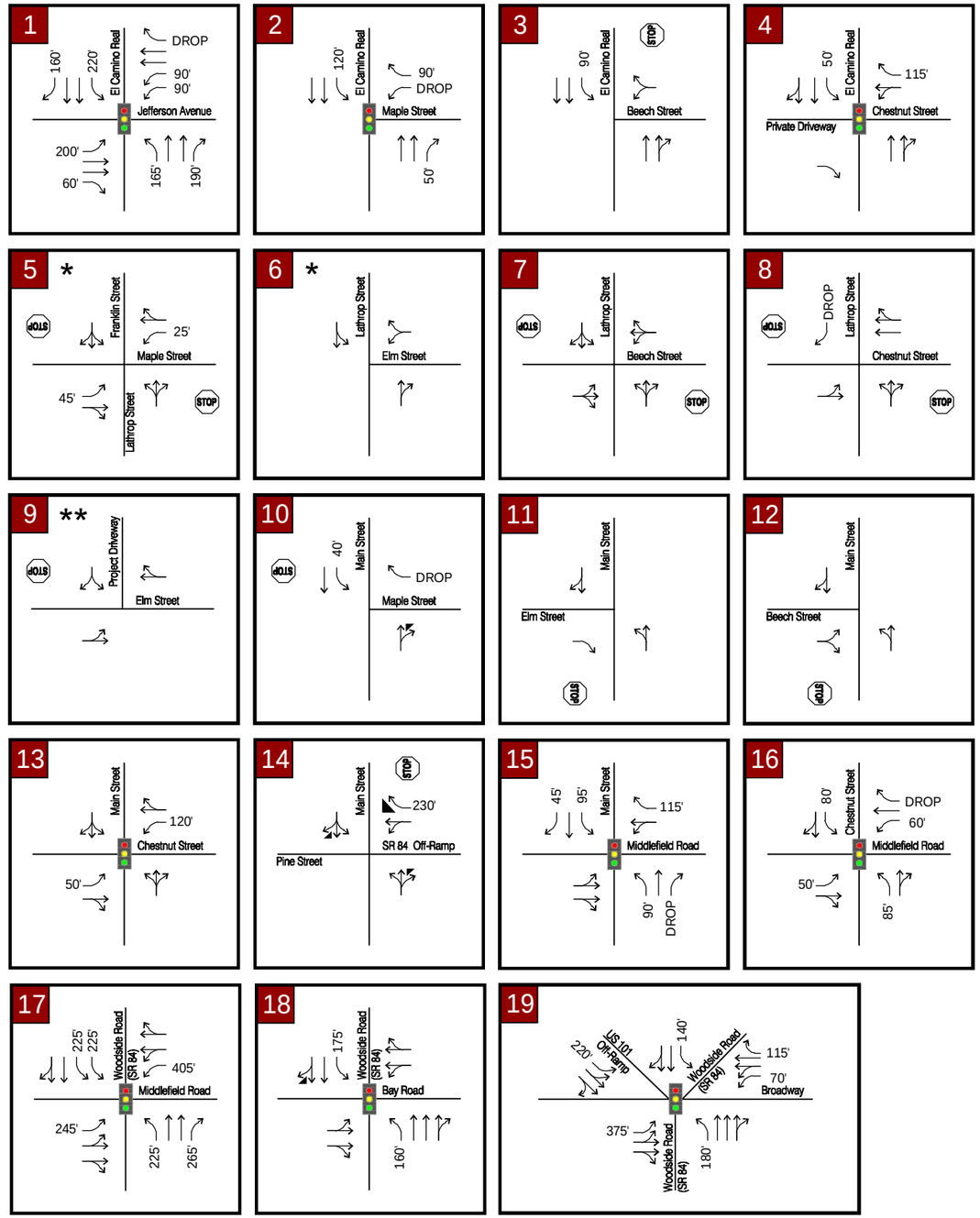
Existing intersection lane configuration and traffic controls are illustrated in **Figure 4**. **Table 5** lists the existing traffic control for each study intersection. With the addition of the project, the existing-left turn pockets are removed at Intersection #5 – Franklin Street-Lathrop Street / Maple Street and the intersection becomes an all-way stop control intersection. Also with the addition of the project, Intersection #6 – Lathrop Street / Elm Street becomes a side-street stop control intersection.

Table 5 - Study Intersection and Traffic Control

#	Intersection	Existing or Future Intersection	Traffic control
1	El Camino Real / Jefferson Avenue	Existing	Signal
2	El Camino Real / Maple Street	Existing	Signal
3	El Camino Real / Beech Street	Existing	SSSC
4	El Camino Real / Chestnut Street	Existing	Signal
5	Franklin Street-Lathrop Street / Maple Street	Existing	SSSC/AWSC[1]
6	Lathrop Street / Elm Street	Existing	Uncontrolled/ SSSC[2]
7	Lathrop Street / Beech Street	Existing	SSSC
8	Lathrop Street / Chestnut Street	Existing	SSSC
9	Elm Street / Project Driveway	Future	SSSC
10	Main Street / Maple Street	Existing	SSSC
11	Main Street / Elm Street	Existing	SSSC
12	Main Street / Beech Street	Existing	SSSC
13	Main Street / Chestnut Street	Existing	Signal
14	Main Street / Pine Street-SR 84 Ramp	Existing	SSSC
15	Middlefield Road / Main Street	Existing	Signal
16	Middlefield Road / Chestnut Street	Existing	Signal
17	Woodside Road (SR 84) / Middlefield Road	Existing	Signal
18	Woodside Road (SR 84) / Bay Road	Existing	Signal
19	Woodside Road (SR 83) / Broadway	Existing	Signal

Note:
SSSC – Side-Street Stop Control
AWSC – All-Way Stop Control
[1] With the addition of the project, the existing left-turn pockets at **Intersection #5** are removed and the intersection **becomes an AWSC.**
[2] With the addition of the project, Intersection #6 becomes a SSSC.





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FIGURE 4
EXISTING LANE GEOMETRY AND TRAFFIC CONTROL

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EXISTING PEAK-HOUR TURNING MOVEMENT VOLUMES

Weekday intersection turning movement volumes for study intersections were collected in March 2016, April 2017 and May 2018. Volumes were collected during the AM (7:00-10:00 AM) peak period and PM (4:00-7:00 PM) peak period on a weekday when local schools were in session.

Volumes at adjacent study intersections with no mid-block driveways were balanced. The volume adjustments from the volume balancing were conservatively completed by increasing the lower volume to match the higher volume. The hand calculations and intersection volume data sheets for all traffic counts are provided in the **Appendix**. Peak hour turning movement volumes are shown in **Figure 5**.

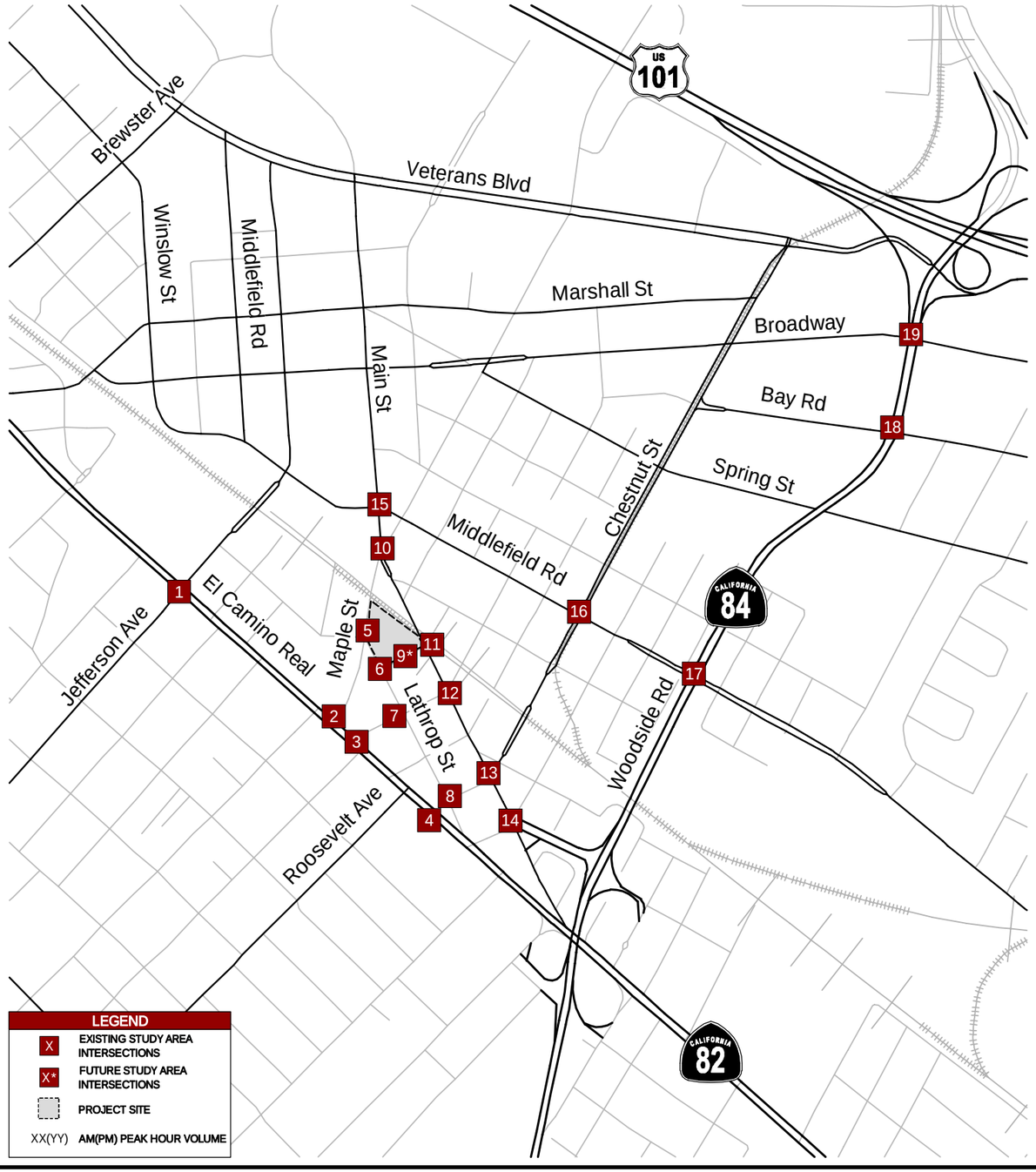
EXISTING SIGNAL WARRANT

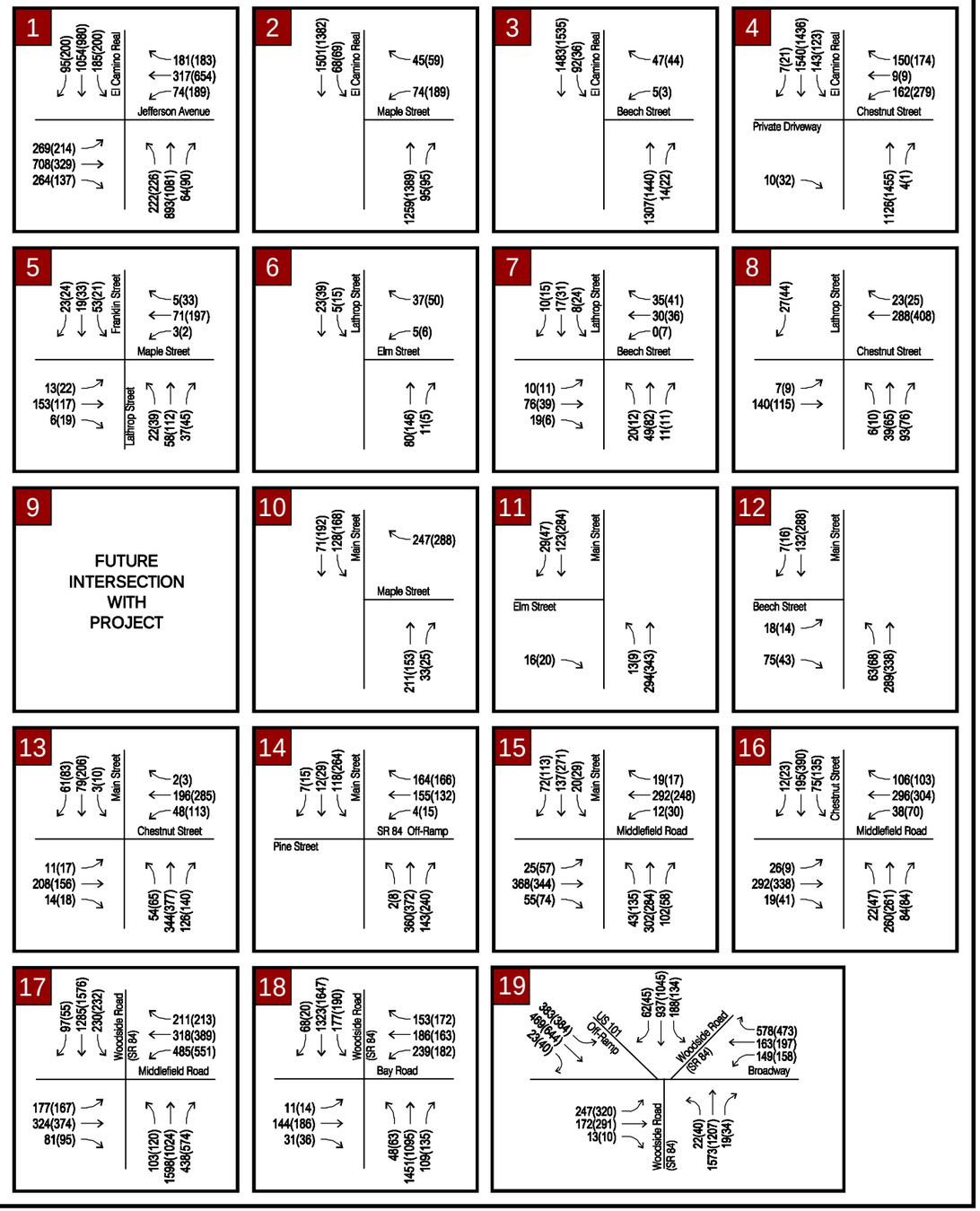
Signal warrants were evaluated at the unsignalized study intersections under Existing Conditions. Below are the results of the signal warrants analysis for the nine (9) unsignalized intersections under existing conditions:

Did not meet peak hour signal warrant:

- #3 – El Camino Real / Beech Street
- #5 – Franklin Street - Lathrop Street / Maple Street
- #6 – Lathrop Street / Elm Street
- #7 – Lathrop Street / Beech Street
- #8 – Lathrop Street / Chestnut Street
- #10 – Main Street / Maple Street
- #11 – Main Street / Elm Street
- #12 – Main Street / Beech Street
- #14 – Main Street / Pine Street – SR 84

Analysis sheets are provided in the **Appendix**.





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FIGURE 5
EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES

1180 & 1190 MAIN STREET TIA

EXISTING INTERSECTION LEVEL OF SERVICE

Traffic operations were evaluated at the study intersections under existing traffic conditions. Results of the analysis are presented in **Table 6**. **Table 6** lists the municipal jurisdiction, LOS criteria, intersection control, and LOS/delay for each intersection. All study intersections function within acceptable LOS standards under this analysis scenario, except for the following intersections:

- #3 – El Camino Real / Beech Street (AM Peak Hour)
- #14 – Main Street / Pine Street – SR 84 Ramps (PM Peak Hour)
- #17 – Woodside Road (SR 84) / Middlefield Road (AM and PM Peak Hours)
- #19 – Woodside Road (SR 84) / Broadway (AM and PM Peak Hours)

Analysis sheets are provided in the **Appendix**.

Table 6 - Existing Intersection Level of Service Summary

#	Intersection	LOS Criteria	Jurisdiction	Control	Existing			
					AM Peak		PM Peak	
					LOS	Delay (sec)[1]	LOS	Delay (sec)[1]
1	El Camino Real / Jefferson Avenue	D	City / Caltrans	Signal	D	51.8	D	48.5
2	El Camino Real / Maple Street	D	City / Caltrans	Signal	A	6.1	A	9.5
3	El Camino Real / Beech Street	D	City / Caltrans	SSSC	**E**	**35.3**	D	28.0
4	El Camino Real / Chestnut Street	D	City / Caltrans	Signal	B	14.7	B	19.5
5	Franklin Street-Lathrop Street / Maple Street	D	City	SSSC	B	11.9	C	15.6
6	Lathrop Street / Elm Street[2]	D	City	-	Uncontrolled Intersection			
7	Lathrop Street / Beech Street	D	City	SSSC	B	10.4	B	10.7
8	Lathrop Street. Chestnut Street	D	City	SSSC	B	11.6	B	13.9
9	Elm Street / Project Driveway (Future)	D	City	SSSC	Future Intersection			
10	Main Street / Maple Street	D	City	SSSC	B	10.8	B	10.6
11	Main Street / Elm Street	D	City	SSSC	A	9.1	B	10.4
12	Main Street / Beech Street	D	City	SSSC	B	10.5	B	12.4
13	Main Street / Chestnut Street	D	City	Signal	B	16.3	B	19.6
14	Main Street / Pine Street-SR 84 Ramps	D	City	SSSC	C	21.0	**F**	**62.3**
15	Middlefield Road / Main Street	D	City	Signal	C	29.2	C	34.9
16	Middlefield Road / Chestnut	D	City	Signal	B	15.3	B	19.0
17	Woodside Road (SR 84) / Middlefield Road[3]	E	City / Caltrans	Signal	**F**	**99.2**	**F**	**112.9**
18	Woodside Road (SR 84) / Bay Road	D	City / Caltrans	Signal	D	37.7	D	39.0
19	Woodside Road (SR 84) / Broadway	D	City / Caltrans	Signal	**E**	**74.6**	**F**	**81.6**

Note: Intersections that are operating below acceptable levels are shown in **BOLD**.

1 The average control delay is reported for signalized intersections. The delay for the worst movement is reported for SSSC intersections.

2 Intersection #6 - Lathrop Street / Elm Street is an uncontrolled intersection and removed from analysis.

3 Intersection #17 - Woodside Road (SR 84) / Middlefield Road is a CMP intersection with a LOS threshold of E.

FIELD OBSERVATIONS

Field observations were conducted in May 2018 to qualitatively confirm existing intersection LOS results with conditions in the field to identify any existing problems. Overall, the study intersections were observed to operate similarly to the calculated LOS.

It should be noted that construction was observed at the following locations:

Main Street / Elm Street: Construction work consisting of installing curb ramps on the west side of the intersection of Main Street / Elm Street and the at-grade railroad crossing just north of the intersection. It was observed that all roadway lanes were open to traffic and construction did not affect the operation at this intersection.

Woodside Road (SR 84) / Middlefield Road: Construction associated with the City's Middlefield Road and Woodside Road Intersection Improvement Project were going on. The improvement project consists of reconstructing roadway intersection, upgrading traffic signal system, and constructing new pedestrian facilities elements such as curb ramps, crosswalks, and pedestrian signals. It is anticipated that construction will be completed in October 2018.

Although construction was observed during field observations, it should be noted that existing traffic counts were collected before construction began. It was observed that only the elements of the pedestrian facilities such as curb ramps and sidewalks were removed. All roadway lanes were open to traffic and construction did not appear to affect the operation at the intersection.

3. EXISTING PLUS PROJECT CONDITIONS

This chapter presents a description of the proposed site use, trip generation, trip distribution, and trip assignment, as well as potential impacts of the proposed project on the transportation system.

PROPOSED SITE USE

The proposed project will merge two parcels at 1180 and 1190 Main Street that are vacant or have been unoccupied for an extended period of time and construct a 112,113-quare foot office building. **Figure 6** illustrates the site plan for the proposed project. Pedestrians may access the building at entrances on Main Street and Lathrop Street. Vehicles may enter the underground parking off Elm Street. Railroad tracks run adjacent to the site on the northeast side of the project from Maple Street to Main Street.

TRIP GENERATION

Trip generation for projects are typically calculated based on information contained in the Institute of Transportation Engineer's (ITE) publication, *Trip Generation Manual, 10th Edition*.[3] The manual is a standard reference used by jurisdictions throughout the country for the estimation of trip generation potential of proposed projects.

A trip is defined in the *Trip Generation Manual* as a single or one-directional vehicle movement with either the origin or destination at the project site. In other words, a trip can be either "to" or "from" the site and therefore, a single visitor to a site is counted as two.

For purposes of determining the worst-case impacts of traffic on the surrounding street network, the trips generated by a proposed project are estimated for the AM peak hour (between the hours of 7:00 AM and 9:00 AM), and for the PM peak hour (between 4:00 PM and 6:00 PM) on a typical weekday.

Trips generated by the proposed project were based on the average rates for ITE Land Use 710 (General Office Building). Since the proposed project is within 0.5 mile from the Redwood City Caltrain station a transit reduction was applied. The proposed project is also located within proximity to downtown and mixed land uses, therefore a MXD (mixed-use development) reduction was also applied. **Table 7** presents the trip generation for the proposed project. The proposed project will generate 105 vehicle trips in the AM peak hour and a 97 vehicle trips in the PM peak hour. Trip generation calculation sheets are provided in the **Appendix**.

[3] *Trip Generation Manual, 10th Edition*, Institute of Transportation Engineers, 2017.

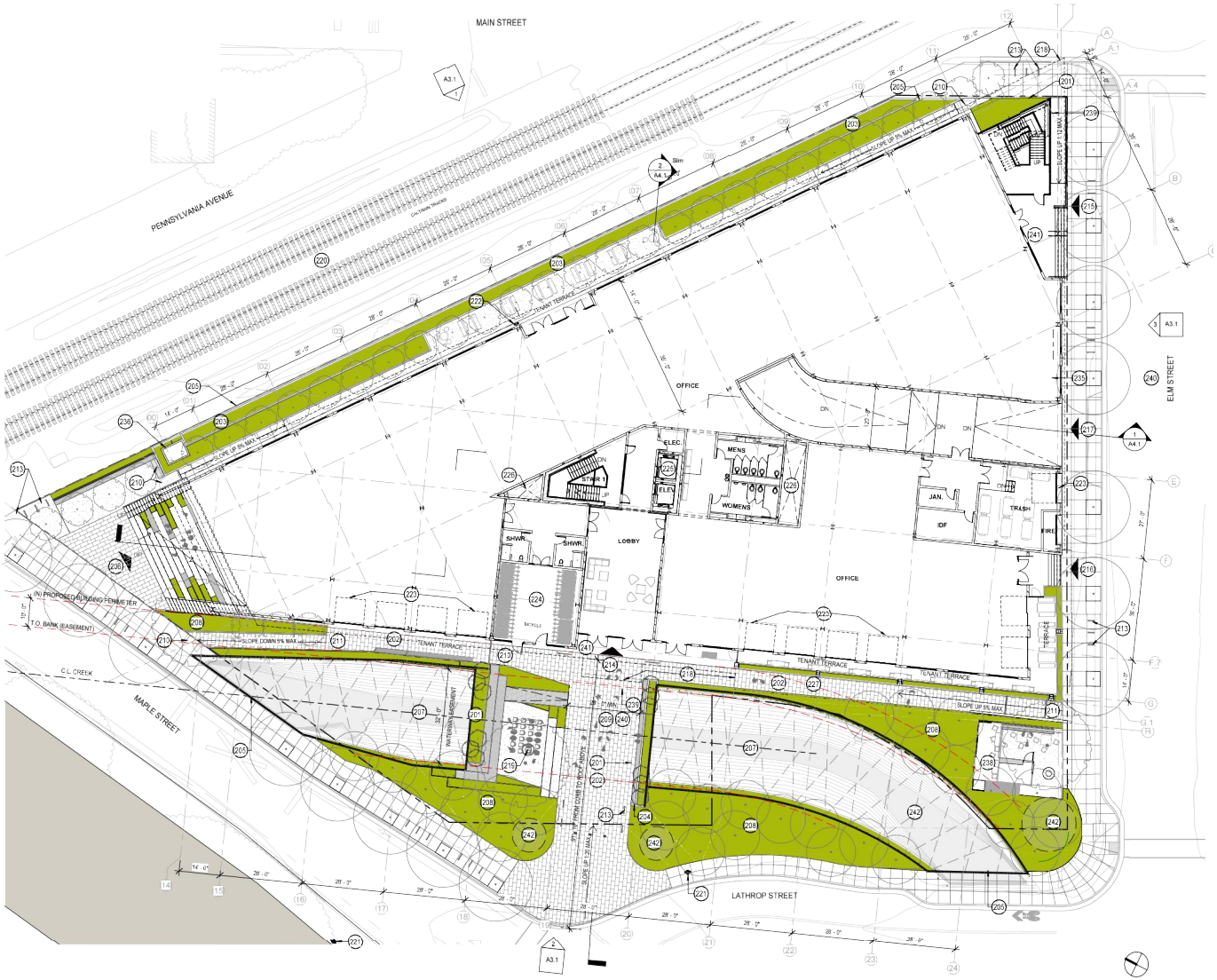

MAIN STREET
PENNSYLVANIA AVENUE
ELM STREET
MAPLE STREET
LATHROP STREET
OFFICE
LOBBY
TENANT TERRACE
SLOPE UP 5% MAX
SLOPE DOWN 5% MAX
(N) PROPOSED PLANTING PERIMETER
T.O. BANK (EASEMENT)
C.L. CREEK
WATERMAIN EASEMENT
SLOPE UP 5% MAX
SLOPE UP 5% MAX
SLOPE UP 5% MAX
SLOPE UP 5% MAX
TENANT TERRACE
TENANT TERRACE
TENANT TERRACE
TENANT TERRACE
OFFICE
ELEC.
MENS
WOMENS
JAN.
TRASH
IDF
FIRE
SHWR.
SHWR.
LOBBY
OFFICE
TERRACE
TERRACE
SLOPE UP 5% MAX
SLOPE UP 5% MAX
SLOPE UP 5% MAX
SLOPE UP 5% MAX

Table 7 - Project Trip Generation

ITE Land Use Code	Land Use	Size	Units	Daily Trips	AM Peak Total	AM Peak In	AM Peak Out	PM Peak Total	PM Peak In	PM Peak Out
710	General Office Building	112.113	KSF	1,092	130	112	18	129	21	108
	Transit Reduction[1]			-73	-9	-8	-1	-7	-1	-6
	Mixed Use Reduction[2]			-229	-16	-14	-2	-25	-4	-21
Total External Project Trips				**1,019**	**105**	**90**	**15**	**97**	**16**	**81**

[1] Utilized transit reduction rate from Redwood City Downtown Precise Plan of 7.3% for the AM peak and 6.0% for the PM peak. Transit reduction rate for daily trips 6.66% (average of AM and PM reduction).
[2] Utilized mixed-used reduction rate from Redwood City Downtown Precise Plan of 12.3% for the AM and 19.1% for the PM

It should be noted that the C/CAG's 2014 *Guidelines for Implementing the Land Use Component of the Congestion Management Program* requires development that generated 100 or more net new peak hours trips to implement a Transportation Demand Management (TDM) plan to reduce demand. However, a TDM reduction was not used in the trip generation calculations to be conservative.

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Project trip distribution was based on existing traffic count information, general orientation of population sources to the site, and trip distribution from RWCMoves. **Figure 7** presents the traffic distribution assumed for this analysis. The project vehicle trip assignment is shown in **Figure 8.**

EXISTING PLUS PROJECT SIGNAL WARRANT

Signal warrants were evaluated at the unsignalized study intersections under Existing Plus Project Conditions. Below are the results of the signal warrants analysis for the ten (10) unsignalized intersections under existing conditions:

Did not meet peak hour signal warrant:

- #3 – El Camino Real / Beech Street
- #5 – Franklin Street - Lathrop Street / Maple Street
- #6 – Lathrop Street / Elm Street
- #7 – Lathrop Street / Beech Street
- #8 – Lathrop Street / Chestnut Street
- #9 – Elm Street / Project Driveway
- #10 – Main Street / Maple Street
- #11 – Main Street / Elm Street
- #12 – Main Street / Beech Street
- #14 – Main Street / Pine Street – SR 84

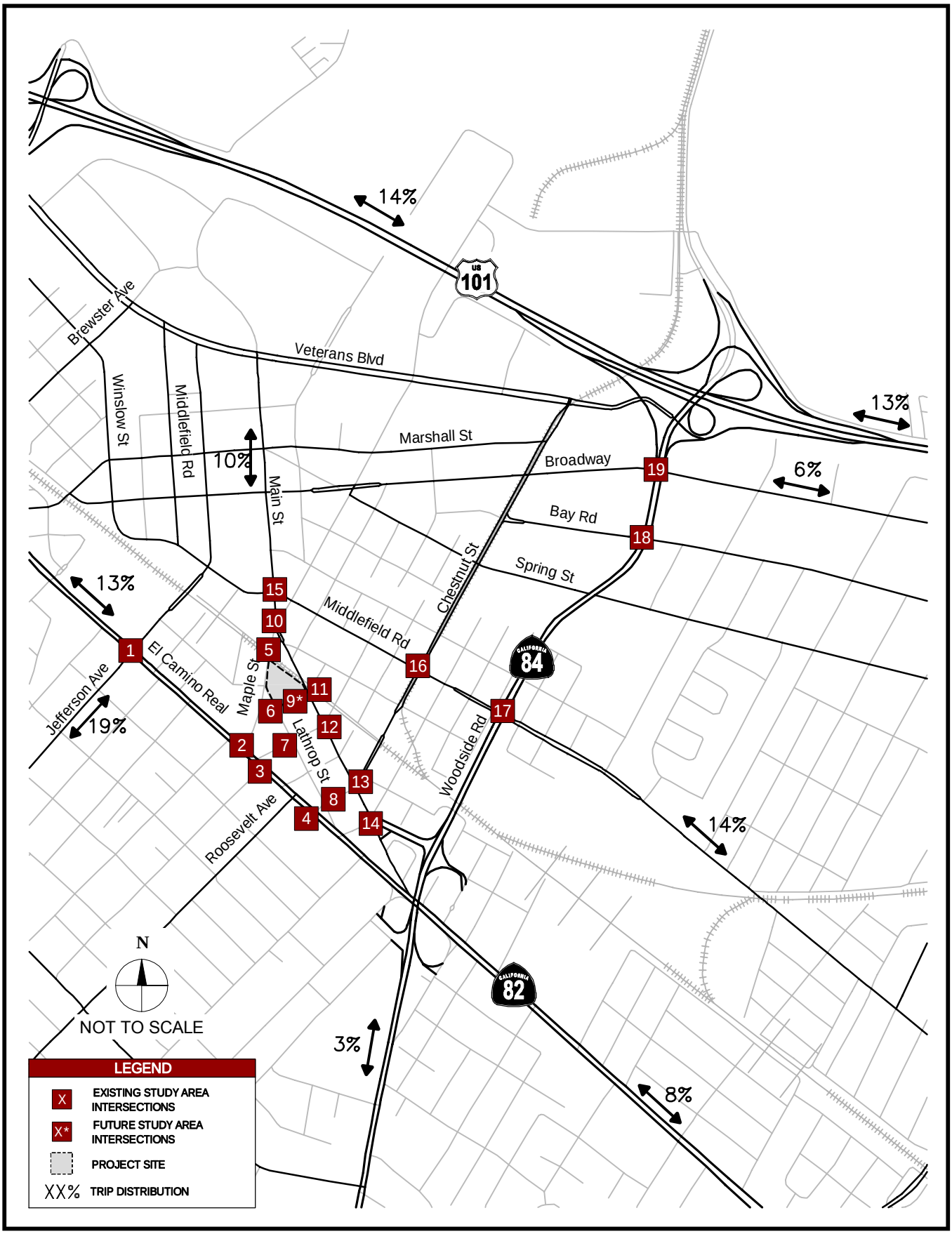
Analysis sheets are provided in the **Appendix**.

EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE

Traffic operations were evaluated at the study intersections under existing conditions plus traffic generated by the project, as seen on **Figure 9**. Results of the analysis are presented in **Table 8**. All study intersections function within acceptable LOS standards under this analysis scenario, except for the following intersections:

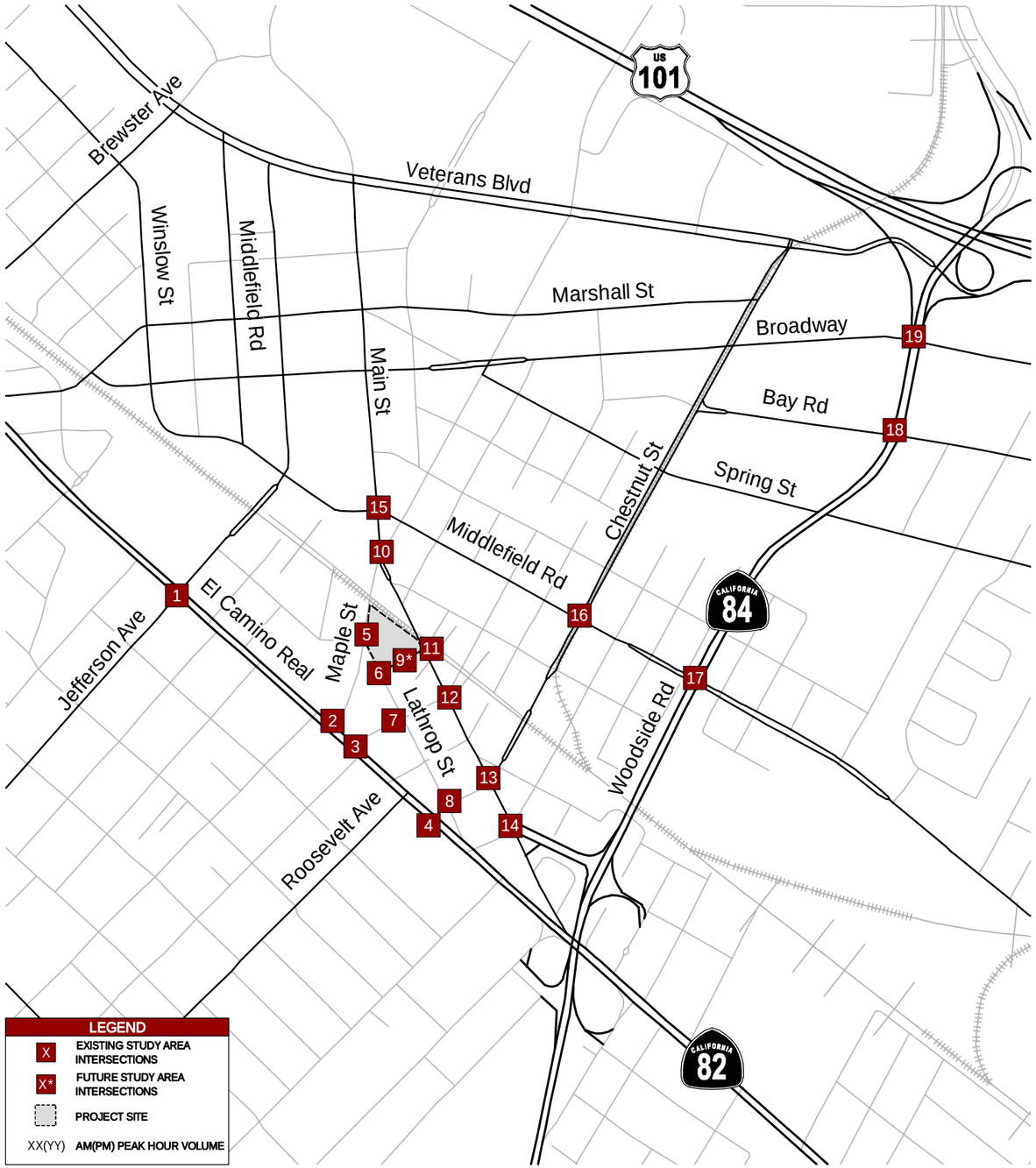
- #3 – El Camino Real / Beech Street (AM Peak Hour)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**
- #14 – Main Street / Pine Street – SR 84 Ramps (PM Peak Hour)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**
- #17 – Woodside Road (SR 84) / Middlefield Road (AM and PM Peak Hours)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**
- #19 – Woodside Road (SR 84) / Broadway (AM and PM Peak Hours)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**

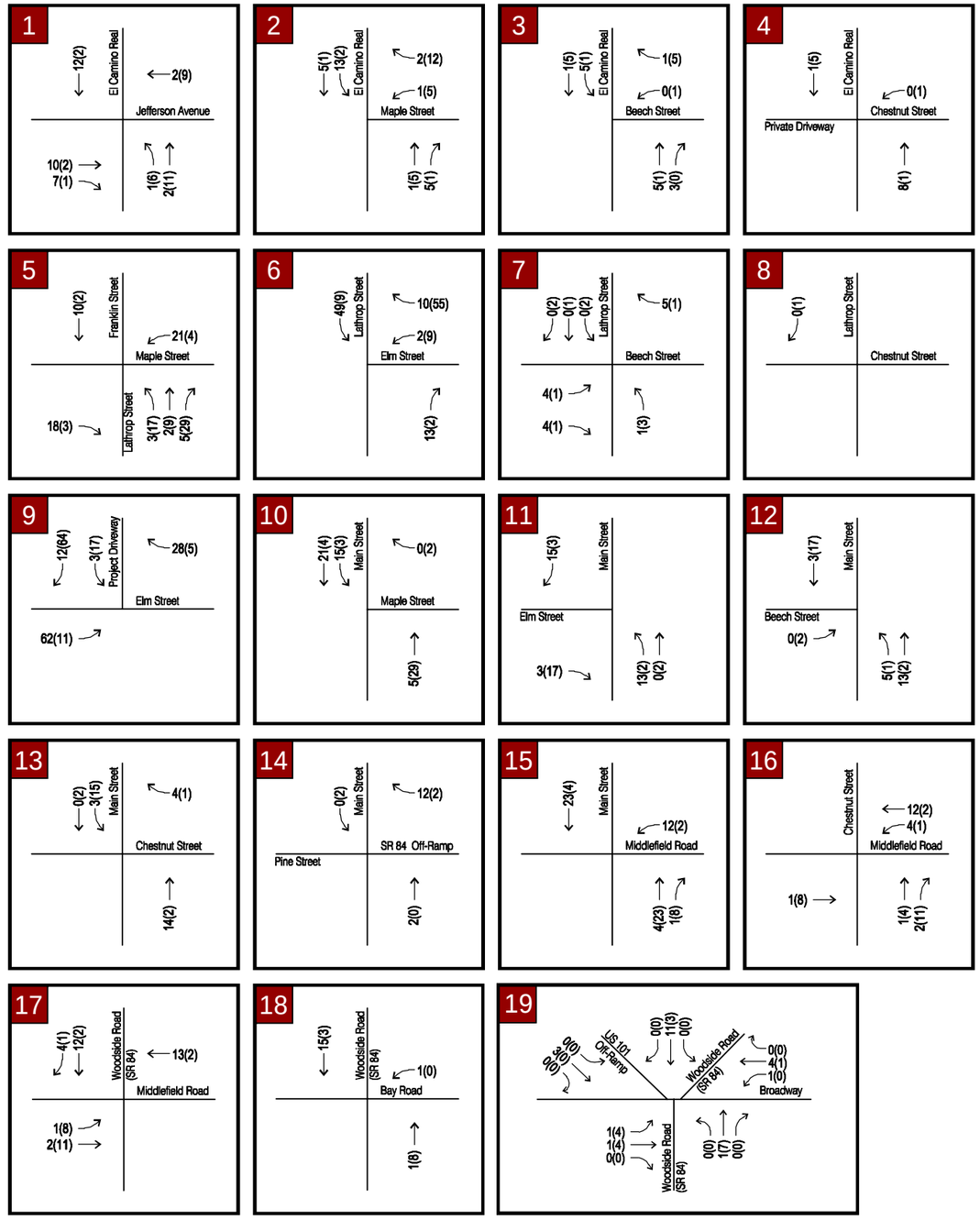
Analysis sheets are provided in the **Appendix**.



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FIGURE 7
PROJECT TRIP DISTRIBUTION





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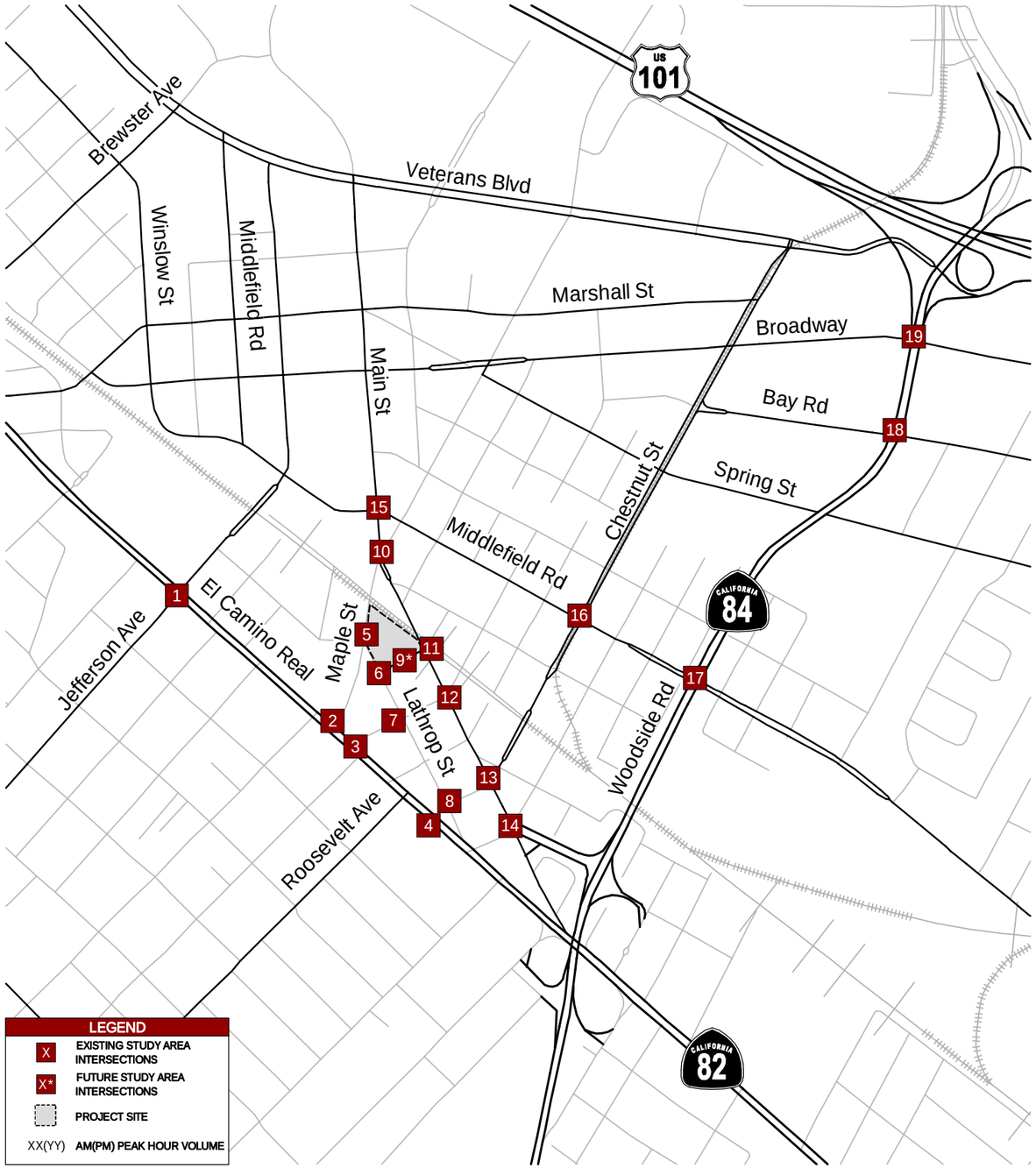
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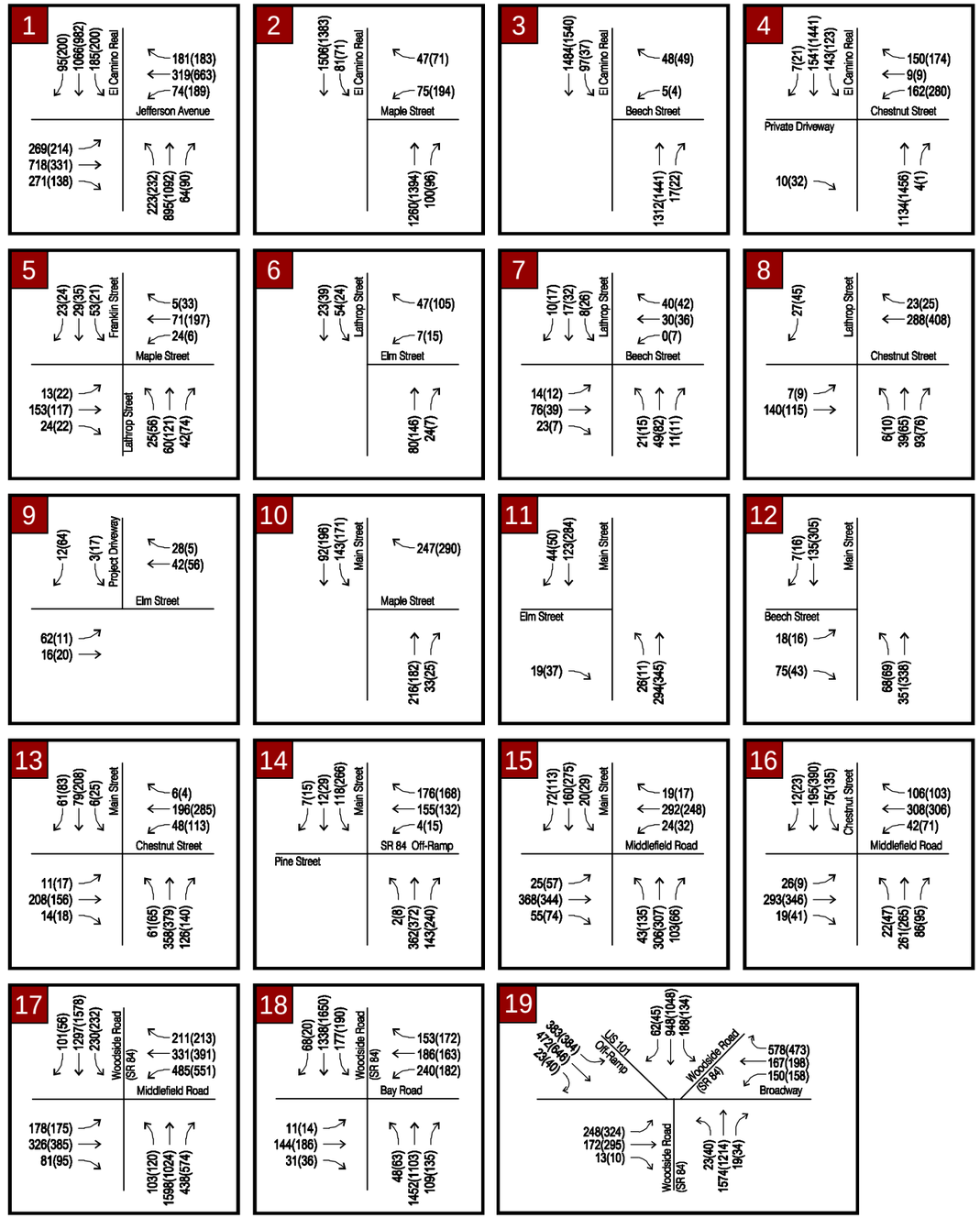
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FIGURE 8
PROJECT GENERATED PEAK HOUR TURNING MOVEMENT VOLUMES

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FIGURE 9
EXISTING PLUS PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

1180 & 1190 MAIN STREET TIA

Table 8 - Existing Plus Project Intersection Level of Service Summary

#	Intersection	LOS Criteria	Jurisdiction	Control	Existing				Existing + Project					
					AM Peak		PM Peak		AM Peak			PM Peak		
					LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	Delay Var	LOS	Delay (sec)[1]	Delay Var
1	El Camino Real / Jefferson Avenue	D	City / Caltrans	Signal	D	51.8	D	48.5	D	52.0	0.2	D	49.0	0.5
2	El Camino Real / Maple Street	D	City / Caltrans	Signal	A	6.1	A	9.5	A	6.5	0.4	A	9.8	0.3
3	El Camino Real / Beech Street	D	City / Caltrans	SSSC	**E**	**35.3**	D	28.0	**E**	**36.0**	**0.7**	D	32.3	4.3
4	El Camino Real / Chestnut Street	D	City / Caltrans	Signal	B	14.7	B	19.5	B	14.7	0.0	B	19.5	0.0
5	Franklin Street-Lathrop Street / Maple Street[2]	D	City	SSSC/AWSC	B	11.9	C	15.6	A	8.9	-3.0	B	10.7	-4.9
6	Lathrop Street / Elm Street[3]	D	City	- / SSSC	Uncontrolled Intersection				A	9.3	-	B	10.2	-
7	Lathrop Street / Beech Street	D	City	SSSC	B	10.4	B	10.7	B	10.6	0.2	B	10.8	0.1
8	Lathrop Street. Chestnut Street	D	City	SSSC	B	11.6	B	13.9	B	11.6	0.0	B	13.9	0.0
9	Elm Street / Project Driveway	D	City	SSSC	Future Intersection				A	8.9	-	A	9.1	-
10	Main Street / Maple Street	D	City	SSSC	B	10.8	B	10.6	B	11.1	0.3	B	11.0	0.4
11	Main Street / Elm Street	D	City	SSSC	A	9.1	B	10.4	A	9.2	0.1	B	10.5	0.1
12	Main Street / Beech Street	D	City	SSSC	B	10.5	B	12.4	B	10.8	0.3	B	12.9	0.5
13	Main Street / Chestnut Street	D	City	Signal	B	16.3	B	19.6	B	16.6	0.3	B	19.5	-0.1
14	Main Street / Pine Street-SR 84 Ramps	D	City	SSSC	C	21.0	**F**	**62.3**	C	21.1	0.1	**F**	**63.8**	**1.5**
15	Middlefield Road / Main Street	D	City	Signal	C	29.2	C	34.9	C	29.7	0.5	D	35.1	0.2
16	Middlefield Road / Chestnut	D	City	Signal	B	15.3	B	19.0	B	15.5	0.2	B	19.3	0.3
17	Woodside Road (SR 84) / Middlefield Road[4]	E	City / Caltrans	Signal	**F**	**99.2**	**F**	**112.9**	**F**	**101.4**	**2.2**	**F**	**115.3**	**2.4**
18	Woodside Road (SR 84) / Bay Road	D	City / Caltrans	Signal	D	37.7	D	39.0	D	38.2	0.5	D	38.9	-0.1
19	Woodside Road (SR 84) / Broadway	D	City / Caltrans	Signal	**E**	**74.6**	**F**	**81.6**	**E**	**75.2**	**0.6**	**F**	**82.4**	**0.8**

Note: Intersections that are operating below acceptable levels are shown in **BOLD**.

1 The average control delay is reported for signalized and AWSC intersections. The delay for the worst movement is reported for SSSC intersections.

2 Intersection #5 - Franklin Street-Lathrop Street / Maple Street becomes an all-way stop control intersection with the Project.

3 Intersection #6 - Lathrop Street / Elm Street becomes a side-street stop control intersection with the Project.

4 Intersection #17 - Woodside Road (SR 84) / Middlefield Road is a CMP intersection with a LOS threshold of E.

4. BACKGROUND TRAFFIC CONDITIONS

This chapter will discuss the traffic conditions under the Background and Background Plus Proposed Project scenarios.

BACKGROUND TRANSPORTATION IMPROVEMENTS

Under Background conditions, the following lane geometry improvements were assumed:

- Intersection #17 – Woodside Road (SR 84) / Middlefield Road: During field work it was observed that the City's Middlefield Road and Woodside Road Intersection Improvement Project is being constructed. The improvement project will reconfigure the following approaches:
    - Eastbound approach will consist of one exclusive left-turn, one through, and one shared through/right-turn lanes.
    - Southbound approach will consist of two exclusive left-turn, two through, and one right-turn lanes.
    - Westbound approach will consist of two exclusive left-turn, one through, and one exclusive right-turn lanes.

Figure 10 illustrates the intersection geometry and traffic control assumed for the Background analysis.

BACKGROUND TRAFFIC VOLUMES

To achieve Background traffic conditions, traffic volumes from approved, but not yet constructed projects were incorporated according to information provided by City staff and added to existing volumes. **Table 9** lists the projects that were included in the background traffic.

Table 9 - Projects to Assume for Background Conditions

Project	Project Description	Status
550 Allerton Street	69,486 sf office	Under Construction
2075 Broadway	80,000 sf office; 13,515 sf retail	Under Construction
150 El Camino Real	12 townhomes	Under Construction
1305 El Camino Real	137-unit multi-family residential	Under Construction
815 Hamilton	60,241 sf office; 7,176 sf retail	Under Construction
1629 Main Street	24,700 sf office; 2 residential units	Under Construction
1175 Marshall Street (Kaiser Hospital Phase II)	196,100 sf medical	Under Construction
849 Veterans Boulevard	90-unit multi-family residential	Under Construction
103 Wilson Street	175-unit multi-family residential	Under Construction
Stanford in Redwood City	570,000 sf office; 31,159 sf recreation; 14,000 sf childcare; 5,053 sf storage	Under Construction
707 Bradford Street	117-unit multi-family residential	Approved
1690 Broadway	92-room hotel	Approved
1409 El Camino Real	350-unit multi-family residential	Approved
433 Harrison Avenue	17 townhomes	Approved
353 Main Street	125-unit multi-family residential	Approved
929 Main Street	8,002 sf retail	Approved
1548 Maple Street	131-unit multi-family residential	Approved
612 Jefferson Avenue	20-unit multi-family residential	Approved
910 Woodside Road	10 condominium units	Approved

BACKGROUND SIGNAL WARRANT

Signal warrants were evaluated at the unsignalized study intersections under Background Conditions. Below are the results of the signal warrants analysis for the nine (9) unsignalized intersections under Background conditions:

Did not meet peak hour signal warrant:

- #3 – El Camino Real / Beech Street
- #5 – Franklin Street - Lathrop Street / Maple Street
- #6 – Lathrop Street / Elm Street
- #7 – Lathrop Street / Beech Street
- #8 – Lathrop Street / Chestnut Street
- #10 – Main Street / Maple Street
- #11 – Main Street / Elm Street
- #12 – Main Street / Beech Street

Met peak hour signal warrant:

- #14 – Main Street / Pine Street – SR 84 (PM Peak Hour)

While Intersection #14 satisfies peak hour signal warrant, other considerations such as other signal warrants and its proximity to the existing signal at Intersection # 13 – Main Street / Maple Street should be evaluated before installing a signal. Analysis sheets are provided in the **Appendix**.

BACKGROUND INTERSECTIONS LEVEL OF SERVICE

Background volumes were evaluated at the study intersections and are presented in **Figure 11**. Results are presented in **Table 10**. All study intersections function within acceptable LOS standards under this analysis scenario, except for the following intersections:

- #3 – El Camino Real / Beech Street (AM Peak Hour)
- #14 – Main Street / Pine Street – SR 84 Ramps (PM Peak Hour)
- #17 – Woodside Road (SR 84) / Middlefield Road (PM Peak Hour)
- #18 – Woodside Road (SR 84) / Bay Road (PM Peak Hour)
- #19 – Woodside Road (SR 84) / Broadway (AM and PM Peak Hours)

Analysis sheets are provided in the **Appendix**.

Table 10 - Background Intersection Level of Service Summary

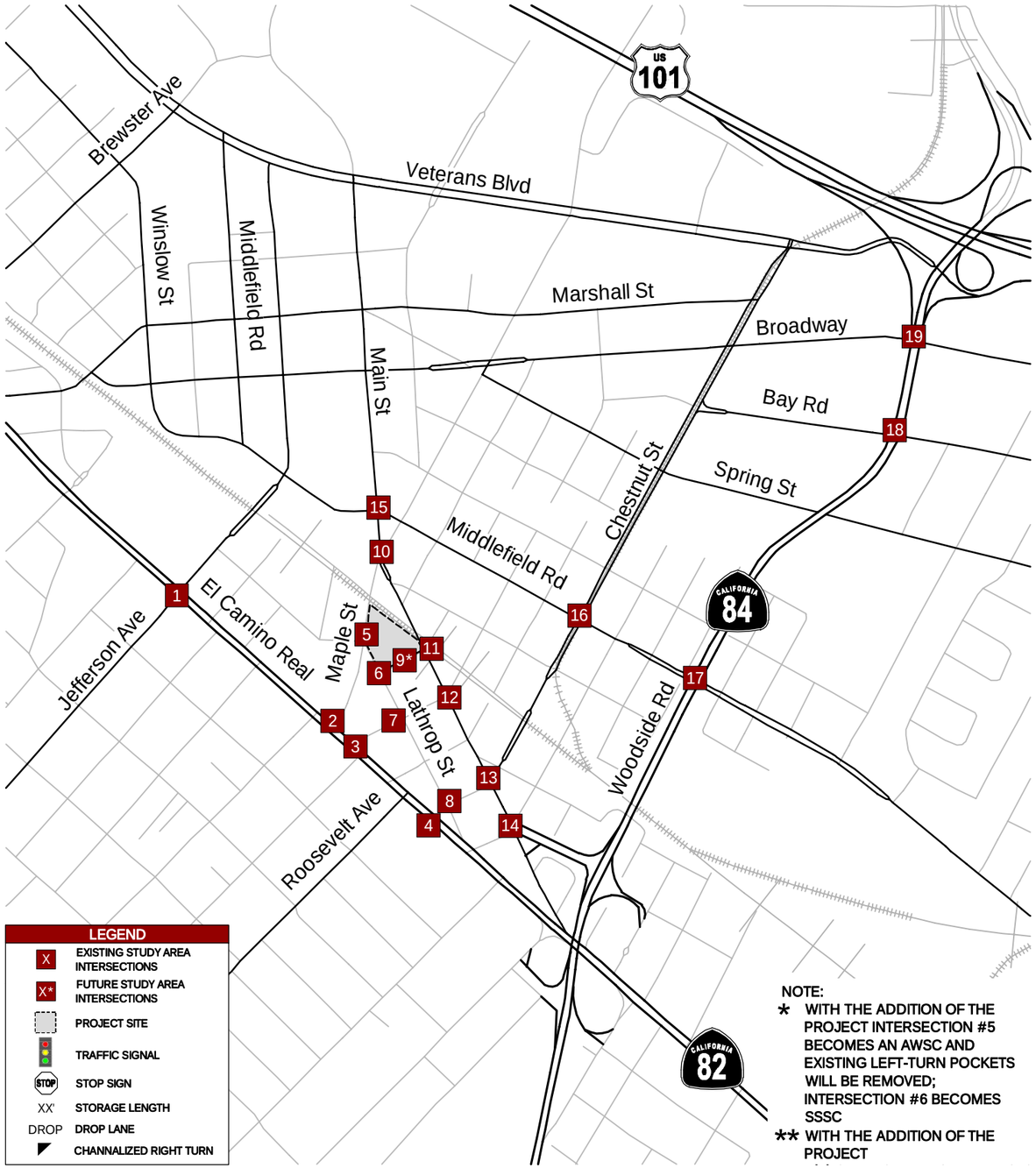
#	Intersection	LOS Criteria	Jurisdiction	Control	Background			
					AM Peak		PM Peak	
					LOS	Delay (sec)[1]	LOS	Delay (sec)[1]
1	El Camino Real / Jefferson Avenue	D	City / Caltrans	Signal	D	52.6	D	51.1
2	El Camino Real / Maple Street	D	City / Caltrans	Signal	A	7.3	B	10.5
3	El Camino Real / Beech Street	D	City / Caltrans	SSSC	**E**	**40.5**	D	33.6
4	El Camino Real / Chestnut Street	D	City / Caltrans	Signal	B	15.1	C	20.5
5	Franklin Street-Lathrop Street / Maple Street	D	City	SSSC	C	15.7	C	21.4
6	Lathrop Street / Elm Street[2]	D	City	-	Uncontrolled Intersection			
7	Lathrop Street / Beech Street	D	City	SSSC	B	10.7	B	11.3
8	Lathrop Street. Chestnut Street	D	City	SSSC	B	11.9	B	14.7
9	Elm Street / Project Driveway (Future)	D	City	SSSC	Future Intersection			
10	Main Street / Maple Street	D	City	SSSC	B	11.7	B	11.3
11	Main Street / Elm Street	D	City	SSSC	A	9.2	B	10.5
12	Main Street / Beech Street	D	City	SSSC	B	10.9	B	12.5
13	Main Street / Chestnut Street	D	City	Signal	B	17.6	C	26.3
14	Main Street / Pine Street-SR 84 Ramps	D	City	SSSC	D	27.3	**F**	**102.9**
15	Middlefield Road / Main Street	D	City	Signal	C	33.4	D	29.9
16	Middlefield Road / Chestnut	D	City	Signal	B	18.2	C	22.0
17	Woodside Road (SR 84) / Middlefield Road[3]	E	City / Caltrans	Signal	E	67.7	**F**	**89.2**
18	Woodside Road (SR 84) / Bay Road	D	City / Caltrans	Signal	D	53.0	**E**	**67.0**
19	Woodside Road (SR 84) / Broadway	D	City / Caltrans	Signal	**F**	**148.5**	**F**	**162.6**

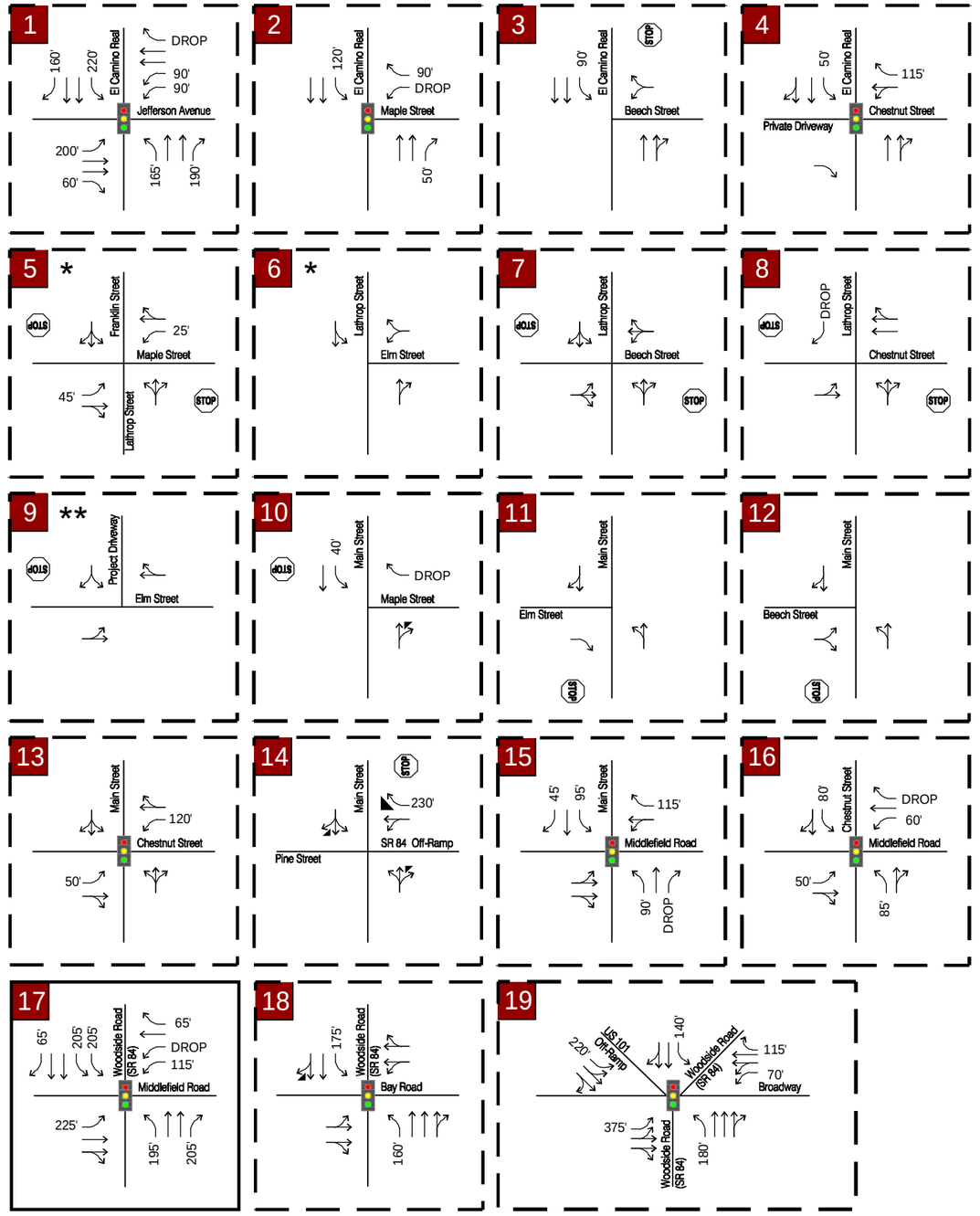
Note: Intersections that are operating below acceptable levels are shown in **BOLD**.

1 The average control delay is reported for signalized intersections. The delay for the worst movement is reported for SSSC intersections.

2 Intersection #6 - Lathrop Street / Elm Street is an uncontrolled intersection and removed from analysis.

3 Intersection #17 - Woodside Road (SR 84) / Middlefield Road is a CMP intersection with a LOS threshold of E.





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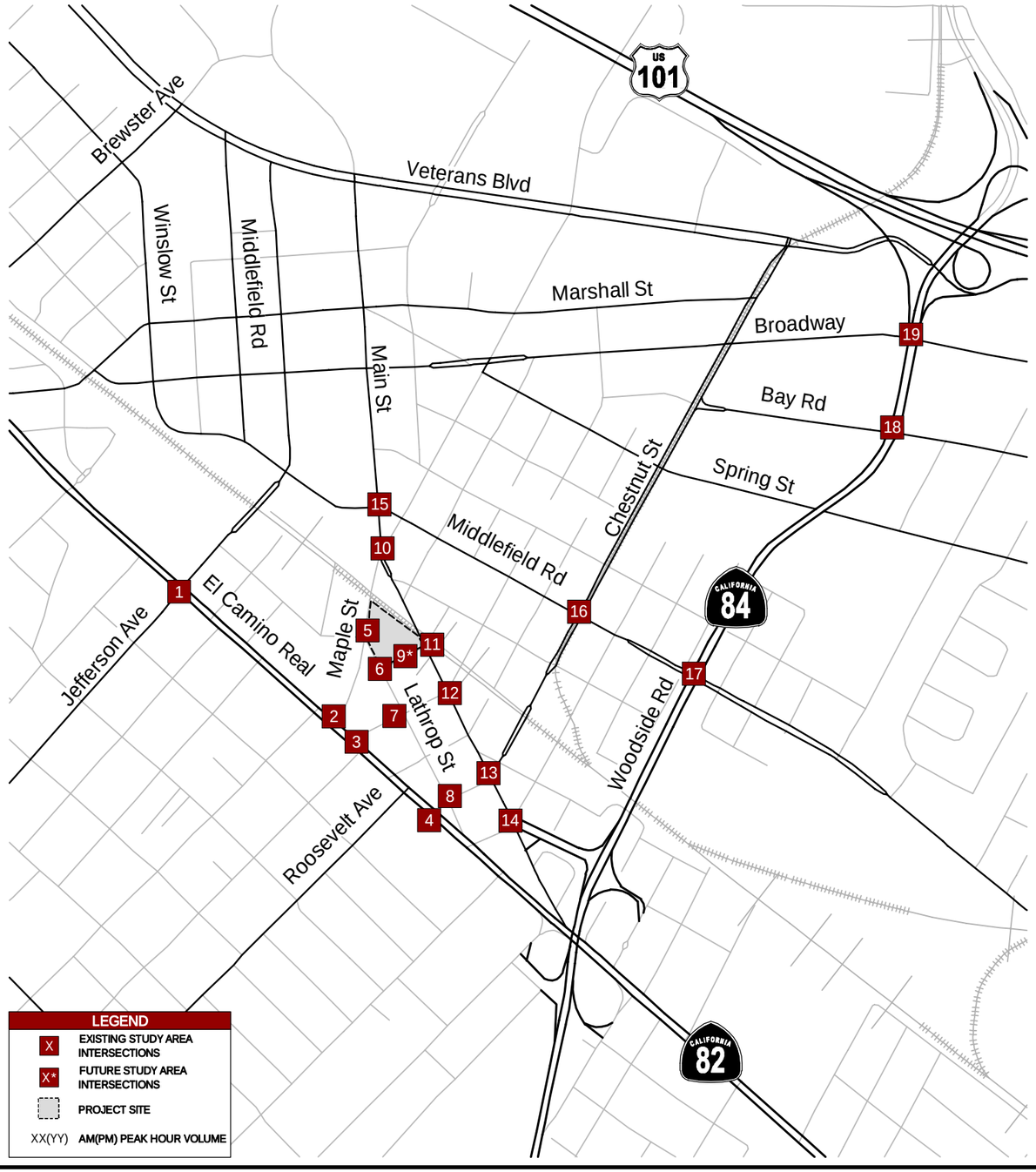
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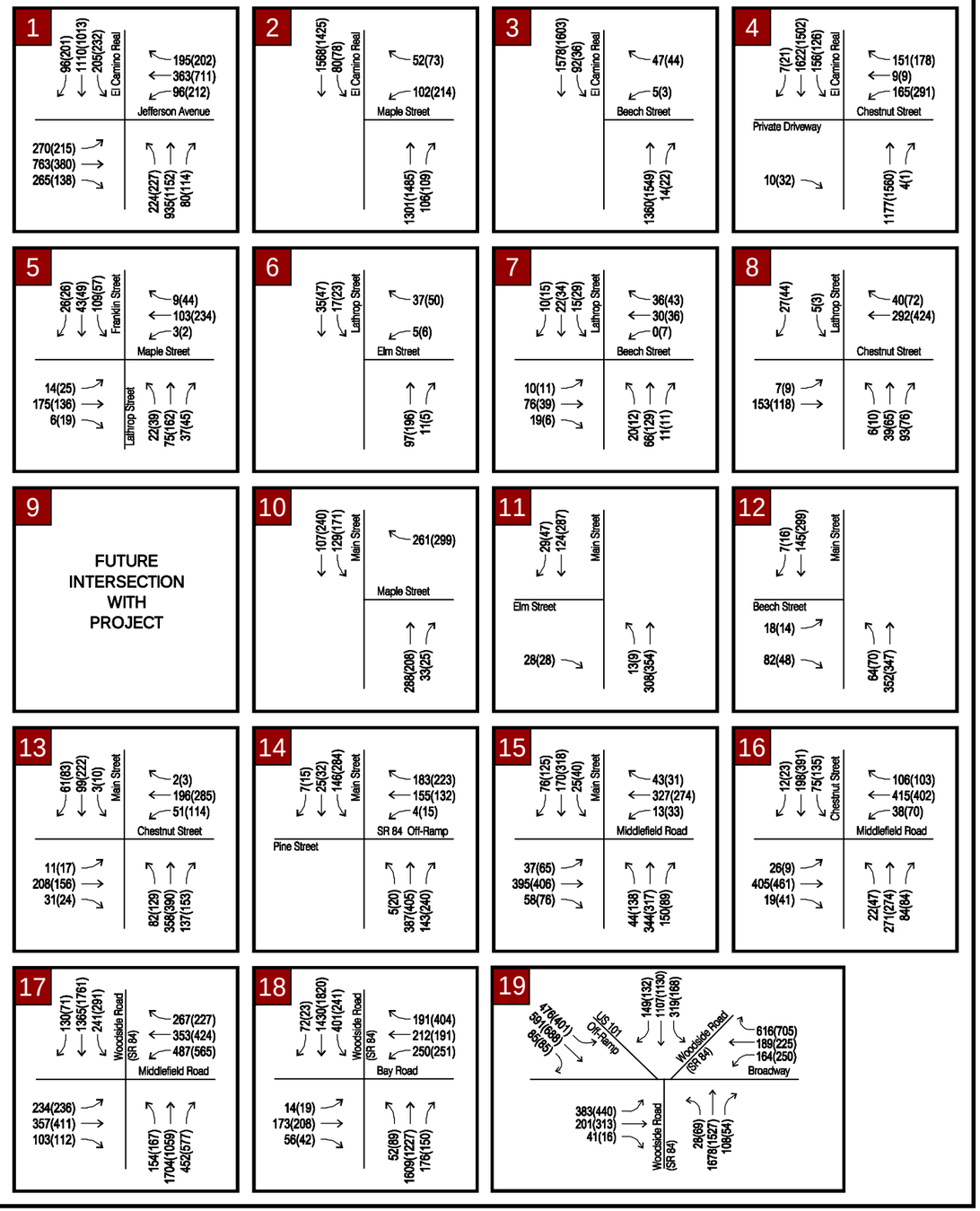
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FIGURE 10
BACKGROUND CONDITION LANE GEOMETRY AND TRAFFIC CONTROL

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FIGURE 11
BACKGROUND CONDITION PEAK HOUR TURNING MOVEMENT VOLUMES

1180 & 1190 MAIN STREET TIA

BACKGROUND PLUS PROJECT SIGNAL WARRANT

Signal warrants were evaluated at the unsignalized study intersections under Background Plus Project Conditions. Below are the results of the signal warrants analysis for the ten (10) unsignalized intersections under Background Plus Project conditions:

Did not meet peak hour signal warrant:

- #3 – El Camino Real / Beech Street
- #5 – Franklin Street - Lathrop Street / Maple Street
- #6 – Lathrop Street / Elm Street
- #7 – Lathrop Street / Beech Street
- #8 – Lathrop Street / Chestnut Street
- #9 – Elm Street / Project Driveway
- #10 – Main Street / Maple Street
- #11 – Main Street / Elm Street
- #12 – Main Street / Beech Street

Met peak hour signal warrant:

- #14 – Main Street / Pine Street – SR 84 (PM Peak Hour)

While Intersection #14 satisfies peak hour signal warrant, other considerations such as other signal warrants and its proximity to the existing signal at Intersection # 13 – Main Street / Maple Street should be evaluated before installing a signal.

Analysis sheets are provided in the **Appendix**.

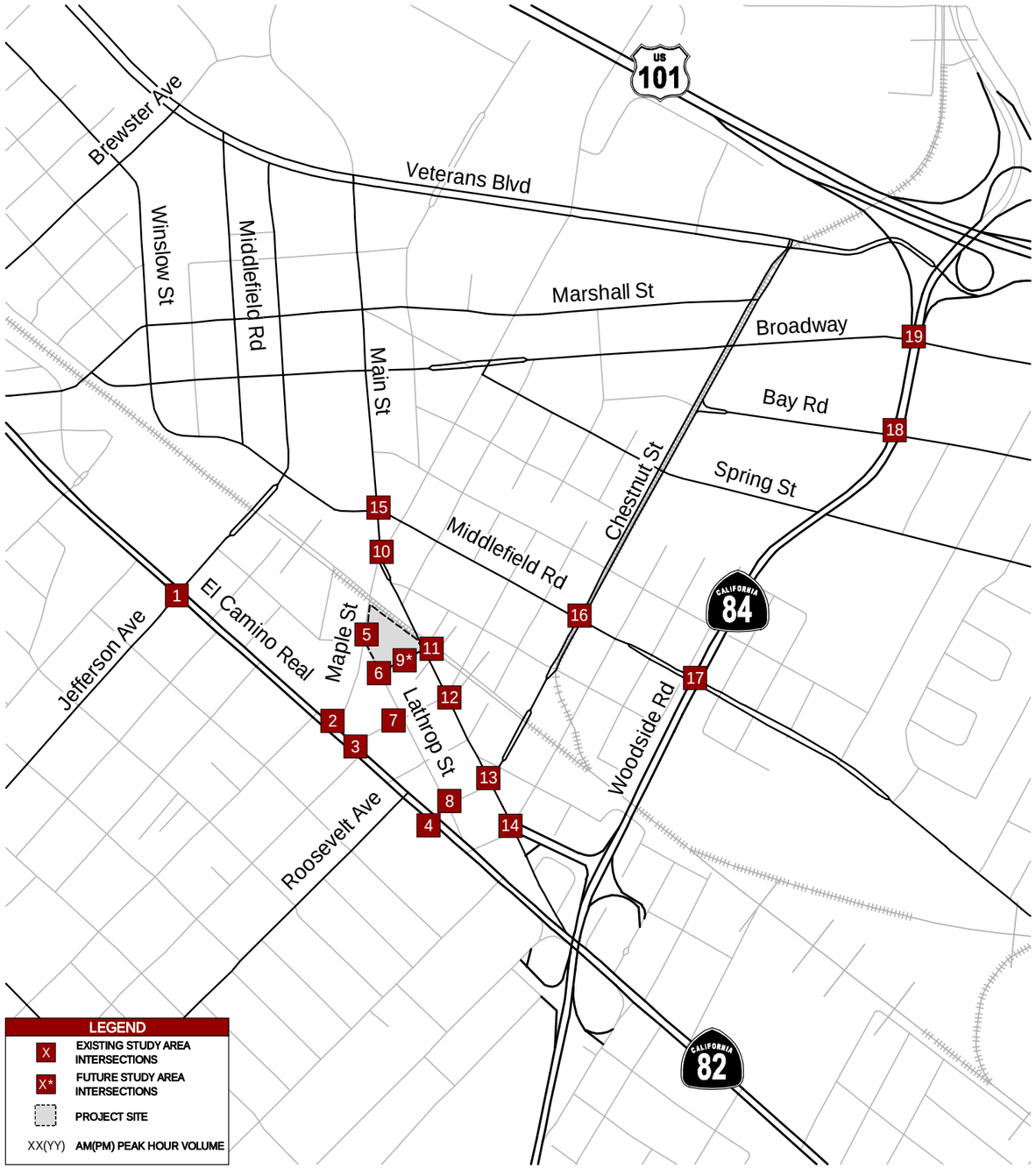
BACKGROUND PLUS PROJECT INTERSECTION LEVEL OF SERVICE

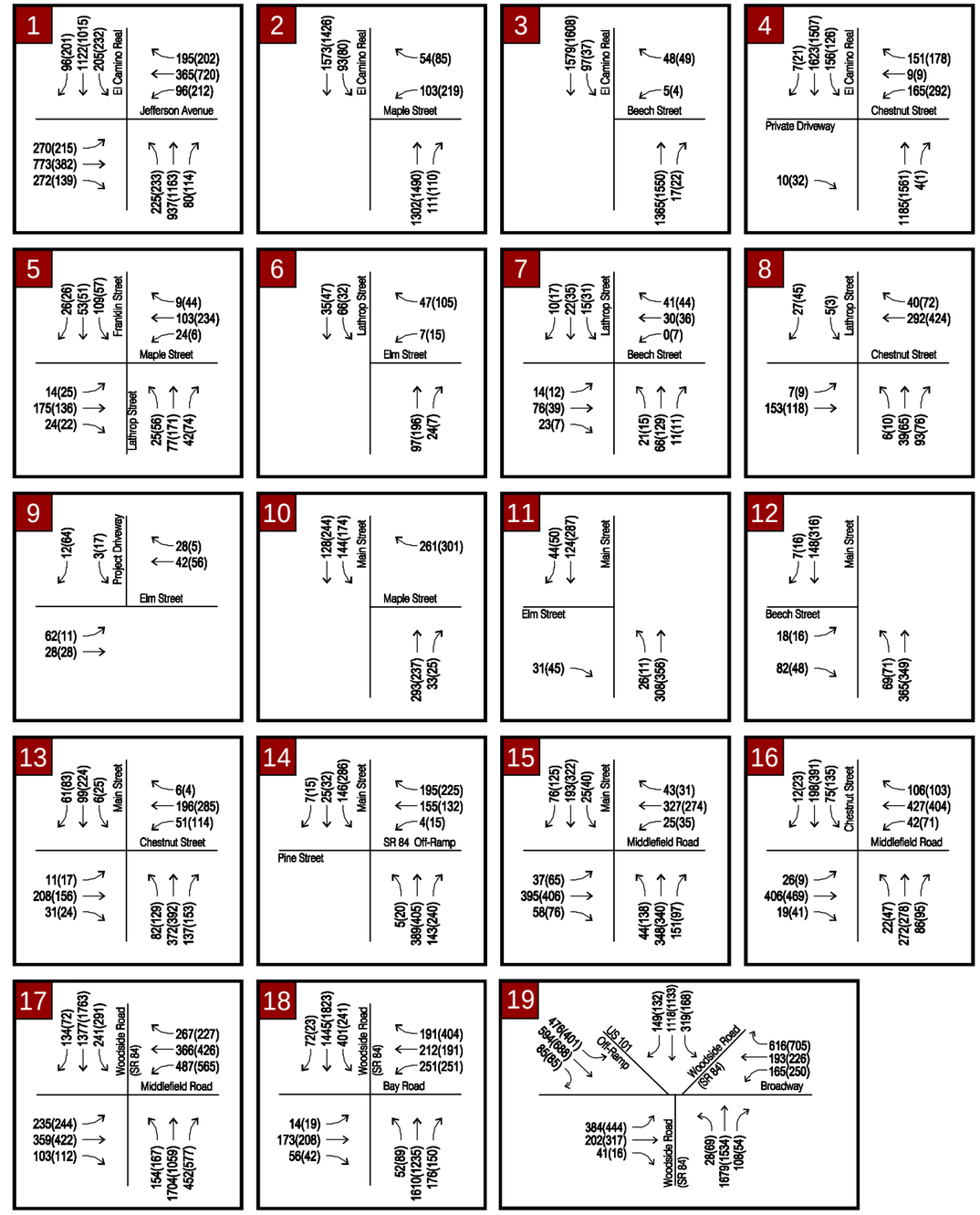
Background Plus Project traffic conditions were evaluated at the study intersections and are shown in **Figure 12**. Results are presented in **Table 11**. All study intersections function within acceptable LOS standards under this analysis scenario, except for the following intersections:

- #3 – El Camino Real / Beech Street (AM and PM Peak Hours)
  - AM peak hour: Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds and volumes do not satisfy Peak Hour Volume signal warrant – **Not a significant Impact**
  - PM peak hour: Intersection operating acceptably without the project and project causes intersection to operate at an unacceptable LOS, but volumes do not satisfy Peak Hour Volume signal warrant – **Not a significant Impact**
- #14 – Main Street / Pine Street – SR 84 Ramps (PM Peak Hour)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**
- #17 – Woodside Road (SR 84) / Middlefield Road (PM Peak Hour)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**

- #18 – Woodside Road (SR 84) / Bay Road (PM Peak Hour)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**
- #19 – Woodside Road (SR 84) / Broadway (AM and PM Peak Hours)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**

Analysis sheets are provided in the **Appendix**.





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FIGURE 12
BACKGROUND PLUS PROJECT CONDITION PEAK HOUR TURNING MOVEMENT VOLUMES

1180 & 1190 MAIN STREET TIA

Table 11 - Background Plus Proposed Project Intersection Level of Service Summary

#	Intersection	LOS Criteria	Jurisdiction	Control	Background				Background + Project					
					AM Peak		PM Peak		AM Peak			PM Peak		
					LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	Delay Var	LOS	Delay (sec)[1]	Delay Var
1	El Camino Real / Jefferson Avenue	D	City / Caltrans	Signal	D	52.6	D	51.1	D	53.4	0.8	D	51.8	0.7
2	El Camino Real / Maple Street	D	City / Caltrans	Signal	A	7.3	B	10.5	A	7.5	0.2	B	10.8	0.3
3	El Camino Real / Beech Street	D	City / Caltrans	SSSC	**E**	**40.5**	D	33.6	**E**	**41.9**	**1.4**	**E**	**38.6**	**5.0**
4	El Camino Real / Chestnut Street	D	City / Caltrans	Signal	B	15.1	C	20.5	B	15.2	0.1	C	20.5	0.0
5	Franklin Street-Lathrop Street / Maple Street[2]	D	City	SSSC/AWSC	C	15.7	C	21.4	A	10.0	-5.7	B	13.0	-8.4
6	Lathrop Street / Elm Street[3]	D	City	- / SSSC	Uncontrolled Intersection				A	9.5	-	B	10.8	-
7	Lathrop Street / Beech Street	D	City	SSSC	B	10.7	B	11.3	B	10.8	0.1	B	11.4	0.1
8	Lathrop Street. Chestnut Street	D	City	SSSC	B	11.9	B	14.7	B	11.9	0.0	B	14.7	0.0
9	Elm Street / Project Driveway (Future)	D	City	SSSC	Future Intersection				A	8.9	-	A	9.1	-
10	Main Street / Maple Street	D	City	SSSC	B	11.7	B	11.3	B	12.0	0.3	B	11.7	0.4
11	Main Street / Elm Street	D	City	SSSC	A	9.2	B	10.5	A	9.3	0.1	B	10.6	0.1
12	Main Street / Beech Street	D	City	SSSC	B	10.9	B	12.5	B	11.0	0.1	B	13.0	0.5
13	Main Street / Chestnut Street	D	City	Signal	B	17.6	C	26.3	B	17.8	0.2	C	26.9	0.6
14	Main Street / Pine Street-SR 84 Ramps	D	City	SSSC	D	27.3	**F**	**102.9**	D	27.4	0.1	**F**	**104.6**	**1.7**
15	Middlefield Road / Main Street	D	City	Signal	C	33.4	D	39.9	C	34.1	0.7	D	40.2	0.3
16	Middlefield Road / Chestnut	D	City	Signal	B	18.2	C	22.0	B	18.4	0.2	C	22.6	0.6
17	Woodside Road (SR 84) / Middlefield Road[4]	E	City / Caltrans	Signal	E	67.7	**F**	**89.2**	E	69.0	1.3	**F**	**90.9**	**1.7**
18	Woodside Road (SR 84) / Bay Road	D	City / Caltrans	Signal	D	53.0	**E**	**67.0**	D	53.2	0.2	**E**	**67.3**	**0.3**
19	Woodside Road (SR 84) / Broadway	D	City / Caltrans	Signal	**F**	**148.5**	**F**	**162.6**	**F**	**149.5**	**1.0**	**F**	**163.7**	**1.1**

Note: Intersections that are operating below acceptable levels are shown in **BOLD**.

1 The average control delay is reported for signalized and AWSC intersections. The delay for the worst movement is reported for SSSC intersections.

2 Intersection #5 - Franklin Street-Lathrop Street / Maple Street becomes an all-way stop control intersection with the Project.

3 Intersection #6 - Lathrop Street / Elm Street becomes a side-street stop control intersection with the Project.

4 Intersection #17 - Woodside Road (SR 84) / Middlefield Road is a CMP intersection with a LOS threshold of E.

5. CUMULATIVE TRAFFIC CONDITIONS

This chapter will discuss the traffic conditions under the Cumulative and Cumulative Plus Project Conditions.

CUMULATIVE TRANSPORTATION IMPROVEMENTS

Under Cumulative conditions, the following lane geometry improvements were assumed:

- Intersection #9 – Elm Street/ Project Driveway: Northbound approach as the driveway for Block D of the proposed 1601 El Camino Real project.

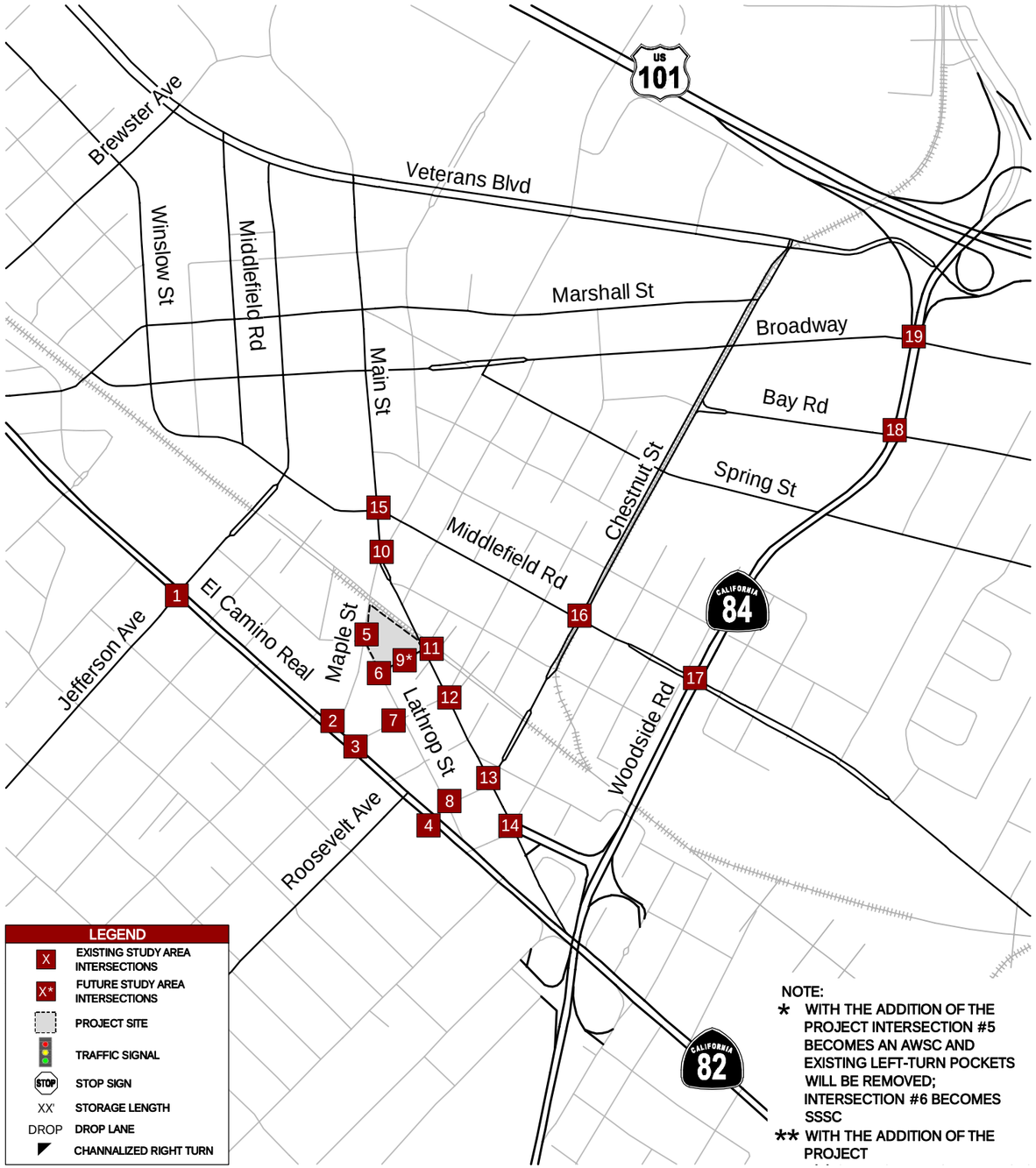
Figure 13 illustrates the intersection geometry and traffic control assumed for the Cumulative analysis.

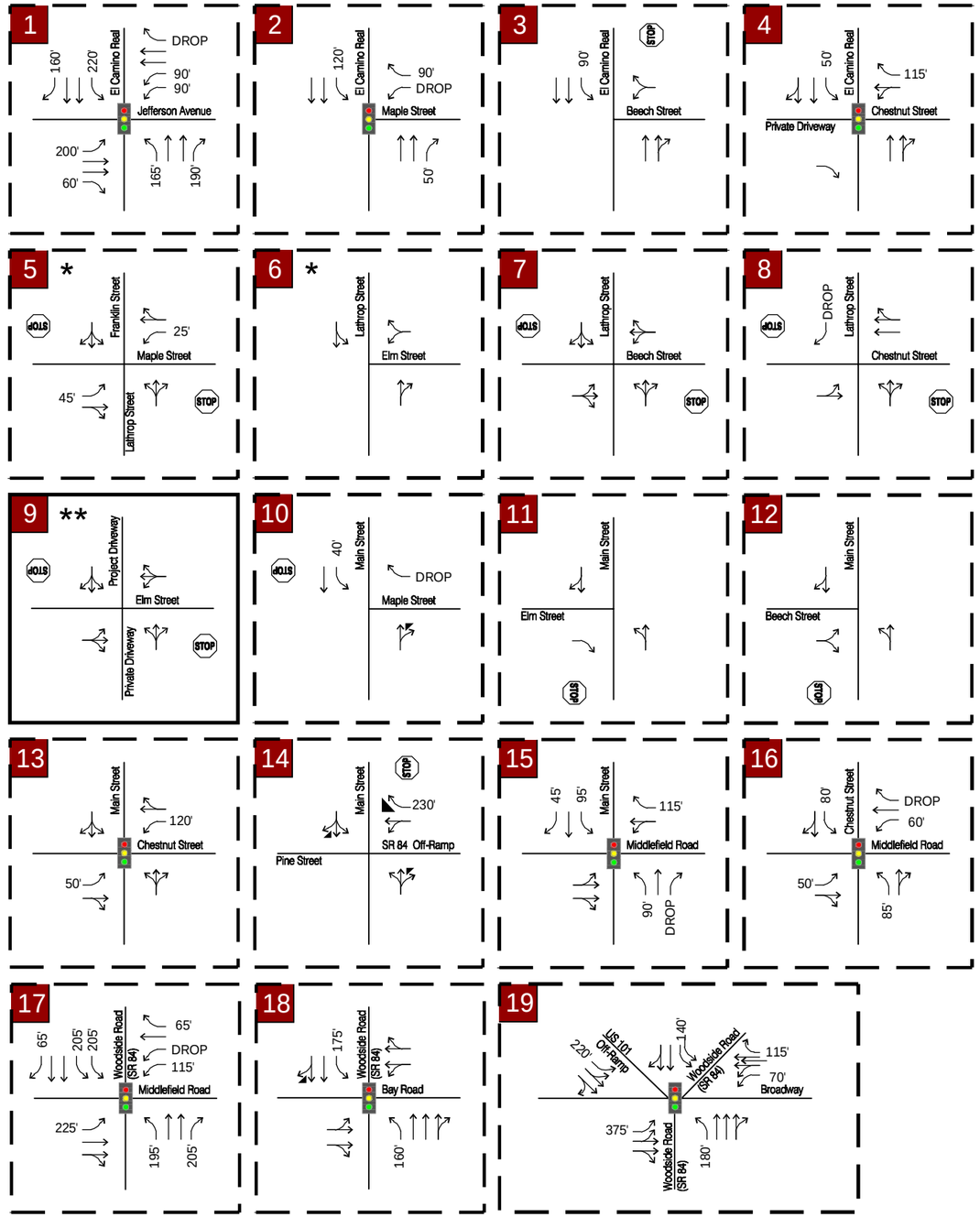
CUMULATIVE TRAFFIC VOLUME

To achieve Cumulative traffic conditions, traffic volumes from approved and pending projects were incorporated according to information provided by City staff. In addition to projects listed in **Table 9**, Cumulative volumes include projects listed in **Table 12**.

Table 12 - Additional Projects to Assume for Cumulative Conditions

Project	Project Description	Status
525 E Bayshore Road	201,000 sf auto-dealership	Proposed
557 E Bayshore Road	550-unit multi-family residential; 100,000 sf sport club	Proposed
320-350 Blomquist Street	1,296,556 SF high-tech office campus	Proposed
1401 Broadway	520-unit multi-family residential; 420,00 sf office; 18,800 sf retail; 6,860 sf commercial	Proposed
31 Center Street	7 residential units	Proposed
120 El Camino Real	12 residential units	Proposed
504 El Camino Real	33-unit multi-family residential; 16,000 sf commercial	Proposed
1601 El Camino Real	272-unit multi-family residential; 589,700sf office; 10,000 sf retail; 10,000 sf childcare	Proposed
851 Main Street	80,000 sf office; 6,910 sf retail	Proposed
610 Walnut Street	63,835 sf office	Proposed





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FIGURE 13
CUMULATIVE CONDITION LANE GEOMETRY AND TRAFFIC CONTROL

1180 & 1190 MAIN STREET TIA

CUMULATIVE SIGNAL WARRANT

Signal warrants were evaluated at the unsignalized study intersections under Cumulative Conditions. Below are the results of the signal warrants analysis for the nine (9) unsignalized intersections under Cumulative conditions:

Did not meet peak hour signal warrant:

- #5 – Franklin Street - Lathrop Street / Maple Street
- #6 – Lathrop Street / Elm Street
- #7 – Lathrop Street / Beech Street
- #8 – Lathrop Street / Chestnut Street
- #10 – Main Street / Maple Street
- #11 – Main Street / Elm Street
- #12 – Main Street / Beech Street

Met peak hour signal warrant:

- #3 – El Camino Real / Beech Street (PM Peak Hour)
- #14 – Main Street / Pine Street – SR 84 (AM and PM Peak Hours)

While both Intersections #3 and #14 satisfy the peak hour signal warrant, other considerations such as other signal warrants and its proximity to existing signals at Intersection #2 – El Camino Real / Maple Street (for Intersection #3) and at Intersection # 13 – Main Street / Chestnut Street (for Intersection #14) should be evaluated before installing a signal.

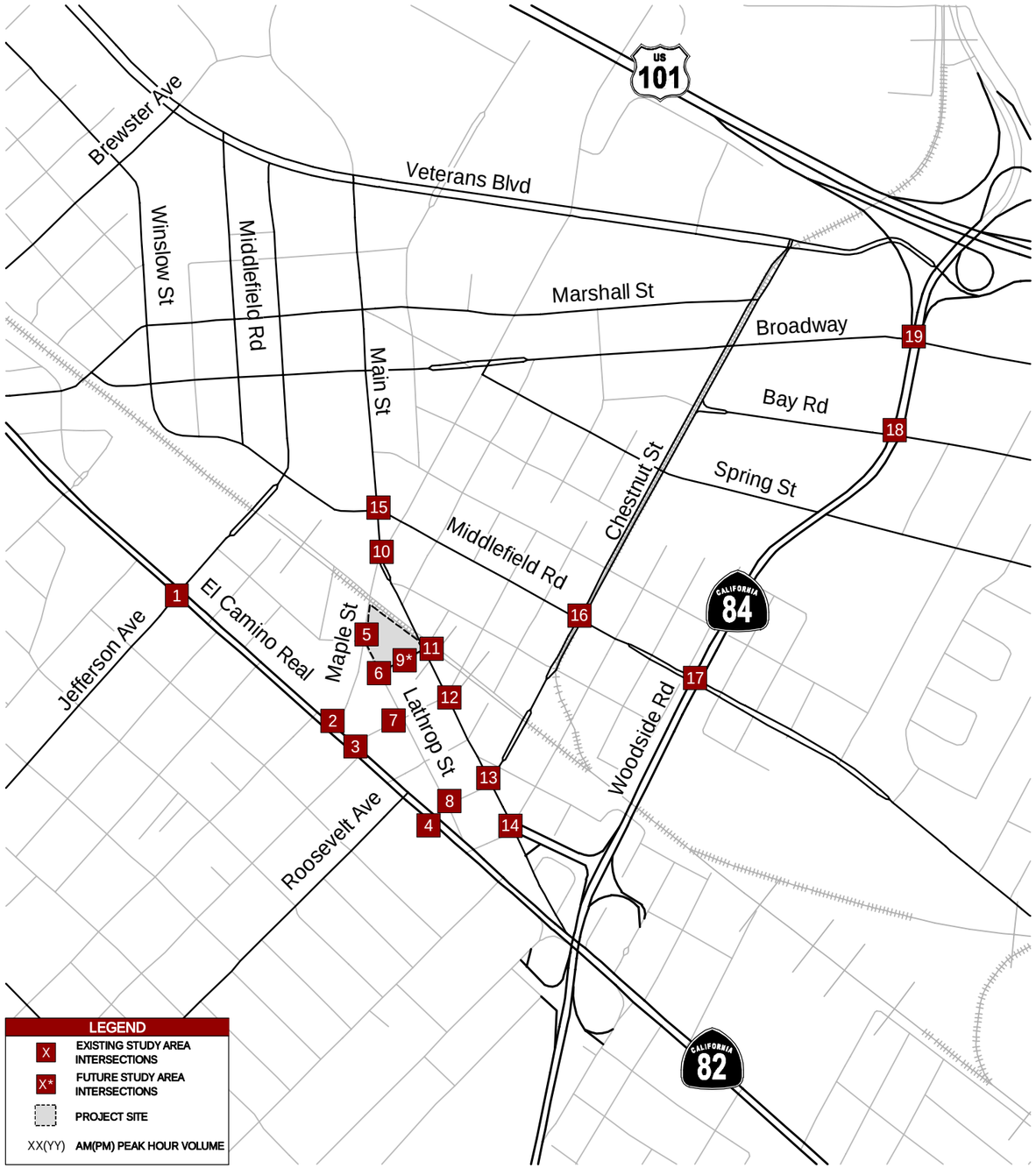
Analysis sheets are provided in the **Appendix**.

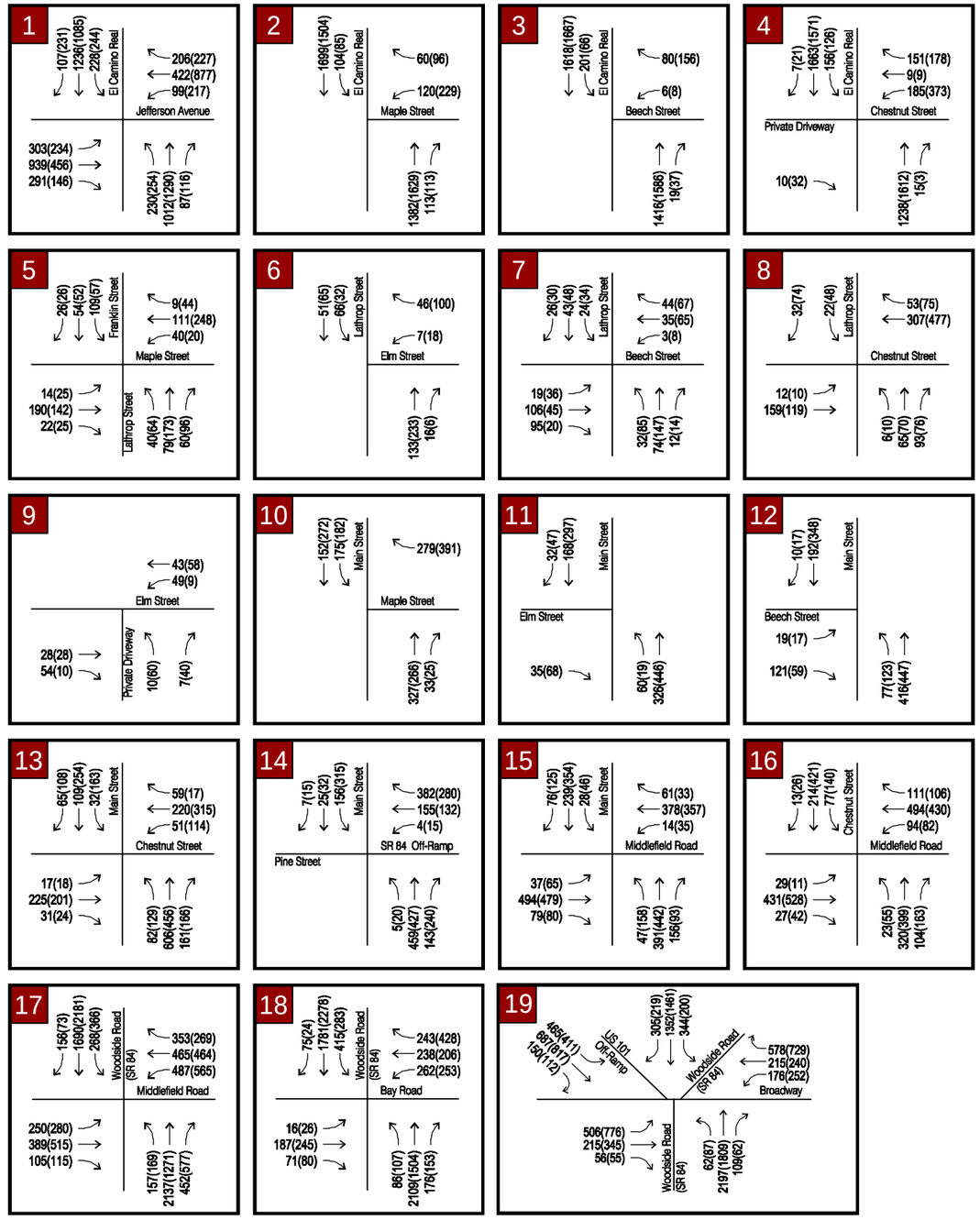
CUMULATIVE INTERSECTIONS LEVEL OF SERVICE

Cumulative volumes were evaluated at the study intersections and are presented in **Figure 14**. Results are presented in **Table 13.** All study intersections function within acceptable LOS standards under this analysis scenario, except for the following intersections:

- #1 – El Camino Real / Jefferson Avenue (AM and PM Peak Hours)
- #3 – El Camino Real / Beech Street (AM and PM Peak Hours)
- #5 – Franklin Street-Lathrop Street / Maple Street (PM Peak Hour)
- #13 – Main Street / Chestnut Street (PM Peak Hour)
- #14 – Main Street / Pine Street – SR 84 Ramps (AM and PM Peak Hours)
- #17 – Woodside Road (SR 84) / Middlefield Road (AM and PM Peak Hours)
- #18 – Woodside Road (SR 84) / Bay Road (AM and PM Peak Hours)
- #19 – Woodside Road (SR 84) / Broadway (AM and PM Peak Hours)

Analysis sheets are provided in the **Appendix**.





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FIGURE 14
CUMULATIVE CONDITION PEAK HOUR TURNING MOVEMENT VOLUMES

1180 & 1190 MAIN STREET TIA

Table 13 - Cumulative Intersection Level of Service Summary

#	Intersection	LOS Criteria	Jurisdiction	Control	Cumulative			
					AM Peak		PM Peak	
					LOS	Delay (sec)[1]	LOS	Delay (sec)[1]
1	El Camino Real / Jefferson Avenue	D	City / Caltrans	Signal	**E**	**75.2**	**E**	**69.2**
2	El Camino Real / Maple Street	D	City / Caltrans	Signal	A	8.3	B	11.6
3	El Camino Real / Beech Street	D	City / Caltrans	SSSC	**F**	**145.4**	**F**	**129.9**
4	El Camino Real / Chestnut Street	D	City / Caltrans	Signal	B	16.7	C	24.4
5	Franklin Street-Lathrop Street / Maple Street	D	City	SSSC	C	21.9	**E**	**35.4**
6	Lathrop Street / Elm Street[2]	D	City	-	Uncontrolled Intersection			
7	Lathrop Street / Beech Street	D	City	SSSC	B	12.3	C	15.4
8	Lathrop Street. Chestnut Street	D	City	SSSC	B	13.7	C	16.1
9	Elm Street / Project Driveway (Future)	D	City	SSSC	A	9.4	A	9.4
10	Main Street / Maple Street	D	City	SSSC	B	13.0	B	12.2
11	Main Street / Elm Street	D	City	SSSC	A	9.6	B	11.0
12	Main Street / Beech Street	D	City	SSSC	B	11.8	C	15.4
13	Main Street / Chestnut Street	D	City	Signal	D	38.8	**E**	**73.0**
14	Main Street / Pine Street-SR 84 Ramps	D	City	SSSC	**E**	**35.5**	**F**	**163.8**
15	Middlefield Road / Main Street	D	City	Signal	D	41.2	D	52.6
16	Middlefield Road / Chestnut	D	City	Signal	C	21.4	D	36.0
17	Woodside Road (SR 84) / Middlefield Road[3]	E	City / Caltrans	Signal	**F**	**133.1**	**F**	**144.7**
18	Woodside Road (SR 84) / Bay Road	D	City / Caltrans	Signal	**F**	**105.5**	**F**	**128.4**
19	Woodside Road (SR 84) / Broadway	D	City / Caltrans	Signal	**F**	**265.4**	**F**	**263.3**

Note: Intersections that are operating below acceptable levels are shown in **BOLD**.

1 The average control delay is reported for signalized intersections. The delay for the worst movement is reported for SSSC intersections.

2 Intersection #6 - Lathrop Street / Elm Street is an uncontrolled intersection and removed from analysis.

3 Intersection #17 - Woodside Road (SR 84) / Middlefield Road is a CMP intersection with a LOS threshold of E.

CUMULATIVE PLUS PROJECT SIGNAL WARRANT

Signal warrants were evaluated at the unsignalized study intersections under Cumulative Plus Project Conditions. Below are the results of the signal warrants analysis for the ten (10) unsignalized intersections under Cumulative Plus Project conditions:

Did not meet peak hour signal warrant:

- #5 – Franklin Street - Lathrop Street / Maple Street
- #6 – Lathrop Street / Elm Street
- #7 – Lathrop Street / Beech Street
- #8 – Lathrop Street / Chestnut Street
- #9 – Elm Street / Project Driveway
- #10 – Main Street / Maple Street
- #11 – Main Street / Elm Street
- #12 – Main Street / Beech Street

Met peak hour signal warrant:

- #3 – El Camino Real / Beech Street (PM Peak Hour)
- #14 – Main Street / Pine Street – SR 84 (AM and PM Peak Hours)

While both Intersections #3 and #14 satisfy peak hour signal warrant, other consideration such as other signal warrants and its proximity to existing signals at Intersection #2 – El Camino Real / Maple Street (for Intersection #3) and at Intersection # 13 – Main Street / Chestnut Street (for Intersection #14) should be evaluated before installing a signal.

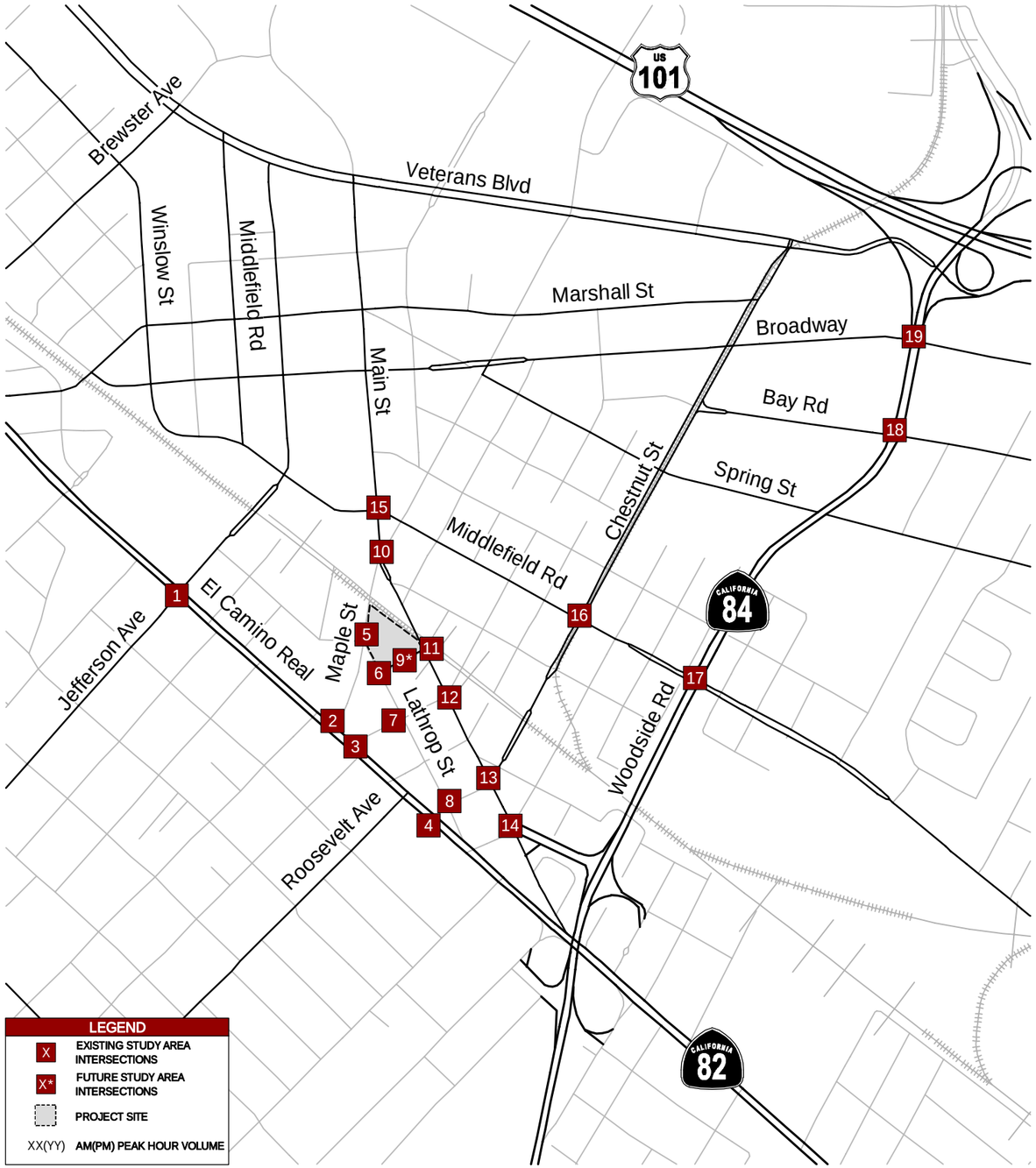
Analysis sheets are provided in the **Appendix**.

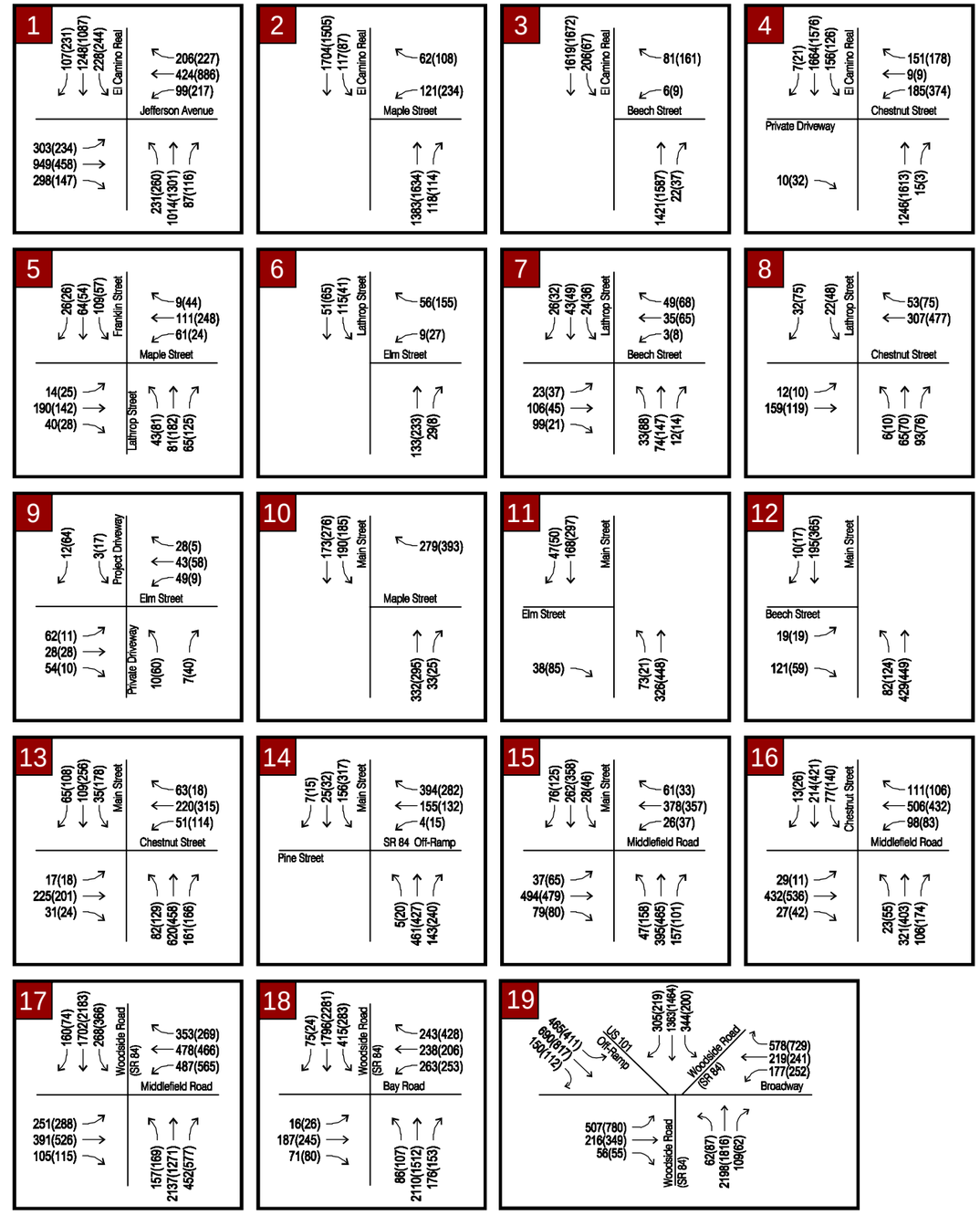
CUMULATIVE PLUS PROJECT INTERSECTION LEVEL OF SERVICE

Cumulative Plus Project traffic conditions were evaluated at the study intersections and are shown in **Figure 15**. Results of the analysis are presented in **Table 14**. All study intersections function within acceptable LOS standards under this analysis scenario, except for the following intersections:

- #1 – El Camino Real / Jefferson Avenue (AM and PM Peak Hours)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**
- #3 – El Camino Real / Beech Street (AM and PM Peak Hours)
  - AM peak hour: Intersection operating unacceptably without the project with increase in delay less than five (5) seconds – **Not a significant Impact**
  - PM peak hour: Intersection operating unacceptably without the project with increase in delay greater than five (5) seconds and volumes satisfy Peak Hour Volume signal warrant – **Significant Impact**
- #13 – Main Street / Chestnut Street (PM Peak Hour)
  - Intersection operating unacceptably without the project with increase in delay greater than five (5) seconds – **Significant Impact**
- #14 – Main Street / Pine Street – SR 84 Ramps (AM and PM Peak Hours)
  - AM peak hour: Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**
  - PM peak hour: Intersection operating unacceptably without the project with increase in delay greater than five (5) seconds and volumes satisfy Peak Hour Volume signal warrant – **Significant Impact**
- #17 – Woodside Road (SR 84) / Middlefield Road (AM and PM Peak Hours)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**
- #18 – Woodside Road (SR 84) / Bay Road (AM and PM Peak Hours)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**
- #19 – Woodside Road (SR 84) / Broadway (AM and PM Peak Hours)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**

Analysis sheets are provided in the **Appendix**.





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FIGURE 15
CUMULATIVE PLUS PROJECT CONDITION PEAK HOUR TURNING MOVEMENT VOLUMES

1180 & 1190 MAIN STREET TIA

Table 14 - Cumulative Plus Project Intersection Level of Service Summary

#	Intersection	LOS Criteria	Jurisdiction	Control	Cumulative				Cumulative + Project					
					AM Peak		PM Peak		AM Peak			PM Peak		
					LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	Delay Var	LOS	Delay (sec)[1]	Delay Var
1	El Camino Real / Jefferson Avenue	D	City / Caltrans	Signal	**E**	**75.2**	**E**	**69.2**	**E**	**76.5**	**1.3**	**E**	**71.2**	**2.0**
2	El Camino Real / Maple Street	D	City / Caltrans	Signal	A	8.3	B	11.6	A	8.6	0.3	B	11.8	0.2
3	El Camino Real / Beech Street	D	City / Caltrans	SSSC	**F**	**145.4**	**F**	**129.9**	**F**	**144.7**	**-0.7**	**F**	**158.2**	**28.3**
4	El Camino Real / Chestnut Street	D	City / Caltrans	Signal	B	16.7	C	24.4	B	16.7	0.0	C	24.4	0.0
5	Franklin Street-Lathrop Street / Maple Street[2]	D	City	SSSC/AWSC	C	21.9	**E**	**35.4**	B	11.4	-10.5	C	17.2	-18.2
6	Lathrop Street / Elm Street[3]	D	City	- / SSSC	Uncontrolled Intersection				B	10.2	-	B	12.4	-
7	Lathrop Street / Beech Street	D	City	SSSC	B	12.3	C	15.4	B	12.5	0.2	C	15.7	0.3
8	Lathrop Street. Chestnut Street	D	City	SSSC	B	13.7	C	16.1	B	13.7	0.0	C	16.1	0.0
9	Elm Street / Project Driveway (Future)	D	City	SSSC	A	9.4	A	9.4	B	10.5	1.1	B	10.1	0.7
10	Main Street / Maple Street	D	City	SSSC	B	13.0	B	12.2	B	13.4	0.4	B	12.7	0.5
11	Main Street / Elm Street	D	City	SSSC	A	9.6	B	11.0	A	9.6	0.0	B	11.2	0.2
12	Main Street / Beech Street	D	City	SSSC	B	11.8	C	15.4	B	12.0	0.2	C	16.3	0.9
13	Main Street / Chestnut Street	D	City	Signal	D	38.8	**E**	**73.0**	D	41.4	2.6	**F**	**84.4**	**11.4**
14	Main Street / Pine Street-SR 84 Ramps	D	City	SSSC	**E**	**35.5**	**F**	**163.8**	**E**	**35.8**	**0.3**	**F**	**169.9**	**6.1**
15	Middlefield Road / Main Street	D	City	Signal	D	41.2	D	52.6	D	42.2	1.0	D	53.7	1.1
16	Middlefield Road / Chestnut	D	City	Signal	C	21.4	D	36.0	C	21.6	0.2	D	37.8	1.8
17	Woodside Road (SR 84) / Middlefield Road[4]	E	City / Caltrans	Signal	**F**	**133.1**	**F**	**144.7**	**F**	**136.4**	**3.3**	**F**	**146.7**	**2.0**
18	Woodside Road (SR 84) / Bay Road	D	City / Caltrans	Signal	**F**	**105.5**	**F**	**128.4**	**F**	**107.2**	**1.7**	**F**	**128.8**	**0.4**
19	Woodside Road (SR 84) / Broadway	D	City / Caltrans	Signal	**F**	**265.4**	**F**	**263.3**	**F**	**267.7**	**2.3**	**F**	**264.7**	**1.4**

Note: Intersections that are operating below acceptable levels are shown in **BOLD** and significant impacts highlighted.

1 The average control delay is reported for signalized and AWSC intersections. The delay for the worst movement is reported for SSSC intersections.

2 Intersection #5 - Franklin Street-Lathrop Street / Maple Street becomes an all-way stop control intersection with the Project.

3 Intersection #6 - Lathrop Street / Elm Street becomes a side-street stop control intersection with the Project.

4 Intersection #17 - Woodside Road (SR 84) / Middlefield Road is a CMP intersection with a LOS threshold of E.

6. INTERSECTION VEHICLE QUEUING AND SITE ACCESS AND CIRCULATION

This chapter presents the results from the vehicle queuing analysis completed for each of the study intersections, as well as site access and circulation for the proposed project site.

INTERSECTION VEHICLE QUEUING

As congestion increases, it is common for traffic at intersections to form lines of stopped (or queued) vehicles. Queue lengths were determined for each turn lane and measured the distance that vehicles will back up in each direction approaching an intersection. *Synchro* software calculates the 95th percentile queues based on *HCM 2000* methodology. The 95th percentile queue is used to account for fluctuations in traffic and represents a condition where 95 percent of the time during the peak period, traffic volumes will be less than or equal to the queue determined by the analysis. It is used as a benchmark for determining deficiencies as a standard transportation engineering practice. A typical vehicle length of 25 feet was used in the queuing analysis. An operational deficiency was assumed to occur if the queue increases by one or more vehicles and the vehicle queue exceeds the turn pocket length. A summary of the queuing results is included in the **Appendix**.

The analysis showed that several existing turn bay storage lengths are exceeded by future traffic volumes. In all cases, the exceeded queue lengths are not solely due to the project, but are a result of pre-existing deficiencies. For example, the 95th percentile northbound left turn queue length at the intersection of El Camino Real and Jefferson Avenue is 302 feet during the AM peak in the Existing Conditions and 303 feet during the AM peak in the Existing Plus Project Conditions. The turn pocket length is 165 feet long and the queue spills out of the turn pocket, the result is a pre-existing deficiency. The analysis found that there are no queuing deficiencies due to the addition of the project.

SITE ACCESS AND CIRCULATION

The proposed project was evaluated to determine if the project will provide adequate access to the site and if the project would potentially conflict with adopted policies, plans, or programs supporting alternative transportation or generate pedestrian and bicycle demand that would not be accommodated by existing pedestrian or bicycle facilities and plans including RWCMoves.

SITE ACCESS

As shown in **Figure 6**, pedestrians may access the site at entrances along Main Street and Lathrop Street. Vehicles may access the underground parking garage on Elm Street. It should be noted that there is a median on the southbound approach at the intersection of Main Street / Elm Street which restricts vehicles from making an eastbound left turn from Elm Street onto Main Street. Vehicles traveling from the project site to downtown will need to utilize the Maple Street / Franklin Street-Lathrop Street intersection to the west or head south towards the Main Street / Beech Street intersection. This median at Main Street / Elm Street also extends into the intersection, making the northbound left from Main Street onto Elm Street a more difficult maneuver, however existing counts show that vehicles (13 trips in the AM peak hour and 9 trips in the PM peak hour) still make this maneuver. It is anticipated that some project trips (13 trips in the AM peak hour and 2 trips in the PM peak hour) will make this maneuver, which will result in less than 10 seconds of delay for the northbound left-turn movement and less than 5 feet of queuing during the peak hours.

The driveway was determined to operate at an acceptable LOS at the completion of the proposed project (see Intersection #9 in **Tables 8, 11, and 14** for LOS results). There were also no queuing deficiencies identified for the southbound approach at Intersection #9.

PARKING REQUIREMENTS

The City parking requirements are stated in Article 30 of Redwood City Municipal Code. The parking requirements for professional, business or administrative offices are dependent on whether the site is within the downtown core (radius distance less than 1,500 feet from the northerly-most corner of the Sequoia Station building adjacent to the Caltrain station). The proposed project has a radius distance of approximately 2,000 feet and is outside the downtown core and will need to provide one (1) space for every 300 square feet of gross floor area[4], which equates to 374 parking spaces. In addition, the project is within a Mixed-Use Live/Work (MULW) zoning district which requires that at least 8 percent of the parking spaces to be designated for any combination of low-emitting fuel-efficient, electric, and carpool/vanpool vehicles[5] or 30 spaces.

The February 2018 site plans indicate that the project will provide a total of 341 spaces, of which 26 spaces are designated for low-emitting and carpool vehicles. Both space counts are lower than the City's requirement and a formal assessment should be conducted to evaluate the adequacy of the proposed parking supply. The project is proposing the use of valet to meet parking requirements which may help increase parking supply; however, reduced parking demand and overall vehicles trips is better achieved through implementation of elements from the required TDM plan. These elements would include parking management and encourage employees to walk, bike, or take transit to work.

PEDESTRIAN ACCESS AND CIRCULATION

The project site is located within walking distance to the Redwood City Caltrain Station as well as the downtown area. Pedestrians traveling to and from the Redwood City Caltrain station would utilize sidewalks on roadways parallel to the north or south of the tracks. For those walking north of the tracks, they will walk along Winslow Street, Middlefield Road, Main Street and would need to cross the Caltrain tracks at either Maple Street or Main Street. For those traveling south of the tracks, they will walk through Sequoia Station shopping center and walk along Franklin Street-Lathrop Street and will need to cross Maple Street. Currently there are no marked crosswalks at Maple Street. Pedestrians walking to or from the downtown area will need to cross the tracks at either side of Maple Street or Main Street.

The Caltrain tracks run along the northeast side of the building. The project is proposing an entrance on Main Street near the train tracks, which might lead to potential train conflicts. While conducting field observation, it was observed that a pedestrian crossing was being constructed on the west side of Main Street, which will involve pedestrian gates and barriers, however the project should provide signage and sight clearance to warn pedestrians of the railroad crossing.

According to Article 55.3.C of the Redwood City Municipal Code, developments within MULW zoning districts shall promote walkability and connectivity. There are existing sidewalks adjacent to the proposed site along Main Street and Elm Street where pedestrians can access the site from the other places within the City. However, there are currently no sidewalks adjacent to the site where the main entrance is located on Lathrop Street, as well as along the site on Maple Street. The February 2018 site plan indicated that the

[4] Redwood City Municipal Code. Article 30.5.B

[5] Redwood City Municipal Code. Article 30.4.D

proposed project will construct sidewalks to connect to the existing pedestrian facilities near the project site. The project also proposes other pedestrian-oriented designs such as enhanced streetscapes which includes benches, lighting, and multiple locations for public art installations.

RWCMoves identifies improvements along Maple Street which include adding crosswalks at Maple Street / Franklin Street-Lathrop Street and constructing sidewalk to bridge over the creek on Lathrop Street. The February 2018 site plan indicates sidewalks over the creek, but no marked crosswalks at Maple Street / Franklin Street-Lathrop Street.

While the project site does include many elements to promote walkability and connectivity, there are still missing pedestrian facilities surrounding the site such as no marked crosswalks at the intersection of Maple Street / Franklin Street-Lathrop Street or signage for the pedestrian crossing at Maple Street and Main Street. Therefore, the project will result in potential **significant impact**.

BICYCLE ACCESS AND CIRCULATION

From the proposed site, bicyclists may utilize the bicycle lanes and bicycle route along Maple Street to connect to bicycle facilities to the north such as Middlefield Road. The bicycle lanes extend south to El Camino Real, where cyclist may use the bicycle routes along Jefferson Avenue and Roosevelt Avenue. However, there are gaps in the existing bicycle network, for example along El Camino Real and Maple street between Main Street and Middlefield Road.

Article 55.6.D of the Redwood City Municipal Code requires developments within MULW zoning district to provide the following bicycle parking:

- Non-live/work Bicycle Parking (Tenant): secure bicycle parking for five (5) percent of motorized vehicle parking capacity
- Non-live/work Bicycle Parking (Visitor): permanently anchored bicycle racks within 100 feet of the primary entrance for five (5) percent of motorized vehicle parking capacity

The project is proposing a total of 341 motorized vehicle parking spaces; therefore, the project is required to 17 secure bicycle parking for tenants and 17 bicycle spaces for visitors. The site plans indicate that the project will be providing 72 vertical mount wall racks for tenant parking and 26 bicycle racks for visitor parking, which meets the City's requirements. The February 2018 site plan indicates the visitor bicycle racks would be located near the entrances of the building for visitors. The site plans did not indicate the location for the tenant vertical mount wall racks, but these racks should be placed in a secure location.

RWCMoves identifies several bicycle improvement projects along El Camino Real, Main Street, Maple Street, and Lathrop Street to encourage more bicycle usage in the area. However, the project site plan only includes sharrows on Lathrop Street between Maple Street and Elm Street as improvements to the bicycle facilities, which conflicts with City's plans and policies, which results in a **potential significant impact**.

TRANSIT

The proposed project was evaluated to determine if it would potentially conflict with adopted policies, plans, or programs supporting relating to transit or generate transit demand that would not be accommodated by existing transit facilities and plans including RWCMoves.

For those taking transit, SamTrans bus routes ECR, 79, 270, 276, 278, 296, and 397 operate within the vicinity of the proposed project. There are no bus stops located adjacent to the site. The nearest bus stops are along El Camino Real near Cedar Street or along Middlefield Road near Cassia Street.

The Redwood City Caltrain station is also within ½ mile and Caltrain riders may walk to the proposed project. Those walking north of the tracks may walk along Winslow Street, Middlefield Street, and Maple Street and cross tracks at the crossing along Maple Street. Those traveling south of the track may walk through Sequoia Station and along Franklin Street. Caltrain provides three northbound limited-stop trains, two northbound baby bullet trains, six southbound limited-stop trains, and two southbound baby bullet trains during the weekday AM peak and four northbound limited-stop trains, three northbound baby bullet trains, three southbound limited-stop trains, and two southbound baby bullet train during the weekday PM peak.

According to RWCMoves, approximately 30 percent and 36 percent of downtown office employees use transit to travel to work, during the AM and PM peak, respectively. If it is conservatively assumed (from the standpoint of transit demand) that 30 and 36 percent of the project employees and visitors will use transit during the peak hours, it represents approximately 39 passengers in the AM peak period and 46 passengers in the PM peak period. The project should consider accommodating transit riders such as provide pedestrian and bicycle facilities to connect the project site to the Caltrain station and SamTrans bus stops.

RAILROAD TRACK GRADE SEPARATION

As identified in the 2009 Grade Separation Footprint Study and RWCMoves, it is proposed that the railroad crossings at Maple Street and Main Street become grade separated.

Maple Street

The Grade Separation Footprint Study identified three feasible alternatives for crossing at Maple Street: 1) full street overpass, 2) full street underpass, or 3) partially depressed roadway.

Based on conceptual designs, either the full street overpass or full street underpass alternative would involve adjusting the roadway elevation near the project site along Maple Street between Middlefield Road and approximately 200 feet south of Franklin Street-Lathrop Street and Franklin Street-Lathrop Street between Monroe Street and Elm Street. Both of these alternatives also involve closing Main Street at the rail crossing. For the overpass, the roadway elevation along Maple Street would change between 0 and 36 feet above existing. Along Franklin Street-Lathrop Street, the roadway elevation would change between 0 and 10 feet above existing. For the underpass, roadway elevation along Maple Street would change between 0 and 22 feet below existing. Along Franklin Street-Lathrop Street, the roadway elevation would change between 0 and 5 feet below existing.

The partially depressed roadway would only be implemented if all the rail crossings from Whipple Avenue to Chestnut Street were grade separated via elevated railroad tracks. This alternative would consist of adjusting the roadway elevation along Maple Street by approximately 100-150 feet north and south of the tracks. The elevation change would be between 0 to 2 feet below existing.

The grade separation at Maple Street will result in design of a pedestrian undercrossing or overcrossing near the intersection of Maple Street / Franklin Street-Lathrop Street.

Main Street

The Grade Separation Footprint Study identified three feasible alternatives for the crossing at Main Street: 1) full street overpass, 2) full street underpass, or 3) partially depressed roadway.

Based on conceptual designs, either the full street overpass or full street underpass alternative would involve adjusting the roadway elevation near the project site along Main Street between Maple Street and Beech Street, Elm Street between Lathrop Street and Main Street, and Lathrop Street between Maple Street and Beech Street. For the overpass, the roadway elevation along Main Street would change between 0 and 30 feet above existing. Elm Street would have a change in elevation between 8 and 28 feet above existing. Lathrop Street would have a change in elevation between 0 and 8 feet above existing. For the underpass, the roadway elevation along Main Street would change between 0 and 22 feet below existing. Elm Street would have a change in elevation between 4 and 21 feet below existing. Lathrop Street would have a change in elevation between 0 and 4 feet below existing.

The partially depressed roadway would only be implemented if all the rail crossings from Whipple Avenue to Chestnut Street were grade separated via elevated railroad tracks. This alternative would consist of adjusting the roadway elevation along Main Street between Heller Street and Beech Street and along Elm Street between Lathrop Street and Main Street. The elevation change along Main Street would be between 0 to 6 feet below existing and between 0 and 4 feet below existing along Elm Street.

The grade separation at Main Street would greatly affect the project since the improvement along Elm Street would affect the Project's only vehicle access driveway.

As proposed, the project would limit the City's ability to construct a grade separation in the future. An additional 150 – 250 feet of clear space from the railroad tracks, would be required to facilitate grade separations.

7. SUMMARY OF IMPACTS AND RECOMMENDED MITIGATIONS

Based on the results of the traffic analysis and evaluation of the proposed site plan, the following project impacts are noted in **Table 15**. The impacts are identified as being significant unless mitigated.

Table 15 - Impact Summary

Impact Type	Location	Scenarios	Impact Significance
LOS	#3 - El Camino Real / Beech Road	Cumulative Plus Project PM Peak Hour	Mitigated to Less than Significant
LOS	#13 - Main Street / Chestnut Street	Cumulative Plus Project PM Peak Hour	Mitigated to Less than Significant
LOS	#14 - Main Street / Pine Street-SR 84 Ramps	Cumulative Plus Project PM Peak Hour	Mitigated to Less than Significant
Pedestrian	Project Site	All	Mitigated to Less than Significant
Bicycle	Project Site	All	Mitigated to Less than Significant

SIGNIFICANT UNLESS MITIGATED

The following significant impacts are listed by study intersection:

IMPACT TRANS – 1: EL CAMINO REAL / BEECH ROAD (INTERSECTION #3)

The intersection of El Camino Real / Beech Road will have an LOS impact in the following scenario due to the proposed project:

- Cumulative Plus Project PM Peak Hour

Cumulative Plus Project

In the Cumulative Plus Project scenario, the intersection of El Camino Real / Beech Road will operate at an unacceptable LOS F with a worst movement delay of 158.2 seconds in the PM peak hour. Although the intersection operates at an unacceptable LOS F with a delay of 129.9 seconds without the project, the project increases the delay by more than five (5) seconds and the volumes satisfy the Peak Hour Volume signal warrant. This is a significant impact.

The intersection satisfies the Peak Hour Volumes signal warrant and installing a signal would result in the intersection operating at LOS B with an average intersection delay of 11.0 seconds. However, other considerations such as other signal warrants and its proximity to an existing signal at Intersection #2 – El Camino Real / Maple Street should be evaluated before installing a signal.

The high delay for the westbound approach can be attributed to high volumes on El Camino Real and vehicles waiting to make a westbound left turn from Beech Street onto El Camino Real. As an alternative mitigation, the westbound left-turn movement should be prohibited at least during the peak times when there are high volumes on El Camino Real. This would result in the intersection operating at LOS D with a worst movement delay of 28.4 seconds. It should be noted that 9 vehicles would be redistributed throughout the network because of this mitigation. This redistribution of traffic was evaluated and was found not to degrade the operation of adjacent intersections to unacceptable levels.

Installing a signal would require approval from Caltrans, while restricting left-turns would involve installing signage on Beech Street, which is under the City's jurisdiction. The restriction of left-turns at this intersection is consistent with the El Camino Real Corridor Plan. Therefore, restricting left-turns from Beech Street is the most feasible mitigation. This mitigation would result in the intersection operating acceptably and therefore the impact is **less than significant** with the proposed mitigation.

IMPACT TRANS – 2: MAIN STREET / CHESTNUT STREET (INTERSECTION #13)

The intersection of Main Street / Chestnut Street will have an LOS impact in the following scenario due to the proposed project:

- Cumulative Plus Project PM Peak Hour

Cumulative Plus Project

In the Cumulative Plus Project scenario, the intersection of Main Street / Chestnut Street will operate at an unacceptable LOS F with a worst movement delay of 84.4 seconds in the PM peak hour. Although the intersection operated at an unacceptable LOS E with a delay of 73.0 seconds without the project, the project increases the delay by more than five (5) seconds. This is a significant impact.

To mitigate the impact, the signal timing should be optimized. This would result in the intersection operating at LOS D with an average intersection delay of 50.8 seconds. The project should pay its fair share to this improvement. This mitigation would result in the intersection operating acceptably and therefore the impact is **less than significant** with the proposed mitigation.

IMPACT TRANS – 3: MAIN STREET / PINE STREET – SR 84 RAMPS (INTERSECTION #14)

The intersection of Main Street / Pine Street-SR 84 Ramps will have an LOS impact in the following scenario due to the proposed project:

- Cumulative Plus Project PM Peak Hour

Cumulative Plus Project

In the Cumulative Plus Project scenario, the intersection of Main Street / Pine Street-SR 84 Ramps will operate at an unacceptable LOS F with a worst movement delay of 169.9 seconds in the PM peak hour. Although the intersection operated at an unacceptable LOS F with a delay of 163.8 seconds without the project, the project increases the delay by more than five (5) seconds and volumes satisfy the Peak Hour Volume signal warrant. This is a significant impact.

The intersection satisfies the Peak Hour Volumes signal warrants and installing a signal would result in the intersection operating at LOS B with an average intersection delay of 14.0 seconds. However, other considerations such as other signal warrants and its proximity to an existing signal at Intersection #13 – Main Street / Chestnut Street should be evaluated before installing a signal.

An alternative mitigation would install stop signs along Main Street to convert the intersection control to an all-way stop control (AWSC). This mitigation would result in the intersection operating at LOS F with an average intersection delay of 63.3 seconds.

Installing a signal would require approval from Caltrans, while converting the intersection to an AWSC would require installing stop signs along Main Street, which is under the City's jurisdiction. Therefore, converting the intersection to an AWSC is the most feasible mitigation. This mitigation would result in the intersection operating better than before project conditions and therefore the impact is **less than significant** with the proposed mitigation.

IMPACT TRANS – 4: PEDESTRIAN FACILITIES

While the project site does include many elements to promote walkability and connectivity, there are still missing pedestrian facilities surrounding the site such as no marked crosswalks at the intersection of Maple Street / Franklin Street-Lathrop Street or signage for the pedestrian railroad crossings at Maple and Main Street. This is a significant impact.

To mitigate the impact, the project should construct the following pedestrian improvements:

- Update the site plan to include marked crosswalks and install accessible curb ramps on all legs of the intersection of Maple Street / Franklin Street-Lathrop Street.
- Add signage (i.e. R15-8 LOOK) for the pedestrian railroad crossing at Maple Street and Main Street.
- Install two-stage pedestrian crossing at Maple Street / Main and improve sidewalks on the east side of Maple Street between Main street and the railroad

The impact is **less than significant** with the proposed mitigation.

IMPACT TRANS – 5: BICYCLE FACILITIES

RWCMoves identifies several bicycle improvement projects along El Camino Real, Main Street, Maple Street, and Lathrop Street to encourage more bicycle usage in the area. It is proposed that Class IV protected bicycle lanes be installed along El Camino Real along the entire corridor within Redwood City, as well as along Main Street and Maple Street between Convention Way and El Camino Real. Along Lathrop Street, it is proposed that Class III bicycle route be installed. While there are many proposed City bicycle projects near the Project, project site plan does not indicate any improvements to the bicycle facility, which conflicts with City's plans and policies. This is a significant impact.

To mitigate the impact, the project would construct some these improvements adjacent to the site such as the Class III bicycle route signage and "sharrows" along Lathrop Street. The project should maintain 35.5 feet of space in the traveled way on Maple Street to accommodate the planned cycle tracks and required fire access. The project should also pay its fair share towards bicycle cycle tracks on Maple Street and improvements projects near the project site. The impact is **less than significant** with the proposed mitigation.

8. SUPPLEMENTAL ANALYSIS – LATHROP STREET CLOSURE

A supplemental analysis was conducted to evaluate the potential effects of closing a segment of Lathrop Street. This chapter discussed the assumptions and results of this proposed closure.

LATHROP STREET CLOSURE

Under Cumulative conditions, there are considerations as part of the proposed project to close Lathrop Street between Maple Street and Elm Street to vehicle access, except for emergency medical services, to allow for more park spaces.

This supplemental analysis evaluated the Lathrop Street Closure between Maple Street and Elm Street. Due to the combined size of the proposed project and 1601 El Camino Block D project (110,778 sf office), as well as good access management practices, it is necessary to allow vehicle access at Intersection #6 to remain.

LANE GEOMETRY AND CONTROL

For the Lathrop Street Closure analysis the lane geometry and traffic control was assumed to be the same as for the Cumulative analysis, except with the following changes:

- Intersection #5 – Franklin Street-Lathrop Street / Maple Street: removal of northbound approach, westbound left turn movement, and eastbound right turn movement
- Intersection #6 – Lathrop Street / Elm Street: removal of southbound approach, northbound through, and westbound right turn

Figure 16 illustrates the intersection geometry and traffic control assumed for the Lathrop Street Closure analysis.

LATHROP STREET CLOSURE VOLUMES

Volumes at Intersection #5 – Franklin Street-Lathrop Street / Maple Street and Intersection #6 – Lathrop Street and Elm Street, as well as trip assignment for background traffic assumed in the Cumulative conditions were redistributed to account for the street closure, as seen on **Figure 17**.

Project trips were also redistributed for the street closure and the Cumulative Plus Project (Lathrop closure) volumes are shown in **Figure 18**.

SIGNAL WARRANTS

Signal warrants were evaluated at the unsignalized study intersections under both without and with project conditions. Below are the results of the signal warrants analysis for the ten (10) unsignalized intersections under Cumulative Plus Project (Lathrop closure) conditions:

Did not meet peak hour signal warrant:

- #5 – Franklin Street - Lathrop Street / Maple Street
- #6 – Lathrop Street / Elm Street
- #7 – Lathrop Street / Beech Street
- #8 – Lathrop Street / Chestnut Street
- #9 – Elm Street / Project Driveway
- #10 – Main Street / Maple Street
- #11 – Main Street / Elm Street
- #12 – Main Street / Beech Street

Met peak hour signal warrant:

- #3 – El Camino Real / Beech Street (PM Peak Hour)
- #14 – Main Street / Pine Street – SR 84 (AM and PM Peak Hours)

While both Intersections #3 and #14 satisfy the peak hour signal warrant, other considerations such as other signal warrants and its proximity to existing signals at Intersection #2 – El Camino Real / Maple Street (for Intersection #3) and at Intersection # 13 – Main Street / Chestnut Street (for Intersection #14) should be evaluated before installing a signal.

Analysis sheets are provided in the **Appendix**.

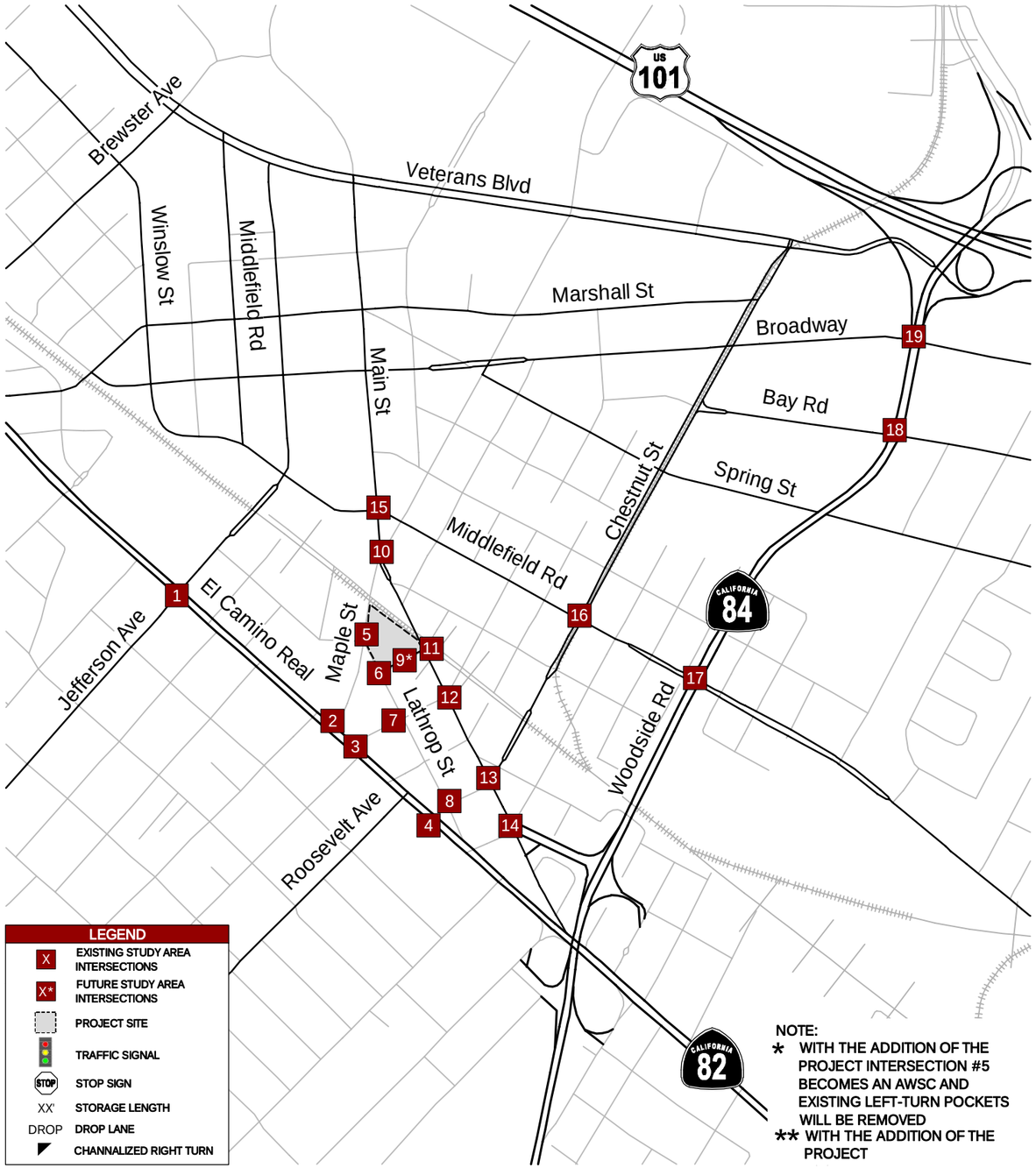
LEVEL OF SERVICE ANALYSIS

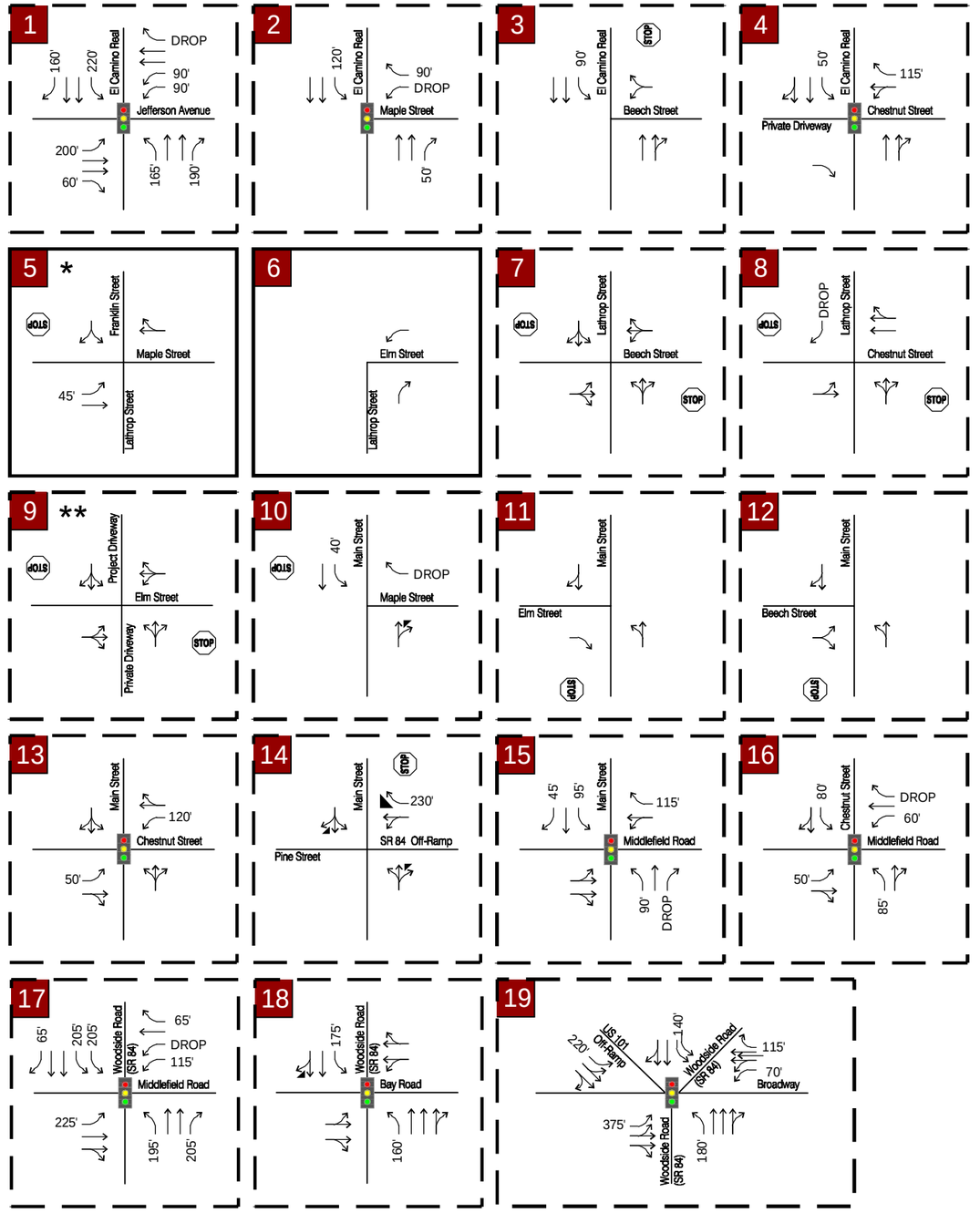
Table 16 presents the results of the LOS analysis. All study intersections function within acceptable LOS standards under this analysis scenario, except for the following intersections:

- #1 – El Camino Real / Jefferson Avenue (AM and PM Peak Hours)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**
- #3 – El Camino Real / Beech Street (AM and PM Peak Hours)
  - Intersection operating unacceptably without the project with increase in delay greater than five (5) seconds and volumes satisfy Peak Hour Volume signal warrant – **Significant Impact**
- #12 – Main Street / Beech Street (PM Peak Hour)
  - Intersection operating unacceptably without the project with increase in delay greater than five (5) seconds, but volumes do not satisfy Peak Hour Volume signal warrant – **Not a significant Impact**
- #13 – Main Street / Chestnut Street (PM Peak Hour)
  - Intersection operating acceptably without the project and project causes intersection to operate at an unacceptable LOS– **Significant Impact**

- #14 – Main Street / Pine Street – SR 84 Ramps (PM Peak Hour)
  - Intersection operating unacceptably without the project with increase in delay greater than five (5) seconds and volumes satisfy Peak Hour Volume signal warrant – **Significant Impact**
- #17 – Woodside Road (SR 84) / Middlefield Road (AM and PM Peak Hours)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**
- #18 – Woodside Road (SR 84) / Bay Road (AM and PM Peak Hours)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**
- #19 – Woodside Road (SR 84) / Broadway (AM and PM Peak Hours)
  - Intersection operating unacceptably without the project with increase in delay by less than five (5) seconds – **Not a significant Impact**

Analysis sheets are provided in the **Appendix**.





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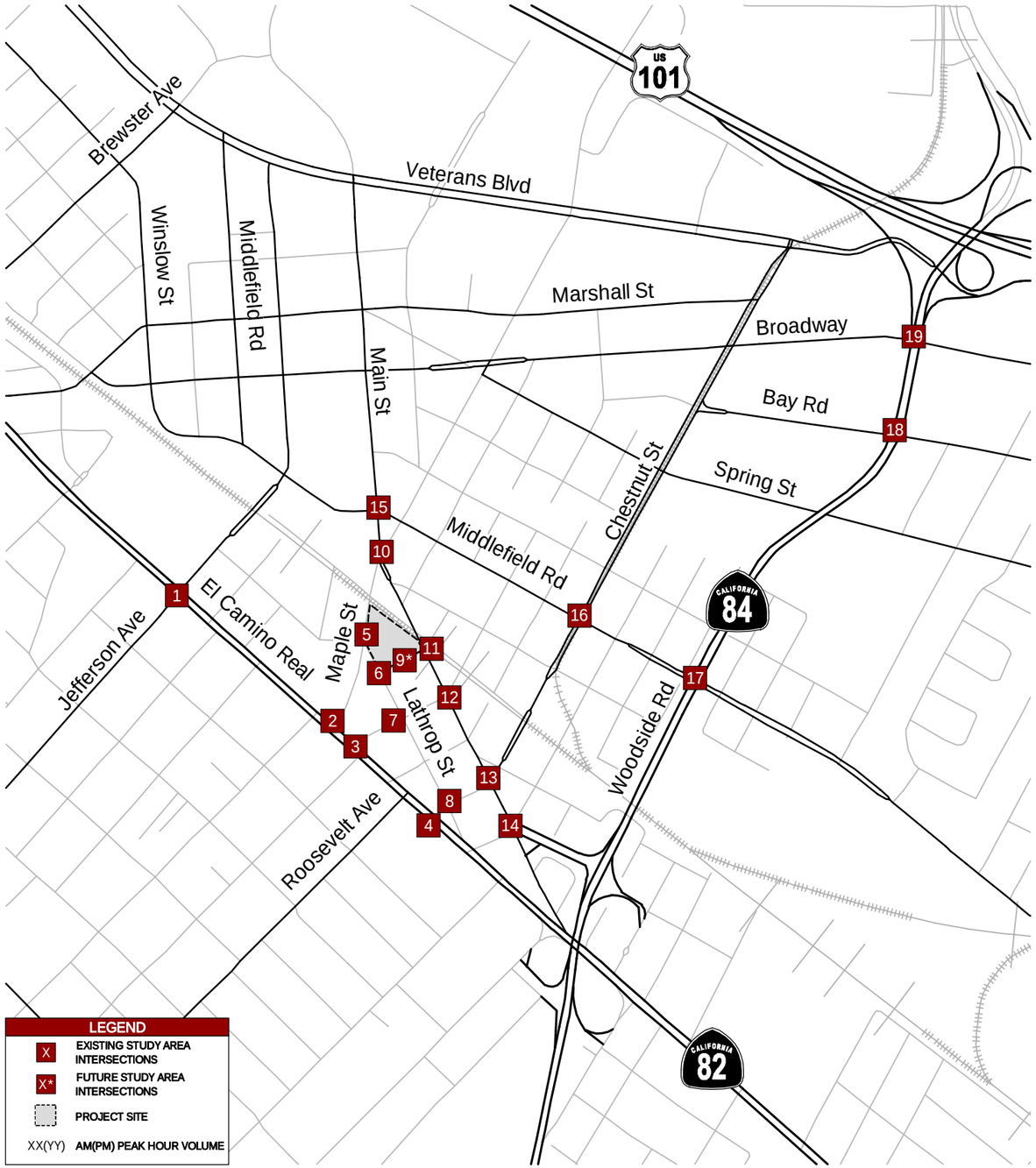
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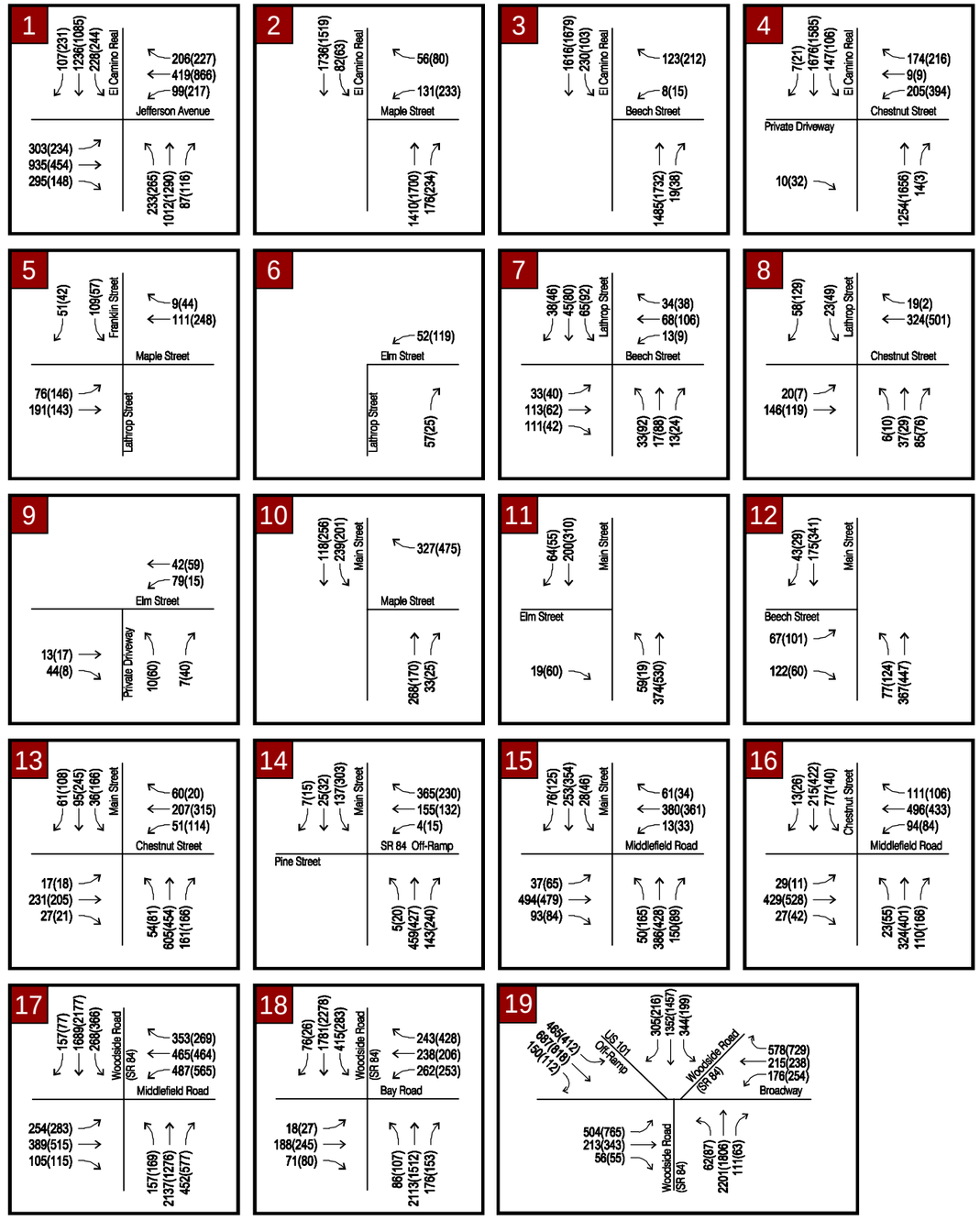
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097596108 DECEMBER 2018

FIGURE 16
CUMULATIVE CONDITION (LATHROP CLOSURE) LANE GEOMETRY AND TRAFFIC CONTROL

1180 & 1190 MAIN STREET TIA





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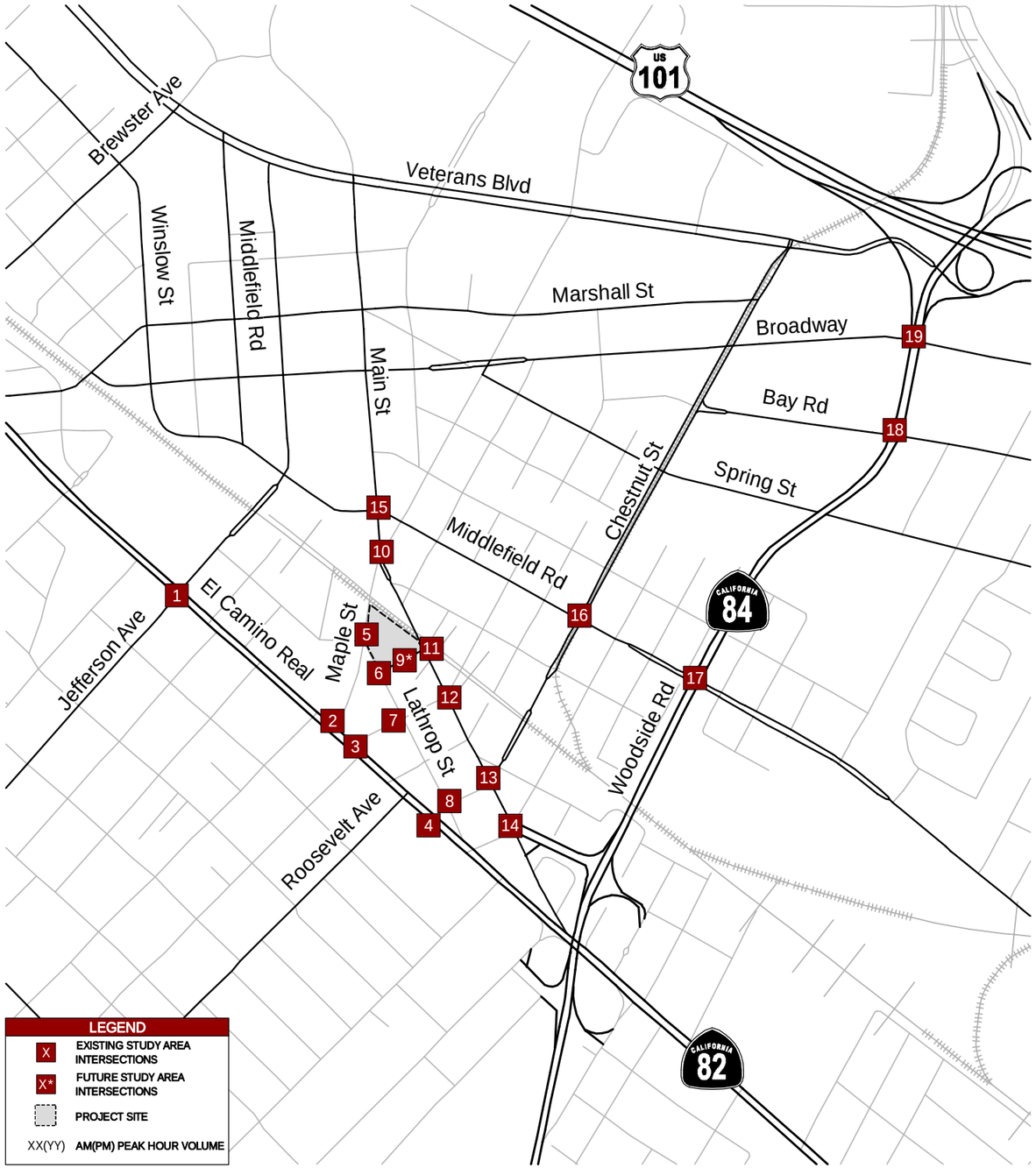
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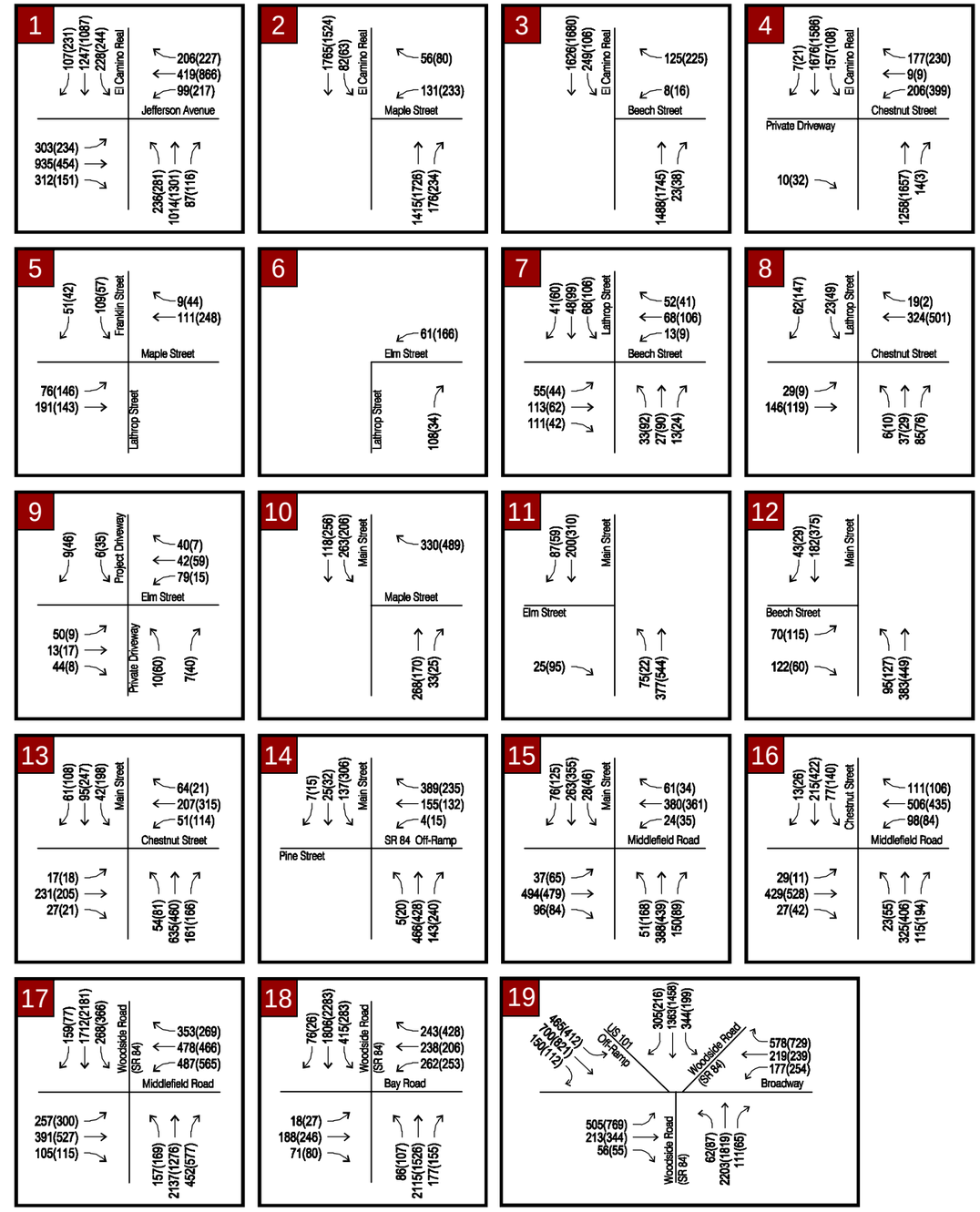
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FIGURE 17
CUMULATIVE CONDITION (LATHROP CLOSURE) PEAK HOUR TURNING MOVEMENT VOLUMES

1180 & 1190 MAIN STREET TIA





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NOT TO SCALE

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097596108 DECEMBER 2018

FIGURE 18
CUMULATIVE PLUS PROJECT CONDITION (LATHROP CLOSURE) PEAK HOUR TURNING MOVEMENT VOLUMES

1180 & 1190 MAIN STREET TIA

Table 16 - Lathrop Street Closure Intersection Level of Service Summary

#	Intersection	LOS Criteria	Jurisdiction	Control	Cumulative				Cumulative + Project (Lathrop Closure)						Cumulative + Project (w/o Lathrop Closure)					
					AM Peak		PM Peak		AM Peak			PM Peak			AM Peak			PM Peak		
					LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	LOS	Delay (sec)[1]	Delay Var	LOS	Delay (sec)[1]	Delay Var	LOS	Delay (sec)[1]	Delay Var	LOS	Delay (sec)[1]	Delay Var
1	El Camino Real / Jefferson Avenue	D	City / Caltrans	Signal	**E**	**75.2**	**E**	**68.1**	**E**	**76.6**	**1.4**	**E**	**69.9**	**1.8**	**E**	**76.5**	**1.3**	**E**	**71.2**	**2.0**
2	El Camino Real / Maple Street	D	City / Caltrans	Signal	A	8.1	B	10.7	A	8.2	0.1	B	10.7	0.0	A	8.6	0.3	B	11.8	0.2
3	El Camino Real / Beech Street	D	City / Caltrans	SSSC	**F**	**459.5**	**F**	**761.3**	**F**	**594.6**	**135.1**	**F**	**841.4**	**80.1**	**F**	**144.7**	**-0.7**	**F**	**158.2**	**28.3**
4	El Camino Real / Chestnut Street	D	City / Caltrans	Signal	B	17.4	C	25.1	B	17.8	0.4	C	25.8	0.7	B	16.7	0.0	C	24.4	0.0
5	Franklin Street-Lathrop Street / Maple Street[2]	D	City	SSSC/AWSC	B	13.7	C	16.3	A	9.7	-4.0	B	10.4	-5.9	B	11.4	-10.5	C	17.2	-18.2
6	Lathrop Street / Elm Street[3]	D	City	- / SSSC	No conflicting movements										B	10.2	-	B	12.4	-
7	Lathrop Street / Beech Street	D	City	SSSC	B	13.3	C	16.3	B	14.8	1.5	C	18.0	1.7	B	12.5	0.2	C	15.7	0.3
8	Lathrop Street. Chestnut Street	D	City	SSSC	B	12.1	B	12.4	B	12.2	0.1	B	12.5	0.1	B	13.7	0.0	C	16.1	0.0
9	Elm Street / Project Driveway (Future)	D	City	SSSC	A	9.6	A	9.4	B	10.6	1.0	A	9.9	0.5	B	10.5	1.1	B	10.1	0.7
10	Main Street / Maple Street	D	City	SSSC	B	13.3	B	11.2	B	13.8	0.5	B	11.2	0.0	B	13.4	0.4	B	12.7	0.5
11	Main Street / Elm Street	D	City	SSSC	A	9.8	B	11.0	A	9.9	0.1	B	11.5	0.5	A	9.6	0.0	B	11.2	0.2
12	Main Street / Beech Street	D	City	SSSC	C	15.4	**E**	**42.7**	C	16.9	1.5	**F**	**62.3**	**19.6**	B	12.0	0.2	C	16.3	0.9
13	Main Street / Chestnut Street	D	City	Signal	C	30.7	D	55.0	D	35.6	4.9	**E**	**77.9**	**22.9**	D	41.4	2.6	**F**	**84.4**	**11.4**
14	Main Street / Pine Street-SR 84 Ramps	D	City	SSSC	D	30.8	**F**	**144.4**	D	31.3	0.5	**F**	**149.7**	**5.3**	**E**	**35.8**	**0.3**	**F**	**169.9**	**6.1**
15	Middlefield Road / Main Street	D	City	Signal	D	41.7	D	53.0	D	42.8	1.1	D	53.7	0.7	D	42.2	1.0	D	53.7	1.1
16	Middlefield Road / Chestnut	D	City	Signal	C	21.8	D	36.4	C	22.1	0.3	D	39.4	3.0	C	21.6	0.2	D	37.8	1.8
17	Woodside Road (SR 84) / Middlefield Road[4]	E	City / Caltrans	Signal	**F**	**133.3**	**F**	**144.5**	**F**	**136.4**	**3.1**	**F**	**148.0**	**3.5**	**F**	**136.4**	**3.3**	**F**	**146.7**	**2.0**
18	Woodside Road (SR 84) / Bay Road	D	City / Caltrans	Signal	**F**	**106.5**	**E**	**128.9**	**F**	**108.5**	**2.0**	**F**	**129.6**	**0.7**	**F**	**107.2**	**1.7**	**F**	**128.8**	**0.4**
19	Woodside Road (SR 84) / Broadway	D	City / Caltrans	Signal	**F**	**265.9**	**F**	**262.1**	**F**	**268.5**	**2.6**	**F**	**264.0**	**1.9**	**F**	**267.7**	**2.3**	**F**	**264.7**	**1.4**

Note: Intersections that are operating below acceptable levels are shown in **BOLD**.

1 The average control delay is reported for signalized and AWSC intersections. The delay for the worst movement is reported for SSSC intersections.

2 Intersection #5 - Franklin Street-Lathrop Street / Maple Street becomes an all-way stop control intersection with the Project.

3 With the Lathop Closure Intersection #6 - Lathrop Street / Elm Street is an uncontrolled intersection with no conflicting movements. Without the closure, Intersection #6 is side-street stop control intersection.

4 Intersection #17 - Woodside Road (SR 84) / Middlefield Road is a CMP intersection with a LOS threshold of E.

INTERSECTION QUEUING

With the Lathrop Street Closure, it is anticipated that the following queuing deficiency in **Table 17** would occur with the project.

Table 17 - Intersection with Queuing Deficiency with the Project and Lathrop Street Closure

#	Intersection	Peak Period	Turning Movement	Storage Length (feet)	Queue Length (feet)		Variance
					Without Project	With Project	
1	El Camino Real / Jefferson Ave	PM Peak	NBL	165	400	428	28 feet (1 veh)
17	Woodside Road (SR 84) / Middlefield Road	PM Peak	EBL	225	528	565	37 feet (1 veh)

For both these impacts, optimizing signal timing would improve these queuing deficiencies.

SUMMARY OF IMPACTS AND RECOMMENDED MITIGATIONS

Based on the results of the supplemental traffic analysis, the following intersection level of service impacts are noted in **Table 18**. The impacts are identified as being significant unless mitigated.

Table 18 - Lathrop Street Closure Project Impact Summary

Impact Type	Location	Peak Hour	Impact Significance
LOS	#3 - El Camino Real / Beech Road	AM Peak Hour PM Peak Hour	Mitigated to Less than Significant
LOS	#13 - Main Street / Chestnut Street	PM Peak Hour	Mitigated to Less than Significant
LOS	#14 - Main Street / Pine Street-SR 84 Ramps	PM Peak Hour	Mitigated to Less than Significant
Pedestrian	Project Site	N/A	Mitigated to Less than Significant
Bicycle	Project Site	N/A	Mitigated to Less than Significant

IMPACT TRANS – S1: EL CAMINO REAL / BEECH ROAD (INTERSECTION #3)

During the AM peak hour, the intersection of El Camino Real / Beech Road would operate at an unacceptable LOS F with a worst movement delay of 594.6 seconds. Although the intersection operates at an unacceptable LOS F with a worst movement delay of 459.5 seconds without the project, the project increases the delay by more than five (5) seconds and the volumes satisfy the Peak Hour Volume signal warrant. This is a significant impact.

In addition, during the PM Peak hour, the intersection will operate at an unacceptable LOS F with a delay of 841.4 seconds. Although the intersection operates at an unacceptable LOS F with a delay of 761.3 seconds without the project, the project increases the delay by more than five (5) seconds and the volumes satisfy the Peak Hour Volume signal warrant. This is a significant impact.

Similar to IMPACT TRANS-1, signalizing the intersection or restricting westbound left-turn movements during the peak periods would mitigate the impact. Signalizing will result in the intersection operating acceptably at LOS B or better during the AM and PM peak hours. This mitigation would require approval from Caltrans.

Restricting westbound left-turns would result in the intersection operating acceptably at LOS C during the AM peak hour and at LOS F with a worst movement delay of 59.1 seconds, which is better than without project condition. This mitigation would also result in the redistribution of 16 trips throughout the network. This redistribution of traffic was evaluated and was found not to degrade operation of adjacent intersection to unacceptable levels. The restriction of left-turns at this intersection is consistent with the El Camino Real Corridor Plan. Therefore, restricting left-turns from Beech Street is the most feasible mitigation. This mitigation would result in the intersection operating acceptably and therefore the impact is **less than significant** with the proposed mitigation.

IMPACT TRANS – S2: MAIN STREET / CHESTNUT STREET (INTERSECTION #13)

During the PM peak hour, the intersection of Main Street / Chestnut Street will operate at an unacceptable LOS E with a delay of 77.9 seconds. Without the project, the intersection operated at an acceptable LOS D. Since the addition of the project causes the intersection to operate unacceptably, this is a significant impact.

Similar to IMPACT TRANS-2, signal timing should be optimized. This would result in the intersection operating acceptably at LOS D with 43.0 seconds of delay. The project should pay for this improvement. This mitigation would result in the intersection operating acceptable and therefore the impact is **less than significant** with the propose mitigation.

IMPACT TRANS – S3: MAIN STREET / PINE STREET – SR 84 RAMPS (INTERSECTION #14)

During the PM peak hour, the intersection of Main Street / Pine Street-SR 84 Ramps will operate at an unacceptable LOS F with a delay of 149.7 seconds. Although the intersection operated at an unacceptable LOS F with a delay of 144.4 seconds without the project, the project increases the delay by more than five (5) seconds and volumes satisfy the Peak Hour Volume signal warrant. This is a significant impact.

Similar to IMPACT TRANS-3, a signal should be installed or the intersection should be converted to an all-way stop control. Signalizing will result in the intersection operating acceptably at LOS B. This mitigation would require approval from Caltrans.

Converting intersection control to an all-way stop control would result in the intersection operating at LOS F with an average intersection delay of 57.2 seconds. Converting the intersection to an AWSC would involve installing stop signs along Main Street which is under the City's jurisdiction. Therefore, converting the intersection to an AWSC is the most feasible mitigation. This mitigation would result in the intersection operating better than before project conditions and therefore the impact is **less than significant** with the proposed mitigation.

IMPACT TRANS – S4: PEDESTRIAN FACILITIES

While the project site does include many elements to promote walkability and connectivity, there are still missing pedestrian facilities surrounding the site such as no marked crosswalks at the intersection of Maple Street / Franklin Street-Lathrop Street or signage for the pedestrian crossings at Maple and Main Street. This is a significant impact.

Similar to IMPACT TRANS-4, the project should construct the following pedestrian improvements:

- Update the site plan to include marked crosswalks and install accessible curb ramps on all legs of the intersection of Maple Street / Franklin Street-Lathrop Street.
- Add signage (i.e. R15-8 LOOK) for the pedestrian railroad crossing at Maple Street and Main Street.
- Install two-stage pedestrian crossing at Maple Street / Main and improve sidewalks on the east side of Maple Street between Main street and the railroad

The impact is **less than significant** with the proposed mitigation.

at the intersection of Maple Street / Franklin Street-Lathrop Street and install signage (R15-8 LOOK) for the pedestrian crossing at Maple Street and Main Street. The impact is **less than significant** with the proposed mitigation.

IMPACT TRANS – S5: BICYCLE FACILITIES

RWCMoves identifies several bicycle improvement projects along El Camino Real, Main Street, Maple Street, and Lathrop Street to encourage more bicycle usage in the area. It is proposed that Class IV protected bicycle lanes be installed along El Camino Real along the entire corridor within Redwood City, as well along Main Street and Maple Street between Convention Way and El Camino Real. Along Lathrop Street, it is proposed that Class III bicycle route be installed. While there are many proposed City bicycle projects near the Project, project site plan does not indicate any improvements to the bicycle facility, which conflicts with City's plans and policies. This is a significant impact.

Similar to IMPACT TRANS-5, the project should install Class III bicycle route "sharrows" along Lathrop Street and maintain 35.5 feet of space in the travel way on Maple to accommodate the planed cycle tracks and required fire access. The project will pay its fair share towards bicycle improvements projects near the project site. The impact is **less than significant** with the proposed mitigation.

APPENDIX

A - TURNING MOVEMENT COUNTS

B - EXISTING TRAFFIC CONDITIONS

C - TRIP GENERATION

D - EXISTING PLUS PROJECT TRAFFIC CONDITIONS

E - BACKGROUND TRAFFIC CONDITIONS

F - BACKGROUND PLUS PROJECT TRAFFIC CONDITIONS

G - CUMULATIVE TRAFFIC CONDITIONS

H - CUMULATIVE PLUS PROJECT TRAFFIC CONDITION

I - QUEUING SUMMARY

J - SIGNAL WARRANTS

K - MITIGATION OUTPUTS

L – LATHROP STREET CLOSURE ANALYSIS OUTPUTS

APPENDIX

A - TURNING MOVEMENT COUNTS

B - EXISTING TRAFFIC CONDITIONS

C - TRIP GENERATION

D - EXISTING PLUS PROJECT TRAFFIC CONDITIONS

E - BACKGROUND TRAFFIC CONDITIONS

F - BACKGROUND PLUS PROJECT TRAFFIC CONDITIONS

G - CUMULATIVE TRAFFIC CONDITIONS

H - CUMULATIVE PLUS PROJECT TRAFFIC CONDITION

I - QUEUING SUMMARY

J - SIGNAL WARRANTS

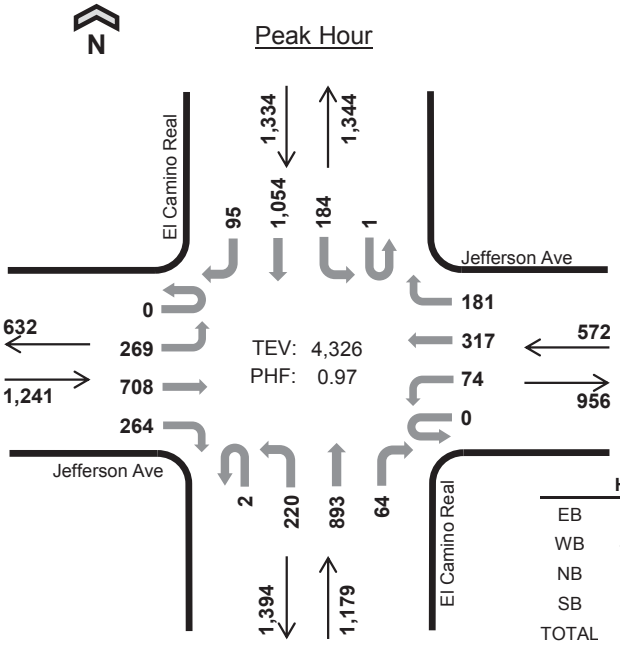
K - MITIGATION OUTPUTS

L – LATHROP STREET CLOSURE ANALYSIS OUTPUTS

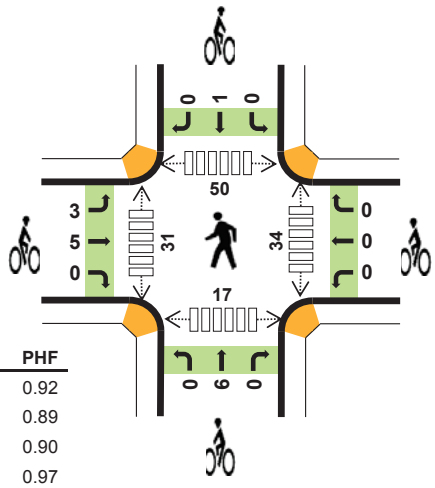
A - Turning Movement Counts

El Camino Real
Jefferson Ave

Date: 03/22/2016
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	1.5%	0.92
WB	4.7%	0.89
NB	3.3%	0.90
SB	3.1%	0.97
TOTAL	2.9%	0.97



Two-Hour Count Summaries

Interval Start		Jefferson Ave Eastbound				Jefferson Ave Westbound				El Camino Real Northbound				El Camino Real Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	33	64	32	0	15	31	16	0	13	112	2	0	17	152	13	500	0
7:15 AM		0	73	114	41	0	16	54	31	0	23	172	7	0	18	213	19	781	0
7:30 AM		0	71	133	51	0	11	85	30	0	29	205	9	0	33	247	27	931	0
7:45 AM		**0**	**64**	**154**	**51**	**0**	**7**	**113**	**41**	**0**	**68**	**245**	**16**	**0**	**45**	**257**	**24**	**1,085**	3,297
8:00 AM		**0**	**64**	**180**	**65**	**0**	**16**	**85**	**47**	**0**	**59**	**227**	**15**	**0**	**38**	**272**	**22**	**1,090**	3,887
8:15 AM		**0**	**70**	**189**	**65**	**0**	**27**	**62**	**64**	**1**	**64**	**223**	**20**	**0**	**45**	**254**	**32**	**1,116**	4,222
8:30 AM		**0**	**71**	**185**	**83**	**0**	**24**	**57**	**29**	**1**	**29**	**198**	**13**	**1**	**56**	**271**	**17**	**1,035**	**4,326**
8:45 AM		0	66	153	49	0	26	43	30	2	30	226	20	1	36	226	25	933	4,174
Count Total		0	512	1,172	437	0	142	530	288	4	315	1,608	102	2	288	1,892	179	7,471	0
Peak Hour	**All**	**0**	**269**	**708**	**264**	**0**	**74**	**317**	**181**	**2**	**220**	**893**	**64**	**1**	**184**	**1,054**	**95**	**4,326**	**0**
	HV	**0**	**8**	**7**	**3**	**0**	**5**	**12**	**10**	**0**	**7**	**32**	**0**	**0**	**12**	**28**	**1**	**125**	**0**
	HV%	**-**	**3%**	**1%**	**1%**	**-**	**7%**	**4%**	**6%**	**0%**	**3%**	**4%**	**0%**	**0%**	**7%**	**3%**	**1%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	5	9	10	*25*	1	1	2	1	*5*	5	5	7	2	*19*
7:15 AM	3	3	8	7	*21*	4	0	3	0	*7*	3	2	15	3	*23*
7:30 AM	6	3	10	16	*35*	2	0	5	0	*7*	5	9	27	2	*43*
7:45 AM	**1**	**6**	**10**	**10**	***27***	**0**	**0**	**2**	**0**	***2***	**4**	**6**	**9**	**1**	*20*
8:00 AM	**2**	**7**	**16**	**10**	***35***	**1**	**0**	**2**	**1**	***4***	**10**	**9**	**12**	**5**	*36*
8:15 AM	**5**	**5**	**5**	**10**	***25***	**5**	**0**	**1**	**0**	***6***	**9**	**9**	**20**	**4**	*42*
8:30 AM	**10**	**9**	**8**	**11**	***38***	**2**	**0**	**1**	**0**	***3***	**11**	**7**	**9**	**7**	***34***
8:45 AM	2	7	10	18	*37*	1	0	3	0	*4*	5	11	18	1	*35*
Count Total	30	45	76	92	*243*	16	1	19	2	*38*	52	58	117	25	*252*
Peak Hour	**18**	**27**	**39**	**41**	***125***	**8**	**0**	**6**	**1**	***15***	**34**	**31**	**50**	**17**	***132***

Deon Fouche: 415 - 757 - 7714 deon.fouche@idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Jefferson Ave Eastbound				Jefferson Ave Westbound				El Camino Real Northbound				El Camino Real Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	1	0	2	1	2	0	0	9	0	0	2	8	0	25	0
7:15 AM	0	1	2	0	0	1	1	1	0	1	7	0	0	1	6	0	21	0
7:30 AM	0	1	2	3	0	1	0	2	0	2	6	2	0	2	12	2	35	0
7:45 AM	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**2**	**0**	**1**	**9**	**0**	**0**	**3**	**7**	**0**	**27**	108
8:00 AM	**0**	**2**	**0**	**0**	**0**	**0**	**5**	**2**	**0**	**1**	**15**	**0**	**0**	**3**	**7**	**0**	**35**	118
8:15 AM	**0**	**1**	**3**	**1**	**0**	**2**	**1**	**2**	**0**	**1**	**4**	**0**	**0**	**3**	**6**	**1**	**25**	122
8:30 AM	**0**	**4**	**4**	**2**	**0**	**3**	**2**	**4**	**0**	**4**	**4**	**0**	**0**	**3**	**8**	**0**	**38**	**125**
8:45 AM	0	1	0	1	0	0	2	5	0	0	9	1	0	3	14	1	37	135
Count Total	0	11	11	8	0	9	16	20	0	10	63	3	0	20	68	4	243	0
Peak Hour	**0**	**8**	**7**	**3**	**0**	**5**	**12**	**10**	**0**	**7**	**32**	**0**	**0**	**12**	**28**	**1**	**125**	**0**

Two-Hour Count Summaries - Bikes

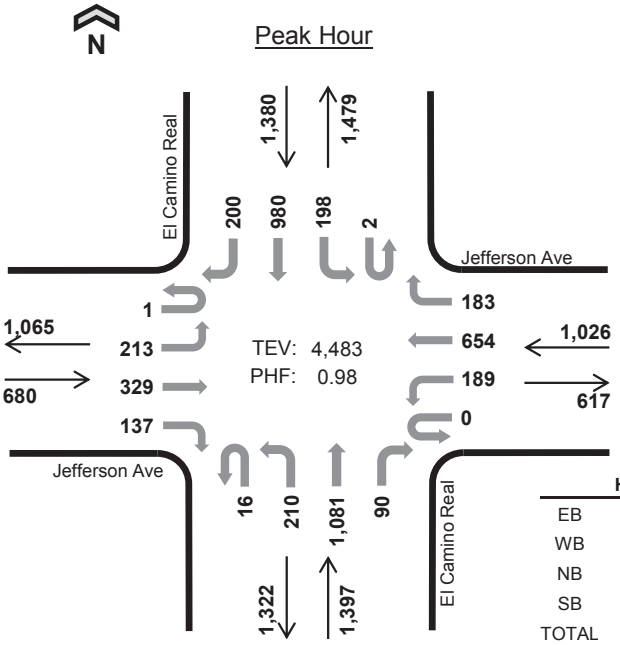
Interval Start	Jefferson Ave Eastbound			Jefferson Ave Westbound			El Camino Real Northbound			El Camino Real Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	1	0	0	0	1	0	0	2	0	0	1	0	5	0
7:15 AM	1	3	0	0	0	0	0	3	0	0	0	0	7	0
7:30 AM	1	1	0	0	0	0	0	5	0	0	0	0	7	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**2**	21
8:00 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**4**	20
8:15 AM	**3**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**6**	19
8:30 AM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	**15**
8:45 AM	0	1	0	0	0	0	0	3	0	0	0	0	4	17
Count Total	6	10	0	0	1	0	0	19	0	0	2	0	38	0
Peak Hour	**3**	**5**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**1**	**0**	**15**	**0**

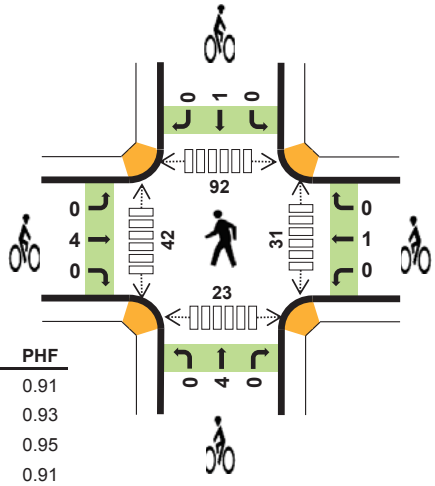
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Deon Fouche: 415 - 757 - 7714 deon.fouche@idaxdata.com

El Camino Real
Jefferson Ave

Date: 03/22/2016
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM





	HV %:	PHF
EB	0.7%	0.91
WB	1.0%	0.93
NB	1.4%	0.95
SB	1.4%	0.91
TOTAL	1.2%	0.98

Two-Hour Count Summaries

Interval Start		Jefferson Ave Eastbound				Jefferson Ave Westbound				El Camino Real Northbound				El Camino Real Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	57	97	52	0	47	113	40	2	59	265	26	0	46	258	46	1,108	0
4:15 PM		0	50	98	31	0	49	119	46	6	55	287	24	0	40	229	57	1,091	0
4:30 PM		0	58	92	31	0	55	125	45	5	47	273	40	0	40	253	46	1,110	0
4:45 PM		**1**	**45**	**83**	**32**	**0**	**59**	**148**	**38**	**6**	**45**	**260**	**29**	**1**	**52**	**277**	**49**	**1,125**	4,434
5:00 PM		**0**	**55**	**78**	**33**	**0**	**50**	**158**	**53**	**2**	**55**	**265**	**24**	**1**	**35**	**230**	**54**	**1,093**	4,419
5:15 PM		**0**	**58**	**88**	**41**	**0**	**49**	**185**	**43**	**4**	**49**	**268**	**21**	**0**	**49**	**246**	**46**	**1,147**	4,475
5:30 PM		**0**	**55**	**80**	**31**	**0**	**31**	**163**	**49**	**4**	**61**	**288**	**16**	**0**	**62**	**227**	**51**	**1,118**	**4,483**
5:45 PM		0	56	81	28	0	39	132	49	0	57	278	24	0	52	275	51	1,122	4,480
Count Total		1	434	697	279	0	379	1,143	363	29	428	2,184	204	2	376	1,995	400	8,914	0
Peak Hour	**All**	**1**	**213**	**329**	**137**	**0**	**189**	**654**	**183**	**16**	**210**	**1,081**	**90**	**2**	**198**	**980**	**200**	**4,483**	**0**
	HV	**0**	**1**	**4**	**0**	**0**	**1**	**4**	**5**	**0**	**1**	**17**	**2**	**0**	**7**	**11**	**1**	**54**	**0**
	HV%	**0%**	**0%**	**1%**	**0%**	**-**	**1%**	**1%**	**3%**	**0%**	**0%**	**2%**	**2%**	**0%**	**4%**	**1%**	**1%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	3	6	7	*20*	0	0	0	0	*0*	2	18	33	3	*56*
4:15 PM	2	4	4	5	*15*	0	0	0	0	*0*	11	10	19	8	*48*
4:30 PM	3	1	10	8	*22*	0	0	1	0	*1*	8	12	14	7	*41*
4:45 PM	**3**	**4**	**4**	**4**	***15***	**1**	**1**	**0**	**0**	***2***	**5**	**8**	**16**	**5**	*34*
5:00 PM	**1**	**2**	**9**	**6**	***18***	**2**	**0**	**3**	**1**	***6***	**7**	**7**	**17**	**13**	*44*
5:15 PM	**1**	**3**	**2**	**4**	***10***	**1**	**0**	**0**	**0**	***1***	**4**	**14**	**28**	**3**	*49*
5:30 PM	**0**	**1**	**5**	**5**	***11***	**0**	**0**	**1**	**0**	***1***	**15**	**13**	**31**	**2**	***61***
5:45 PM	1	3	2	4	*10*	0	4	1	0	*5*	9	10	21	6	*46*
Count Total	15	21	42	43	*121*	4	5	6	1	*16*	61	92	179	47	*379*
Peak Hour	**5**	**10**	**20**	**19**	***54***	**4**	**1**	**4**	**1**	***10***	**31**	**42**	**92**	**23**	***188***

Deon Fouche: 415 - 757 - 7714 deon.fouche@idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Jefferson Ave Eastbound				Jefferson Ave Westbound				El Camino Real Northbound				El Camino Real Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	0	3	0	0	0	3	0	0	6	0	0	2	4	1	20	0
4:15 PM	0	0	2	0	0	0	1	3	0	0	3	1	0	1	4	0	15	0
4:30 PM	0	2	1	0	0	0	0	1	0	0	9	1	0	2	5	1	22	0
4:45 PM	**0**	**1**	**2**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**4**	**0**	**0**	**1**	**3**	**0**	**15**	72
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**7**	**2**	**0**	**2**	**3**	**1**	**18**	70
5:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**2**	**0**	**0**	**1**	**3**	**0**	**10**	65
5:30 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**4**	**0**	**0**	**3**	**2**	**0**	**11**	**54**
5:45 PM	0	0	0	1	0	0	0	3	0	0	2	0	0	0	4	0	10	49
Count Total	0	4	7	4	0	1	5	15	0	1	37	4	0	12	28	3	121	0
Peak Hour	**0**	**1**	**4**	**0**	**0**	**1**	**4**	**5**	**0**	**1**	**17**	**2**	**0**	**7**	**11**	**1**	**54**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Jefferson Ave Eastbound			Jefferson Ave Westbound			El Camino Real Northbound			El Camino Real Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	0
4:45 PM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	3
5:00 PM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**0**	**6**	9
5:15 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	10
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**10**
5:45 PM	0	0	0	1	3	0	0	1	0	0	0	0	5	13
Count Total	0	4	0	1	4	0	0	6	0	0	1	0	16	0
Peak Hour	**0**	**4**	**0**	**0**	**1**	**0**	**0**	**4**	**0**	**0**	**1**	**0**	**10**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

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Prepared by National Data & Surveying Services

Maple St & El Camino Real

Peak Hour Turning Movement Count

ID: 18-08257-001
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	05:00 PM - 06:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Maple St — SOUTHBOUND

AM	45	0	74	0	156	AM
NOON	0	0	0	0	0	NOON
PM	59	0	186	0	149	PM
	1	0	1	0		

El Camino Real — EASTBOUND

AM	NOON	PM	
1311	0	1463	
7	0	15	0
61	0	54	1
1501	0	1358	2
0	0	0	0
AM	NOON	PM	

CONTROL

Signalized

TEV	3042 AM	0 NOON	3156 PM
PHF	0.97		0.99

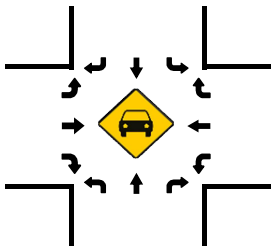
El Camino Real — WESTBOUND

PM	NOON	AM	
95	0	95	1
1389	0	1259	2
0	0	0	0
0	0	0	0
1544	0	1575	
PM	NOON	AM	

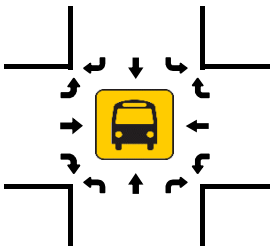
0	0	0	0	
PM	NOON	AM		
0	0	0	0	PM
0	0	0	0	NOON
0	0	0	0	AM

Maple St — NORTHBOUND

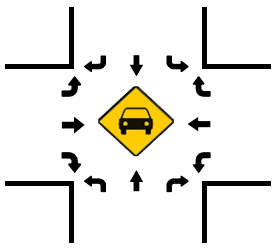
Total Vehicles (AM)



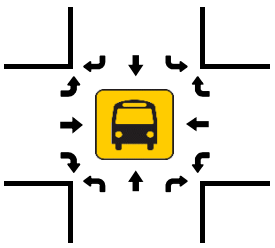
Total Vehicles (AM)



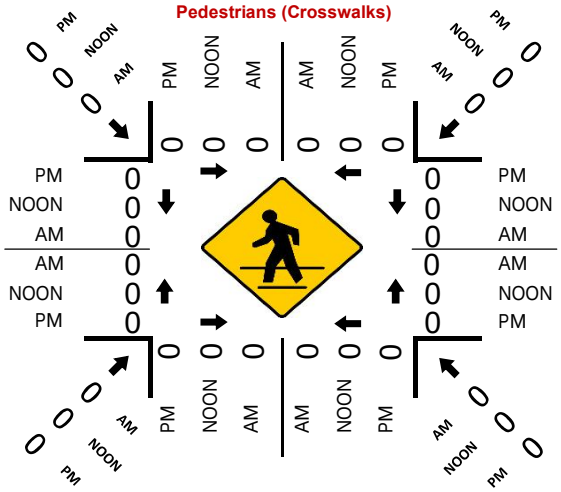
Total Vehicles (NOON)



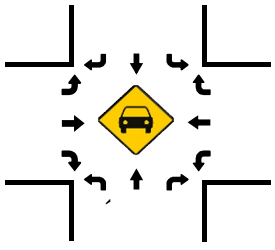
Total Vehicles (NOON)



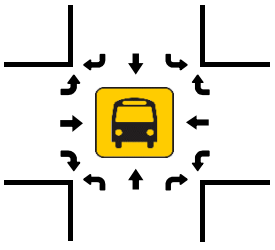
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Beech St & El Camino Real

Peak Hour Turning Movement Count

ID: 18-08257-002
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:45 PM - 05:45 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Beech St — SOUTHBOUND

AM	46	0	5	0	100	AM
NOON	0	0	0	0	0	NOON
PM	43	0	3	0	57	PM

El Camino Real — EASTBOUND

AM	NOON	PM	
1348	0	1454	
5	0	1	0
86	0	35	1
1463	0	1535	3
0	0	0	0

El Camino Real — WESTBOUND

PM	NOON	AM	
22	0	14	0
1410	0	1297	2
0	0	0	0
0	0	0	0
1538	0	1468	

CONTROL

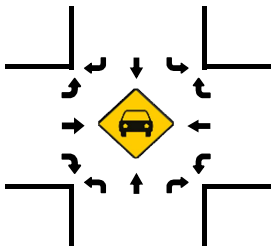
1-Way Stop (SB)

TEV	2916 AM	0 NOON	3049 PM
PHF	0.98		0.99

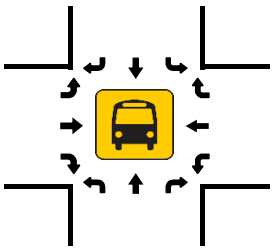
Beech St — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

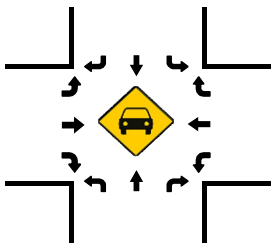
Total Vehicles (AM)



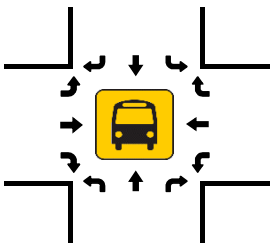
Total Vehicles (AM)



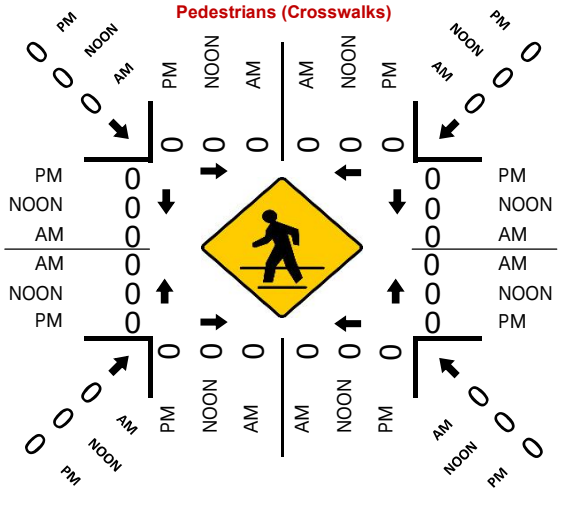
Total Vehicles (NOON)



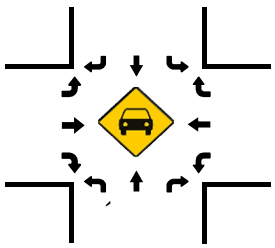
Total Vehicles (NOON)



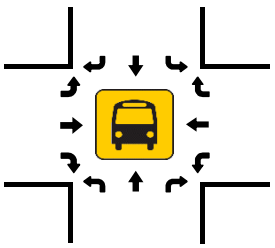
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Chestnut St & El Camino Real

Peak Hour Turning Movement Count

ID: 18-08257-003
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	05:00 PM - 06:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Chestnut St — SOUTHBOUND

AM	150	9	162	0	130	AM
NOON	0	0	0	0	0	NOON
PM	166	8	266	0	101	PM

El Camino Real — EASTBOUND

AM	NOON	PM	
1276	0	1621	
0	0	0	0
127	0	100	1
1540	0	1436	2
7	0	21	0
AM	NOON	PM	

El Camino Real — WESTBOUND

PM	NOON	AM	
1	0	3	0
1455	0	1126	2
0	0	0	0
0	0	0	0
1734	0	1712	
PM	NOON	AM	

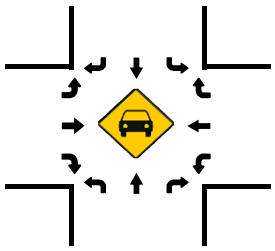
CONTROL: Signalized

TEV	3134	0	3485
	AM	NOON	PM
PHF	0.96		0.96

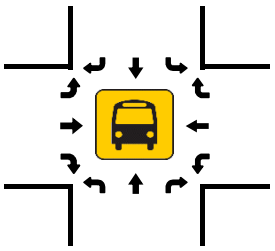
Chestnut St — NORTHBOUND

PM	29	0	0	0	32	PM
NOON	0	0	0	0	0	NOON
AM	16	0	0	0	10	AM

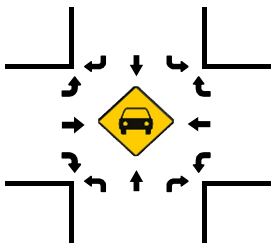
Total Vehicles (AM)



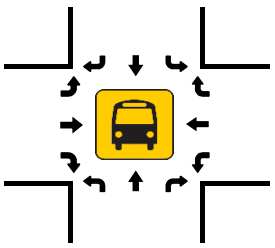
Total Vehicles (AM)



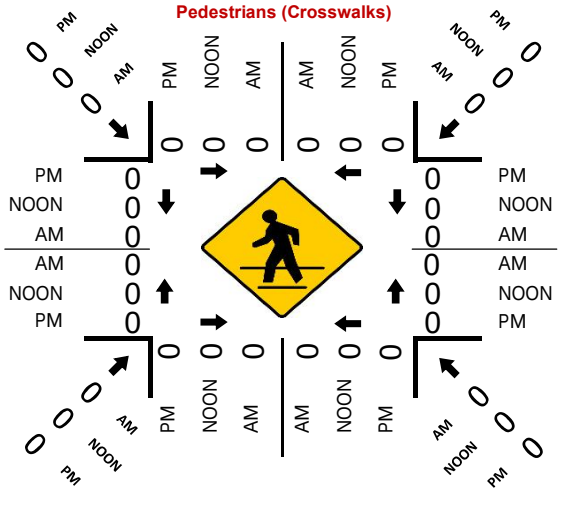
Total Vehicles (NOON)



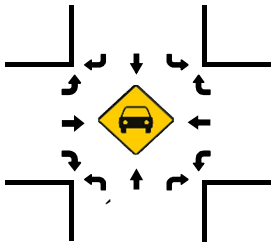
Total Vehicles (NOON)



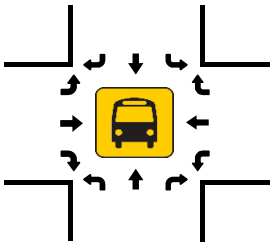
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Maple St & Franklin St / Lathrop St

Peak Hour Turning Movement Count

ID: 18-08257-004
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Maple St — SOUTHBOUND

AM	5	71	3	0	243	AM
NOON	0	0	0	0	0	NOON
PM	33	197	2	0	183	PM

Franklin St/Lathrop St — EASTBOUND

AM	NOON	PM	
76	0	166	⇦
0	0	0	0
53	0	21	0
18	0	32	1
23	0	24	0
AM	NOON	PM	

Franklin St/Lathrop St — WESTBOUND

PM	NOON	AM	
45	0	37	0
111	0	58	1
39	0	22	0
0	0	0	0
52	0	27	⇨
PM	NOON	AM	

CONTROL

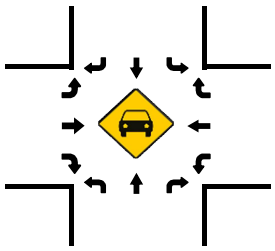
2-Way Stop (EB/WB)

TEV	462 AM	0 NOON	661 PM
PHF	0.92		0.97

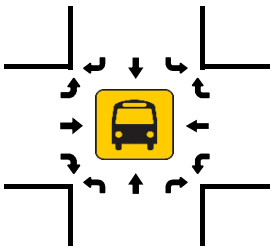
Maple St — NORTHBOUND

PM	260	0	22	117	18	PM
NOON	0	0	0	0	0	NOON
AM	116	0	13	153	6	AM

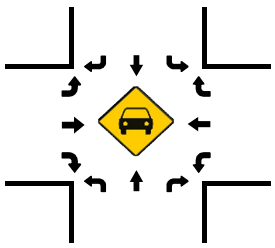
Total Vehicles (AM)



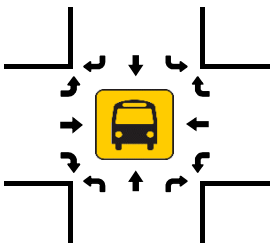
Total Vehicles (AM)



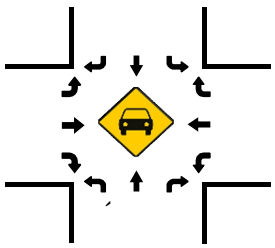
Total Vehicles (NOON)



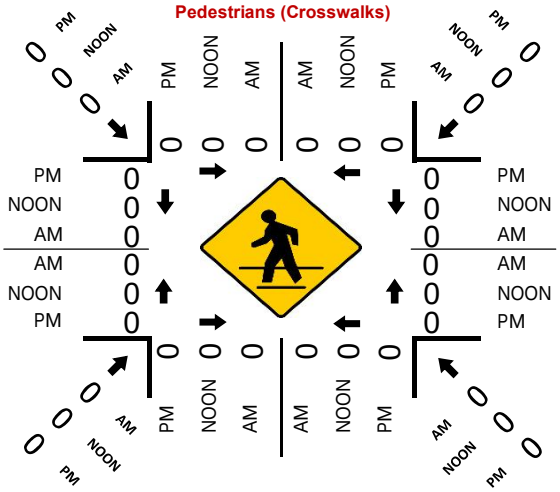
Total Vehicles (NOON)



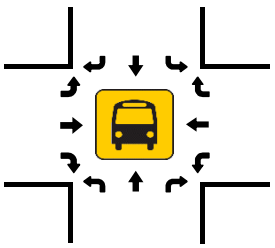
Total Vehicles (PM)



Pedestrians (Crosswalks)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Elm St & Lathrop St

Peak Hour Turning Movement Count

ID: 18-08257-005
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND — Elm St

AM	36	0	5	0	16	AM
NOON	0	0	0	0	0	NOON
PM	50	0	6	0	19	PM

EASTBOUND — Lathrop St

AM	NOON	PM	
114	0	196	⇦
0	0	0	↶ 0
5	0	14	↱ 0
23	0	39	→ 1
0	0	0	↴ 0
AM	NOON	PM	

WESTBOUND — Lathrop St

PM	NOON	AM	
5	0	11	0 ↰
146	0	78	1 ←
0	0	0	0 ↰
1	0	0	0 ↰
46	0	28	⇨
PM	NOON	AM	

NORTHBOUND — Elm St

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

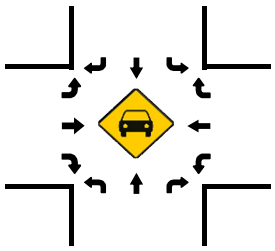
	0	1	0	0
	0	0	0	0

CONTROL

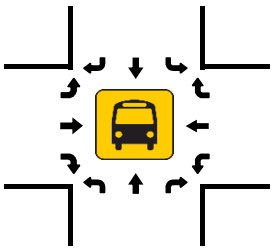
No Control

TEV	158 AM	0 NOON	261 PM
PHF	0.82		0.92

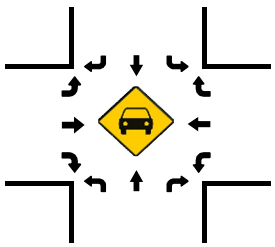
Total Vehicles (AM)



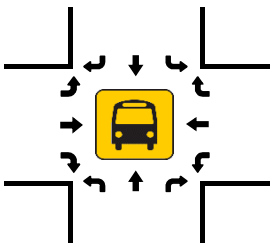
Total Vehicles (AM)



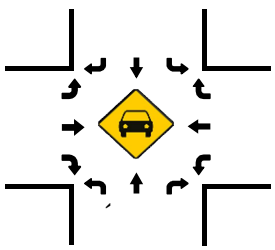
Total Vehicles (NOON)



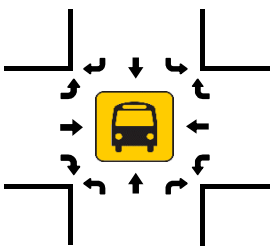
Total Vehicles (NOON)



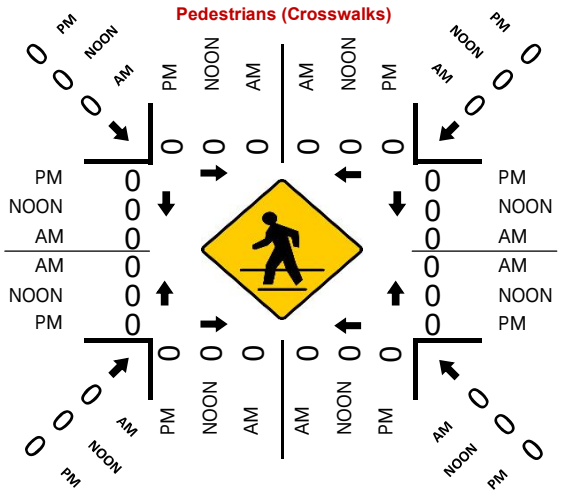
Total Vehicles (PM)



Total Vehicles (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Beech St & Lathrop St

Peak Hour Turning Movement Count

ID: 18-08257-006
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:00 PM - 05:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Beech St — SOUTHBOUND

AM	35	30	0	0	95	AM
NOON	0	0	0	0	0	NOON
PM	41	36	7	0	74	PM

EASTBOUND — Lathrop St

AM	NOON	PM		
94	0	133	⇦	
0	0	0	↶	0
8	0	24	↱	0
17	0	31	→	1
10	0	15	↴	0
AM	NOON	PM		

WESTBOUND — Lathrop St

PM	NOON	AM		
11	0	11	↰	0
82	0	49	←	1
12	0	18	↰	0
0	0	2	↰	0
44	0	38	⇨	
PM	NOON	AM		

NORTHBOUND — Beech St

PM	64	1	10	39	6	PM
NOON	0	0	0	0	0	NOON
AM	58	0	10	76	19	AM

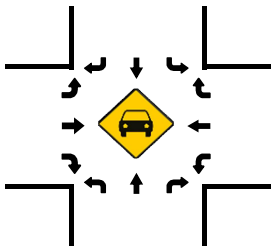
	0	1	0	0
	0	0	1	0

CONTROL

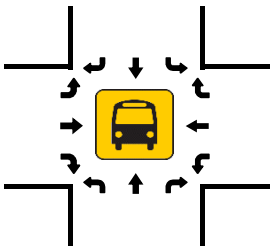
2-Way Stop (EB/WB)

TEV	285 AM	0 NOON	315 PM
PHF	0.94		0.88

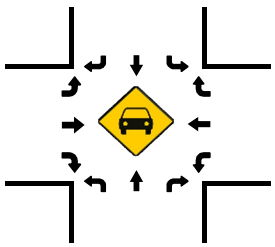
Total Vehicles (AM)



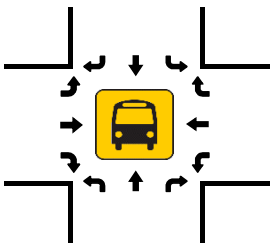
Total Vehicles (AM)



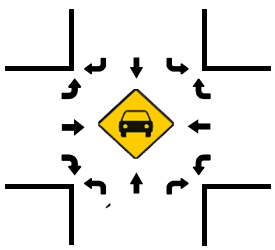
Total Vehicles (NOON)



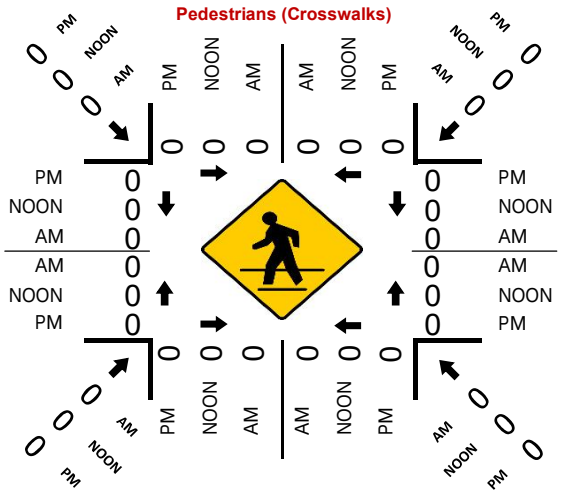
Total Vehicles (NOON)



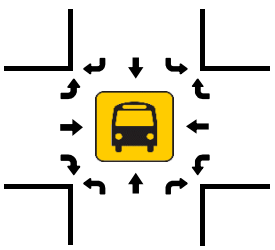
Total Vehicles (PM)



Pedestrians (Crosswalks)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Chestnut St & Lathrop St

Peak Hour Turning Movement Count

ID: 18-08257-007
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Chestnut St — SOUTHBOUND

AM	23	288	0	0	212	AM
NOON	0	0	0	0	0	NOON
PM	25	407	0	0	190	PM
	0	2	0	0		

Lathrop St — EASTBOUND

AM	NOON	PM	
69	0	99	
0	0	0	0
0	0	0	0
0	0	0	0
27	0	44	1
AM	NOON	PM	

Lathrop St — WESTBOUND

PM	NOON	AM	
76	0	85	0
65	0	39	1
10	0	6	0
0	0	0	0
0	0	0	
PM	NOON	AM	

CONTROL

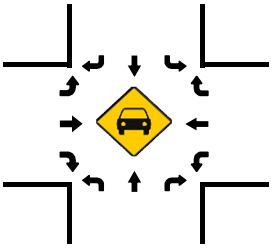
2-Way Stop (EB/WB)

TEV	602 AM	0 NOON	750 PM
PHF	0.91		0.92

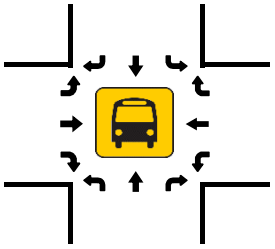
Chestnut St — NORTHBOUND

	0	0	1	0		
PM	461	0	9	114	0	PM
NOON	0	0	0	0	0	NOON
AM	321	0	7	127	0	AM

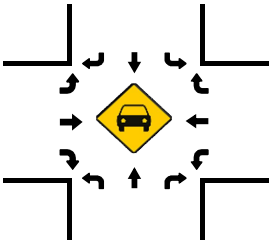
Total Vehicles (AM)



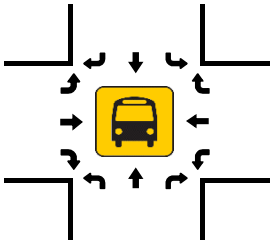
Total Vehicles (AM)



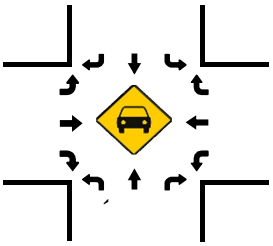
Total Vehicles (NOON)



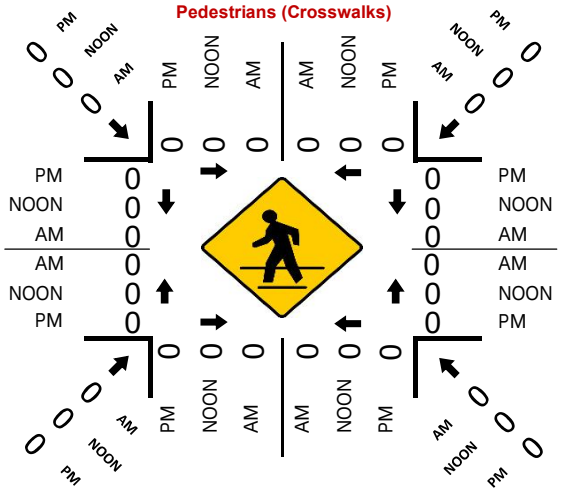
Total Vehicles (NOON)



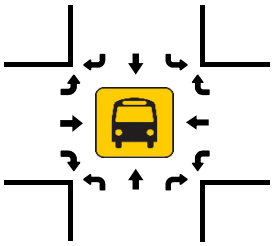
Total Vehicles (PM)



Pedestrians (Crosswalks)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Maple St / Dwy & Main St

Peak Hour Turning Movement Count

ID: 18-08257-009
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 05:00 PM - 06:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Maple St/Dwy — SOUTHBOUND

AM	4	4	1	0	0	AM
NOON	0	0	0	0	0	NOON
PM	26	8	3	0	0	PM

EASTBOUND — Main St

AM	NOON	PM		
462	0	467	⇦	
0	0	0	↶	0
0	0	0	↱	1
128	0	168	→	0
71	0	192	↴	1
AM	NOON	PM		

WESTBOUND — Main St

PM	NOON	AM		
0	0	0	↰	0
288	0	247	←	1
4	0	0	↰	0
0	0	0	↶	0
196	0	162	⇨	
PM	NOON	AM		

CONTROL: 2-Way Stop (SB/EB)

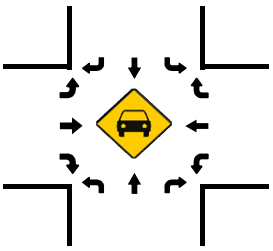
TEV	699 AM	0 NOON	867 PM
PHF	0.91		0.95

NORTHBOUND — Maple St/Dwy

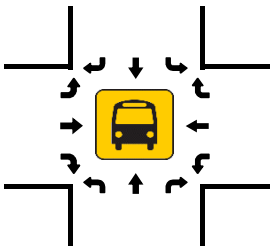
PM	204	0	153	0	25	PM
NOON	0	0	0	0	0	NOON
AM	75	0	211	0	33	AM

0 0 0.5 0.5

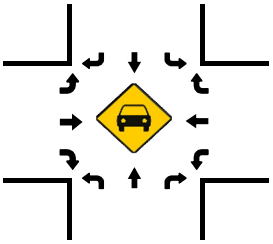
Total Vehicles (AM)



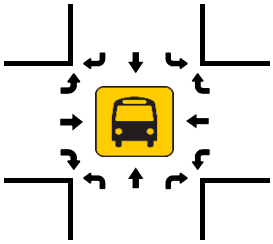
Total Vehicles (AM)



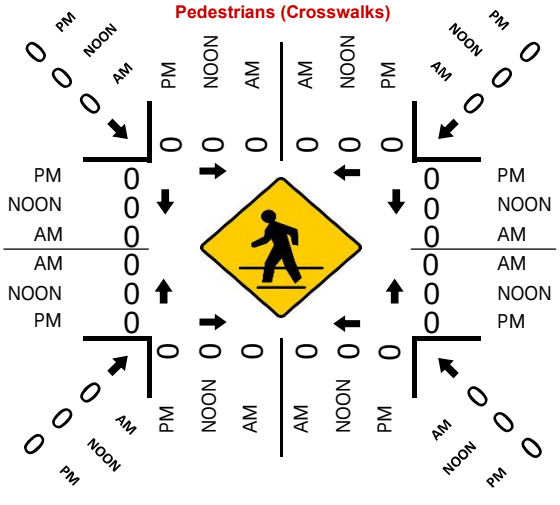
Total Vehicles (NOON)



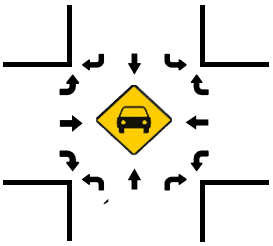
Total Vehicles (NOON)



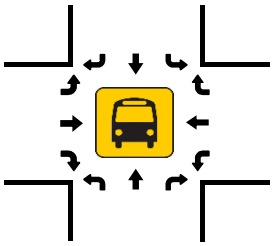
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Elm St & Main St

Peak Hour Turning Movement Count

ID: 18-08257-010
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 05:00 PM - 06:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND — Elm St

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Main St

AM	NOON	PM	
294	0	343	⇦
0	0	0	↰ 0
0	0	0	↱ 0
123	0	281	→ 1
27	0	45	↴ 0
AM	NOON	PM	

WESTBOUND — Main St

PM	NOON	AM	
0	0	0	0 ↰
343	0	294	1 ←
9	0	12	0 ↰
0	0	0	0 ↰
301	0	135	⇨
PM	NOON	AM	

NORTHBOUND — Elm St

PM	54	0	0	0	20	PM
NOON	0	0	0	0	0	NOON
AM	39	0	0	0	12	AM

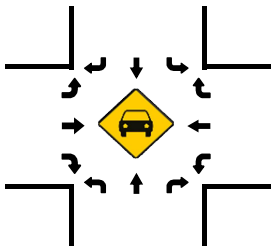
	0	0	1	0
	↰	←	↑	↱

CONTROL

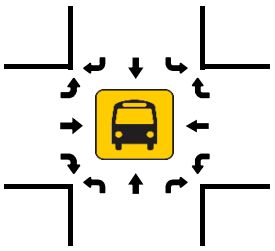
1-Way Stop (NB)

TEV	468 AM	0 NOON	698 PM
PHF	0.88		0.94

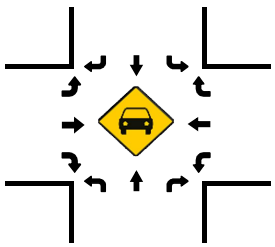
Total Vehicles (AM)



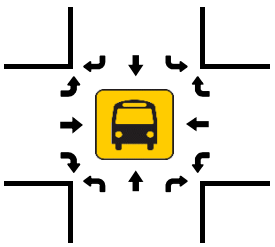
Total Vehicles (AM)



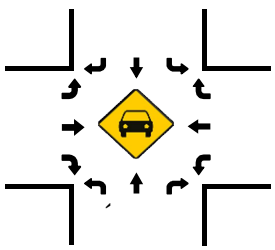
Total Vehicles (NOON)



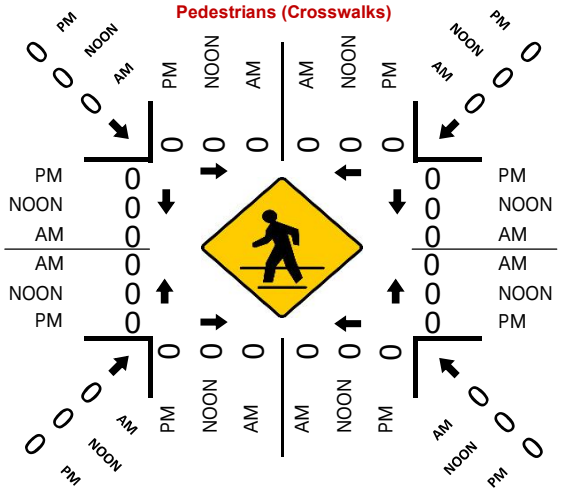
Total Vehicles (NOON)



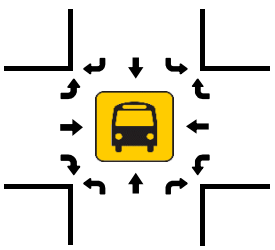
Total Vehicles (PM)



Pedestrians (Crosswalks)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Beech St & Main St

Peak Hour Turning Movement Count

ID: 18-08257-011
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	07:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

Beech St — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Main St

AM	NOON	PM	
307	0	350	⇦
0	0	0	↰ 0
0	0	0	↱ 0
127	0	288	→ 1
7	0	16	↳ 0

WESTBOUND — Main St

PM	NOON	AM	
0	0	0	↰ 0
336	0	289	← 1
68	0	63	↰ 0
0	0	0	↰ 0
331	0	202	⇨

CONTROL

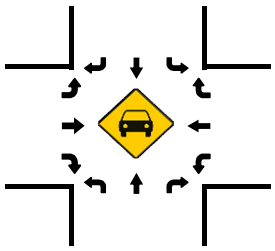
1-Way Stop (NB)

TEV	579 AM	0 NOON	765 PM
PHF	0.93		0.94

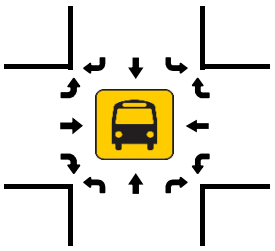
NORTHBOUND — Beech St

	0	0	1	0		
PM	84	0	14	0	43	PM
NOON	0	0	0	0	0	NOON
AM	70	0	18	0	75	AM

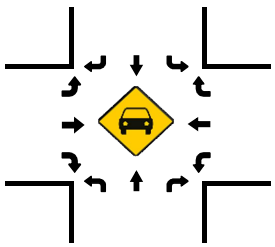
Total Vehicles (AM)



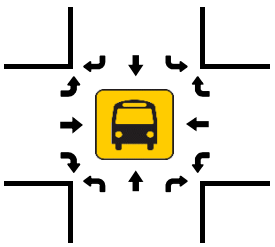
Total Vehicles (AM)



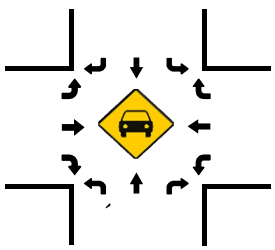
Total Vehicles (NOON)



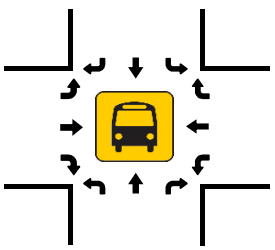
Total Vehicles (NOON)



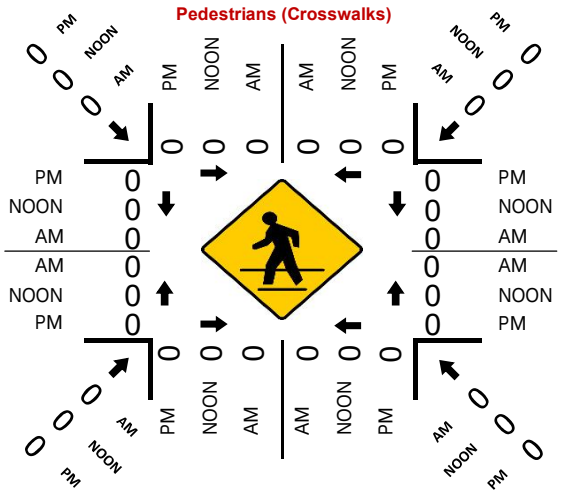
Total Vehicles (PM)



Total Vehicles (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Chestnut St & Main St

Peak Hour Turning Movement Count

ID: 18-08257-012
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:45 PM - 05:45 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND — Chestnut St

AM	2	183	48	0	337	AM
NOON	0	0	0	0	0	NOON
PM	3	285	113	0	306	PM

EASTBOUND — Main St

AM	NOON	PM	
357	0	397	⇦
0	0	0	↶ 0
3	0	10	↱ 0
79	0	206	→ 1
57	0	83	↴ 0
AM	NOON	PM	

WESTBOUND — Main St

PM	NOON	AM	
140	0	126	↰ 0
377	0	344	← 1
65	0	50	↰ 0
0	0	0	↰ 0
337	0	141	⇨
PM	NOON	AM	

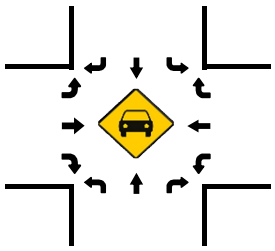
NORTHBOUND — Chestnut St

PM	433	0	17	156	18	PM
NOON	0	0	0	0	0	NOON
AM	290	0	11	208	14	AM

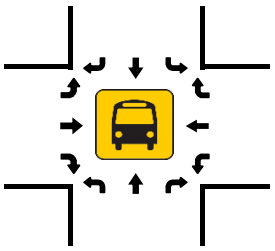
CONTROL: Signalized

TEV	1125 AM	0 NOON	1473 PM
PHF	0.97		0.93

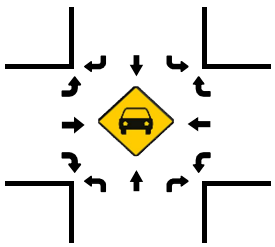
Total Vehicles (AM)



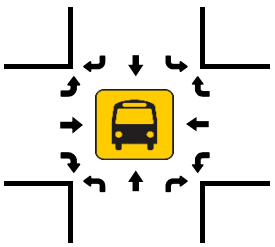
Total Vehicles (AM)



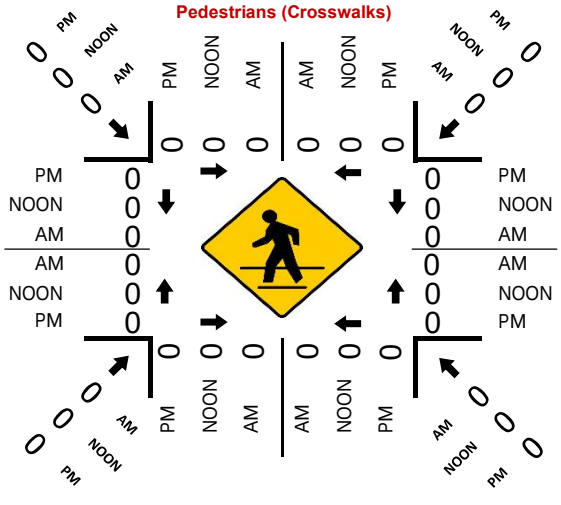
Total Vehicles (NOON)



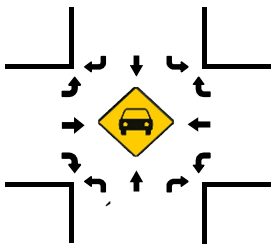
Total Vehicles (NOON)



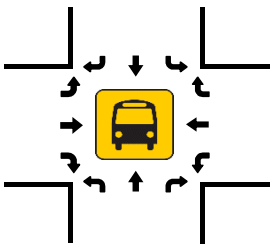
Pedestrians (Crosswalks)



Total Vehicles (PM)

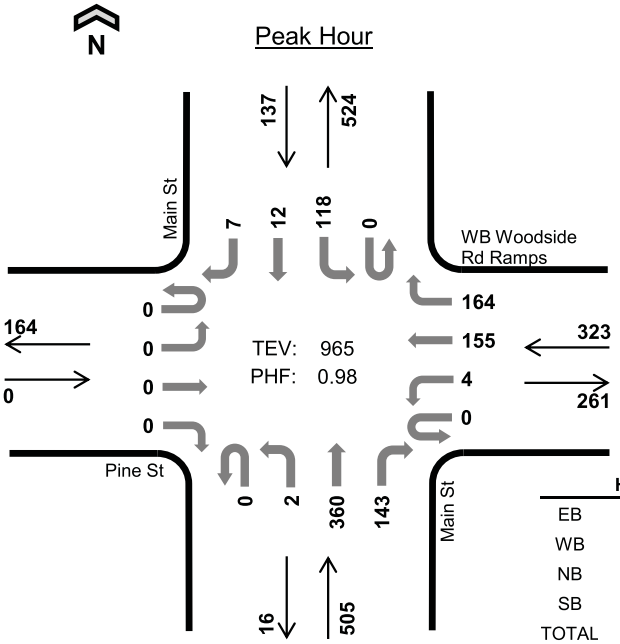


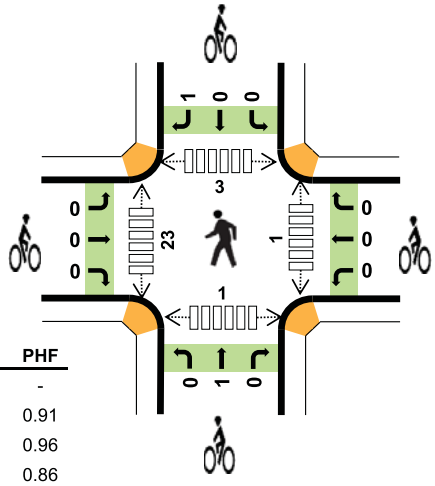
Total Vehicles (PM)



Main St
WB Woodside Rd Ramps

Date: 03/22/2016
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	-	-
WB	7.1%	0.91
NB	4.0%	0.96
SB	7.3%	0.86
TOTAL	5.5%	0.98

Two-Hour Count Summaries

Interval Start		Pine St Eastbound				WB Woodside Rd Ramps Westbound				Main St Northbound				Main St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	0	0	0	0	31	21	0	0	38	25	0	13	1	0	129	0
7:15 AM		0	0	0	0	0	1	24	28	0	0	45	24	0	19	3	0	144	0
7:30 AM		0	0	0	0	0	2	47	34	0	0	40	36	0	25	3	1	188	0
7:45 AM		**0**	**0**	**0**	**0**	**0**	**0**	**41**	**46**	**0**	**0**	**84**	**32**	**0**	**32**	**1**	**2**	**238**	699
8:00 AM		**0**	**0**	**0**	**0**	**0**	**1**	**33**	**39**	**0**	**2**	**90**	**40**	**0**	**31**	**0**	**1**	**237**	807
8:15 AM		**0**	**0**	**0**	**0**	**0**	**3**	**37**	**49**	**0**	**0**	**91**	**34**	**0**	**25**	**3**	**2**	**244**	907
8:30 AM		**0**	**0**	**0**	**0**	**0**	**0**	**44**	**30**	**0**	**0**	**95**	**37**	**0**	**30**	**8**	**2**	**246**	**965**
8:45 AM		0	0	0	1	0	0	36	33	0	0	76	30	0	32	6	1	215	942
Count Total		0	0	0	1	0	7	293	280	0	2	559	258	0	207	25	9	1,641	0
Peak Hour	**All**	**0**	**0**	**0**	**0**	**0**	**4**	**155**	**164**	**0**	**2**	**360**	**143**	**0**	**118**	**12**	**7**	**965**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**20**	**3**	**0**	**0**	**4**	**16**	**0**	**9**	**0**	**1**	**53**	**0**
	HV%	**-**	**-**	**-**	**-**	**-**	**0%**	**13%**	**2%**	**-**	**0%**	**1%**	**11%**	**-**	**8%**	**0%**	**14%**	**5%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	0	8	3	0	*11*	0	0	1	1	*2*	1	5	0	0	*6*
7:15 AM	0	6	3	2	*11*	0	0	0	0	*0*	0	6	0	0	*6*
7:30 AM	0	3	5	2	*10*	0	0	1	2	*3*	2	7	0	0	*9*
7:45 AM	**0**	**5**	**5**	**1**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**7**	**0**	**0**	*7*
8:00 AM	**0**	**5**	**2**	**4**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**5**	**2**	**0**	*7*
8:15 AM	**0**	**7**	**8**	**1**	***16***	**0**	**0**	**0**	**1**	***1***	**0**	**5**	**0**	**0**	*5*
8:30 AM	**0**	**6**	**5**	**4**	***15***	**0**	**0**	**1**	**0**	***1***	**1**	**6**	**1**	**1**	***9***
8:45 AM	0	5	2	2	*9*	0	0	0	0	*0*	1	5	0	0	*6*
Count Total	0	45	33	16	*94*	0	0	3	4	*7*	5	46	3	1	*55*
Peak Hour	**0**	**23**	**20**	**10**	***53***	**0**	**0**	**1**	**1**	***2***	**1**	**23**	**3**	**1**	***28***

Deon Fouche: 415 - 757 - 7714 deon.fouche@idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Pine St				WB Woodside Rd Ramps				Main St				Main St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	5	3	0	0	2	1	0	0	0	0	11	0
7:15 AM	0	0	0	0	0	0	4	2	0	0	0	3	0	0	2	0	11	0
7:30 AM	0	0	0	0	0	0	2	1	0	0	1	4	0	1	0	1	10	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**2**	**0**	**0**	**0**	**5**	**0**	**1**	**0**	**0**	**11**	43
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**1**	**1**	**0**	**3**	**0**	**1**	**11**	43
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**1**	**0**	**0**	**2**	**6**	**0**	**1**	**0**	**0**	**16**	48
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**1**	**4**	**0**	**4**	**0**	**0**	**15**	**53**
8:45 AM	0	0	0	0	0	0	4	1	0	0	0	2	0	2	0	0	9	51
Count Total	0	0	0	0	0	0	35	10	0	0	7	26	0	12	2	2	94	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**20**	**3**	**0**	**0**	**4**	**16**	**0**	**9**	**0**	**1**	**53**	**0**

Two-Hour Count Summaries - Bikes

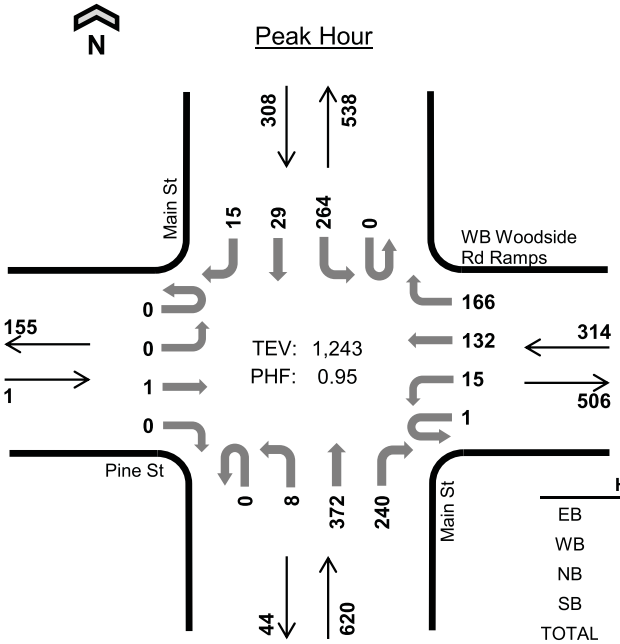
Interval Start	Pine St			WB Woodside Rd Ramps			Main St			Main St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	1	0	0	0	1	0	2	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	1	0	2	0	3	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	5
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	4
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**2**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	0	0	1	1	1	0	3	1	7	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**2**	**0**

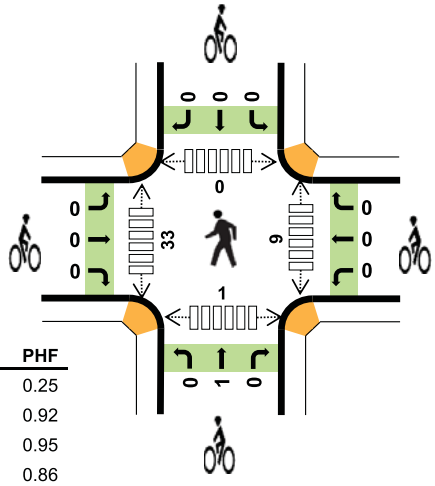
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Deon Fouche: 415 - 757 - 7714 deon.fouche@idaxdata.com

Main St
WB Woodside Rd Ramps

Date: 03/22/2016
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM





	HV %:	PHF
EB	0.0%	0.25
WB	1.3%	0.92
NB	1.0%	0.95
SB	1.0%	0.86
TOTAL	1.0%	0.95

Two-Hour Count Summaries

Interval Start		Pine St (Eastbound)				WB Woodside Rd Ramps (Westbound)				Main St (Northbound)				Main St (Southbound)				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	0	0	0	4	29	31	0	0	90	75	0	46	3	1	279	0
4:15 PM		0	0	0	0	0	4	41	43	0	2	90	64	0	32	7	4	287	0
4:30 PM		0	0	0	0	0	2	39	29	0	2	66	75	0	52	6	7	278	0
4:45 PM		**0**	**0**	**0**	**0**	**0**	**4**	**32**	**44**	**0**	**2**	**85**	**65**	**0**	**53**	**8**	**2**	**295**	1,139
5:00 PM		**0**	**0**	**1**	**0**	**0**	**2**	**39**	**44**	**0**	**3**	**95**	**65**	**0**	**69**	**5**	**3**	**326**	1,186
5:15 PM		**0**	**0**	**0**	**0**	**0**	**7**	**27**	**44**	**0**	**0**	**97**	**54**	**0**	**76**	**8**	**6**	**319**	1,218
5:30 PM		**0**	**0**	**0**	**0**	**1**	**2**	**34**	**34**	**0**	**3**	**95**	**56**	**0**	**66**	**8**	**4**	**303**	**1,243**
5:45 PM		0	0	0	1	0	3	31	26	0	0	80	55	0	41	12	3	252	1,200
Count Total		0	0	1	1	1	28	272	295	0	12	698	509	0	435	57	30	2,339	0
Peak Hour	**All**	**0**	**0**	**1**	**0**	**1**	**15**	**132**	**166**	**0**	**8**	**372**	**240**	**0**	**264**	**29**	**15**	**1,243**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**4**	**2**	**0**	**2**	**1**	**0**	**13**	**0**
	HV%	**-**	**-**	**0%**	**-**	**0%**	**0%**	**2%**	**1%**	**-**	**0%**	**1%**	**1%**	**-**	**1%**	**3%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	1	1	1	*3*	0	0	0	0	*0*	2	11	1	0	*14*
4:15 PM	0	1	3	0	*4*	0	0	0	0	*0*	3	6	1	0	*10*
4:30 PM	0	0	2	0	*2*	0	0	1	0	*1*	4	8	1	0	*13*
4:45 PM	**0**	**1**	**3**	**1**	***5***	**0**	**0**	**0**	**0**	***0***	**5**	**11**	**0**	**1**	*17*
5:00 PM	**0**	**1**	**2**	**1**	***4***	**0**	**0**	**1**	**0**	***1***	**2**	**9**	**0**	**0**	*11*
5:15 PM	**0**	**1**	**1**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**0**	*2*
5:30 PM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**2**	**11**	**0**	**0**	***13***
5:45 PM	0	3	0	0	*3*	0	0	0	0	*0*	4	6	0	0	*10*
Count Total	0	9	12	4	*25*	0	0	2	0	*2*	22	64	3	1	*90*
Peak Hour	**0**	**4**	**6**	**3**	***13***	**0**	**0**	**1**	**0**	***1***	**9**	**33**	**0**	**1**	***43***

Deon Fouche: 415 - 757 - 7714 deon.fouche@idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Pine St				WB Woodside Rd Ramps				Main St				Main St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	3	0
4:15 PM	0	0	0	0	0	0	1	0	0	0	2	1	0	0	0	0	4	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**1**	**0**	**1**	**0**	**0**	**5**	14
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**4**	15
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**3**	14
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**13**
5:45 PM	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	3	11
Count Total	0	0	0	0	0	1	4	4	0	0	9	3	0	3	1	0	25	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**4**	**2**	**0**	**2**	**1**	**0**	**13**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Pine St			WB Woodside Rd Ramps			Main St			Main St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	2
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	2	0	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Deon Fouche: 415 - 757 - 7714 deon.fouche@idaxdata.com

Prepared by National Data & Surveying Services

Main St & Middlefield Rd

Peak Hour Turning Movement Count

ID: 18-08257-013
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 05:00 PM - 06:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND (Main St)

AM	72	137	20	0	346	AM
NOON	0	0	0	0	0	NOON
PM	113	271	29	0	358	PM

EASTBOUND (Middlefield Rd)

AM	NOON	PM	
407	0	496	
0	0	0	0
25	0	57	0
368	0	344	2
55	0	74	0
AM	NOON	PM	

WESTBOUND (Middlefield Rd)

PM	NOON	AM	
17	0	19	1
248	0	292	0.5
30	0	12	0.5
0	0	0	0
431	0	490	
PM	NOON	AM	

NORTHBOUND (Main St)

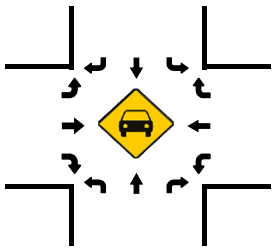
PM	375	0	135	284	58	PM
NOON	0	0	0	0	0	NOON
AM	204	0	43	302	102	AM

CONTROL

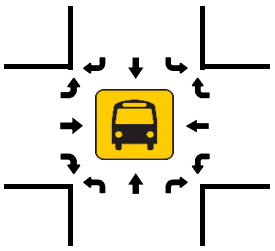
Signalized

TEV	1447 AM	0 NOON	1660 PM
PHF	0.95		0.94

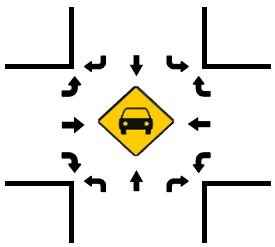
Total Vehicles (AM)



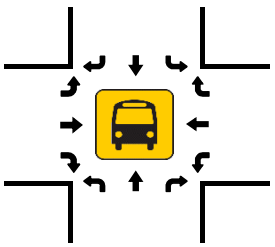
Total Vehicles (AM)



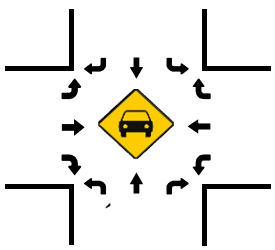
Total Vehicles (NOON)



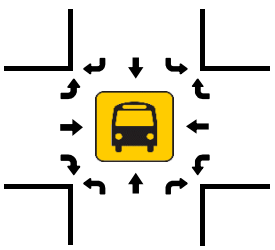
Total Vehicles (NOON)



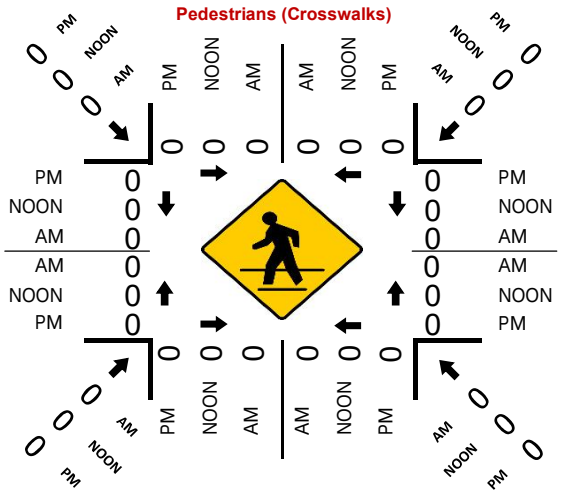
Total Vehicles (PM)



Total Vehicles (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Chestnut St & Middlefield Rd

Peak Hour Turning Movement Count

ID: 18-08257-014
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Chestnut St — SOUTHBOUND

AM	12	195	75	0	392	AM
NOON	0	0	0	0	0	NOON
PM	23	390	135	0	373	PM

Middlefield Rd — EASTBOUND

AM	NOON	PM		
330	0	374		
0	0	0	0	
26	0	9	1	
292	0	338	2	
19	0	41	0	
AM	NOON	PM		

CONTROL

Signalized

TEV	1425 AM	0 NOON	1805 PM
PHF	0.98		0.93

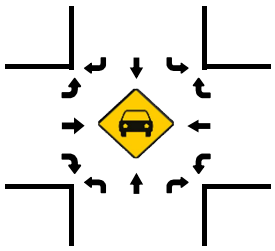
WESTBOUND — Middlefield Rd

PM	NOON	AM	
103	0	106	1
304	0	296	1
70	0	38	1
0	0	0	0
557	0	451	
PM	NOON	AM	

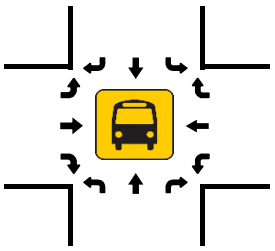
Chestnut St — NORTHBOUND

PM	501	0	47	261	84	PM
NOON	0	0	0	0	0	NOON
AM	252	0	22	260	84	AM

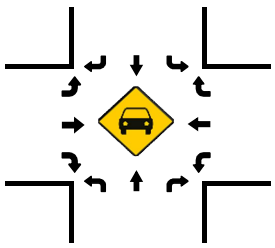
Total Vehicles (AM)



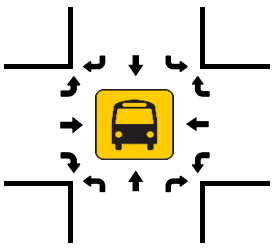
Total Vehicles (AM)



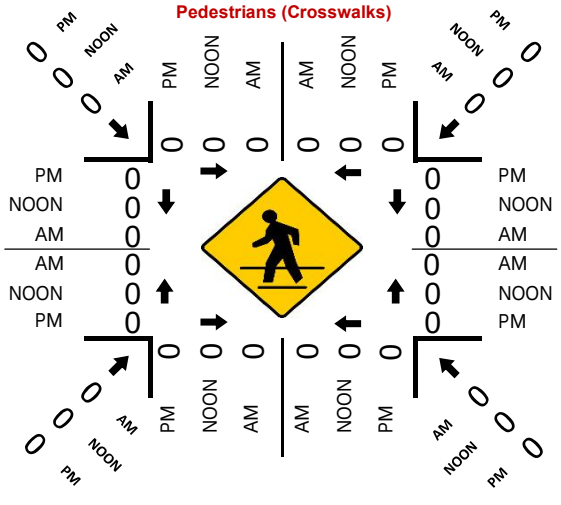
Total Vehicles (NOON)



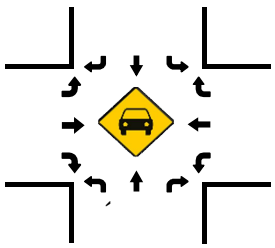
Total Vehicles (NOON)



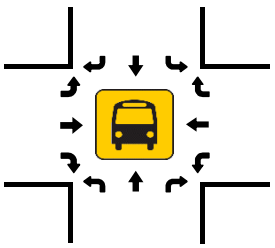
Pedestrians (Crosswalks)



Total Vehicles (PM)

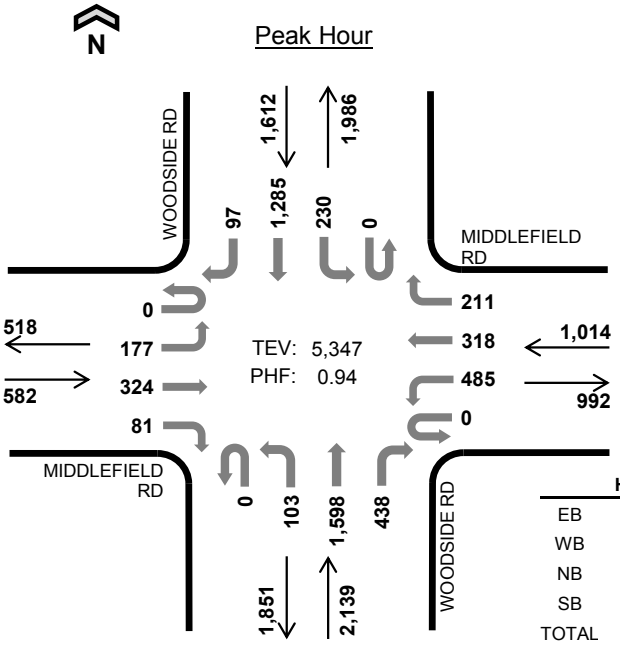


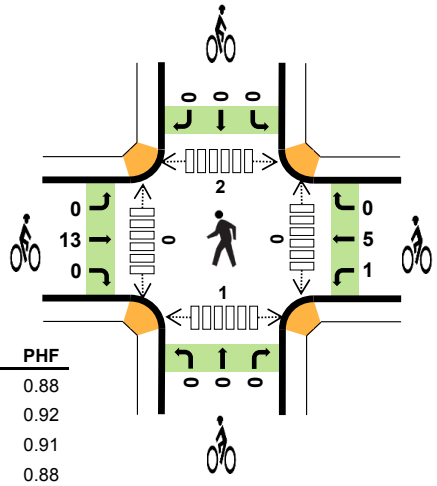
Total Vehicles (PM)



WOODSIDE RD
MIDDLEFIELD RD

Date: 04/20/2017
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM





	HV %:	PHF
EB	3.4%	0.88
WB	5.5%	0.92
NB	2.8%	0.91
SB	9.2%	0.88
TOTAL	5.3%	0.94

Two-Hour Count Summaries

Interval Start		MIDDLEFIELD RD Eastbound				MIDDLEFIELD RD Westbound				WOODSIDE RD Northbound				WOODSIDE RD Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	19	42	28	0	102	30	43	0	10	316	68	0	54	270	25	1,007	0
7:15 AM		0	31	59	38	0	127	67	60	0	27	348	78	0	51	288	25	1,199	0
7:30 AM		**0**	**35**	**78**	**26**	**0**	**141**	**83**	**53**	**0**	**28**	**365**	**117**	**0**	**65**	**289**	**27**	**1,307**	0
7:45 AM		**0**	**43**	**80**	**13**	**0**	**119**	**70**	**48**	**0**	**29**	**438**	**123**	**0**	**48**	**380**	**31**	**1,422**	4,935
8:00 AM		**0**	**51**	**96**	**18**	**0**	**118**	**81**	**68**	**0**	**19**	**372**	**103**	**0**	**49**	**278**	**14**	**1,267**	5,195
8:15 AM		**0**	**48**	**70**	**24**	**0**	**107**	**84**	**42**	**0**	**27**	**423**	**95**	**0**	**68**	**338**	**25**	**1,351**	**5,347**
8:30 AM		0	34	86	22	0	104	72	58	0	29	353	82	0	39	267	21	1,167	5,207
8:45 AM		0	37	53	15	0	73	48	37	0	20	377	76	0	35	261	22	1,054	4,839
Count Total		0	298	564	184	0	891	535	409	0	189	2,992	742	0	409	2,371	190	9,774	0
Peak Hour	**All**	**0**	**177**	**324**	**81**	**0**	**485**	**318**	**211**	**0**	**103**	**1,598**	**438**	**0**	**230**	**1,285**	**97**	**5,347**	**0**
	HV	**0**	**6**	**11**	**3**	**0**	**30**	**12**	**14**	**0**	**1**	**54**	**4**	**0**	**15**	**119**	**15**	**284**	**0**
	HV%	**-**	**3%**	**3%**	**4%**	**-**	**6%**	**4%**	**7%**	**-**	**1%**	**3%**	**1%**	**-**	**7%**	**9%**	**15%**	**5%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	3	8	7	18	*36*	5	4	0	0	*9*	0	0	0	0	*0*
7:15 AM	2	15	13	24	*54*	2	0	0	0	*2*	0	0	0	0	*0*
7:30 AM	**3**	**11**	**17**	**37**	***68***	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**7**	**16**	**13**	**43**	***79***	**3**	**3**	**0**	**0**	***6***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**4**	**16**	**10**	**35**	***65***	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**1**	**1**	*2*
8:15 AM	**6**	**13**	**19**	**34**	***72***	**6**	**1**	**0**	**0**	***7***	**0**	**0**	**1**	**0**	***1***
8:30 AM	10	13	25	26	*74*	3	0	0	0	*3*	0	0	0	0	*0*
8:45 AM	4	8	22	19	*53*	3	3	0	0	*6*	0	0	0	0	*0*
Count Total	39	100	126	236	*501*	26	13	0	0	*39*	0	0	2	1	*3*
Peak Hour	**20**	**56**	**59**	**149**	***284***	**13**	**6**	**0**	**0**	***19***	**0**	**0**	**2**	**1**	***3***

Deon Fouche: 415 - 757 - 7714 deon.fouche@idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	MIDDLEFIELD RD Eastbound				MIDDLEFIELD RD Westbound				WOODSIDE RD Northbound				WOODSIDE RD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	2	0	5	1	2	0	1	5	1	0	3	14	1	36	0
7:15 AM	0	0	2	0	0	9	3	3	0	0	12	1	0	6	13	5	54	0
7:30 AM	**0**	**0**	**2**	**1**	**0**	**5**	**3**	**3**	**0**	**0**	**16**	**1**	**0**	**5**	**25**	**7**	**68**	0
7:45 AM	**0**	**1**	**6**	**0**	**0**	**10**	**3**	**3**	**0**	**1**	**11**	**1**	**0**	**4**	**35**	**4**	**79**	237
8:00 AM	**0**	**3**	**1**	**0**	**0**	**8**	**1**	**7**	**0**	**0**	**9**	**1**	**0**	**2**	**32**	**1**	**65**	266
8:15 AM	**0**	**2**	**2**	**2**	**0**	**7**	**5**	**1**	**0**	**0**	**18**	**1**	**0**	**4**	**27**	**3**	**72**	**284**
8:30 AM	0	4	5	1	0	8	2	3	0	1	22	2	0	2	23	1	74	290
8:45 AM	0	1	3	0	0	3	4	1	0	0	19	3	0	1	17	1	53	264
Count Total	0	11	22	6	0	55	22	23	0	3	112	11	0	27	186	23	501	0
Peak Hour	**0**	**6**	**11**	**3**	**0**	**30**	**12**	**14**	**0**	**1**	**54**	**4**	**0**	**15**	**119**	**15**	**284**	**0**

Two-Hour Count Summaries - Bikes

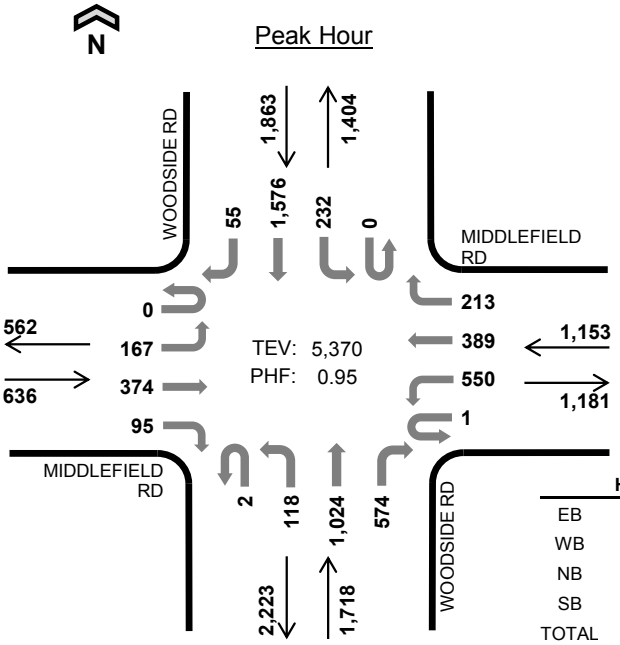
Interval Start	MIDDLEFIELD RD Eastbound			MIDDLEFIELD RD Westbound			WOODSIDE RD Northbound			WOODSIDE RD Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	5	0	0	4	0	0	0	0	0	0	0	9	0
7:15 AM	0	2	0	0	0	0	0	0	0	0	0	0	2	0
7:30 AM	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	0
7:45 AM	**0**	**3**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	20
8:00 AM	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	14
8:15 AM	**0**	**6**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**19**
8:30 AM	0	3	0	0	0	0	0	0	0	0	0	0	3	19
8:45 AM	0	3	0	0	3	0	0	0	0	0	0	0	6	19
Count Total	0	26	0	1	12	0	0	0	0	0	0	0	39	0
Peak Hour	**0**	**13**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**19**	**0**

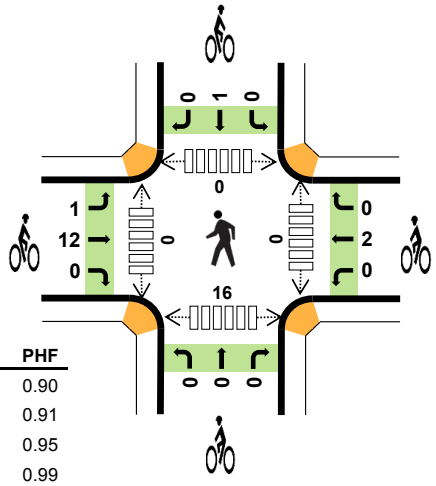
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Deon Fouche: 415 - 757 - 7714 deon.fouche@idaxdata.com

WOODSIDE RD
MIDDLEFIELD RD

Date: 04/20/2017
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM





	HV %:	PHF
EB	1.6%	0.90
WB	0.9%	0.91
NB	1.9%	0.95
SB	1.1%	0.99
TOTAL	1.3%	0.95

Two-Hour Count Summaries

Interval Start		MIDDLEFIELD RD Eastbound				MIDDLEFIELD RD Westbound				WOODSIDE RD Northbound				WOODSIDE RD Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	44	76	33	0	120	72	68	0	17	307	141	0	73	366	23	1,340	0
4:15 PM		0	45	91	28	0	152	96	70	0	31	270	111	0	69	323	15	1,301	0
4:30 PM		0	45	99	23	0	133	81	45	1	26	285	119	0	52	371	19	1,299	0
4:45 PM		0	40	96	27	0	128	87	50	1	27	290	121	0	62	375	20	1,324	5,264
5:00 PM		**0**	**53**	**98**	**25**	**0**	**138**	**85**	**59**	**0**	**31**	**244**	**140**	**0**	**51**	**390**	**13**	**1,327**	5,251
5:15 PM		**0**	**41**	**90**	**21**	**0**	**133**	**106**	**40**	**2**	**30**	**254**	**125**	**0**	**56**	**403**	**11**	**1,312**	5,262
5:30 PM		**0**	**41**	**96**	**27**	**0**	**148**	**106**	**62**	**0**	**17**	**286**	**151**	**0**	**70**	**385**	**17**	**1,406**	5,369
5:45 PM		**0**	**32**	**90**	**22**	**1**	**131**	**92**	**52**	**0**	**40**	**240**	**158**	**0**	**55**	**398**	**14**	**1,325**	**5,370**
Count Total		0	341	736	206	1	1,083	725	446	4	219	2,176	1,066	0	488	3,011	132	10,634	0
Peak Hour	**All**	**0**	**167**	**374**	**95**	**1**	**550**	**389**	**213**	**2**	**118**	**1,024**	**574**	**0**	**232**	**1,576**	**55**	**5,370**	**0**
	HV	**0**	**2**	**7**	**1**	**0**	**4**	**4**	**2**	**0**	**4**	**27**	**1**	**0**	**1**	**18**	**1**	**72**	**0**
	HV%	**-**	**1%**	**2%**	**1%**	**0%**	**1%**	**1%**	**1%**	**0%**	**3%**	**3%**	**0%**	**-**	**0%**	**1%**	**2%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	3	15	15	*37*	0	4	0	0	*4*	0	0	2	1	*3*
4:15 PM	2	5	8	7	*22*	2	0	0	0	*2*	0	0	0	1	*1*
4:30 PM	3	2	10	8	*23*	1	7	0	0	*8*	0	0	0	1	*1*
4:45 PM	1	6	17	7	*31*	2	2	0	1	*5*	0	0	0	3	*3*
5:00 PM	**4**	**4**	**10**	**10**	***28***	**2**	**2**	**0**	**0**	***4***	**0**	**0**	**0**	**10**	*10*
5:15 PM	**2**	**2**	**9**	**3**	***16***	**6**	**0**	**0**	**0**	***6***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**2**	**3**	**7**	**4**	***16***	**2**	**0**	**0**	**0**	***2***	**0**	**0**	**0**	**3**	*3*
5:45 PM	**2**	**1**	**6**	**3**	***12***	**3**	**0**	**0**	**1**	***4***	**0**	**0**	**0**	**3**	***3***
Count Total	20	26	82	57	*185*	18	15	0	2	*35*	0	0	2	22	*24*
Peak Hour	**10**	**10**	**32**	**20**	***72***	**13**	**2**	**0**	**1**	***16***	**0**	**0**	**0**	**16**	***16***

Deon Fouche: 415 - 757 - 7714 deon.fouche@idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	MIDDLEFIELD RD Eastbound				MIDDLEFIELD RD Westbound				WOODSIDE RD Northbound				WOODSIDE RD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	4	0	0	1	1	1	0	1	13	1	0	1	14	0	37	0
4:15 PM	0	0	1	1	0	3	2	0	0	1	7	0	0	2	5	0	22	0
4:30 PM	0	1	2	0	0	0	1	1	0	1	9	0	0	1	7	0	23	0
4:45 PM	0	0	1	0	0	3	1	2	0	0	15	2	0	0	7	0	31	113
5:00 PM	**0**	**1**	**3**	**0**	**0**	**3**	**1**	**0**	**0**	**3**	**7**	**0**	**0**	**1**	**8**	**1**	**28**	104
5:15 PM	**0**	**0**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**8**	**1**	**0**	**0**	**3**	**0**	**16**	98
5:30 PM	**0**	**1**	**1**	**0**	**0**	**0**	**2**	**1**	**0**	**1**	**6**	**0**	**0**	**0**	**4**	**0**	**16**	91
5:45 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**6**	**0**	**0**	**0**	**3**	**0**	**12**	**72**
Count Total	0	3	15	2	0	11	9	6	0	7	71	4	0	5	51	1	185	0
Peak Hour	**0**	**2**	**7**	**1**	**0**	**4**	**4**	**2**	**0**	**4**	**27**	**1**	**0**	**1**	**18**	**1**	**72**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	MIDDLEFIELD RD Eastbound			MIDDLEFIELD RD Westbound			WOODSIDE RD Northbound			WOODSIDE RD Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	3	1	0	0	0	0	0	0	4	0
4:15 PM	0	2	0	0	0	0	0	0	0	0	0	0	2	0
4:30 PM	0	1	0	1	6	0	0	0	0	0	0	0	8	0
4:45 PM	0	2	0	0	2	0	0	0	0	0	0	1	5	19
5:00 PM	**1**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	19
5:15 PM	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	23
5:30 PM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	17
5:45 PM	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**4**	**16**
Count Total	1	17	0	1	13	1	0	0	0	0	1	1	35	0
Peak Hour	**1**	**12**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**16**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Deon Fouche: 415 - 757 - 7714 deon.fouche@idaxdata.com

Prepared by National Data & Surveying Services

Woodside Rd & Bay Rd

Peak Hour Turning Movement Count

ID: 18-08257-015
City: Redwood City

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 05:00 PM - 06:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Woodside Rd — SOUTHBOUND

AM	68	1323	173	4	1619	AM
NOON	0	0	0	0	0	NOON
PM	20	1647	185	5	1174	PM

Bay Rd — EASTBOUND

AM	NOON	PM	
293	0	233	
0	0	0	0
11	0	13	0
144	0	186	1.5
31	0	36	0.5
AM	NOON	PM	

WESTBOUND — Bay Rd

PM	NOON	AM	
157	0	153	0
163	0	186	2
182	0	239	0
0	0	0	0
506	0	426	
PM	NOON	AM	

CONTROL: Signalized

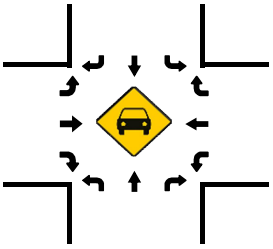
TEV	3940 AM	0 NOON	3791 PM
PHF	0.98		0.95

NORTHBOUND — Woodside Rd

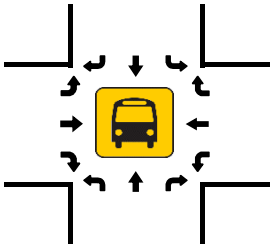
PM	1878	13	50	999	135	PM
NOON	0	0	0	0	0	NOON
AM	1602	9	39	1451	109	AM

0.5 1.5 1 0 — 0 1 3 0

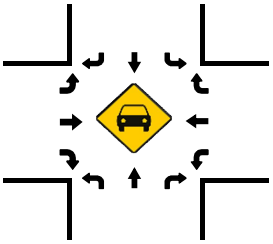
Total Vehicles (AM)



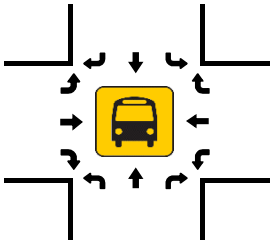
Total Vehicles (AM)



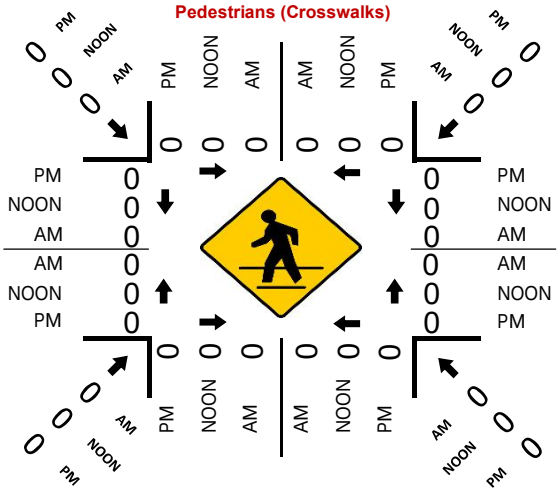
Total Vehicles (NOON)



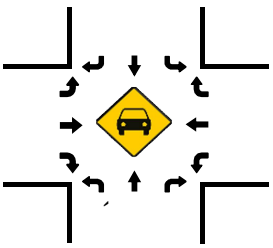
Total Vehicles (NOON)



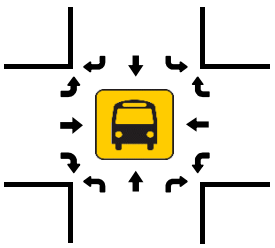
Pedestrians (Crosswalks)

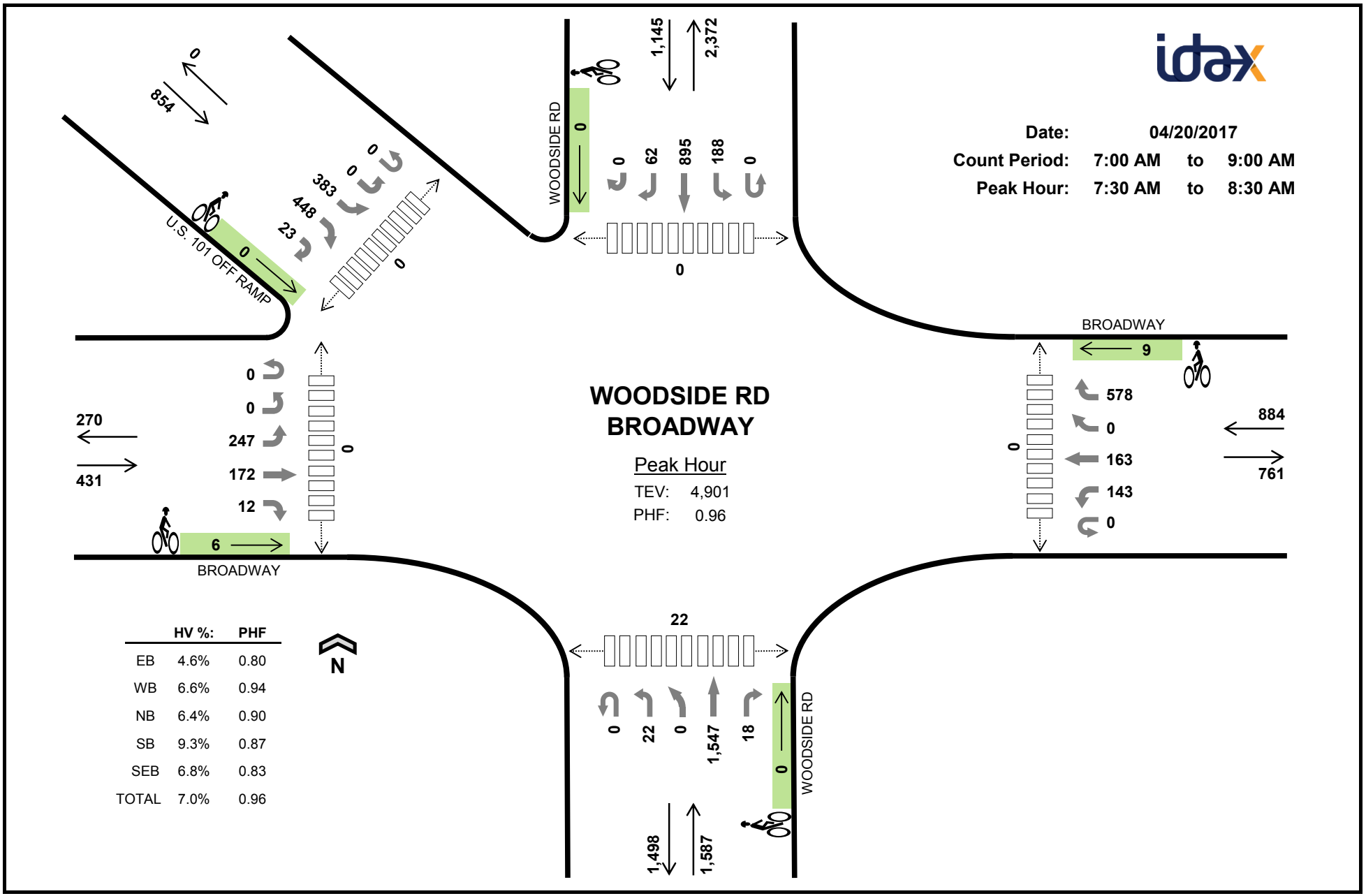


Total Vehicles (PM)



Total Vehicles (PM)





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Two-Hour Count Summaries

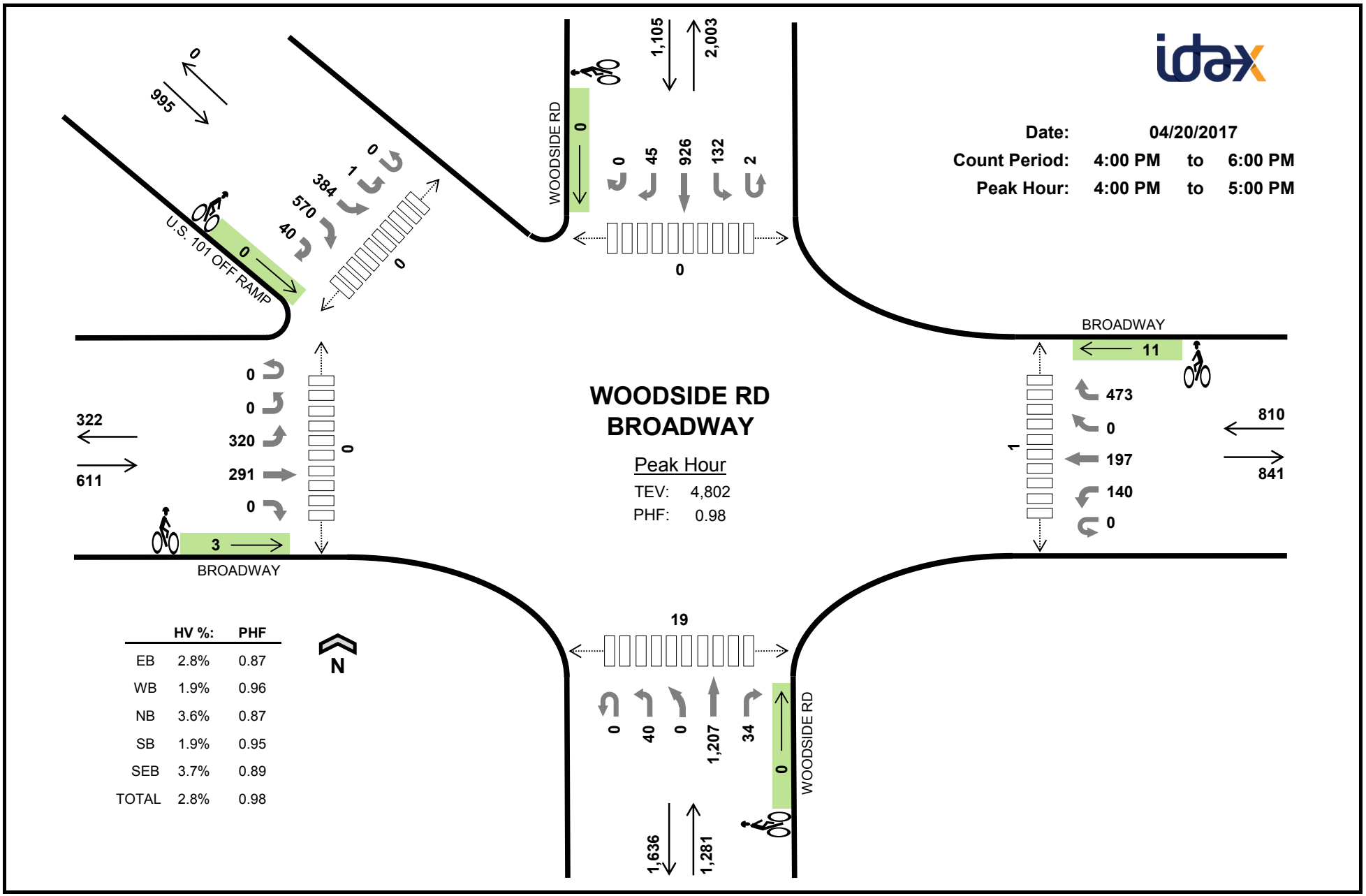
Interval Start		BROADWAY Eastbound					BROADWAY Westbound					WOODSIDE RD Northbound					WOODSIDE RD Southbound					U.S. 101 OFF RAMP Southeastbound					15-min Total	Rolling One Hour
		UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
7:00 AM		0	0	48	38	1	0	25	14	0	123	0	3	0	307	1	0	56	235	8	0	0	0	91	92	14	1,056	0
7:15 AM		0	0	42	38	5	0	21	45	0	124	0	5	0	316	1	0	39	218	5	0	0	0	92	129	3	1,083	0
7:30 AM		**0**	**0**	**58**	**37**	**2**	**0**	**33**	**45**	**0**	**142**	**0**	**6**	**0**	**433**	**2**	**0**	**49**	**258**	**22**	**0**	**0**	**0**	**86**	**103**	**5**	**1,281**	0
7:45 AM		**0**	**0**	**84**	**48**	**3**	**0**	**43**	**29**	**0**	**162**	**0**	**5**	**0**	**360**	**3**	**0**	**42**	**228**	**15**	**0**	**0**	**0**	**122**	**124**	**11**	**1,279**	4,699
8:00 AM		**0**	**0**	**47**	**46**	**7**	**0**	**43**	**37**	**0**	**146**	**0**	**6**	**0**	**358**	**3**	**0**	**55**	**184**	**10**	**0**	**0**	**0**	**106**	**104**	**1**	**1,153**	4,796
8:15 AM		**0**	**0**	**58**	**41**	**0**	**0**	**24**	**52**	**0**	**128**	**0**	**5**	**0**	**396**	**10**	**0**	**42**	**225**	**15**	**0**	**0**	**0**	**69**	**117**	**6**	**1,188**	**4,901**
8:30 AM		0	0	57	59	0	0	30	37	0	108	0	5	0	331	4	0	35	198	14	0	0	0	72	141	13	1,104	4,724
8:45 AM		0	0	37	42	0	0	27	33	0	103	0	3	0	384	3	0	28	159	14	0	0	0	98	129	9	1,069	4,514
Count Total		0	0	431	349	18	0	246	292	0	1,036	0	38	0	2,885	27	0	346	1,705	103	0	0	0	736	939	62	9,213	0
Peak Hour	**All**	**0**	**0**	**247**	**172**	**12**	**0**	**143**	**163**	**0**	**578**	**0**	**22**	**0**	**1,547**	**18**	**0**	**188**	**895**	**62**	**0**	**0**	**0**	**383**	**448**	**23**	**4,901**	**0**
	HV	**0**	**0**	**9**	**5**	**6**	**0**	**7**	**5**	**0**	**46**	**0**	**1**	**0**	**99**	**2**	**0**	**9**	**95**	**3**	**0**	**0**	**0**	**9**	**48**	**1**	**345**	**0**
	HV%	**-**	**-**	**4%**	**3%**	**50%**	**-**	**5%**	**3%**	**-**	**8%**	**-**	**5%**	**-**	**6%**	**11%**	**-**	**5%**	**11%**	**5%**	**-**	**-**	**-**	**2%**	**11%**	**4%**	**7%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	SEB	Total	EB	WB	NB	SB	SEB	Total	East	West	North	South	Northwest	Total
7:00 AM	4	7	10	24	10	*55*	2	1	0	0	0	*3*	0	0	0	2	0	*2*
7:15 AM	4	13	16	17	19	*69*	3	3	0	0	0	*6*	1	0	0	9	0	*10*
7:30 AM	**3**	**15**	**25**	**34**	**15**	***92***	**3**	**3**	**0**	**0**	**0**	***6***	**0**	**0**	**0**	**3**	**0**	***3***
7:45 AM	**5**	**17**	**19**	**22**	**18**	***81***	**3**	**3**	**0**	**0**	**0**	***6***	**0**	**0**	**0**	**5**	**0**	***5***
8:00 AM	**10**	**10**	**28**	**19**	**9**	***76***	**0**	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**6**	**0**	***6***
8:15 AM	**2**	**16**	**30**	**32**	**16**	***96***	**0**	**2**	**0**	**0**	**0**	***2***	**0**	**0**	**0**	**8**	**0**	***8***
8:30 AM	4	11	35	14	17	*81*	0	1	1	0	0	*2*	0	0	0	3	0	*3*
8:45 AM	1	10	38	15	16	*80*	0	1	0	0	0	*1*	0	0	0	4	0	*4*
Count Total	33	99	201	177	120	*630*	11	15	1	0	0	*27*	1	0	0	40	0	*41*
Peak Hr	**20**	**58**	**102**	**107**	**58**	***345***	**6**	**9**	**0**	**0**	**0**	***15***	**0**	**0**	**0**	**22**	**0**	*22*

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Two-Hour Count Summaries - Heavy Vehicles

Interval Start	BROADWAY Eastbound					BROADWAY Westbound					WOODSIDE RD Northbound					WOODSIDE RD Southbound					n/a Southeastbound					15-min Total	Rolling One Hour
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
4:00 PM	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**1**	**0**	**12**	**1**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**3**	**6**	**2**	**38**	0
4:15 PM	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**8**	**0**	**0**	**3**	**2**	**0**	**0**	**0**	**0**	**6**	**7**	**0**	**37**	0
4:30 PM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**9**	**0**	**0**	**2**	**5**	**0**	**0**	**0**	**0**	**3**	**5**	**0**	**30**	0
4:45 PM	**0**	**0**	**0**	**5**	**0**	**0**	**1**	**1**	**0**	**1**	**0**	**0**	**0**	**15**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**2**	**3**	**0**	**31**	**136**
5:00 PM	0	0	2	2	0	0	0	1	0	0	0	0	0	9	0	0	0	3	1	0	0	0	1	4	0	23	121
5:15 PM	0	0	1	2	0	0	0	1	0	2	0	0	0	5	1	0	1	1	0	0	0	0	0	1	0	15	99
5:30 PM	0	0	0	2	0	0	0	2	0	2	0	0	0	6	0	0	0	4	0	0	0	0	0	4	0	20	89
5:45 PM	0	0	0	3	0	0	1	0	0	0	0	0	0	8	0	0	0	1	0	0	0	0	1	0	0	14	72
Count Total	0	0	7	22	0	0	3	8	0	13	0	1	0	72	2	0	7	24	1	0	0	0	16	30	2	208	0
Peak Hour	**0**	**0**	**4**	**13**	**0**	**0**	**2**	**4**	**0**	**9**	**0**	**1**	**0**	**44**	**1**	**0**	**6**	**15**	**0**	**0**	**0**	**0**	**14**	**21**	**2**	136	**0**

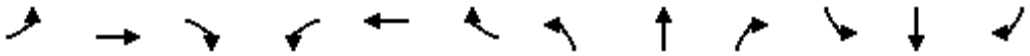
Two-Hour Count Summaries - Bikes

Interval Start	BROADWAY Eastbound					BROADWAY Westbound					WOODSIDE RD Northbound					WOODSIDE RD Southbound					n/a Southeastbound					15-min Total	Rolling One Hour
	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	HL	BL	BR	HR		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	0
4:30 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	0
4:45 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**14**
5:00 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	16
5:15 PM	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4	17
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	11
5:45 PM	0	0	0	1	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	15
Count Total	0	0	0	6	0	0	0	22	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	29	0
Peak Hour	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	14	**0**

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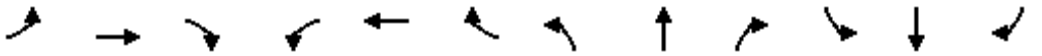
B - Existing Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	277	730	272	76	327	187	229	921	66	191	1087	98
v/c Ratio	0.92	0.75	0.55	0.34	0.55	0.40	0.80	0.77	0.32	0.54	0.82	0.16
Control Delay	85.4	46.2	26.7	59.5	50.1	8.8	61.2	50.6	16.3	52.2	42.7	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.4	46.2	26.7	59.5	50.1	8.8	61.2	50.6	16.3	52.2	42.7	11.9
Queue Length 50th (ft)	221	282	113	30	128	0	193	418	2	143	425	14
Queue Length 95th (ft)	#380	331	190	56	164	64	#302	#513	42	224	#622	58
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	311	985	501	604	821	465	311	1199	369	353	1331	605
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.74	0.54	0.13	0.40	0.40	0.74	0.77	0.18	0.54	0.82	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	269	708	264	74	317	181	222	893	64	185	1054	95
Future Volume (vph)	269	708	264	74	317	181	222	893	64	185	1054	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	277	730	272	76	327	187	229	921	66	191	1087	98
RTOR Reduction (vph)	0	0	76	0	0	150	0	0	62	0	0	44
Lane Group Flow (vph)	277	730	196	76	327	37	229	921	4	191	1087	54
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	Perm
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									2
Actuated Green, G (s)	21.4	34.4	34.4	8.2	21.2	25.0	20.3	42.3	8.2	25.0	47.0	47.0
Effective Green, g (s)	21.4	34.4	34.4	8.2	21.2	25.0	20.3	42.3	8.2	25.0	47.0	47.0
Actuated g/C Ratio	0.17	0.28	0.28	0.07	0.17	0.20	0.16	0.34	0.07	0.20	0.38	0.38
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	303	973	421	225	600	316	287	1197	103	354	1330	560
v/s Ratio Prot	c0.16	c0.21		0.02	0.09	0.02	0.13	c0.26	0.00	0.11	c0.31	
v/s Ratio Perm			0.13									0.04
v/c Ratio	0.91	0.75	0.47	0.34	0.55	0.12	0.80	0.77	0.04	0.54	0.82	0.10
Uniform Delay, d1	50.9	41.4	37.7	55.8	47.5	41.0	50.4	37.0	54.7	44.8	35.1	25.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.84	1.22	6.54	1.00	1.00	1.00
Incremental Delay, d2	30.3	3.3	0.8	0.9	1.0	0.2	13.1	4.4	0.2	1.6	5.7	0.3
Delay (s)	81.2	44.7	38.5	56.7	48.5	41.1	55.5	49.7	358.1	46.4	40.8	25.6
Level of Service	F	D	D	E	D	D	E	D	F	D	D	C
Approach Delay (s)		51.3			47.2			67.5			40.5	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	51.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	76	46	1298	98	70	1547
v/c Ratio	0.50	0.26	0.47	0.08	0.48	0.50
Control Delay	65.1	17.9	3.0	1.9	69.0	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.1	17.9	3.0	1.9	69.0	2.8
Queue Length 50th (ft)	60	0	53	1	59	75
Queue Length 95th (ft)	108	37	92	13	m86	70
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	377	2778	1248	354	3113
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.12	0.47	0.08	0.20	0.50

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	74	45	1259	95	68	1501
Future Volume (vph)	74	45	1259	95	68	1501
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	76	46	1298	98	70	1547
RTOR Reduction (vph)	0	43	0	6	0	0
Lane Group Flow (vph)	76	3	1298	92	70	1547
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	9.4	9.4	96.1	96.1	9.0	108.6
Effective Green, g (s)	9.4	9.4	96.1	96.1	9.0	108.6
Actuated g/C Ratio	0.08	0.08	0.77	0.77	0.07	0.87
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	133	119	2720	1217	127	3074
v/s Ratio Prot	c0.04		0.37		0.04	c0.44
v/s Ratio Perm		0.00		0.06		
v/c Ratio	0.57	0.03	0.48	0.08	0.55	0.50
Uniform Delay, d1	55.9	53.6	5.3	3.5	56.0	1.9
Progression Factor	1.00	1.00	0.39	0.44	1.12	1.04
Incremental Delay, d2	5.8	0.1	0.5	0.1	3.9	0.4
Delay (s)	61.7	53.7	2.6	1.7	66.7	2.4
Level of Service	E	D	A	A	E	A
Approach Delay (s)	58.7		2.5			5.2
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	6.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	47	1307	14	92	1483
Future Vol, veh/h	5	47	1307	14	92	1483
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	48	1334	14	94	1513

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2285	674	0	0	1348	0
Stage 1	1341	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	33	397	-	-	507	-
Stage 1	208	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	27	397	-	-	507	-
Mov Cap-2 Maneuver	27	-	-	-	-	-
Stage 1	208	-	-	-	-	-
Stage 2	276	-	-	-	-	-

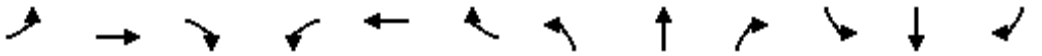
Approach	WB	NB	SB
HCM Control Delay, s	35.3	0	0.8
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	171	507	-
HCM Lane V/C Ratio	-	-	0.31	0.185	-
HCM Control Delay (s)	-	-	35.3	13.7	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	1.2	0.7	-



Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	10	178	156	1177	149	1611
v/c Ratio	0.04	0.70	0.43	0.51	0.67	0.57
Control Delay	0.3	64.9	10.5	13.8	63.4	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	64.9	10.5	13.8	63.4	4.7
Queue Length 50th (ft)	0	139	0	242	123	132
Queue Length 95th (ft)	0	204	57	395	185	175
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	380	384	464	2298	424	2831
Starvation Cap Reductn	0	0	0	0	0	73
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.46	0.34	0.51	0.35	0.58

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	10	162	9	150	0	1126	4	143	1540	7
Future Volume (vph)	0	0	10	162	9	150	0	1126	4	143	1540	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1778	1583		3537		1770	3537	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1778	1583		3537		1770	3537	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	10	169	9	156	0	1173	4	149	1604	7
RTOR Reduction (vph)	0	0	9	0	0	134	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1	0	178	22	0	1177	0	149	1611	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			16.9		17.9	17.9		81.3		15.8	100.1	
Effective Green, g (s)			16.9		17.9	17.9		81.3		15.8	100.1	
Actuated g/C Ratio			0.14		0.14	0.14		0.65		0.13	0.80	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			217		254	226		2300		223	2832	
v/s Ratio Prot								0.33		c0.08	c0.46	
v/s Ratio Perm			0.00		0.10	0.01						
v/c Ratio			0.01		0.70	0.10		0.51		0.67	0.57	
Uniform Delay, d1			46.8		51.0	46.5		11.4		52.1	4.6	
Progression Factor			1.00		1.00	1.00		1.00		0.97	0.75	
Incremental Delay, d2			0.0		8.4	0.2		0.8		6.9	0.8	
Delay (s)			46.8		59.4	46.7		12.3		57.5	4.2	
Level of Service			D		E	D		B		E	A	
Approach Delay (s)		46.8			53.5			12.3			8.7	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	153	6	3	71	5	22	58	37	53	19	23
Future Vol, veh/h	13	153	6	3	71	5	22	58	37	53	19	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	45	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	166	7	3	77	5	24	63	40	58	21	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	83	0	0	173	0	0	307	287	170	335	287	80
Stage 1	-	-	-	-	-	-	198	198	-	86	86	-
Stage 2	-	-	-	-	-	-	109	89	-	249	201	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1514	-	-	1404	-	-	645	623	874	619	623	980
Stage 1	-	-	-	-	-	-	804	737	-	922	824	-
Stage 2	-	-	-	-	-	-	896	821	-	755	735	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1514	-	-	1404	-	-	607	616	874	540	616	980
Mov Cap-2 Maneuver	-	-	-	-	-	-	607	616	-	540	616	-
Stage 1	-	-	-	-	-	-	797	730	-	913	822	-
Stage 2	-	-	-	-	-	-	849	819	-	652	728	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.3	11.5	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	677	1514	-	-	1404	-	-	623
HCM Lane V/C Ratio	0.188	0.009	-	-	0.002	-	-	0.166
HCM Control Delay (s)	11.5	7.4	-	-	7.6	-	-	11.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	10	76	19	0	30	35	20	49	11	8	17	10
Future Vol, veh/h	10	76	19	0	30	35	20	49	11	8	17	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	81	20	0	32	37	21	52	12	9	18	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	69	0	0	101	0	0	177	181	91	195	173	51
Stage 1	-	-	-	-	-	-	112	112	-	51	51	-
Stage 2	-	-	-	-	-	-	65	69	-	144	122	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1532	-	-	1491	-	-	785	713	967	764	720	1017
Stage 1	-	-	-	-	-	-	893	803	-	962	852	-
Stage 2	-	-	-	-	-	-	946	837	-	859	795	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1532	-	-	1491	-	-	757	707	967	708	714	1017
Mov Cap-2 Maneuver	-	-	-	-	-	-	757	707	-	708	714	-
Stage 1	-	-	-	-	-	-	886	797	-	954	852	-
Stage 2	-	-	-	-	-	-	916	837	-	787	789	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0	10.4	9.9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	747	1532	-	-	1491	-	-	779
HCM Lane V/C Ratio	0.114	0.007	-	-	-	-	-	0.048
HCM Control Delay (s)	10.4	7.4	0	-	0	-	-	9.9
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	140	0	0	288	23	6	39	93	0	0	27
Future Vol, veh/h	7	140	0	0	288	23	6	39	93	0	0	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	154	0	0	316	25	7	43	102	0	0	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	342	0	-	-	-	0	327	511	154	-	-	171
Stage 1	-	-	-	-	-	-	169	169	-	-	-	-
Stage 2	-	-	-	-	-	-	158	342	-	-	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	-	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	-	-	3.319
Pot Cap-1 Maneuver	1215	-	0	0	-	-	614	465	891	0	0	844
Stage 1	-	-	0	0	-	-	832	758	-	0	0	-
Stage 2	-	-	0	0	-	-	829	637	-	0	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1215	-	-	-	-	-	589	462	891	-	-	844
Mov Cap-2 Maneuver	-	-	-	-	-	-	589	462	-	-	-	-
Stage 1	-	-	-	-	-	-	826	753	-	-	-	-
Stage 2	-	-	-	-	-	-	800	637	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	11.6	9.4
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	694	1215	-	-	-	844
HCM Lane V/C Ratio	0.219	0.006	-	-	-	0.035
HCM Control Delay (s)	11.6	8	0	-	-	9.4
HCM Lane LOS	B	A	A	-	-	A
HCM 95th %tile Q(veh)	0.8	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	247	211	33	128	71
Future Vol, veh/h	0	247	211	33	128	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	271	232	36	141	78

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	232	232
Stage 1	-	-	0	0
Stage 2	-	-	232	232
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	756	668
Stage 1	-	-	-	-
Stage 2	-	-	807	713
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	756	0
Mov Cap-2 Maneuver	-	-	756	0
Stage 1	-	-	-	0
Stage 2	-	-	807	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	756	-
HCM Lane V/C Ratio	-	-	0.186	-
HCM Control Delay (s)	-	-	10.8	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.7	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	16	13	294	123	29
Future Vol, veh/h	0	16	13	294	123	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	15	334	140	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	156	173	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	890	1404	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	890	1404	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1404	-	890	-	-
HCM Lane V/C Ratio	0.011	-	0.02	-	-
HCM Control Delay (s)	7.6	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	75	63	289	132	7
Future Vol, veh/h	18	75	63	289	132	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	81	68	311	142	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	592	146	149	0	-	0
Stage 1	146	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	469	901	1432	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	645	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	442	901	1432	-	-	-
Mov Cap-2 Maneuver	442	-	-	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	608	-	-	-	-	-

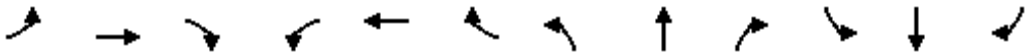
Approach	EB	NB	SB
HCM Control Delay, s	10.5	1.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1432	-	750	-	-
HCM Lane V/C Ratio	0.047	-	0.133	-	-
HCM Control Delay (s)	7.6	0	10.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	11	228	49	204	541	147
v/c Ratio	0.05	0.49	0.17	0.33	0.71	0.19
Control Delay	29.7	24.3	28.4	16.7	19.1	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	24.3	28.4	16.7	19.1	8.8
Queue Length 50th (ft)	4	71	16	45	146	21
Queue Length 95th (ft)	19	150	51	128	301	59
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	773	1009	773	1028	1171	1190
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.23	0.06	0.20	0.46	0.12

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	208	14	48	196	2	54	344	126	3	79	61
Future Volume (vph)	11	208	14	48	196	2	54	344	126	3	79	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.97			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1846		1770	1860			1793			1753	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (perm)	1770	1846		1770	1860			1723			1740	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	11	214	14	49	202	2	56	355	130	3	81	63
RTOR Reduction (vph)	0	3	0	0	1	0	0	11	0	0	27	0
Lane Group Flow (vph)	11	225	0	49	203	0	0	530	0	0	120	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	0.9	14.6		3.7	17.4			23.1			23.1	
Effective Green, g (s)	0.9	14.6		3.7	17.4			23.1			23.1	
Actuated g/C Ratio	0.02	0.26		0.07	0.32			0.42			0.42	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	28	488		118	586			721			728	
v/s Ratio Prot	0.01	c0.12		c0.03	c0.11							
v/s Ratio Perm								c0.31			0.07	
v/c Ratio	0.39	0.46		0.42	0.35			0.74			0.17	
Uniform Delay, d1	26.9	17.0		24.7	14.5			13.5			10.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.3	0.7		0.9	0.4			3.4			0.0	
Delay (s)	30.2	17.7		25.6	14.9			16.8			10.1	
Level of Service	C	B		C	B			B			B	
Approach Delay (s)		18.3			17.0			16.8			10.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	13.8
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	155	164	2	360	143	118	12	7
Future Vol, veh/h	0	0	0	4	155	164	2	360	143	118	12	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	163	173	2	379	151	124	13	7

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	644	644	-	13	0	-	379	0	0
Stage 1	383	383	-	-	-	-	-	-	-
Stage 2	261	261	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	437	391	0	1606	-	0	1179	-	0
Stage 1	689	612	0	-	-	0	-	-	0
Stage 2	783	692	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	390	0	-	1606	-	-	1179	-	-
Mov Cap-2 Maneuver	390	0	-	-	-	-	-	-	-
Stage 1	688	0	-	-	-	-	-	-	-
Stage 2	700	0	-	-	-	-	-	-	-

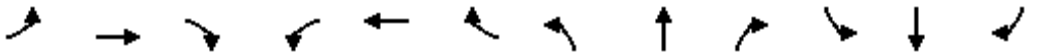
Approach	WB	NB	SB
HCM Control Delay, s	21	0	7.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1606	-	390	-	1179	-
HCM Lane V/C Ratio	0.001	-	0.429	-	0.105	-
HCM Control Delay (s)	7.2	0	21	0	8.4	0
HCM Lane LOS	A	A	C	A	A	A
HCM 95th %tile Q(veh)	0	-	2.1	-	0.4	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	471	320	20	45	318	107	21	144	76
v/c Ratio	0.58	0.65	0.04	0.24	0.63	0.21	0.12	0.33	0.17
Control Delay	32.7	36.2	0.2	45.8	35.9	7.9	46.5	33.2	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.7	36.2	0.2	45.8	35.9	7.9	46.5	33.2	7.1
Queue Length 50th (ft)	103	136	0	21	130	0	10	65	0
Queue Length 95th (ft)	213	300	0	69	316	44	41	151	31
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1719	919	827	389	716	674	389	716	663
Starvation Cap Reductn	0	24	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.36	0.02	0.12	0.44	0.16	0.05	0.20	0.11

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	368	55	12	292	19	43	302	102	20	137	72
Future Volume (vph)	25	368	55	12	292	19	43	302	102	20	137	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3464			1859	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3464			1859	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	387	58	13	307	20	45	318	107	21	144	76
RTOR Reduction (vph)	0	9	0	0	0	15	0	0	79	0	0	58
Lane Group Flow (vph)	0	462	0	0	320	5	45	318	28	21	144	18
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		18.5			21.2	21.2	4.2	21.7	21.7	2.2	19.7	19.7
Effective Green, g (s)		18.5			21.2	21.2	4.2	21.7	21.7	2.2	19.7	19.7
Actuated g/C Ratio		0.23			0.26	0.26	0.05	0.26	0.26	0.03	0.24	0.24
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		780			480	408	90	492	418	47	447	379
v/s Ratio Prot		c0.13			c0.17		c0.03	c0.17		0.01	0.08	
v/s Ratio Perm						0.00			0.02			0.01
v/c Ratio		0.59			0.67	0.01	0.50	0.65	0.07	0.45	0.32	0.05
Uniform Delay, d1		28.4			27.3	22.7	37.9	26.8	22.6	39.4	25.7	24.0
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.2			3.5	0.0	1.6	2.9	0.1	2.5	0.4	0.1
Delay (s)		29.6			30.8	22.7	39.5	29.7	22.7	41.8	26.1	24.0
Level of Service		C			C	C	D	C	C	D	C	C
Approach Delay (s)		29.6			30.3			29.1			26.8	
Approach LOS		C			C			C			C	

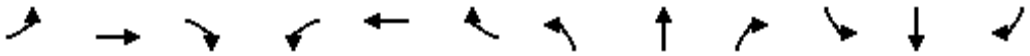
Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	82.1	Sum of lost time (s)	18.5
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	27	317	39	302	108	22	351	77	211
v/c Ratio	0.10	0.54	0.14	0.52	0.19	0.08	0.59	0.25	0.27
Control Delay	16.8	19.9	17.3	19.6	5.2	27.0	20.0	25.4	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	19.9	17.3	19.6	5.2	27.0	20.0	25.4	11.0
Queue Length 50th (ft)	6	79	9	76	0	6	86	21	29
Queue Length 95th (ft)	25	186	34	178	31	29	201	68	111
Internal Link Dist (ft)		965		760			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	724	1485	689	1498	1294	648	1050	648	1162
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.21	0.06	0.20	0.08	0.03	0.33	0.12	0.18

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	292	19	38	296	106	22	260	84	75	195	12
Future Volume (vph)	26	292	19	38	296	106	22	260	84	75	195	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1846		1770	1863	1583	1770	1794		1770	1847	
Flt Permitted	0.48	1.00		0.46	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	900	1846		857	1863	1583	1770	1794		1770	1847	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	27	298	19	39	302	108	22	265	86	77	199	12
RTOR Reduction (vph)	0	3	0	0	0	76	0	11	0	0	2	0
Lane Group Flow (vph)	27	314	0	39	302	32	22	340	0	77	209	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	15.1	15.1		15.1	15.1	15.1	1.0	17.3		4.2	20.5	
Effective Green, g (s)	15.1	15.1		15.1	15.1	15.1	1.0	17.3		4.2	20.5	
Actuated g/C Ratio	0.30	0.30		0.30	0.30	0.30	0.02	0.34		0.08	0.41	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	269	551		256	557	473	35	614		147	749	
v/s Ratio Prot		c0.17			0.16		0.01	c0.19		c0.04	c0.11	
v/s Ratio Perm	0.03			0.05		0.02						
v/c Ratio	0.10	0.57		0.15	0.54	0.07	0.63	0.55		0.52	0.28	
Uniform Delay, d1	12.8	15.0		13.0	14.8	12.7	24.6	13.5		22.2	10.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.2		0.2	0.9	0.0	26.7	0.9		2.6	0.1	
Delay (s)	12.9	16.1		13.2	15.7	12.7	51.3	14.3		24.7	10.2	
Level of Service	B	B		B	B	B	D	B		C	B	
Approach Delay (s)		15.9			14.7			16.5			14.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	13.9
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

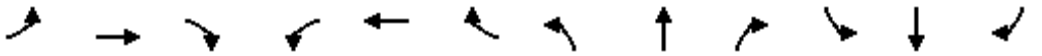


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	169	450	361	717	110	1700	466	245	1470
v/c Ratio	1.08	1.35	1.50	1.40	0.79	0.89	0.46	0.81	0.76
Control Delay	151.8	219.7	287.0	231.8	96.6	34.0	5.7	81.4	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	151.8	219.7	287.0	231.8	96.6	34.0	5.7	81.4	26.3
Queue Length 50th (ft)	~186	~284	~492	~456	97	665	47	111	502
Queue Length 95th (ft)	#352	#403	#710	#591	#198	782	117	#178	595
Internal Link Dist (ft)		760		309		888			1305
Turn Bay Length (ft)	245		405		225		265	225	
Base Capacity (vph)	156	333	240	511	145	1981	1041	307	1989
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.08	1.35	1.50	1.40	0.76	0.86	0.45	0.80	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



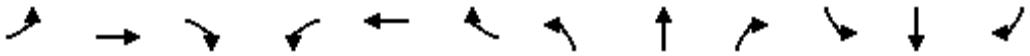
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	324	81	485	318	211	103	1598	438	230	1285	97
Future Volume (vph)	177	324	81	485	318	211	103	1598	438	230	1285	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		4.2	4.2		3.2	5.5	5.5	3.2	5.5	
Lane Util. Factor	0.91	0.91		0.91	0.91		1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1610	3286		1610	3197		1770	3539	1583	3433	3502	
Flt Permitted	0.95	1.00		0.95	0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1610	3286		1610	3197		1770	3539	1583	3433	3502	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	188	345	86	516	338	224	110	1700	466	245	1367	103
RTOR Reduction (vph)	0	14	0	0	35	0	0	0	162	0	4	0
Lane Group Flow (vph)	169	436	0	361	682	0	110	1700	304	245	1466	0
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	8	8		4	4		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	13.0	13.0		20.0	20.0		10.6	72.7	72.7	11.8	73.9	
Effective Green, g (s)	13.0	13.0		20.0	20.0		10.6	72.7	72.7	11.8	73.9	
Actuated g/C Ratio	0.10	0.10		0.15	0.15		0.08	0.54	0.54	0.09	0.55	
Clearance Time (s)	3.7	3.7		4.2	4.2		3.2	5.5	5.5	3.2	5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	156	318		240	476		139	1918	858	302	1929	
v/s Ratio Prot	0.10	c0.13		c0.22	0.21		0.06	c0.48		c0.07	0.42	
v/s Ratio Perm									0.19			
v/c Ratio	1.08	1.37		1.50	1.43		0.79	0.89	0.35	0.81	0.76	
Uniform Delay, d1	60.5	60.5		57.0	57.0		60.7	27.1	17.4	60.1	23.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	96.1	185.2		247.4	206.7		25.7	5.4	0.3	15.1	1.8	
Delay (s)	156.6	245.7		304.4	263.7		86.3	32.4	17.7	75.2	25.0	
Level of Service	F	F		F	F		F	C	B	E	C	
Approach Delay (s)		221.4			277.3			32.0			32.2	
Approach LOS		F			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	99.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	134.1	Sum of lost time (s)	16.6
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	190	590	49	1592	181	1419
v/c Ratio	0.22	0.86	0.44	0.72	0.50	0.68
Control Delay	38.1	61.3	78.9	37.8	58.7	25.5
Queue Delay	0.0	0.0	0.0	0.5	0.0	2.4
Total Delay	38.1	61.3	78.9	38.3	58.7	27.8
Queue Length 50th (ft)	69	274	47	474	156	498
Queue Length 95th (ft)	95	324	91	566	245	710
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	1060	848	304	2202	361	2079
Starvation Cap Reductn	0	0	0	231	0	504
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.70	0.16	0.81	0.50	0.90

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	144	31	239	186	153	48	1451	109	177	1323	68
Future Volume (vph)	11	144	31	239	186	153	48	1451	109	177	1323	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.97			0.96		1.00	0.99		1.00	0.99	
Flt Protected		1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3440			3330		1770	5032		1770	3513	
Flt Permitted		0.91			0.73		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3146			2476		1770	5032		1770	3513	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	11	147	32	244	190	156	49	1481	111	181	1350	69
RTOR Reduction (vph)	0	12	0	0	26	0	0	5	0	0	2	0
Lane Group Flow (vph)	0	178	0	0	564	0	49	1587	0	181	1417	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		40.2			40.2		8.3	64.6		31.5	87.8	
Effective Green, g (s)		40.2			40.2		8.3	64.6		31.5	87.8	
Actuated g/C Ratio		0.27			0.27		0.06	0.43		0.21	0.59	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		843			663		97	2167		371	2056	
v/s Ratio Prot							0.03	c0.32		0.10	c0.40	
v/s Ratio Perm		0.06			c0.23							
v/c Ratio		0.21			0.85		0.51	0.73		0.49	0.69	
Uniform Delay, d1		42.6			52.0		68.9	35.5		52.2	21.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			10.2		4.1	2.2		1.0	1.9	
Delay (s)		42.7			62.2		72.9	37.7		53.2	23.5	
Level of Service		D			E		E	D		D	C	
Approach Delay (s)		42.7			62.2			38.8			26.9	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

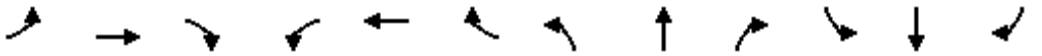


Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	146	304	105	220	602	24	1659	196	1041	624	288
v/c Ratio	0.69	0.69	0.77	0.77	0.92	0.28	1.04	0.86	0.70	0.93	0.78
Control Delay	82.8	74.1	104.4	89.6	44.1	82.8	84.4	100.0	42.9	83.9	54.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	17.2	0.0	0.0	0.0	0.0
Total Delay	82.8	74.1	104.4	89.6	44.1	82.8	101.6	100.0	42.9	83.9	54.6
Queue Length 50th (ft)	162	168	119	125	283	25	~680	202	486	333	212
Queue Length 95th (ft)	249	224	#245	#200	#561	60	#849	#370	640	#489	#390
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	375	773	142	296	656	156	1601	234	1477	668	370
Starvation Cap Reductn	0	0	0	0	0	0	65	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.39	0.74	0.74	0.92	0.15	1.08	0.84	0.70	0.93	0.78

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	247	172	13	149	163	578	23	1573	19	188	937	62
Future Volume (vph)	247	172	13	149	163	578	23	1573	19	188	937	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3306		1610	3352	1583	1770	5076		1770	3506	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3306		1610	3352	1583	1770	5076		1770	3506	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	257	179	14	155	170	602	24	1639	20	196	976	65
RTOR Reduction (vph)	0	2	0	0	0	285	0	1	0	0	0	0
Lane Group Flow (vph)	146	302	0	105	220	317	24	1658	0	196	1041	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	20.9	20.9		13.6	13.6	34.1	5.2	51.6		20.5	66.9	
Effective Green, g (s)	20.9	20.9		13.6	13.6	34.1	5.2	51.6		20.5	66.9	
Actuated g/C Ratio	0.13	0.13		0.08	0.08	0.21	0.03	0.32		0.13	0.42	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	209	431		136	284	336	57	1633		226	1463	
v/s Ratio Prot	0.09	c0.09		0.07	0.07	c0.12	0.01	c0.33		0.11	0.30	
v/s Ratio Perm						0.08						
v/c Ratio	0.70	0.70		0.77	0.77	0.94	0.42	1.02		0.87	0.71	
Uniform Delay, d1	66.7	66.7		71.8	71.8	62.2	76.1	54.4		68.6	38.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.8	5.1		23.3	12.4	34.4	5.0	26.2		27.6	1.7	
Delay (s)	76.4	71.8		95.1	84.2	96.5	81.0	80.6		96.2	40.4	
Level of Service	E	E		F	F	F	F	F		F	D	
Approach Delay (s)		73.3			93.5			80.6			49.2	
Approach LOS		E			F			F			D	

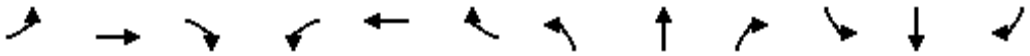
Intersection Summary			
HCM 2000 Control Delay	74.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	160.3	Sum of lost time (s)	21.6
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	383	469	23
Future Volume (vph)	383	469	23
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.95	0.85	
Flt Protected	0.97	1.00	
Satd. Flow (prot)	3312	1441	
Flt Permitted	0.97	1.00	
Satd. Flow (perm)	3312	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	399	489	24
RTOR Reduction (vph)	0	80	0
Lane Group Flow (vph)	624	208	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.1	32.1	
Effective Green, g (s)	32.1	32.1	
Actuated g/C Ratio	0.20	0.20	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	663	288	
v/s Ratio Prot	c0.19		
v/s Ratio Perm		0.14	
v/c Ratio	0.94	0.72	
Uniform Delay, d1	63.2	59.9	
Progression Factor	1.00	1.00	
Incremental Delay, d2	21.6	8.6	
Delay (s)	84.8	68.6	
Level of Service	F	E	
Approach Delay (s)	79.7		
Approach LOS	E		

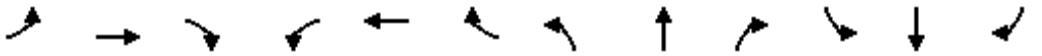
Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	221	339	141	195	674	189	233	1114	93	206	1010	206
v/c Ratio	0.89	0.36	0.29	0.58	0.86	0.48	0.89	0.85	0.37	0.80	0.78	0.32
Control Delay	88.8	39.0	13.4	60.7	58.3	10.9	69.7	37.9	23.2	74.3	40.3	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.8	39.0	13.4	60.7	58.3	10.9	69.7	37.9	23.2	74.3	40.3	13.0
Queue Length 50th (ft)	179	116	22	78	273	0	186	507	20	160	382	44
Queue Length 95th (ft)	#331	166	78	115	347	66	#325	#501	78	#266	468	106
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	248	935	481	411	821	412	271	1315	286	283	1319	637
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.36	0.29	0.47	0.82	0.46	0.86	0.85	0.33	0.73	0.77	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	329	137	189	654	183	226	1081	90	200	980	200
Future Volume (vph)	214	329	137	189	654	183	226	1081	90	200	980	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	221	339	141	195	674	189	233	1114	93	206	1010	206
RTOR Reduction (vph)	0	0	77	0	0	161	0	0	84	0	0	80
Lane Group Flow (vph)	221	339	64	195	674	28	233	1114	9	206	1010	126
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	custom
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									6
Actuated Green, G (s)	17.5	33.1	33.1	12.2	27.8	18.2	18.6	46.4	12.2	18.2	46.0	46.4
Effective Green, g (s)	17.5	33.1	33.1	12.2	27.8	18.2	18.6	46.4	12.2	18.2	46.0	46.4
Actuated g/C Ratio	0.14	0.26	0.26	0.10	0.22	0.15	0.15	0.37	0.10	0.15	0.37	0.37
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	247	937	405	335	787	230	263	1313	154	257	1302	556
v/s Ratio Prot	c0.12	0.10		0.06	c0.19	0.02	0.13	c0.31	0.01	0.12	c0.29	
v/s Ratio Perm			0.04									0.08
v/c Ratio	0.89	0.36	0.16	0.58	0.86	0.12	0.89	0.85	0.06	0.80	0.78	0.23
Uniform Delay, d1	52.8	37.4	35.3	54.0	46.7	46.4	52.2	36.1	51.2	51.7	34.9	27.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.86	3.13	1.00	1.00	1.00
Incremental Delay, d2	30.9	0.2	0.2	2.6	9.1	0.2	24.3	5.9	0.1	16.3	4.6	0.9
Delay (s)	83.7	37.6	35.4	56.5	55.8	46.7	64.3	36.8	160.2	67.9	39.5	27.9
Level of Service	F	D	D	E	E	D	E	D	F	E	D	C
Approach Delay (s)		51.7			54.3			49.2			42.0	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	48.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	195	61	1432	98	71	1425
v/c Ratio	0.73	0.21	0.58	0.09	0.49	0.51
Control Delay	65.6	15.5	6.4	3.9	78.9	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.6	15.5	6.4	3.9	78.9	2.2
Queue Length 50th (ft)	152	6	133	9	61	22
Queue Length 95th (ft)	221	43	108	m4	m69	24
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	383	2466	1110	283	2803
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.16	0.58	0.09	0.25	0.51

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	189	59	1389	95	69	1382
Future Volume (vph)	189	59	1389	95	69	1382
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	195	61	1432	98	71	1425
RTOR Reduction (vph)	0	45	0	7	0	0
Lane Group Flow (vph)	195	16	1432	91	71	1425
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	19.0	19.0	86.4	86.4	9.1	99.0
Effective Green, g (s)	19.0	19.0	86.4	86.4	9.1	99.0
Actuated g/C Ratio	0.15	0.15	0.69	0.69	0.07	0.79
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	269	240	2446	1094	128	2802
v/s Ratio Prot	c0.11		c0.40		0.04	c0.40
v/s Ratio Perm		0.01		0.06		
v/c Ratio	0.72	0.07	0.59	0.08	0.55	0.51
Uniform Delay, d1	50.5	45.4	10.0	6.3	56.0	4.5
Progression Factor	1.00	1.00	0.48	0.58	1.30	0.34
Incremental Delay, d2	9.3	0.1	0.8	0.1	4.1	0.5
Delay (s)	59.8	45.5	5.6	3.8	76.7	2.1
Level of Service	E	D	A	A	E	A
Approach Delay (s)	56.4		5.5			5.6
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	44	1440	22	36	1535
Future Vol, veh/h	3	44	1440	22	36	1535
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	45	1469	22	37	1566

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2338	746	0	0	1492	0
Stage 1	1481	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	31	356	-	-	446	-
Stage 1	175	-	-	-	-	-
Stage 2	376	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	28	356	-	-	446	-
Mov Cap-2 Maneuver	28	-	-	-	-	-
Stage 1	175	-	-	-	-	-
Stage 2	345	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28	0	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	204	446	-
HCM Lane V/C Ratio	-	-	0.235	0.082	-
HCM Control Delay (s)	-	-	28	13.8	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	0.9	0.3	-



Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	33	300	181	1517	128	1518
v/c Ratio	0.09	0.83	0.39	0.71	0.63	0.58
Control Delay	1.2	67.5	8.2	21.0	76.9	4.0
Queue Delay	0.0	0.7	0.0	0.0	0.0	0.0
Total Delay	1.2	68.2	8.2	21.0	76.9	4.1
Queue Length 50th (ft)	0	230	0	444	105	110
Queue Length 95th (ft)	4	#363	60	589	170	67
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	399	394	491	2133	283	2640
Starvation Cap Reductn	0	12	0	0	0	61
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.79	0.37	0.71	0.45	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	32	279	9	174	0	1455	1	123	1436	21
Future Volume (vph)	0	0	32	279	9	174	0	1455	1	123	1436	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1777	1583		3539		1770	3532	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1777	1583		3539		1770	3532	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	33	291	9	181	0	1516	1	128	1496	22
RTOR Reduction (vph)	0	0	27	0	0	144	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	6	0	300	37	0	1517	0	128	1517	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			24.3		25.3	25.3		75.4		14.3	92.7	
Effective Green, g (s)			24.3		25.3	25.3		75.4		14.3	92.7	
Actuated g/C Ratio			0.19		0.20	0.20		0.60		0.11	0.74	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			313		359	320		2134		202	2619	
v/s Ratio Prot								c0.43		c0.07	0.43	
v/s Ratio Perm			0.00		0.17	0.02						
v/c Ratio			0.02		0.84	0.11		0.71		0.63	0.58	
Uniform Delay, d1			40.7		47.9	40.7		17.2		52.8	7.3	
Progression Factor			1.00		1.00	1.00		1.00		1.23	0.41	
Incremental Delay, d2			0.0		15.4	0.2		2.0		5.7	0.8	
Delay (s)			40.8		63.2	40.9		19.3		70.8	3.8	
Level of Service			D		E	D		B		E	A	
Approach Delay (s)		40.8			54.8			19.3			9.0	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	117	19	2	197	33	39	112	45	21	33	24
Future Vol, veh/h	22	117	19	2	197	33	39	112	45	21	33	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	45	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	127	21	2	214	36	42	122	49	23	36	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	250	0	0	148	0	0	452	439	138	507	432	232
Stage 1	-	-	-	-	-	-	185	185	-	236	236	-
Stage 2	-	-	-	-	-	-	267	254	-	271	196	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1316	-	-	1434	-	-	518	512	910	476	516	807
Stage 1	-	-	-	-	-	-	817	747	-	767	710	-
Stage 2	-	-	-	-	-	-	738	697	-	735	739	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1316	-	-	1434	-	-	467	502	910	361	506	807
Mov Cap-2 Maneuver	-	-	-	-	-	-	467	502	-	361	506	-
Stage 1	-	-	-	-	-	-	802	733	-	753	709	-
Stage 2	-	-	-	-	-	-	677	696	-	569	726	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.1	15.6	13.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	550	1316	-	-	1434	-	-	509
HCM Lane V/C Ratio	0.387	0.018	-	-	0.002	-	-	0.167
HCM Control Delay (s)	15.6	7.8	-	-	7.5	-	-	13.5
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	11	39	6	7	36	41	12	82	11	24	31	15
Future Vol, veh/h	11	39	6	7	36	41	12	82	11	24	31	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	41	6	7	38	44	13	87	12	26	33	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	82	0	0	48	0	0	167	165	45	193	146	60
Stage 1	-	-	-	-	-	-	68	68	-	75	75	-
Stage 2	-	-	-	-	-	-	99	97	-	118	71	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1515	-	-	1559	-	-	797	728	1025	767	745	1005
Stage 1	-	-	-	-	-	-	942	838	-	934	833	-
Stage 2	-	-	-	-	-	-	907	815	-	887	836	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1515	-	-	1559	-	-	750	719	1025	681	735	1005
Mov Cap-2 Maneuver	-	-	-	-	-	-	750	719	-	681	735	-
Stage 1	-	-	-	-	-	-	934	831	-	927	829	-
Stage 2	-	-	-	-	-	-	853	811	-	779	829	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.6	10.7	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	746	1515	-	-	1559	-	-	758
HCM Lane V/C Ratio	0.15	0.008	-	-	0.005	-	-	0.098
HCM Control Delay (s)	10.7	7.4	0	-	7.3	0	-	10.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	115	0	0	408	25	10	65	76	0	0	44
Future Vol, veh/h	9	115	0	0	408	25	10	65	76	0	0	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	126	0	0	448	27	11	71	84	0	0	48

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	476	0	-	-	-	0	370	622	126	-	-	238
Stage 1	-	-	-	-	-	-	146	146	-	-	-	-
Stage 2	-	-	-	-	-	-	224	476	-	-	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	-	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	-	-	3.319
Pot Cap-1 Maneuver	1084	-	0	0	-	-	574	402	924	0	0	764
Stage 1	-	-	0	0	-	-	856	776	-	0	0	-
Stage 2	-	-	0	0	-	-	759	556	-	0	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1084	-	-	-	-	-	534	398	924	-	-	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	534	398	-	-	-	-
Stage 1	-	-	-	-	-	-	847	768	-	-	-	-
Stage 2	-	-	-	-	-	-	711	556	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	13.9	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	571	1084	-	-	-	764
HCM Lane V/C Ratio	0.291	0.009	-	-	-	0.063
HCM Control Delay (s)	13.9	8.4	0	-	-	10
HCM Lane LOS	B	A	A	-	-	B
HCM 95th %tile Q(veh)	1.2	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	288	153	25	168	192
Future Vol, veh/h	0	288	153	25	168	192
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	316	168	27	185	211

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	168	168
Stage 1	-	-	0	0
Stage 2	-	-	168	168
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	822	725
Stage 1	-	-	-	-
Stage 2	-	-	862	759
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	822	0
Mov Cap-2 Maneuver	-	-	822	0
Stage 1	-	-	-	0
Stage 2	-	-	862	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	822	-
HCM Lane V/C Ratio	-	-	0.225	-
HCM Control Delay (s)	-	-	10.6	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.9	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	9	343	284	47
Future Vol, veh/h	0	20	9	343	284	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	10	390	323	53

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	349	376	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	694	1182	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	694	1182	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1182	-	694	-	-
HCM Lane V/C Ratio	0.009	-	0.033	-	-
HCM Control Delay (s)	8.1	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	43	68	338	288	16
Future Vol, veh/h	14	43	68	338	288	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	46	73	363	310	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	828	318	327	0	-	0
Stage 1	318	-	-	-	-	-
Stage 2	510	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	341	723	1233	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	603	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	316	723	1233	-	-	-
Mov Cap-2 Maneuver	316	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	558	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	1.4	0
HCM LOS	B		

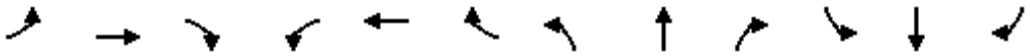
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1233	-	549	-	-
HCM Lane V/C Ratio	0.059	-	0.112	-	-
HCM Control Delay (s)	8.1	0	12.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	18	180	116	297	600	308
v/c Ratio	0.10	0.51	0.47	0.49	0.72	0.35
Control Delay	31.9	29.8	34.2	20.7	21.2	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	29.8	34.2	20.7	21.2	12.5
Queue Length 50th (ft)	7	65	44	86	175	66
Queue Length 95th (ft)	27	128	96	187	#426	152
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	566	736	566	762	867	911
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.24	0.20	0.39	0.69	0.34

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	156	18	113	285	3	65	377	140	10	206	83
Future Volume (vph)	17	156	18	113	285	3	65	377	140	10	206	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1833		1770	1860			1792			1790	
Flt Permitted	0.95	1.00		0.95	1.00			0.93			0.98	
Satd. Flow (perm)	1770	1833		1770	1860			1675			1758	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	161	19	116	294	3	67	389	144	10	212	86
RTOR Reduction (vph)	0	5	0	0	1	0	0	10	0	0	13	0
Lane Group Flow (vph)	18	175	0	116	296	0	0	590	0	0	295	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	14.9		7.3	21.1			31.8			31.8	
Effective Green, g (s)	1.1	14.9		7.3	21.1			31.8			31.8	
Actuated g/C Ratio	0.02	0.22		0.11	0.31			0.47			0.47	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	28	402		190	578			785			824	
v/s Ratio Prot	0.01	0.10		c0.07	c0.16							
v/s Ratio Perm								c0.35			0.17	
v/c Ratio	0.64	0.44		0.61	0.51			0.75			0.36	
Uniform Delay, d1	33.2	22.8		28.9	19.1			14.8			11.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	32.0	0.8		4.0	0.8			3.6			0.1	
Delay (s)	65.2	23.6		32.9	19.9			18.4			11.6	
Level of Service	E	C		C	B			B			B	
Approach Delay (s)		27.4			23.6			18.4			11.6	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	67.8	Sum of lost time (s)	13.8
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	14.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	15	132	166	8	372	240	264	29	15
Future Vol, veh/h	0	0	0	15	132	166	8	372	240	264	29	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	139	175	8	392	253	278	31	16

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	994	994	-	31	0	-	392	0	0
Stage 1	408	408	-	-	-	-	-	-	-
Stage 2	586	586	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	272	245	0	1582	-	0	1167	-	0
Stage 1	671	597	0	-	-	0	-	-	0
Stage 2	556	497	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	205	0	-	1582	-	-	1167	-	-
Mov Cap-2 Maneuver	205	0	-	-	-	-	-	-	-
Stage 1	667	0	-	-	-	-	-	-	-
Stage 2	421	0	-	-	-	-	-	-	-

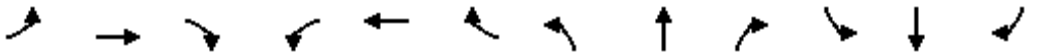
Approach	WB	NB	SB
HCM Control Delay, s	62.3	0.2	8.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1582	-	205	-	1167	-
HCM Lane V/C Ratio	0.005	-	0.755	-	0.238	-
HCM Control Delay (s)	7.3	0	62.3	0	9	0
HCM Lane LOS	A	A	F	A	A	A
HCM 95th %tile Q(veh)	0	-	5.1	-	0.9	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	500	293	18	142	299	61	31	285	119
v/c Ratio	0.66	0.70	0.04	0.61	0.49	0.10	0.21	0.71	0.29
Control Delay	39.2	45.4	0.2	55.8	32.8	3.4	52.9	47.4	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	45.4	0.2	55.8	32.8	3.4	52.9	47.4	15.0
Queue Length 50th (ft)	139	161	0	81	152	0	18	157	15
Queue Length 95th (ft)	245	307	0	183	307	18	58	316	73
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1397	748	692	317	645	605	317	585	557
Starvation Cap Reductn	0	23	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.40	0.03	0.45	0.46	0.10	0.10	0.49	0.21

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	344	74	30	248	17	135	284	58	29	271	113
Future Volume (vph)	57	344	74	30	248	17	135	284	58	29	271	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3436			1853	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		0.99			0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3436			1853	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	60	362	78	32	261	18	142	299	61	31	285	119
RTOR Reduction (vph)	0	12	0	0	0	14	0	0	41	0	0	67
Lane Group Flow (vph)	0	488	0	0	293	4	142	299	20	31	285	52
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		20.6			21.4	21.4	12.4	31.3	31.3	4.1	23.0	23.0
Effective Green, g (s)		20.6			21.4	21.4	12.4	31.3	31.3	4.1	23.0	23.0
Actuated g/C Ratio		0.21			0.22	0.22	0.13	0.33	0.33	0.04	0.24	0.24
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		738			413	353	228	608	516	75	446	379
v/s Ratio Prot		c0.14			c0.16		c0.08	0.16		0.02	c0.15	
v/s Ratio Perm						0.00			0.01			0.03
v/c Ratio		0.66			0.71	0.01	0.62	0.49	0.04	0.41	0.64	0.14
Uniform Delay, d1		34.5			34.4	29.0	39.5	25.9	22.0	44.7	32.7	28.7
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.2			5.5	0.0	3.8	0.6	0.0	1.3	3.0	0.2
Delay (s)		36.7			39.9	29.0	43.3	26.5	22.1	46.1	35.7	28.8
Level of Service		D			D	C	D	C	C	D	D	C
Approach Delay (s)		36.7			39.3			30.7			34.6	
Approach LOS		D			D			C			C	

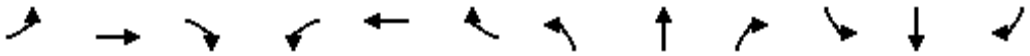
Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	95.9	Sum of lost time (s)	18.5
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	9	387	71	310	105	48	352	138	421
v/c Ratio	0.03	0.67	0.36	0.54	0.19	0.20	0.62	0.43	0.57
Control Delay	17.7	25.7	24.9	22.6	5.4	29.9	24.3	29.3	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	25.7	24.9	22.6	5.4	29.9	24.3	29.3	19.6
Queue Length 50th (ft)	2	117	20	91	0	16	103	45	124
Queue Length 95th (ft)	13	249	64	197	32	53	230	112	258
Internal Link Dist (ft)		965		760			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	595	1308	448	1327	1157	508	828	508	895
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.30	0.16	0.23	0.09	0.09	0.43	0.27	0.47

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	338	41	70	304	103	47	261	84	135	390	23
Future Volume (vph)	9	338	41	70	304	103	47	261	84	135	390	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1832		1770	1863	1583	1770	1794		1770	1847	
Flt Permitted	0.45	1.00		0.34	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	836	1832		629	1863	1583	1770	1794		1770	1847	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	9	345	42	71	310	105	48	266	86	138	398	23
RTOR Reduction (vph)	0	6	0	0	0	73	0	12	0	0	2	0
Lane Group Flow (vph)	9	381	0	71	310	32	48	340	0	138	419	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	17.9	17.9		17.9	17.9	17.9	4.3	19.0		8.2	22.9	
Effective Green, g (s)	17.9	17.9		17.9	17.9	17.9	4.3	19.0		8.2	22.9	
Actuated g/C Ratio	0.30	0.30		0.30	0.30	0.30	0.07	0.32		0.14	0.39	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	253	555		190	565	480	129	577		246	716	
v/s Ratio Prot		c0.21			0.17		0.03	0.19		c0.08	c0.23	
v/s Ratio Perm	0.01			0.11		0.02						
v/c Ratio	0.04	0.69		0.37	0.55	0.07	0.37	0.59		0.56	0.59	
Uniform Delay, d1	14.5	18.1		16.1	17.2	14.6	26.1	16.7		23.7	14.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	3.5		1.2	1.1	0.1	1.8	1.6		2.9	1.2	
Delay (s)	14.5	21.6		17.4	18.3	14.7	27.9	18.4		26.6	15.5	
Level of Service	B	C		B	B	B	C	B		C	B	
Approach Delay (s)		21.5			17.4			19.5			18.3	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	13.9
Intersection Capacity Utilization	67.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

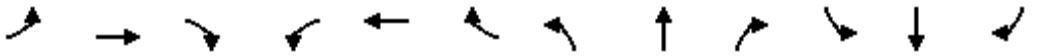


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	160	517	410	817	128	1089	611	247	1736
v/c Ratio	0.92	1.39	1.54	1.45	0.82	0.63	0.59	0.75	0.99
Control Delay	104.3	231.6	294.9	246.6	89.5	24.6	6.2	67.3	48.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.3	231.6	294.9	246.6	89.5	24.6	6.2	67.3	48.9
Queue Length 50th (ft)	137	~290	~492	~465	99	319	43	97	682
Queue Length 95th (ft)	#285	#409	#710	#601	#205	391	139	#148	#872
Internal Link Dist (ft)		760		309		888			1305
Turn Bay Length (ft)	245		405		225		265	225	
Base Capacity (vph)	173	371	267	564	161	1738	1035	342	1758
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	1.39	1.54	1.45	0.80	0.63	0.59	0.72	0.99

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	374	95	551	389	213	120	1024	574	232	1576	55
Future Volume (vph)	167	374	95	551	389	213	120	1024	574	232	1576	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		4.2	4.2		3.2	5.5	5.5	3.2	5.5	
Lane Util. Factor	0.91	0.91		0.91	0.91		1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1610	3285		1610	3214		1770	3539	1583	3433	3521	
Flt Permitted	0.95	1.00		0.95	0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1610	3285		1610	3214		1770	3539	1583	3433	3521	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	178	398	101	586	414	227	128	1089	611	247	1677	59
RTOR Reduction (vph)	0	16	0	0	31	0	0	0	258	0	2	0
Lane Group Flow (vph)	160	501	0	410	786	0	128	1089	353	247	1734	0
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	8	8		4	4		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	13.0	13.0		20.0	20.0		10.7	59.1	59.1	11.6	60.0	
Effective Green, g (s)	13.0	13.0		20.0	20.0		10.7	59.1	59.1	11.6	60.0	
Actuated g/C Ratio	0.11	0.11		0.17	0.17		0.09	0.49	0.49	0.10	0.50	
Clearance Time (s)	3.7	3.7		4.2	4.2		3.2	5.5	5.5	3.2	5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	173	354		267	534		157	1738	777	331	1756	
v/s Ratio Prot	0.10	c0.15		c0.25	0.24		c0.07	0.31		0.07	c0.49	
v/s Ratio Perm									0.22			
v/c Ratio	0.92	1.42		1.54	1.47		0.82	0.63	0.45	0.75	0.99	
Uniform Delay, d1	53.2	53.6		50.1	50.1		53.8	22.5	20.0	52.9	29.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	46.8	202.8		259.0	222.5		26.7	0.7	0.4	8.8	18.4	
Delay (s)	100.0	256.4		309.1	272.7		80.5	23.2	20.5	61.8	48.1	
Level of Service	F	F		F	F		F	C	C	E	D	
Approach Delay (s)		219.4			284.9			26.3			49.8	
Approach LOS		F			F			C			D	

Intersection Summary			
HCM 2000 Control Delay	112.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.3	Sum of lost time (s)	16.6
Intersection Capacity Utilization	101.2%	ICU Level of Service	G
Analysis Period (min)	15		

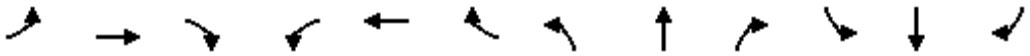
c Critical Lane Group



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	241	528	64	1255	194	1701
v/c Ratio	0.32	0.86	0.50	0.67	0.37	0.79
Control Delay	43.8	61.4	79.9	40.7	46.4	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	12.7
Total Delay	43.8	61.4	79.9	40.7	46.4	40.3
Queue Length 50th (ft)	96	234	61	371	150	654
Queue Length 95th (ft)	126	284	110	418	249	#1001
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	1044	833	304	1938	522	2161
Starvation Cap Reductn	0	0	0	0	0	471
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.63	0.21	0.65	0.37	1.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	186	36	182	163	172	63	1095	135	190	1647	20
Future Volume (vph)	14	186	36	182	163	172	63	1095	135	190	1647	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.98			0.95		1.00	0.98		1.00	1.00	
Flt Protected		1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3448			3304		1770	5001		1770	3533	
Flt Permitted		0.90			0.71		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3103			2376		1770	5001		1770	3533	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	14	190	37	186	166	176	64	1117	138	194	1681	20
RTOR Reduction (vph)	0	11	0	0	47	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	230	0	0	481	0	64	1244	0	194	1701	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		36.0			36.0		9.5	55.0		45.3	90.8	
Effective Green, g (s)		36.0			36.0		9.5	55.0		45.3	90.8	
Actuated g/C Ratio		0.24			0.24		0.06	0.37		0.30	0.61	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		744			570		112	1833		534	2138	
v/s Ratio Prot							0.04	c0.25		0.11	c0.48	
v/s Ratio Perm		0.07			c0.20							
v/c Ratio		0.31			0.84		0.57	0.68		0.36	0.80	
Uniform Delay, d1		46.8			54.3		68.3	40.1		41.0	22.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			11.0		6.9	2.0		0.4	3.2	
Delay (s)		47.0			65.3		75.1	42.1		41.5	25.7	
Level of Service		D			E		E	D		D	C	
Approach Delay (s)		47.0			65.3			43.7			27.3	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

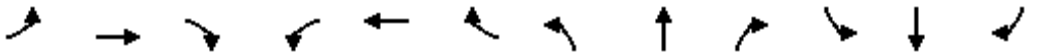


Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	210	436	120	250	493	42	1292	140	1136	756	357
v/c Ratio	0.74	0.74	0.85	0.85	0.81	0.41	0.87	0.74	0.91	1.15	0.97
Control Delay	79.8	71.2	116.2	97.5	30.6	88.5	61.8	94.9	61.5	139.3	84.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	79.8	71.2	116.2	97.5	30.6	88.5	62.3	94.9	61.5	139.3	84.5
Queue Length 50th (ft)	239	247	142	148	173	44	476	148	608	~501	323
Queue Length 95th (ft)	351	320	#308	#258	350	92	589	239	#840	#696	#616
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	374	775	141	295	639	155	1592	233	1283	657	369
Starvation Cap Reductn	0	0	0	0	0	0	69	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.56	0.85	0.85	0.77	0.27	0.85	0.60	0.89	1.15	0.97

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	320	291	10	158	197	473	40	1207	34	134	1045	45
Future Volume (vph)	320	291	10	158	197	473	40	1207	34	134	1045	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	0.99		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3332		1610	3360	1583	1770	5065		1770	3517	
Flt Permitted	0.95	0.99		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3332		1610	3360	1583	1770	5065		1770	3517	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	333	303	10	165	205	493	42	1257	35	140	1089	47
RTOR Reduction (vph)	0	1	0	0	0	271	0	1	0	0	0	0
Lane Group Flow (vph)	210	435	0	120	250	222	42	1291	0	140	1136	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	28.3	28.3		14.1	14.1	31.2	7.9	47.8		17.1	57.0	
Effective Green, g (s)	28.3	28.3		14.1	14.1	31.2	7.9	47.8		17.1	57.0	
Actuated g/C Ratio	0.18	0.18		0.09	0.09	0.19	0.05	0.30		0.11	0.35	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	282	584		140	293	306	86	1501		187	1243	
v/s Ratio Prot	0.13	c0.13		c0.07	0.07	0.08	0.02	0.25		c0.08	c0.32	
v/s Ratio Perm						0.06						
v/c Ratio	0.74	0.75		0.86	0.85	0.73	0.49	0.86		0.75	0.91	
Uniform Delay, d1	63.0	63.0		72.6	72.5	61.0	74.7	53.5		70.0	49.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.2	5.1		37.2	20.7	8.3	4.3	5.2		15.1	10.4	
Delay (s)	73.2	68.2		109.7	93.2	69.3	79.0	58.7		85.0	60.1	
Level of Service	E	E		F	F	E	E	E		F	E	
Approach Delay (s)		69.8			81.8			59.3			62.9	
Approach LOS		E			F			E			E	

Intersection Summary			
HCM 2000 Control Delay	81.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	161.2	Sum of lost time (s)	21.6
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	384	644	40
Future Volume (vph)	384	644	40
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.93	0.85	
Flt Protected	0.97	1.00	
Satd. Flow (prot)	3272	1441	
Flt Permitted	0.97	1.00	
Satd. Flow (perm)	3272	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	400	671	42
RTOR Reduction (vph)	0	80	0
Lane Group Flow (vph)	756	277	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.3	32.3	
Effective Green, g (s)	32.3	32.3	
Actuated g/C Ratio	0.20	0.20	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	655	288	
v/s Ratio Prot	c0.23		
v/s Ratio Perm		0.19	
v/c Ratio	1.15	0.96	
Uniform Delay, d1	64.4	63.8	
Progression Factor	1.00	1.00	
Incremental Delay, d2	86.0	42.5	
Delay (s)	150.4	106.3	
Level of Service	F	F	
Approach Delay (s)	136.3		
Approach LOS	F		

Intersection Summary

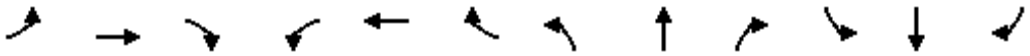
C - Trip Generation

ITE Land Use Code	Land Use	Size	Units	Daily Rate	Daily Trips	Rates	% In	% Out	AM Peak			Rates	% In	% Out	PM Peak		
									Total	In	Out				Total	In	Out
710	General Office Building	112.113	KSF	9.74	1,092	1.16	86%	14%	130	112	18	1.15	16%	84%	129	21	108
	Transit Reduction[1]				-73				-9	-8	-1				-7	-1	-6
	Mixed Use Reduction[2]				-229				-16	-14	-2				-25	-4	-21
Total External Project Trips					**1,019**				**105**	**90**	**15**				**97**	**16**	**81**

[1] Utilized transit reduction rate from Redwood City Downtown Precise Plan of 7.3% for the AM peak and 6.0% for the PM peak. Transit reduction rate for daily trips 6.66% (average of AM and PM reduction).

[2] Utilized mixed-used reduction rate from Redwood City Downtown Precise Plan of 12.3% for the AM and 19.1% for the PM

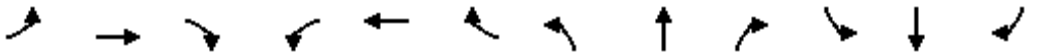
D - Existing Plus Project Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	277	740	279	76	329	187	230	923	66	191	1099	98
v/c Ratio	0.92	0.75	0.55	0.34	0.53	0.40	0.80	0.78	0.32	0.55	0.83	0.16
Control Delay	85.4	45.8	27.0	59.5	49.5	8.9	62.5	50.3	16.2	52.5	44.0	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.4	45.8	27.0	59.5	49.5	8.9	62.5	50.3	16.2	52.5	44.0	11.9
Queue Length 50th (ft)	221	285	118	30	128	0	194	420	2	143	435	14
Queue Length 95th (ft)	#380	336	196	56	165	64	#303	#514	42	224	#634	58
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	311	997	506	604	821	463	310	1189	369	350	1317	599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.74	0.55	0.13	0.40	0.40	0.74	0.78	0.18	0.55	0.83	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	269	718	271	74	319	181	223	895	64	185	1066	95
Future Volume (vph)	269	718	271	74	319	181	223	895	64	185	1066	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	277	740	279	76	329	187	230	923	66	191	1099	98
RTOR Reduction (vph)	0	0	76	0	0	150	0	0	62	0	0	45
Lane Group Flow (vph)	277	740	203	76	329	37	230	923	4	191	1099	53
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	Perm
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									2
Actuated Green, G (s)	21.4	34.9	34.9	8.2	21.7	24.8	20.3	42.0	8.2	24.8	46.5	46.5
Effective Green, g (s)	21.4	34.9	34.9	8.2	21.7	24.8	20.3	42.0	8.2	24.8	46.5	46.5
Actuated g/C Ratio	0.17	0.28	0.28	0.07	0.17	0.20	0.16	0.34	0.07	0.20	0.37	0.37
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	303	988	427	225	614	314	287	1189	103	351	1316	555
v/s Ratio Prot	c0.16	c0.21		0.02	0.09	0.02	0.13	c0.26	0.00	0.11	c0.31	
v/s Ratio Perm			0.13									0.04
v/c Ratio	0.91	0.75	0.48	0.34	0.54	0.12	0.80	0.78	0.04	0.54	0.84	0.10
Uniform Delay, d1	50.9	41.1	37.5	55.8	47.1	41.1	50.4	37.3	54.7	45.0	35.8	25.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.86	1.20	6.52	1.00	1.00	1.00
Incremental Delay, d2	30.3	3.2	0.8	0.9	0.9	0.2	13.4	4.5	0.2	1.7	6.4	0.3
Delay (s)	81.2	44.2	38.3	56.7	48.0	41.3	56.9	49.3	356.8	46.7	42.1	25.9
Level of Service	F	D	D	E	D	D	E	D	F	D	D	C
Approach Delay (s)		50.8			47.0			67.4			41.6	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	52.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	77	48	1299	103	84	1553
v/c Ratio	0.51	0.27	0.49	0.09	0.53	0.50
Control Delay	65.2	17.9	3.3	1.9	69.9	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.2	17.9	3.3	1.9	69.9	2.8
Queue Length 50th (ft)	60	0	53	1	71	75
Queue Length 95th (ft)	109	37	89	13	m100	71
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	379	2670	1200	354	3112
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.13	0.49	0.09	0.24	0.50

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	47	1260	100	81	1506
Future Volume (vph)	75	47	1260	100	81	1506
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	77	48	1299	103	84	1553
RTOR Reduction (vph)	0	44	0	7	0	0
Lane Group Flow (vph)	77	4	1299	96	84	1553
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	9.5	9.5	93.7	93.7	11.3	108.5
Effective Green, g (s)	9.5	9.5	93.7	93.7	11.3	108.5
Actuated g/C Ratio	0.08	0.08	0.75	0.75	0.09	0.87
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	134	120	2652	1186	160	3071
v/s Ratio Prot	c0.04		0.37		0.05	c0.44
v/s Ratio Perm		0.00		0.06		
v/c Ratio	0.57	0.03	0.49	0.08	0.53	0.51
Uniform Delay, d1	55.8	53.5	6.2	4.2	54.3	1.9
Progression Factor	1.00	1.00	0.38	0.41	1.14	1.02
Incremental Delay, d2	5.8	0.1	0.6	0.1	2.3	0.4
Delay (s)	61.6	53.6	3.0	1.8	64.1	2.4
Level of Service	E	D	A	A	E	A
Approach Delay (s)	58.6		2.9			5.6
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	48	1312	17	97	1484
Future Vol, veh/h	5	48	1312	17	97	1484
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	49	1339	17	99	1514

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2302	678	0	0	1356	0
Stage 1	1347	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	32	395	-	-	503	-
Stage 1	207	-	-	-	-	-
Stage 2	334	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	26	395	-	-	503	-
Mov Cap-2 Maneuver	26	-	-	-	-	-
Stage 1	207	-	-	-	-	-
Stage 2	268	-	-	-	-	-

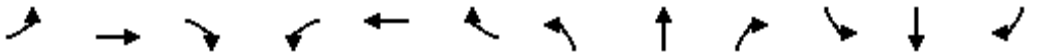
Approach	WB	NB	SB
HCM Control Delay, s	36	0	0.9
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	169	503	-
HCM Lane V/C Ratio	-	-	0.32	0.197	-
HCM Control Delay (s)	-	-	36	13.9	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	1.3	0.7	-



Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	10	178	156	1185	149	1612
v/c Ratio	0.04	0.70	0.43	0.52	0.67	0.57
Control Delay	0.3	64.9	10.5	13.9	63.6	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	64.9	10.5	13.9	63.6	4.7
Queue Length 50th (ft)	0	139	0	244	123	138
Queue Length 95th (ft)	0	204	57	399	185	174
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	380	384	464	2298	424	2831
Starvation Cap Reductn	0	0	0	0	0	76
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.46	0.34	0.52	0.35	0.59

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	10	162	9	150	0	1134	4	143	1541	7
Future Volume (vph)	0	0	10	162	9	150	0	1134	4	143	1541	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1778	1583		3537		1770	3537	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1778	1583		3537		1770	3537	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	10	169	9	156	0	1181	4	149	1605	7
RTOR Reduction (vph)	0	0	9	0	0	134	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1	0	178	22	0	1185	0	149	1612	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			16.9		17.9	17.9		81.3		15.8	100.1	
Effective Green, g (s)			16.9		17.9	17.9		81.3		15.8	100.1	
Actuated g/C Ratio			0.14		0.14	0.14		0.65		0.13	0.80	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			217		254	226		2300		223	2832	
v/s Ratio Prot								0.33		c0.08	c0.46	
v/s Ratio Perm			0.00		0.10	0.01						
v/c Ratio			0.01		0.70	0.10		0.52		0.67	0.57	
Uniform Delay, d1			46.8		51.0	46.5		11.5		52.1	4.6	
Progression Factor			1.00		1.00	1.00		1.00		0.97	0.75	
Incremental Delay, d2			0.0		8.4	0.2		0.8		6.8	0.8	
Delay (s)			46.8		59.4	46.7		12.3		57.6	4.2	
Level of Service			D		E	D		B		E	A	
Approach Delay (s)		46.8			53.5			12.3			8.7	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	153	24	24	71	5	25	60	42	53	29	23
Future Vol, veh/h	13	153	24	24	71	5	25	60	42	53	29	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	166	26	26	77	5	27	65	46	58	32	25
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.3	8.7	8.7	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	7%	24%	50%
Vol Thru, %	47%	81%	71%	28%
Vol Right, %	33%	13%	5%	22%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	127	190	100	105
LT Vol	25	13	24	53
Through Vol	60	153	71	29
RT Vol	42	24	5	23
Lane Flow Rate	138	207	109	114
Geometry Grp	1	1	1	1
Degree of Util (X)	0.179	0.264	0.145	0.153
Departure Headway (Hd)	4.665	4.607	4.801	4.819
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	766	777	745	742
Service Time	2.709	2.649	2.849	2.866
HCM Lane V/C Ratio	0.18	0.266	0.146	0.154
HCM Control Delay	8.7	9.3	8.7	8.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	1.1	0.5	0.5

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	47	80	24	54	23
Future Vol, veh/h	7	47	80	24	54	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	57	98	29	66	28

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	272	112	0	0	127	0
Stage 1	112	-	-	-	-	-
Stage 2	160	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	717	941	-	-	1459	-
Stage 1	913	-	-	-	-	-
Stage 2	869	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	684	941	-	-	1459	-
Mov Cap-2 Maneuver	684	-	-	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	829	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	5.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	897	1459	-
HCM Lane V/C Ratio	-	-	0.073	0.045	-
HCM Control Delay (s)	-	-	9.3	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	14	76	23	0	30	40	21	49	11	8	17	10
Future Vol, veh/h	14	76	23	0	30	40	21	49	11	8	17	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	81	24	0	32	43	22	52	12	9	18	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	74	0	0	105	0	0	191	197	93	208	188	53
Stage 1	-	-	-	-	-	-	123	123	-	53	53	-
Stage 2	-	-	-	-	-	-	68	74	-	155	135	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1526	-	-	1486	-	-	769	699	964	749	707	1014
Stage 1	-	-	-	-	-	-	881	794	-	960	851	-
Stage 2	-	-	-	-	-	-	942	833	-	847	785	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1526	-	-	1486	-	-	740	692	964	692	700	1014
Mov Cap-2 Maneuver	-	-	-	-	-	-	740	692	-	692	700	-
Stage 1	-	-	-	-	-	-	872	786	-	950	851	-
Stage 2	-	-	-	-	-	-	912	833	-	773	777	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	10.6	9.9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	732	1526	-	-	1486	-	-	766
HCM Lane V/C Ratio	0.118	0.01	-	-	-	-	-	0.049
HCM Control Delay (s)	10.6	7.4	0	-	0	-	-	9.9
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	140	0	0	288	23	6	39	93	0	0	27
Future Vol, veh/h	7	140	0	0	288	23	6	39	93	0	0	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	154	0	0	316	25	7	43	102	0	0	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	342	0	-	-	-	0	327	511	154	-	-	171
Stage 1	-	-	-	-	-	-	169	169	-	-	-	-
Stage 2	-	-	-	-	-	-	158	342	-	-	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	-	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	-	-	3.319
Pot Cap-1 Maneuver	1215	-	0	0	-	-	614	465	891	0	0	844
Stage 1	-	-	0	0	-	-	832	758	-	0	0	-
Stage 2	-	-	0	0	-	-	829	637	-	0	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1215	-	-	-	-	-	589	462	891	-	-	844
Mov Cap-2 Maneuver	-	-	-	-	-	-	589	462	-	-	-	-
Stage 1	-	-	-	-	-	-	826	753	-	-	-	-
Stage 2	-	-	-	-	-	-	800	637	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	11.6	9.4
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	694	1215	-	-	-	844
HCM Lane V/C Ratio	0.219	0.006	-	-	-	0.035
HCM Control Delay (s)	11.6	8	0	-	-	9.4
HCM Lane LOS	B	A	A	-	-	A
HCM 95th %tile Q(veh)	0.8	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	62	16	42	28	3	12
Future Vol, veh/h	62	16	42	28	3	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	17	46	30	3	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	76	0	-	0	213	61
Stage 1	-	-	-	-	61	-
Stage 2	-	-	-	-	152	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1523	-	-	-	775	1004
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	876	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1523	-	-	-	741	1004
Mov Cap-2 Maneuver	-	-	-	-	741	-
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	837	-

Approach	EB	WB	SB
HCM Control Delay, s	5.9	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1523	-	-	-	937
HCM Lane V/C Ratio	0.044	-	-	-	0.017
HCM Control Delay (s)	7.5	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	247	216	33	143	92
Future Vol, veh/h	0	247	216	33	143	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	271	237	36	157	101

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	237	237
Stage 1	-	-	0	0
Stage 2	-	-	237	237
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	751	664
Stage 1	-	-	-	-
Stage 2	-	-	802	709
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	751	0
Mov Cap-2 Maneuver	-	-	751	0
Stage 1	-	-	-	0
Stage 2	-	-	802	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	751	-
HCM Lane V/C Ratio	-	-	0.209	-
HCM Control Delay (s)	-	-	11.1	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.8	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	19	26	294	123	44
Future Vol, veh/h	0	19	26	294	123	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	30	334	140	50

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	165	190	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	879	1384	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	879	1384	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1384	-	879	-	-
HCM Lane V/C Ratio	0.021	-	0.025	-	-
HCM Control Delay (s)	7.7	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	75	68	351	135	7
Future Vol, veh/h	18	75	68	351	135	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	81	73	377	145	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	673	149	153	0	-	0
Stage 1	149	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	421	898	1428	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	594	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	394	898	1428	-	-	-
Mov Cap-2 Maneuver	394	-	-	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	555	-	-	-	-	-

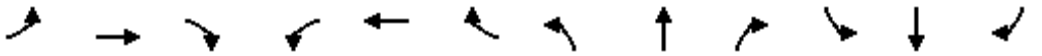
Approach	EB	NB	SB
HCM Control Delay, s	10.8	1.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1428	-	720	-	-
HCM Lane V/C Ratio	0.051	-	0.139	-	-
HCM Control Delay (s)	7.7	0	10.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	11	228	49	208	562	150
v/c Ratio	0.05	0.51	0.18	0.35	0.70	0.18
Control Delay	30.3	25.3	29.2	17.5	19.1	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	25.3	29.2	17.5	19.1	8.8
Queue Length 50th (ft)	4	76	17	50	156	22
Queue Length 95th (ft)	19	150	51	130	319	61
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	734	959	734	974	1133	1144
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.24	0.07	0.21	0.50	0.13

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	208	14	48	196	6	61	358	126	6	79	61
Future Volume (vph)	11	208	14	48	196	6	61	358	126	6	79	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.97			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1846		1770	1855			1795			1754	
Flt Permitted	0.95	1.00		0.95	1.00			0.95			0.98	
Satd. Flow (perm)	1770	1846		1770	1855			1716			1722	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	11	214	14	49	202	6	63	369	130	6	81	63
RTOR Reduction (vph)	0	3	0	0	1	0	0	10	0	0	25	0
Lane Group Flow (vph)	11	225	0	49	207	0	0	552	0	0	125	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	0.9	14.6		3.7	17.4			24.9			24.9	
Effective Green, g (s)	0.9	14.6		3.7	17.4			24.9			24.9	
Actuated g/C Ratio	0.02	0.26		0.06	0.31			0.44			0.44	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	27	472		114	566			749			752	
v/s Ratio Prot	0.01	c0.12		c0.03	c0.11							
v/s Ratio Perm								c0.32			0.07	
v/c Ratio	0.41	0.48		0.43	0.37			0.74			0.17	
Uniform Delay, d1	27.8	18.0		25.6	15.5			13.3			9.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.6	0.8		0.9	0.4			3.3			0.0	
Delay (s)	31.4	18.7		26.6	15.9			16.6			9.8	
Level of Service	C	B		C	B			B			A	
Approach Delay (s)		19.3			17.9			16.6			9.8	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	13.8
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	155	176	2	362	143	118	12	7
Future Vol, veh/h	0	0	0	4	155	176	2	362	143	118	12	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	163	185	2	381	151	124	13	7

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	646	646	-	13	0	-	381	0	0
Stage 1	385	385	-	-	-	-	-	-	-
Stage 2	261	261	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	436	390	0	1606	-	0	1177	-	0
Stage 1	688	611	0	-	-	0	-	-	0
Stage 2	783	692	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	389	0	-	1606	-	-	1177	-	-
Mov Cap-2 Maneuver	389	0	-	-	-	-	-	-	-
Stage 1	687	0	-	-	-	-	-	-	-
Stage 2	700	0	-	-	-	-	-	-	-

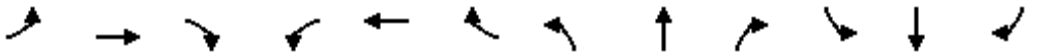
Approach	WB	NB	SB
HCM Control Delay, s	21.1	0	7.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1606	-	389	-	1177	-
HCM Lane V/C Ratio	0.001	-	0.43	-	0.106	-
HCM Control Delay (s)	7.2	0	21.1	0	8.4	0
HCM Lane LOS	A	A	C	A	A	A
HCM 95th %tile Q(veh)	0	-	2.1	-	0.4	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	471	332	20	45	322	108	21	168	76
v/c Ratio	0.59	0.67	0.04	0.25	0.64	0.21	0.12	0.38	0.17
Control Delay	33.5	36.6	0.2	46.6	36.4	7.9	47.1	34.2	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	36.7	0.2	46.6	36.4	7.9	47.1	34.2	7.1
Queue Length 50th (ft)	107	146	0	22	135	0	10	79	0
Queue Length 95th (ft)	215	311	0	70	325	45	42	175	31
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1688	900	813	381	703	665	381	703	652
Starvation Cap Reductn	0	28	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.38	0.02	0.12	0.46	0.16	0.06	0.24	0.12

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	368	55	24	292	19	43	306	103	20	160	72
Future Volume (vph)	25	368	55	24	292	19	43	306	103	20	160	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3464			1856	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3464			1856	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	387	58	25	307	20	45	322	108	21	168	76
RTOR Reduction (vph)	0	9	0	0	0	15	0	0	79	0	0	58
Lane Group Flow (vph)	0	462	0	0	332	5	45	322	29	21	168	18
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		18.6			22.0	22.0	4.2	22.1	22.1	2.2	20.1	20.1
Effective Green, g (s)		18.6			22.0	22.0	4.2	22.1	22.1	2.2	20.1	20.1
Actuated g/C Ratio		0.22			0.26	0.26	0.05	0.26	0.26	0.03	0.24	0.24
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		772			489	417	89	493	419	46	448	381
v/s Ratio Prot		c0.13			c0.18		c0.03	c0.17		0.01	0.09	
v/s Ratio Perm						0.00			0.02			0.01
v/c Ratio		0.60			0.68	0.01	0.51	0.65	0.07	0.46	0.38	0.05
Uniform Delay, d1		29.1			27.5	22.7	38.6	27.2	22.9	40.0	26.4	24.3
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.3			3.7	0.0	1.6	3.1	0.1	2.6	0.5	0.1
Delay (s)		30.3			31.3	22.7	40.2	30.3	23.0	42.6	26.9	24.4
Level of Service		C			C	C	D	C	C	D	C	C
Approach Delay (s)		30.3			30.8			29.6			27.4	
Approach LOS		C			C			C			C	

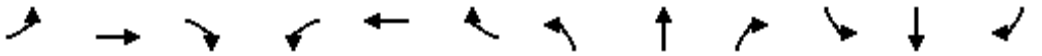
Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	18.5
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	27	318	43	314	108	22	354	77	211
v/c Ratio	0.10	0.54	0.16	0.53	0.19	0.08	0.59	0.25	0.27
Control Delay	16.9	20.0	17.5	19.9	5.1	27.4	20.3	25.6	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	20.0	17.5	19.9	5.1	27.4	20.3	25.6	11.2
Queue Length 50th (ft)	6	80	10	80	0	6	87	21	29
Queue Length 95th (ft)	25	187	36	185	31	29	206	69	113
Internal Link Dist (ft)		965		760			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	692	1477	684	1490	1288	642	1041	642	1157
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.22	0.06	0.21	0.08	0.03	0.34	0.12	0.18

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	293	19	42	308	106	22	261	86	75	195	12
Future Volume (vph)	26	293	19	42	308	106	22	261	86	75	195	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1846		1770	1863	1583	1770	1793		1770	1847	
Flt Permitted	0.46	1.00		0.46	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	865	1846		854	1863	1583	1770	1793		1770	1847	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	27	299	19	43	314	108	22	266	88	77	199	12
RTOR Reduction (vph)	0	3	0	0	0	76	0	11	0	0	2	0
Lane Group Flow (vph)	27	315	0	43	314	32	22	343	0	77	209	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	15.3	15.3		15.3	15.3	15.3	1.0	17.4		4.3	20.7	
Effective Green, g (s)	15.3	15.3		15.3	15.3	15.3	1.0	17.4		4.3	20.7	
Actuated g/C Ratio	0.30	0.30		0.30	0.30	0.30	0.02	0.34		0.08	0.41	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	260	554		256	559	475	34	612		149	751	
v/s Ratio Prot		c0.17			0.17		0.01	c0.19		c0.04	c0.11	
v/s Ratio Perm	0.03			0.05		0.02						
v/c Ratio	0.10	0.57		0.17	0.56	0.07	0.65	0.56		0.52	0.28	
Uniform Delay, d1	12.9	15.0		13.1	15.0	12.7	24.8	13.6		22.3	10.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.1		0.2	1.1	0.0	31.7	1.0		2.3	0.1	
Delay (s)	13.0	16.1		13.3	16.0	12.8	56.5	14.6		24.6	10.3	
Level of Service	B	B		B	B	B	E	B		C	B	
Approach Delay (s)		15.9			15.0			17.0			14.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	50.9	Sum of lost time (s)	13.9
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

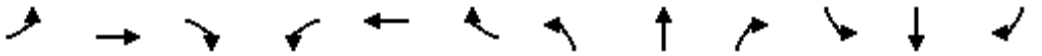


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	170	452	366	726	110	1700	466	245	1487
v/c Ratio	1.09	1.36	1.52	1.42	0.79	0.89	0.46	0.81	0.77
Control Delay	153.5	223.8	295.4	239.1	96.6	34.0	5.7	81.4	26.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	153.5	223.8	295.4	239.1	96.6	34.0	5.7	81.4	26.7
Queue Length 50th (ft)	~189	~287	~502	~465	97	665	47	111	512
Queue Length 95th (ft)	#354	#407	#723	#602	#198	782	117	#178	606
Internal Link Dist (ft)		760		309		888			1305
Turn Bay Length (ft)	245		405		225		265	225	
Base Capacity (vph)	156	332	240	511	145	1981	1041	307	1989
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.36	1.52	1.42	0.76	0.86	0.45	0.80	0.75

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	178	326	81	485	331	211	103	1598	438	230	1297	101
Future Volume (vph)	178	326	81	485	331	211	103	1598	438	230	1297	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		4.2	4.2		3.2	5.5	5.5	3.2	5.5	
Lane Util. Factor	0.91	0.91		0.91	0.91		1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1610	3287		1610	3200		1770	3539	1583	3433	3501	
Flt Permitted	0.95	1.00		0.95	0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1610	3287		1610	3200		1770	3539	1583	3433	3501	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	189	347	86	516	352	224	110	1700	466	245	1380	107
RTOR Reduction (vph)	0	14	0	0	34	0	0	0	162	0	4	0
Lane Group Flow (vph)	170	438	0	366	692	0	110	1700	304	245	1483	0
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	8	8		4	4		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	13.0	13.0		20.0	20.0		10.6	72.7	72.7	11.8	73.9	
Effective Green, g (s)	13.0	13.0		20.0	20.0		10.6	72.7	72.7	11.8	73.9	
Actuated g/C Ratio	0.10	0.10		0.15	0.15		0.08	0.54	0.54	0.09	0.55	
Clearance Time (s)	3.7	3.7		4.2	4.2		3.2	5.5	5.5	3.2	5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	156	318		240	477		139	1918	858	302	1929	
v/s Ratio Prot	0.11	c0.13		c0.23	0.22		0.06	c0.48		c0.07	0.42	
v/s Ratio Perm									0.19			
v/c Ratio	1.09	1.38		1.52	1.45		0.79	0.89	0.35	0.81	0.77	
Uniform Delay, d1	60.5	60.5		57.0	57.0		60.7	27.1	17.4	60.1	23.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	98.1	189.0		256.3	214.3		25.7	5.4	0.3	15.1	1.9	
Delay (s)	158.6	249.6		313.4	271.3		86.3	32.4	17.7	75.2	25.3	
Level of Service	F	F		F	F		F	C	B	E	C	
Approach Delay (s)		224.7			285.4			32.0			32.4	
Approach LOS		F			F			C			C	

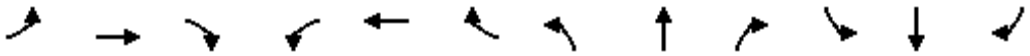
Intersection Summary			
HCM 2000 Control Delay	101.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	134.1	Sum of lost time (s)	16.6
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	190	591	49	1593	181	1434
v/c Ratio	0.22	0.86	0.44	0.74	0.48	0.69
Control Delay	38.0	61.3	78.9	39.0	57.4	25.8
Queue Delay	0.0	0.0	0.0	0.6	0.0	2.6
Total Delay	38.0	61.3	78.9	39.7	57.4	28.4
Queue Length 50th (ft)	69	275	47	475	156	507
Queue Length 95th (ft)	95	324	91	567	245	723
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	1060	848	304	2152	378	2077
Starvation Cap Reductn	0	0	0	231	0	500
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.70	0.16	0.83	0.48	0.91

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	144	31	240	186	153	48	1452	109	177	1338	68
Future Volume (vph)	11	144	31	240	186	153	48	1452	109	177	1338	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.97			0.96		1.00	0.99		1.00	0.99	
Flt Protected		1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3440			3330		1770	5032		1770	3514	
Flt Permitted		0.91			0.73		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3146			2475		1770	5032		1770	3514	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	11	147	32	245	190	156	49	1482	111	181	1365	69
RTOR Reduction (vph)	0	12	0	0	26	0	0	5	0	0	2	0
Lane Group Flow (vph)	0	178	0	0	565	0	49	1588	0	181	1432	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		40.2			40.2		8.3	63.2		32.9	87.8	
Effective Green, g (s)		40.2			40.2		8.3	63.2		32.9	87.8	
Actuated g/C Ratio		0.27			0.27		0.06	0.42		0.22	0.59	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		843			663		97	2120		388	2056	
v/s Ratio Prot							0.03	c0.32		0.10	c0.41	
v/s Ratio Perm		0.06			c0.23							
v/c Ratio		0.21			0.85		0.51	0.75		0.47	0.70	
Uniform Delay, d1		42.6			52.1		68.9	36.7		50.9	21.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			10.3		4.1	2.5		0.9	2.0	
Delay (s)		42.7			62.3		72.9	39.2		51.8	23.8	
Level of Service		D			E		E	D		D	C	
Approach Delay (s)		42.7			62.3			40.2			26.9	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	38.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

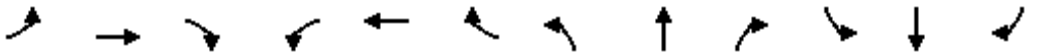


Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	150	302	108	222	602	24	1660	196	1053	625	290
v/c Ratio	0.70	0.68	0.79	0.78	0.92	0.28	1.04	0.86	0.71	0.94	0.78
Control Delay	83.5	73.5	107.0	90.2	44.2	83.0	85.2	100.3	43.5	84.5	55.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	17.6	0.0	0.0	0.0	0.0
Total Delay	83.5	73.5	107.0	90.2	44.2	83.0	102.9	100.3	43.5	84.5	55.3
Queue Length 50th (ft)	167	167	123	126	284	25	~684	203	495	335	215
Queue Length 95th (ft)	257	223	#253	#204	#564	60	#856	#370	653	#494	#397
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	375	772	141	295	656	156	1599	234	1475	667	370
Starvation Cap Reductn	0	0	0	0	0	0	66	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.39	0.77	0.75	0.92	0.15	1.08	0.84	0.71	0.94	0.78

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	173	13	150	167	578	23	1574	19	188	948	62
Future Volume (vph)	248	173	13	150	167	578	23	1574	19	188	948	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3307		1610	3354	1583	1770	5076		1770	3506	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3307		1610	3354	1583	1770	5076		1770	3506	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	258	180	14	156	174	602	24	1640	20	196	988	65
RTOR Reduction (vph)	0	2	0	0	0	285	0	1	0	0	0	0
Lane Group Flow (vph)	150	300	0	108	222	317	24	1659	0	196	1053	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	21.2	21.2		13.6	13.6	34.1	5.2	51.6		20.5	66.9	
Effective Green, g (s)	21.2	21.2		13.6	13.6	34.1	5.2	51.6		20.5	66.9	
Actuated g/C Ratio	0.13	0.13		0.08	0.08	0.21	0.03	0.32		0.13	0.42	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	212	436		136	284	336	57	1630		225	1460	
v/s Ratio Prot	c0.09	0.09		0.07	0.07	c0.12	0.01	c0.33		0.11	0.30	
v/s Ratio Perm						0.08						
v/c Ratio	0.71	0.69		0.79	0.78	0.94	0.42	1.02		0.87	0.72	
Uniform Delay, d1	66.7	66.5		72.1	72.0	62.3	76.2	54.5		68.8	39.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.3	4.5		26.4	13.1	34.3	5.0	26.9		28.7	1.8	
Delay (s)	77.0	71.0		98.6	85.1	96.6	81.2	81.4		97.4	40.9	
Level of Service	E	E		F	F	F	F	F		F	D	
Approach Delay (s)		73.0			94.1			81.4			49.7	
Approach LOS		E			F			F			D	

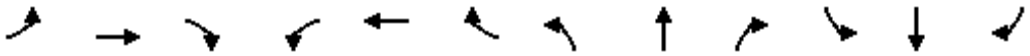
Intersection Summary			
HCM 2000 Control Delay	75.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	160.6	Sum of lost time (s)	21.6
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	383	472	23
Future Volume (vph)	383	472	23
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.95	0.85	
Flt Protected	0.97	1.00	
Satd. Flow (prot)	3312	1441	
Flt Permitted	0.97	1.00	
Satd. Flow (perm)	3312	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	399	492	24
RTOR Reduction (vph)	0	80	0
Lane Group Flow (vph)	625	210	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.1	32.1	
Effective Green, g (s)	32.1	32.1	
Actuated g/C Ratio	0.20	0.20	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	661	288	
v/s Ratio Prot	c0.19		
v/s Ratio Perm		0.15	
v/c Ratio	0.95	0.73	
Uniform Delay, d1	63.4	60.2	
Progression Factor	1.00	1.00	
Incremental Delay, d2	22.4	8.9	
Delay (s)	85.7	69.1	
Level of Service	F	E	
Approach Delay (s)	80.5		
Approach LOS	F		

Intersection Summary

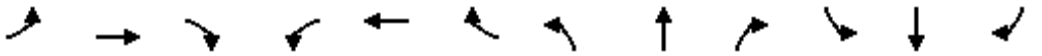


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	221	341	142	195	684	189	239	1126	93	206	1012	206
v/c Ratio	0.89	0.36	0.29	0.58	0.86	0.48	0.91	0.86	0.37	0.80	0.78	0.32
Control Delay	88.8	38.9	13.5	60.7	58.9	10.9	72.7	38.3	23.4	74.7	40.6	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.8	38.9	13.5	60.7	58.9	10.9	72.7	38.3	23.4	74.7	40.6	13.0
Queue Length 50th (ft)	179	117	23	78	278	0	192	512	20	160	383	44
Queue Length 95th (ft)	#331	167	79	115	#355	66	#338	#569	m77	#266	470	106
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	248	939	483	411	821	412	270	1312	286	283	1312	636
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.36	0.29	0.47	0.83	0.46	0.89	0.86	0.33	0.73	0.77	0.32

Intersection Summary

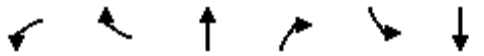
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	331	138	189	663	183	232	1092	90	200	982	200
Future Volume (vph)	214	331	138	189	663	183	232	1092	90	200	982	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	221	341	142	195	684	189	239	1126	93	206	1012	206
RTOR Reduction (vph)	0	0	77	0	0	162	0	0	84	0	0	80
Lane Group Flow (vph)	221	341	65	195	684	27	239	1126	9	206	1012	126
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	custom
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									6
Actuated Green, G (s)	17.5	33.2	33.2	12.2	27.9	18.1	18.7	46.4	12.2	18.1	45.8	46.4
Effective Green, g (s)	17.5	33.2	33.2	12.2	27.9	18.1	18.7	46.4	12.2	18.1	45.8	46.4
Actuated g/C Ratio	0.14	0.27	0.27	0.10	0.22	0.14	0.15	0.37	0.10	0.14	0.37	0.37
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	247	939	406	335	789	229	264	1313	154	256	1296	556
v/s Ratio Prot	c0.12	0.10		0.06	c0.19	0.02	0.14	c0.32	0.01	0.12	c0.29	
v/s Ratio Perm			0.04									0.08
v/c Ratio	0.89	0.36	0.16	0.58	0.87	0.12	0.91	0.86	0.06	0.80	0.78	0.23
Uniform Delay, d1	52.8	37.3	35.2	54.0	46.8	46.5	52.3	36.3	51.2	51.7	35.1	27.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.85	3.16	1.00	1.00	1.00
Incremental Delay, d2	30.9	0.2	0.2	2.6	9.9	0.2	27.6	6.2	0.1	16.6	4.7	0.9
Delay (s)	83.7	37.5	35.4	56.5	56.7	46.7	67.8	37.1	161.7	68.3	39.9	27.9
Level of Service	F	D	D	E	E	D	E	D	F	E	D	C
Approach Delay (s)		51.6			54.9			50.1			42.3	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	49.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	200	73	1437	99	73	1426
v/c Ratio	0.73	0.25	0.59	0.09	0.49	0.51
Control Delay	65.4	15.4	6.4	3.8	79.2	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.4	15.4	6.4	3.8	79.2	2.3
Queue Length 50th (ft)	156	8	132	9	62	22
Queue Length 95th (ft)	227	48	110	m4	m70	24
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	390	2453	1104	283	2793
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.19	0.59	0.09	0.26	0.51

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	194	71	1394	96	71	1383
Future Volume (vph)	194	71	1394	96	71	1383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	200	73	1437	99	73	1426
RTOR Reduction (vph)	0	52	0	8	0	0
Lane Group Flow (vph)	200	21	1437	91	73	1426
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	19.3	19.3	86.0	86.0	9.2	98.7
Effective Green, g (s)	19.3	19.3	86.0	86.0	9.2	98.7
Actuated g/C Ratio	0.15	0.15	0.69	0.69	0.07	0.79
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	273	244	2434	1089	130	2794
v/s Ratio Prot	c0.11		c0.41		0.04	c0.40
v/s Ratio Perm		0.01		0.06		
v/c Ratio	0.73	0.08	0.59	0.08	0.56	0.51
Uniform Delay, d1	50.4	45.3	10.2	6.5	56.0	4.6
Progression Factor	1.00	1.00	0.47	0.56	1.30	0.34
Incremental Delay, d2	9.7	0.1	0.8	0.1	4.4	0.5
Delay (s)	60.1	45.4	5.6	3.7	77.2	2.1
Level of Service	E	D	A	A	E	A
Approach Delay (s)	56.2		5.5			5.8
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	49	1441	22	37	1540
Future Vol, veh/h	4	49	1441	22	37	1540
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	50	1470	22	38	1571

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2343	746	0	0	1493	0
Stage 1	1482	-	-	-	-	-
Stage 2	861	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	30	356	-	-	446	-
Stage 1	175	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	27	356	-	-	446	-
Mov Cap-2 Maneuver	27	-	-	-	-	-
Stage 1	175	-	-	-	-	-
Stage 2	342	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	32.3	0	0.3
HCM LOS	D		

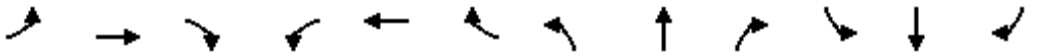
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	185	446	-
HCM Lane V/C Ratio	-	-	0.292	0.085	-
HCM Control Delay (s)	-	-	32.3	13.8	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	1.2	0.3	-



Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	33	301	181	1518	128	1523
v/c Ratio	0.09	0.83	0.39	0.71	0.63	0.58
Control Delay	1.2	67.5	8.2	21.0	76.7	4.1
Queue Delay	0.0	0.7	0.0	0.0	0.0	0.0
Total Delay	1.2	68.2	8.2	21.0	76.7	4.1
Queue Length 50th (ft)	0	230	0	445	105	113
Queue Length 95th (ft)	4	#365	60	590	170	67
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	399	394	492	2131	283	2638
Starvation Cap Reductn	0	12	0	0	0	61
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.79	0.37	0.71	0.45	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	32	280	9	174	0	1456	1	123	1441	21
Future Volume (vph)	0	0	32	280	9	174	0	1456	1	123	1441	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1777	1583		3539		1770	3532	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1777	1583		3539		1770	3532	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	33	292	9	181	0	1517	1	128	1501	22
RTOR Reduction (vph)	0	0	27	0	0	144	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	6	0	301	37	0	1518	0	128	1522	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			24.4		25.4	25.4		75.3		14.3	92.6	
Effective Green, g (s)			24.4		25.4	25.4		75.3		14.3	92.6	
Actuated g/C Ratio			0.20		0.20	0.20		0.60		0.11	0.74	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			314		361	321		2131		202	2616	
v/s Ratio Prot								c0.43		c0.07	0.43	
v/s Ratio Perm			0.00		0.17	0.02						
v/c Ratio			0.02		0.83	0.11		0.71		0.63	0.58	
Uniform Delay, d1			40.6		47.8	40.6		17.3		52.8	7.4	
Progression Factor			1.00		1.00	1.00		1.00		1.23	0.41	
Incremental Delay, d2			0.0		15.1	0.2		2.1		5.7	0.8	
Delay (s)			40.7		62.9	40.8		19.4		70.6	3.9	
Level of Service			D		E	D		B		E	A	
Approach Delay (s)		40.7			54.6			19.4			9.0	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	10.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	117	22	6	197	33	56	121	74	21	35	24
Future Vol, veh/h	22	117	22	6	197	33	56	121	74	21	35	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	127	24	7	214	36	61	132	80	23	38	26
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10	11	11.3	9.2
HCM LOS	A	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	14%	3%	26%
Vol Thru, %	48%	73%	83%	44%
Vol Right, %	29%	14%	14%	30%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	251	161	236	80
LT Vol	56	22	6	21
Through Vol	121	117	197	35
RT Vol	74	22	33	24
Lane Flow Rate	273	175	257	87
Geometry Grp	1	1	1	1
Degree of Util (X)	0.385	0.254	0.363	0.13
Departure Headway (Hd)	5.086	5.224	5.094	5.373
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	709	688	708	667
Service Time	3.101	3.255	3.11	3.409
HCM Lane V/C Ratio	0.385	0.254	0.363	0.13
HCM Control Delay	11.3	10	11	9.2
HCM Lane LOS	B	A	B	A
HCM 95th-tile Q	1.8	1	1.7	0.4

Intersection	
Int Delay, s/veh	4.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	105	146	7	24	39
Future Vol, veh/h	15	105	146	7	24	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	128	178	9	29	48

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	288	182	0	0	187	0
Stage 1	182	-	-	-	-	-
Stage 2	106	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	702	861	-	-	1387	-
Stage 1	849	-	-	-	-	-
Stage 2	918	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	687	861	-	-	1387	-
Mov Cap-2 Maneuver	687	-	-	-	-	-
Stage 1	849	-	-	-	-	-
Stage 2	899	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	2.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	835	1387	-
HCM Lane V/C Ratio	-	-	0.175	0.021	-
HCM Control Delay (s)	-	-	10.2	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	12	39	7	7	36	42	15	82	11	26	32	17
Future Vol, veh/h	12	39	7	7	36	42	15	82	11	26	32	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	41	7	7	38	45	16	87	12	28	34	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	83	0	0	49	0	0	173	169	45	196	150	61
Stage 1	-	-	-	-	-	-	71	71	-	76	76	-
Stage 2	-	-	-	-	-	-	102	98	-	120	74	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1514	-	-	1558	-	-	790	724	1025	763	742	1004
Stage 1	-	-	-	-	-	-	939	836	-	933	832	-
Stage 2	-	-	-	-	-	-	904	814	-	884	833	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1514	-	-	1558	-	-	740	714	1025	677	732	1004
Mov Cap-2 Maneuver	-	-	-	-	-	-	740	714	-	677	732	-
Stage 1	-	-	-	-	-	-	931	828	-	925	828	-
Stage 2	-	-	-	-	-	-	847	810	-	775	826	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.6	10.8	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	740	1514	-	-	1558	-	-	757
HCM Lane V/C Ratio	0.155	0.008	-	-	0.005	-	-	0.105
HCM Control Delay (s)	10.8	7.4	0	-	7.3	0	-	10.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	115	0	0	408	25	10	65	76	0	0	45
Future Vol, veh/h	9	115	0	0	408	25	10	65	76	0	0	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	126	0	0	448	27	11	71	84	0	0	49

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	476	0	-	-	-	0	370	622	126	-	-	238
Stage 1	-	-	-	-	-	-	146	146	-	-	-	-
Stage 2	-	-	-	-	-	-	224	476	-	-	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	-	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	-	-	3.319
Pot Cap-1 Maneuver	1084	-	0	0	-	-	574	402	924	0	0	764
Stage 1	-	-	0	0	-	-	856	776	-	0	0	-
Stage 2	-	-	0	0	-	-	759	556	-	0	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1084	-	-	-	-	-	533	398	924	-	-	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	533	398	-	-	-	-
Stage 1	-	-	-	-	-	-	847	768	-	-	-	-
Stage 2	-	-	-	-	-	-	710	556	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	13.9	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	571	1084	-	-	-	764
HCM Lane V/C Ratio	0.291	0.009	-	-	-	0.065
HCM Control Delay (s)	13.9	8.4	0	-	-	10
HCM Lane LOS	B	A	A	-	-	B
HCM 95th %tile Q(veh)	1.2	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	20	56	5	17	64
Future Vol, veh/h	11	20	56	5	17	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	22	61	5	18	70

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	66	0	-	0	110	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	46	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1536	-	-	-	887	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	976	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1536	-	-	-	880	1000
Mov Cap-2 Maneuver	-	-	-	-	880	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	968	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1536	-	-	-	972
HCM Lane V/C Ratio	0.008	-	-	-	0.091
HCM Control Delay (s)	7.4	0	-	-	9.1
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	290	182	25	171	196
Future Vol, veh/h	0	290	182	25	171	196
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	319	200	27	188	215

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	200	200
Stage 1	-	-	0	0
Stage 2	-	-	200	200
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	789	696
Stage 1	-	-	-	-
Stage 2	-	-	834	736
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	789	0
Mov Cap-2 Maneuver	-	-	789	0
Stage 1	-	-	-	0
Stage 2	-	-	834	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	789	-
HCM Lane V/C Ratio	-	-	0.238	-
HCM Control Delay (s)	-	-	11	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.9	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	37	11	345	284	50
Future Vol, veh/h	0	37	11	345	284	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	42	13	392	323	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	351	380	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	692	1178	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	692	1178	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1178	-	692	-	-
HCM Lane V/C Ratio	0.011	-	0.061	-	-
HCM Control Delay (s)	8.1	0	10.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	43	69	338	305	16
Future Vol, veh/h	16	43	69	338	305	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	46	74	363	328	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	849	337	345	0	-	0
Stage 1	337	-	-	-	-	-
Stage 2	512	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	331	705	1214	-	-	-
Stage 1	723	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	306	705	1214	-	-	-
Mov Cap-2 Maneuver	306	-	-	-	-	-
Stage 1	723	-	-	-	-	-
Stage 2	556	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.9	1.4	0
HCM LOS	B		

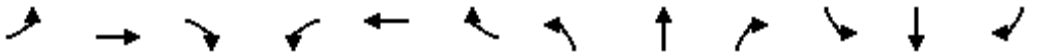
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1214	-	521	-	-
HCM Lane V/C Ratio	0.061	-	0.122	-	-
HCM Control Delay (s)	8.2	0	12.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	18	180	116	298	602	326
v/c Ratio	0.11	0.52	0.48	0.49	0.71	0.38
Control Delay	31.9	30.0	34.5	20.9	21.1	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	30.0	34.5	20.9	21.1	13.1
Queue Length 50th (ft)	7	65	44	87	176	72
Queue Length 95th (ft)	27	128	96	189	#429	166
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	556	724	556	749	850	858
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.25	0.21	0.40	0.71	0.38

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	156	18	113	285	4	65	379	140	25	208	83
Future Volume (vph)	17	156	18	113	285	4	65	379	140	25	208	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1833		1770	1859			1793			1789	
Flt Permitted	0.95	1.00		0.95	1.00			0.93			0.94	
Satd. Flow (perm)	1770	1833		1770	1859			1671			1685	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	161	19	116	294	4	67	391	144	26	214	86
RTOR Reduction (vph)	0	5	0	0	1	0	0	10	0	0	12	0
Lane Group Flow (vph)	18	175	0	116	297	0	0	592	0	0	314	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	14.8		7.4	21.1			32.5			32.5	
Effective Green, g (s)	1.1	14.8		7.4	21.1			32.5			32.5	
Actuated g/C Ratio	0.02	0.22		0.11	0.31			0.47			0.47	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	28	396		191	572			792			799	
v/s Ratio Prot	0.01	0.10		c0.07	c0.16							
v/s Ratio Perm								c0.35			0.19	
v/c Ratio	0.64	0.44		0.61	0.52			0.75			0.39	
Uniform Delay, d1	33.5	23.3		29.2	19.5			14.7			11.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	32.0	0.8		3.7	0.8			3.4			0.1	
Delay (s)	65.5	24.1		32.9	20.3			18.1			11.7	
Level of Service	E	C		C	C			B			B	
Approach Delay (s)		27.8			23.8			18.1			11.7	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	13.8
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	14.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	15	132	168	8	372	240	266	29	15
Future Vol, veh/h	0	0	0	15	132	168	8	372	240	266	29	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	139	177	8	392	253	280	31	16

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	999	999	-	31	0	-	392	0	0
Stage 1	408	408	-	-	-	-	-	-	-
Stage 2	591	591	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	270	243	0	1582	-	0	1167	-	0
Stage 1	671	597	0	-	-	0	-	-	0
Stage 2	553	494	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	203	0	-	1582	-	-	1167	-	-
Mov Cap-2 Maneuver	203	0	-	-	-	-	-	-	-
Stage 1	667	0	-	-	-	-	-	-	-
Stage 2	418	0	-	-	-	-	-	-	-

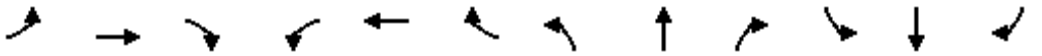
Approach	WB	NB	SB
HCM Control Delay, s	63.8	0.2	8.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1582	-	203	-	1167	-
HCM Lane V/C Ratio	0.005	-	0.762	-	0.24	-
HCM Control Delay (s)	7.3	0	63.8	0	9.1	0
HCM Lane LOS	A	A	F	A	A	A
HCM 95th %tile Q(veh)	0	-	5.2	-	0.9	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	500	295	18	142	323	69	31	289	119
v/c Ratio	0.66	0.70	0.04	0.62	0.52	0.12	0.21	0.71	0.29
Control Delay	39.4	45.6	0.2	56.4	33.7	4.8	53.2	47.7	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	45.7	0.2	56.4	33.7	4.8	53.2	47.7	15.0
Queue Length 50th (ft)	141	164	0	82	168	0	18	161	15
Queue Length 95th (ft)	245	308	0	184	335	24	58	320	73
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1389	743	688	315	644	605	315	582	555
Starvation Cap Reductn	0	24	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.41	0.03	0.45	0.50	0.11	0.10	0.50	0.21

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	344	74	32	248	17	135	307	66	29	275	113
Future Volume (vph)	57	344	74	32	248	17	135	307	66	29	275	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3436			1852	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		0.99			0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3436			1852	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	60	362	78	34	261	18	142	323	69	31	289	119
RTOR Reduction (vph)	0	12	0	0	0	14	0	0	46	0	0	67
Lane Group Flow (vph)	0	488	0	0	295	4	142	323	23	31	289	52
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		20.7			21.6	21.6	12.4	31.6	31.6	4.1	23.3	23.3
Effective Green, g (s)		20.7			21.6	21.6	12.4	31.6	31.6	4.1	23.3	23.3
Actuated g/C Ratio		0.21			0.22	0.22	0.13	0.33	0.33	0.04	0.24	0.24
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		737			414	354	227	610	518	75	449	382
v/s Ratio Prot		c0.14			c0.16		c0.08	0.17		0.02	c0.16	
v/s Ratio Perm						0.00			0.01			0.03
v/c Ratio		0.66			0.71	0.01	0.63	0.53	0.04	0.41	0.64	0.14
Uniform Delay, d1		34.7			34.6	29.1	39.8	26.4	22.1	45.0	32.9	28.7
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.2			5.7	0.0	3.8	0.8	0.0	1.3	3.2	0.2
Delay (s)		36.9			40.3	29.2	43.7	27.2	22.2	46.4	36.0	28.9
Level of Service		D			D	C	D	C	C	D	D	C
Approach Delay (s)		36.9			39.7			31.0			34.8	
Approach LOS		D			D			C			C	

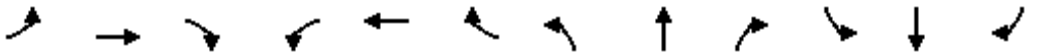
Intersection Summary			
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	96.5	Sum of lost time (s)	18.5
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	9	395	72	312	105	48	367	138	421
v/c Ratio	0.03	0.69	0.38	0.54	0.19	0.20	0.64	0.43	0.57
Control Delay	17.8	26.4	25.9	22.8	5.4	30.2	24.7	29.7	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.8	26.4	25.9	22.8	5.4	30.2	24.7	29.7	19.6
Queue Length 50th (ft)	2	122	20	93	0	16	109	45	124
Queue Length 95th (ft)	13	255	65	198	32	53	241	113	260
Internal Link Dist (ft)		965		760			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	585	1295	428	1314	1147	502	816	502	895
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.31	0.17	0.24	0.09	0.10	0.45	0.27	0.47

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	346	41	71	306	103	47	265	95	135	390	23
Future Volume (vph)	9	346	41	71	306	103	47	265	95	135	390	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1833		1770	1863	1583	1770	1789		1770	1847	
Flt Permitted	0.45	1.00		0.33	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	829	1833		608	1863	1583	1770	1789		1770	1847	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	9	353	42	72	312	105	48	270	97	138	398	23
RTOR Reduction (vph)	0	6	0	0	0	73	0	13	0	0	2	0
Lane Group Flow (vph)	9	389	0	72	312	32	48	354	0	138	419	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	18.2	18.2		18.2	18.2	18.2	4.3	19.3		8.3	23.3	
Effective Green, g (s)	18.2	18.2		18.2	18.2	18.2	4.3	19.3		8.3	23.3	
Actuated g/C Ratio	0.30	0.30		0.30	0.30	0.30	0.07	0.32		0.14	0.39	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	252	558		185	567	482	127	578		246	720	
v/s Ratio Prot		c0.21			0.17		0.03	0.20		c0.08	c0.23	
v/s Ratio Perm	0.01			0.12		0.02						
v/c Ratio	0.04	0.70		0.39	0.55	0.07	0.38	0.61		0.56	0.58	
Uniform Delay, d1	14.6	18.3		16.4	17.3	14.7	26.4	17.0		24.0	14.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	3.8		1.4	1.2	0.1	1.9	1.9		2.9	1.2	
Delay (s)	14.6	22.1		17.7	18.5	14.8	28.3	19.0		26.9	15.6	
Level of Service	B	C		B	B	B	C	B		C	B	
Approach Delay (s)		22.0			17.6			20.1			18.4	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	13.9
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

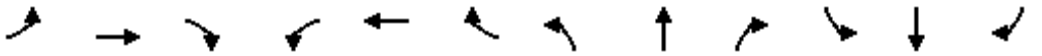


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	167	530	410	819	128	1089	611	247	1739
v/c Ratio	0.97	1.43	1.54	1.45	0.82	0.63	0.59	0.75	0.99
Control Delay	113.2	245.8	294.9	249.2	89.5	24.6	6.2	67.3	49.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	113.2	245.8	294.9	249.2	89.5	24.6	6.2	67.3	49.3
Queue Length 50th (ft)	143	~302	~492	~468	99	319	43	97	684
Queue Length 95th (ft)	#300	#422	#710	#603	#205	391	139	#148	#875
Internal Link Dist (ft)		760		309		888			1305
Turn Bay Length (ft)	245		405		225		265	225	
Base Capacity (vph)	173	371	267	563	161	1738	1035	342	1758
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	1.43	1.54	1.45	0.80	0.63	0.59	0.72	0.99

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	385	95	551	391	213	120	1024	574	232	1578	56
Future Volume (vph)	175	385	95	551	391	213	120	1024	574	232	1578	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		4.2	4.2		3.2	5.5	5.5	3.2	5.5	
Lane Util. Factor	0.91	0.91		0.91	0.91		1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1610	3287		1610	3215		1770	3539	1583	3433	3521	
Flt Permitted	0.95	1.00		0.95	0.99		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1610	3287		1610	3215		1770	3539	1583	3433	3521	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	186	410	101	586	416	227	128	1089	611	247	1679	60
RTOR Reduction (vph)	0	16	0	0	30	0	0	0	258	0	2	0
Lane Group Flow (vph)	167	514	0	410	789	0	128	1089	353	247	1737	0
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	8	8		4	4		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	13.0	13.0		20.0	20.0		10.7	59.1	59.1	11.6	60.0	
Effective Green, g (s)	13.0	13.0		20.0	20.0		10.7	59.1	59.1	11.6	60.0	
Actuated g/C Ratio	0.11	0.11		0.17	0.17		0.09	0.49	0.49	0.10	0.50	
Clearance Time (s)	3.7	3.7		4.2	4.2		3.2	5.5	5.5	3.2	5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	173	355		267	534		157	1738	777	331	1756	
v/s Ratio Prot	0.10	c0.16		c0.25	0.25		c0.07	0.31		0.07	c0.49	
v/s Ratio Perm									0.22			
v/c Ratio	0.97	1.45		1.54	1.48		0.82	0.63	0.45	0.75	0.99	
Uniform Delay, d1	53.4	53.6		50.1	50.1		53.8	22.5	20.0	52.9	29.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	57.7	216.7		259.0	224.8		26.7	0.7	0.4	8.8	18.7	
Delay (s)	111.1	270.4		309.1	275.0		80.5	23.2	20.5	61.8	48.6	
Level of Service	F	F		F	F		F	C	C	E	D	
Approach Delay (s)		232.2			286.4			26.3			50.2	
Approach LOS		F			F			C			D	

Intersection Summary			
HCM 2000 Control Delay	115.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.3	Sum of lost time (s)	16.6
Intersection Capacity Utilization	101.7%	ICU Level of Service	G
Analysis Period (min)	15		

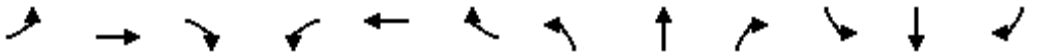
c Critical Lane Group



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	241	528	64	1264	194	1704
v/c Ratio	0.32	0.86	0.50	0.67	0.37	0.79
Control Delay	43.8	61.4	79.9	40.5	46.8	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	13.0
Total Delay	43.8	61.4	79.9	40.5	46.8	40.7
Queue Length 50th (ft)	96	234	61	374	151	657
Queue Length 95th (ft)	126	284	110	421	250	#1004
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	1044	833	304	1938	518	2161
Starvation Cap Reductn	0	0	0	0	0	470
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.63	0.21	0.65	0.37	1.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	186	36	182	163	172	63	1103	135	190	1650	20
Future Volume (vph)	14	186	36	182	163	172	63	1103	135	190	1650	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.98			0.95		1.00	0.98		1.00	1.00	
Flt Protected		1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3448			3304		1770	5002		1770	3533	
Flt Permitted		0.90			0.71		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3103			2376		1770	5002		1770	3533	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	14	190	37	186	166	176	64	1126	138	194	1684	20
RTOR Reduction (vph)	0	11	0	0	47	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	230	0	0	481	0	64	1253	0	194	1704	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		36.0			36.0		9.5	55.4		44.9	90.8	
Effective Green, g (s)		36.0			36.0		9.5	55.4		44.9	90.8	
Actuated g/C Ratio		0.24			0.24		0.06	0.37		0.30	0.61	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		744			570		112	1847		529	2138	
v/s Ratio Prot							0.04	c0.25		0.11	c0.48	
v/s Ratio Perm		0.07			c0.20							
v/c Ratio		0.31			0.84		0.57	0.68		0.37	0.80	
Uniform Delay, d1		46.8			54.3		68.3	39.8		41.4	22.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			11.0		6.9	2.0		0.4	3.2	
Delay (s)		47.0			65.3		75.1	41.8		41.8	25.8	
Level of Service		D			E		E	D		D	C	
Approach Delay (s)		47.0			65.3			43.4			27.4	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	38.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

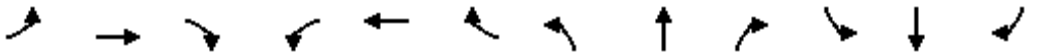


Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	213	442	120	251	493	42	1300	140	1139	756	357
v/c Ratio	0.75	0.75	0.86	0.86	0.81	0.41	0.87	0.74	0.91	1.16	0.97
Control Delay	80.4	71.6	117.7	98.8	31.0	88.7	62.0	95.1	61.5	141.9	85.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	80.4	71.6	117.7	98.8	31.0	88.7	62.6	95.1	61.5	141.9	85.7
Queue Length 50th (ft)	243	252	142	149	175	45	482	148	613	~504	324
Queue Length 95th (ft)	358	324	#308	#259	351	92	594	239	#844	#696	#616
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	372	771	140	293	637	155	1584	232	1277	653	368
Starvation Cap Reductn	0	0	0	0	0	0	68	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.57	0.86	0.86	0.77	0.27	0.86	0.60	0.89	1.16	0.97

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	324	295	10	158	198	473	40	1214	34	134	1048	45
Future Volume (vph)	324	295	10	158	198	473	40	1214	34	134	1048	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	0.99		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3332		1610	3360	1583	1770	5065		1770	3517	
Flt Permitted	0.95	0.99		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3332		1610	3360	1583	1770	5065		1770	3517	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	338	307	10	165	206	493	42	1265	35	140	1092	47
RTOR Reduction (vph)	0	1	0	0	0	270	0	1	0	0	0	0
Lane Group Flow (vph)	213	441	0	120	251	223	42	1299	0	140	1139	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	28.6	28.6		14.1	14.1	31.3	7.9	48.1		17.2	57.4	
Effective Green, g (s)	28.6	28.6		14.1	14.1	31.3	7.9	48.1		17.2	57.4	
Actuated g/C Ratio	0.18	0.18		0.09	0.09	0.19	0.05	0.30		0.11	0.35	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	284	588		140	292	306	86	1505		188	1247	
v/s Ratio Prot	0.13	c0.13		0.07	c0.07	0.08	0.02	0.26		c0.08	c0.32	
v/s Ratio Perm						0.06						
v/c Ratio	0.75	0.75		0.86	0.86	0.73	0.49	0.86		0.74	0.91	
Uniform Delay, d1	63.2	63.2		72.9	72.9	61.3	75.0	53.7		70.2	49.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.6	5.4		37.2	21.4	8.4	4.3	5.4		14.8	10.3	
Delay (s)	73.8	68.6		110.0	94.3	69.6	79.3	59.1		84.9	60.1	
Level of Service	E	E		F	F	E	E	E		F	E	
Approach Delay (s)		70.3			82.4			59.7			62.8	
Approach LOS		E			F			E			E	

Intersection Summary			
HCM 2000 Control Delay	82.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	161.8	Sum of lost time (s)	21.6
Intersection Capacity Utilization	99.4%	ICU Level of Service	F
Analysis Period (min)	15		

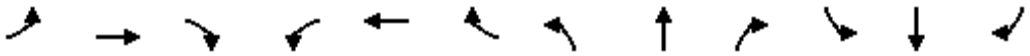
c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	384	644	40
Future Volume (vph)	384	644	40
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.93	0.85	
Flt Protected	0.97	1.00	
Satd. Flow (prot)	3272	1441	
Flt Permitted	0.97	1.00	
Satd. Flow (perm)	3272	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	400	671	42
RTOR Reduction (vph)	0	80	0
Lane Group Flow (vph)	756	277	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.2	32.2	
Effective Green, g (s)	32.2	32.2	
Actuated g/C Ratio	0.20	0.20	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	651	286	
v/s Ratio Prot	c0.23		
v/s Ratio Perm		0.19	
v/c Ratio	1.16	0.97	
Uniform Delay, d1	64.8	64.3	
Progression Factor	1.00	1.00	
Incremental Delay, d2	88.8	44.0	
Delay (s)	153.6	108.3	
Level of Service	F	F	
Approach Delay (s)	139.1		
Approach LOS	F		

Intersection Summary

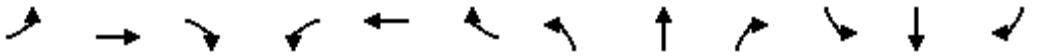
E - Background Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	278	787	273	99	374	201	231	964	82	211	1144	99
v/c Ratio	0.92	0.75	0.52	0.40	0.54	0.43	0.83	0.85	0.38	0.63	0.91	0.17
Control Delay	85.7	44.7	25.2	59.8	47.5	9.0	65.1	53.1	21.1	56.2	51.3	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.7	44.7	25.2	59.8	47.5	9.0	65.1	53.1	21.1	56.2	51.3	12.2
Queue Length 50th (ft)	222	299	110	40	143	0	195	438	2	160	484	16
Queue Length 95th (ft)	#382	367	193	68	187	65	#305	#547	59	246	#674	58
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	311	1046	526	604	821	464	300	1135	369	337	1255	574
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.75	0.52	0.16	0.46	0.43	0.77	0.85	0.22	0.63	0.91	0.17

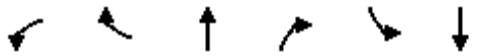
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	763	265	96	363	195	224	935	80	205	1110	96
Future Volume (vph)	270	763	265	96	363	195	224	935	80	205	1110	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	278	787	273	99	374	201	231	964	82	211	1144	99
RTOR Reduction (vph)	0	0	74	0	0	163	0	0	76	0	0	46
Lane Group Flow (vph)	278	787	199	99	374	38	231	964	6	211	1144	53
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	Perm
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									2
Actuated Green, G (s)	21.4	37.0	37.0	9.0	24.6	23.8	19.6	40.1	9.0	23.8	44.3	44.3
Effective Green, g (s)	21.4	37.0	37.0	9.0	24.6	23.8	19.6	40.1	9.0	23.8	44.3	44.3
Actuated g/C Ratio	0.17	0.30	0.30	0.07	0.20	0.19	0.16	0.32	0.07	0.19	0.35	0.35
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	303	1047	452	247	696	301	277	1135	113	337	1254	528
v/s Ratio Prot	c0.16	c0.22		0.03	0.11	0.02	0.13	c0.27	0.00	0.12	c0.32	
v/s Ratio Perm			0.13									0.04
v/c Ratio	0.92	0.75	0.44	0.40	0.54	0.13	0.83	0.85	0.05	0.63	0.91	0.10
Uniform Delay, d1	50.9	39.8	35.6	55.4	45.1	42.0	51.1	39.6	54.0	46.5	38.5	27.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.83	1.14	3.80	1.00	1.00	1.00
Incremental Delay, d2	30.9	3.1	0.7	1.1	0.8	0.2	17.0	7.1	0.2	3.6	11.5	0.4
Delay (s)	81.8	42.9	36.3	56.5	45.9	42.2	59.7	52.4	205.5	50.1	50.0	27.4
Level of Service	F	D	D	E	D	D	E	D	F	D	D	C
Approach Delay (s)		49.7			46.3			63.5			48.5	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	52.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	105	54	1341	109	82	1616
v/c Ratio	0.58	0.26	0.51	0.09	0.52	0.54
Control Delay	66.0	15.8	3.4	1.9	73.4	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.0	15.8	3.4	1.9	73.4	3.4
Queue Length 50th (ft)	82	0	54	1	70	63
Queue Length 95th (ft)	138	39	91	13	m93	m94
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	384	2624	1181	354	2980
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.14	0.51	0.09	0.23	0.54

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	102	52	1301	106	80	1568
Future Volume (vph)	102	52	1301	106	80	1568
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	105	54	1341	109	82	1616
RTOR Reduction (vph)	0	49	0	7	0	0
Lane Group Flow (vph)	105	5	1341	102	82	1616
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	12.7	12.7	92.0	92.0	9.8	105.3
Effective Green, g (s)	12.7	12.7	92.0	92.0	9.8	105.3
Actuated g/C Ratio	0.10	0.10	0.74	0.74	0.08	0.84
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	179	160	2604	1165	138	2981
v/s Ratio Prot	c0.06		0.38		0.05	c0.46
v/s Ratio Perm		0.00		0.06		
v/c Ratio	0.59	0.03	0.51	0.09	0.59	0.54
Uniform Delay, d1	53.6	50.6	7.0	4.7	55.7	2.9
Progression Factor	1.00	1.00	0.34	0.37	1.21	0.91
Incremental Delay, d2	4.8	0.1	0.6	0.1	4.7	0.5
Delay (s)	58.5	50.7	3.1	1.8	72.2	3.1
Level of Service	E	D	A	A	E	A
Approach Delay (s)	55.8		3.0			6.4
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	47	1360	14	92	1578
Future Vol, veh/h	5	47	1360	14	92	1578
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	48	1388	14	94	1610

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2388	701	0	0	1402	0
Stage 1	1395	-	-	-	-	-
Stage 2	993	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	28	381	-	-	483	-
Stage 1	195	-	-	-	-	-
Stage 2	319	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	23	381	-	-	483	-
Mov Cap-2 Maneuver	23	-	-	-	-	-
Stage 1	195	-	-	-	-	-
Stage 2	257	-	-	-	-	-

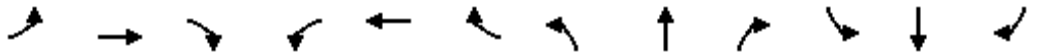
Approach	WB	NB	SB
HCM Control Delay, s	40.5	0	0.8
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	153	483	-
HCM Lane V/C Ratio	-	-	0.347	0.194	-
HCM Control Delay (s)	-	-	40.5	14.2	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	1.4	0.7	-



Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	10	181	157	1230	163	1697
v/c Ratio	0.04	0.70	0.43	0.54	0.69	0.60
Control Delay	0.3	64.8	10.3	15.0	63.4	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	64.8	10.3	15.0	63.4	5.1
Queue Length 50th (ft)	0	141	0	267	132	207
Queue Length 95th (ft)	0	207	58	434	203	172
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	373	384	465	2266	424	2825
Starvation Cap Reductn	0	0	0	0	0	72
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.47	0.34	0.54	0.38	0.62

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	10	165	9	151	0	1177	4	156	1622	7
Future Volume (vph)	0	0	10	165	9	151	0	1177	4	156	1622	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1778	1583		3537		1770	3537	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1778	1583		3537		1770	3537	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	10	172	9	157	0	1226	4	162	1690	7
RTOR Reduction (vph)	0	0	9	0	0	134	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1	0	181	23	0	1230	0	163	1697	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			17.1		18.1	18.1		80.1		16.8	99.9	
Effective Green, g (s)			17.1		18.1	18.1		80.1		16.8	99.9	
Actuated g/C Ratio			0.14		0.14	0.14		0.64		0.13	0.80	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			220		257	229		2266		237	2826	
v/s Ratio Prot								0.35		c0.09	c0.48	
v/s Ratio Perm			0.00		0.10	0.01						
v/c Ratio			0.01		0.70	0.10		0.54		0.69	0.60	
Uniform Delay, d1			46.6		50.9	46.4		12.4		51.6	4.8	
Progression Factor			1.00		1.00	1.00		1.00		0.98	0.76	
Incremental Delay, d2			0.0		8.5	0.2		0.9		7.3	0.9	
Delay (s)			46.6		59.4	46.6		13.3		57.8	4.5	
Level of Service			D		E	D		B		E	A	
Approach Delay (s)		46.6			53.4			13.3			9.2	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	175	6	3	103	9	22	75	37	109	43	26
Future Vol, veh/h	14	175	6	3	103	9	22	75	37	109	43	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	45	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	190	7	3	112	10	24	82	40	118	47	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	122	0	0	197	0	0	385	352	193	408	350	117
Stage 1	-	-	-	-	-	-	224	224	-	123	123	-
Stage 2	-	-	-	-	-	-	161	128	-	285	227	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1465	-	-	1376	-	-	573	573	849	554	574	935
Stage 1	-	-	-	-	-	-	779	718	-	881	794	-
Stage 2	-	-	-	-	-	-	841	790	-	722	716	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1465	-	-	1376	-	-	516	566	849	465	567	935
Mov Cap-2 Maneuver	-	-	-	-	-	-	516	566	-	465	567	-
Stage 1	-	-	-	-	-	-	771	711	-	872	792	-
Stage 2	-	-	-	-	-	-	766	788	-	603	709	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.2	12.7	15.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	613	1465	-	-	1376	-	-	527
HCM Lane V/C Ratio	0.238	0.01	-	-	0.002	-	-	0.367
HCM Control Delay (s)	12.7	7.5	-	-	7.6	-	-	15.7
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.9	0	-	-	0	-	-	1.7

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	76	19	0	30	36	20	66	11	15	22	10
Future Vol, veh/h	10	76	19	0	30	36	20	66	11	15	22	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	81	20	0	32	38	21	70	12	16	23	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	70	0	0	101	0	0	180	182	91	204	173	51
Stage 1	-	-	-	-	-	-	112	112	-	51	51	-
Stage 2	-	-	-	-	-	-	68	70	-	153	122	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1531	-	-	1491	-	-	782	712	967	754	720	1017
Stage 1	-	-	-	-	-	-	893	803	-	962	852	-
Stage 2	-	-	-	-	-	-	942	837	-	849	795	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1531	-	-	1491	-	-	750	706	967	684	714	1017
Mov Cap-2 Maneuver	-	-	-	-	-	-	750	706	-	684	714	-
Stage 1	-	-	-	-	-	-	886	797	-	954	852	-
Stage 2	-	-	-	-	-	-	907	837	-	759	789	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0	10.7	10.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	737	1531	-	-	1491	-	-	751
HCM Lane V/C Ratio	0.14	0.007	-	-	-	-	-	0.067
HCM Control Delay (s)	10.7	7.4	0	-	0	-	-	10.1
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	153	0	0	292	40	6	39	93	5	0	27
Future Vol, veh/h	7	153	0	0	292	40	6	39	93	5	0	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	168	0	0	321	44	7	43	102	5	0	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	365	0	-	-	-	0	344	549	168	599	-	182
Stage 1	-	-	-	-	-	-	184	184	-	343	-	-
Stage 2	-	-	-	-	-	-	160	365	-	256	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	7.33	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	3.519	-	3.319
Pot Cap-1 Maneuver	1192	-	0	0	-	-	598	443	875	399	0	830
Stage 1	-	-	0	0	-	-	817	747	-	646	0	-
Stage 2	-	-	0	0	-	-	827	623	-	748	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1192	-	-	-	-	-	574	440	875	324	-	830
Mov Cap-2 Maneuver	-	-	-	-	-	-	574	440	-	324	-	-
Stage 1	-	-	-	-	-	-	811	742	-	641	-	-
Stage 2	-	-	-	-	-	-	797	623	-	618	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	11.9	9.5
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	672	1192	-	-	-	830
HCM Lane V/C Ratio	0.226	0.006	-	-	-	0.036
HCM Control Delay (s)	11.9	8	0	-	-	9.5
HCM Lane LOS	B	A	A	-	-	A
HCM 95th %tile Q(veh)	0.9	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	261	288	33	129	107
Future Vol, veh/h	0	261	288	33	129	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	287	316	36	142	118

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	316	316
Stage 1	-	-	0	0
Stage 2	-	-	316	316
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	677	600
Stage 1	-	-	-	-
Stage 2	-	-	739	655
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	677	0
Mov Cap-2 Maneuver	-	-	677	0
Stage 1	-	-	-	0
Stage 2	-	-	739	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	677	-
HCM Lane V/C Ratio	-	-	0.209	-
HCM Control Delay (s)	-	-	11.7	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.8	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	28	13	308	124	29
Future Vol, veh/h	0	28	13	308	124	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	32	15	350	141	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	157	174	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	889	1403	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	889	1403	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1403	-	889	-	-
HCM Lane V/C Ratio	0.011	-	0.036	-	-
HCM Control Delay (s)	7.6	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	82	64	352	145	7
Future Vol, veh/h	18	82	64	352	145	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	88	69	378	156	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	676	160	163	0	-	0
Stage 1	160	-	-	-	-	-
Stage 2	516	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	419	885	1416	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	393	885	1416	-	-	-
Mov Cap-2 Maneuver	393	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	562	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	1.2	0
HCM LOS	B		

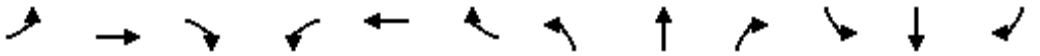
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1416	-	722	-	-
HCM Lane V/C Ratio	0.049	-	0.149	-	-
HCM Control Delay (s)	7.7	0	10.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	11	246	53	204	595	168
v/c Ratio	0.06	0.58	0.22	0.36	0.70	0.19
Control Delay	31.3	27.7	30.8	18.4	20.0	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.3	27.7	30.8	18.4	20.0	9.6
Queue Length 50th (ft)	4	89	20	56	176	28
Queue Length 95th (ft)	20	161	54	127	#413	74
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	638	826	638	858	976	1027
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.30	0.08	0.24	0.61	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	208	31	51	196	2	82	358	137	3	99	61
Future Volume (vph)	11	208	31	51	196	2	82	358	137	3	99	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			0.97			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1826		1770	1860			1790			1767	
Flt Permitted	0.95	1.00		0.95	1.00			0.93			0.99	
Satd. Flow (perm)	1770	1826		1770	1860			1678			1755	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	11	214	32	53	202	2	85	369	141	3	102	63
RTOR Reduction (vph)	0	6	0	0	1	0	0	10	0	0	20	0
Lane Group Flow (vph)	11	240	0	53	203	0	0	585	0	0	148	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.0	15.2		4.0	18.2			29.5			29.5	
Effective Green, g (s)	1.0	15.2		4.0	18.2			29.5			29.5	
Actuated g/C Ratio	0.02	0.24		0.06	0.29			0.47			0.47	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	28	444		113	541			792			828	
v/s Ratio Prot	0.01	c0.13		c0.03	c0.11							
v/s Ratio Perm								c0.35			0.08	
v/c Ratio	0.39	0.54		0.47	0.38			0.74			0.18	
Uniform Delay, d1	30.4	20.6		28.2	17.6			13.4			9.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.3	1.3		1.1	0.4			3.1			0.0	
Delay (s)	33.7	22.0		29.3	18.1			16.5			9.6	
Level of Service	C	C		C	B			B			A	
Approach Delay (s)		22.5			20.4			16.5			9.6	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	13.8
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	155	183	5	387	143	146	25	7
Future Vol, veh/h	0	0	0	4	155	183	5	387	143	146	25	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	163	193	5	407	151	154	26	7

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	752	752	-	26	0	-	407	0	0
Stage 1	418	418	-	-	-	-	-	-	-
Stage 2	334	334	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	378	339	0	1588	-	0	1152	-	0
Stage 1	664	591	0	-	-	0	-	-	0
Stage 2	725	643	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	325	0	-	1588	-	-	1152	-	-
Mov Cap-2 Maneuver	325	0	-	-	-	-	-	-	-
Stage 1	661	0	-	-	-	-	-	-	-
Stage 2	626	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.3	0.1	7.3
HCM LOS	D		

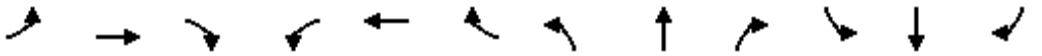
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1588	-	325	-	1152	-
HCM Lane V/C Ratio	0.003	-	0.515	-	0.133	-
HCM Control Delay (s)	7.3	0	27.3	0	8.6	0
HCM Lane LOS	A	A	D	A	A	A
HCM 95th %tile Q(veh)	0	-	2.8	-	0.5	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	516	358	45	46	362	158	26	179	80
v/c Ratio	0.65	0.73	0.09	0.28	0.70	0.29	0.17	0.35	0.16
Control Delay	37.7	42.4	0.9	51.6	41.9	7.3	51.3	34.5	7.9
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	42.4	0.9	51.6	41.9	7.3	51.3	34.5	7.9
Queue Length 50th (ft)	155	211	0	28	203	0	16	90	0
Queue Length 95th (ft)	243	348	4	73	#426	55	50	193	36
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1477	789	723	334	615	628	334	615	582
Starvation Cap Reductn	0	33	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.47	0.06	0.14	0.59	0.25	0.08	0.29	0.14

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	395	58	13	327	43	44	344	150	25	170	76
Future Volume (vph)	37	395	58	13	327	43	44	344	150	25	170	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3463			1859	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3463			1859	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	39	416	61	14	344	45	46	362	158	26	179	80
RTOR Reduction (vph)	0	9	0	0	0	33	0	0	115	0	0	59
Lane Group Flow (vph)	0	507	0	0	358	12	46	362	43	26	179	21
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		20.7			24.1	24.1	4.4	25.4	25.4	3.8	24.8	24.8
Effective Green, g (s)		20.7			24.1	24.1	4.4	25.4	25.4	3.8	24.8	24.8
Actuated g/C Ratio		0.22			0.26	0.26	0.05	0.27	0.27	0.04	0.27	0.27
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		774			484	412	84	511	434	72	499	424
v/s Ratio Prot		c0.15			c0.19		c0.03	c0.19		0.01	0.10	
v/s Ratio Perm						0.01			0.03			0.01
v/c Ratio		0.66			0.74	0.03	0.55	0.71	0.10	0.36	0.36	0.05
Uniform Delay, d1		32.7			31.3	25.5	43.1	30.2	25.0	43.2	27.4	25.1
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.0			5.9	0.0	3.9	4.5	0.1	1.1	0.4	0.0
Delay (s)		34.7			37.2	25.5	46.9	34.7	25.1	44.3	27.9	25.2
Level of Service		C			D	C	D	C	C	D	C	C
Approach Delay (s)		34.7			35.9			33.0			28.6	
Approach LOS		C			D			C			C	

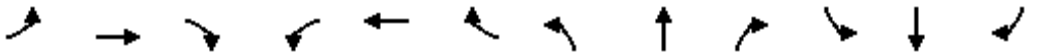
Intersection Summary			
HCM 2000 Control Delay	33.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	92.5	Sum of lost time (s)	18.5
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	27	432	39	423	108	22	363	77	214
v/c Ratio	0.13	0.67	0.19	0.65	0.17	0.10	0.66	0.29	0.29
Control Delay	17.0	23.2	18.2	22.8	4.5	31.7	26.2	30.6	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	23.2	18.2	22.8	4.5	31.7	26.2	30.6	15.6
Queue Length 50th (ft)	6	127	10	125	0	7	107	25	38
Queue Length 95th (ft)	26	262	35	256	30	32	249	76	135
Internal Link Dist (ft)		965		430			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	434	1318	419	1327	1158	538	876	538	952
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.33	0.09	0.32	0.09	0.04	0.41	0.14	0.22

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	405	19	38	415	106	22	271	84	75	198	12
Future Volume (vph)	26	405	19	38	415	106	22	271	84	75	198	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1850		1770	1863	1583	1770	1797		1770	1847	
Flt Permitted	0.33	1.00		0.32	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	609	1850		588	1863	1583	1770	1797		1770	1847	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	27	413	19	39	423	108	22	277	86	77	202	12
RTOR Reduction (vph)	0	2	0	0	0	72	0	11	0	0	2	0
Lane Group Flow (vph)	27	430	0	39	423	36	22	352	0	77	212	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	19.9	19.9		19.9	19.9	19.9	2.1	18.9		6.2	23.0	
Effective Green, g (s)	19.9	19.9		19.9	19.9	19.9	2.1	18.9		6.2	23.0	
Actuated g/C Ratio	0.34	0.34		0.34	0.34	0.34	0.04	0.32		0.11	0.39	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	205	625		198	629	534	63	576		186	721	
v/s Ratio Prot		c0.23			0.23		0.01	c0.20		c0.04	c0.11	
v/s Ratio Perm	0.04			0.07		0.02						
v/c Ratio	0.13	0.69		0.20	0.67	0.07	0.35	0.61		0.41	0.29	
Uniform Delay, d1	13.5	16.8		13.8	16.7	13.2	27.7	16.9		24.7	12.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.9		0.4	2.6	0.0	2.4	1.6		1.1	0.2	
Delay (s)	13.7	19.7		14.2	19.3	13.3	30.2	18.5		25.7	12.5	
Level of Service	B	B		B	B	B	C	B		C	B	
Approach Delay (s)		19.4			17.8			19.2			16.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	13.9
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

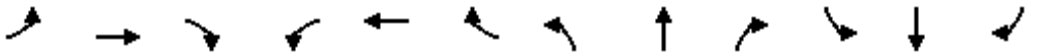


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	249	490	518	376	284	164	1813	481	256	1452	138
v/c Ratio	1.11	0.90	0.94	1.11	0.75	0.92	1.07	0.54	1.02	0.91	0.17
Control Delay	139.7	68.4	75.8	128.1	40.4	103.4	74.2	11.4	116.8	40.2	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	139.7	68.4	75.8	128.1	40.4	103.4	74.2	11.4	116.8	40.2	3.8
Queue Length 50th (ft)	~220	188	206	~333	126	128	~818	105	~106	538	1
Queue Length 95th (ft)	#386	#286	#311	#527	#246	#261	#957	202	#194	#663	37
Internal Link Dist (ft)		250		609			888			1305	
Turn Bay Length (ft)	225		115		65	195		205	205		65
Base Capacity (vph)	225	543	552	338	381	178	1695	897	251	1598	789
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.90	0.94	1.11	0.75	0.92	1.07	0.54	1.02	0.91	0.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	357	103	487	353	267	154	1704	452	241	1365	130
Future Volume (vph)	234	357	103	487	353	267	154	1704	452	241	1365	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3420		3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3420		3433	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	249	380	110	518	376	284	164	1813	481	256	1452	138
RTOR Reduction (vph)	0	22	0	0	0	94	0	0	139	0	0	75
Lane Group Flow (vph)	249	468	0	518	376	190	164	1813	342	256	1452	63
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)	15.3	18.3		19.3	21.8	21.8	12.1	57.5	57.5	8.8	54.2	54.2
Effective Green, g (s)	15.3	18.3		19.3	21.8	21.8	12.1	57.5	57.5	8.8	54.2	54.2
Actuated g/C Ratio	0.13	0.15		0.16	0.18	0.18	0.10	0.48	0.48	0.07	0.45	0.45
Clearance Time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	225	521		552	338	287	178	1695	758	251	1598	714
v/s Ratio Prot	c0.14	0.14		c0.15	c0.20		c0.09	c0.51		c0.07	0.41	
v/s Ratio Perm						0.12			0.22			0.04
v/c Ratio	1.11	0.90		0.94	1.11	0.66	0.92	1.07	0.45	1.02	0.91	0.09
Uniform Delay, d1	52.4	49.9		49.8	49.1	45.7	53.5	31.2	20.8	55.6	30.6	18.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	91.5	18.0		23.8	82.8	5.6	45.3	43.2	0.4	62.0	7.9	0.1
Delay (s)	143.9	68.0		73.5	131.9	51.3	98.8	74.4	21.2	117.6	38.5	18.8
Level of Service	F	E		E	F	D	F	E	C	F	D	B
Approach Delay (s)		93.5			86.8			65.6			48.0	
Approach LOS		F			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	67.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	248	666	53	1822	409	1532
v/c Ratio	0.27	0.90	0.46	0.88	1.17	0.78
Control Delay	35.3	62.6	79.2	46.4	154.7	31.5
Queue Delay	0.0	0.0	0.0	3.4	0.0	9.0
Total Delay	35.3	62.6	79.2	49.8	154.7	40.5
Queue Length 50th (ft)	84	306	51	596	~489	632
Queue Length 95th (ft)	118	379	97	#701	#704	821
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	1037	824	304	2078	349	1965
Starvation Cap Reductn	0	0	0	178	0	414
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.81	0.17	0.96	1.17	0.99

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	173	56	250	212	191	52	1609	176	401	1430	72
Future Volume (vph)	14	173	56	250	212	191	52	1609	176	401	1430	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.97			0.96		1.00	0.99		1.00	0.99	
Flt Protected		1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3408			3320		1770	5010		1770	3514	
Flt Permitted		0.89			0.70		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3055			2382		1770	5010		1770	3514	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	14	177	57	255	216	195	53	1642	180	409	1459	73
RTOR Reduction (vph)	0	20	0	0	32	0	0	8	0	0	2	0
Lane Group Flow (vph)	0	228	0	0	634	0	53	1814	0	409	1530	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		44.7			44.7		8.7	61.1		30.5	82.9	
Effective Green, g (s)		44.7			44.7		8.7	61.1		30.5	82.9	
Actuated g/C Ratio		0.30			0.30		0.06	0.41		0.20	0.55	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		910			709		102	2040		359	1942	
v/s Ratio Prot							0.03	c0.36		c0.23	0.44	
v/s Ratio Perm		0.07			c0.27							
v/c Ratio		0.25			0.89		0.52	0.89		1.14	0.79	
Uniform Delay, d1		39.9			50.4		68.6	41.3		59.8	26.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			13.8		4.4	6.3		90.9	3.3	
Delay (s)		40.1			64.2		73.0	47.6		150.7	29.9	
Level of Service		D			E		E	D		F	C	
Approach Delay (s)		40.1			64.2			48.3			55.4	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	53.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

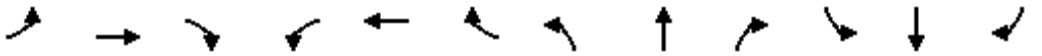


Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	215	436	120	248	642	29	1861	332	1308	816	385
v/c Ratio	0.77	0.76	0.90	0.89	1.05	0.34	1.24	1.50	0.98	1.30	1.08
Control Delay	84.4	74.2	128.4	106.5	79.8	88.8	159.7	294.0	69.9	196.0	116.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	84.4	74.2	128.4	106.5	79.8	88.8	159.8	294.0	69.9	196.0	116.7
Queue Length 50th (ft)	251	251	146	151	~478	31	~925	~504	~765	~588	~415
Queue Length 95th (ft)	361	318	#308	#255	#768	71	#1090	#751	#1038	#768	#695
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	355	725	134	280	612	147	1506	221	1340	629	355
Starvation Cap Reductn	0	0	0	0	0	0	52	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.60	0.90	0.89	1.05	0.20	1.28	1.50	0.98	1.30	1.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	383	201	41	164	189	616	28	1678	108	319	1107	149
Future Volume (vph)	383	201	41	164	189	616	28	1678	108	319	1107	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3271		1610	3356	1583	1770	5039		1770	3476	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3271		1610	3356	1583	1770	5039		1770	3476	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	399	209	43	171	197	642	29	1748	112	332	1153	155
RTOR Reduction (vph)	0	5	0	0	0	254	0	4	0	0	0	0
Lane Group Flow (vph)	215	431	0	120	248	388	29	1857	0	332	1308	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	29.2	29.2		14.0	14.0	35.0	7.1	50.9		21.0	64.8	
Effective Green, g (s)	29.2	29.2		14.0	14.0	35.0	7.1	50.9		21.0	64.8	
Actuated g/C Ratio	0.17	0.17		0.08	0.08	0.21	0.04	0.30		0.12	0.38	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	278	566		133	278	328	74	1520		220	1335	
v/s Ratio Prot	c0.13	0.13		0.07	0.07	c0.15	0.02	c0.37		c0.19	0.38	
v/s Ratio Perm						0.10						
v/c Ratio	0.77	0.76		0.90	0.89	1.18	0.39	1.22		1.51	0.98	
Uniform Delay, d1	66.6	66.4		76.7	76.6	66.8	78.7	58.9		73.8	51.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.6	6.0		49.4	28.0	108.6	3.4	105.9		251.2	19.7	
Delay (s)	79.1	72.4		126.1	104.6	175.5	82.1	164.8		325.1	71.0	
Level of Service	E	E		F	F	F	F	F		F	E	
Approach Delay (s)		74.7			152.2			163.5			122.4	
Approach LOS		E			F			F			F	

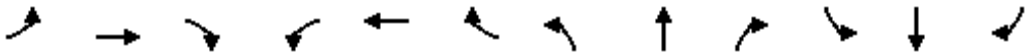
Intersection Summary			
HCM 2000 Control Delay	148.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	168.7	Sum of lost time (s)	21.6
Intersection Capacity Utilization	110.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	476	591	85
Future Volume (vph)	476	591	85
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.94	0.85	
Flt Protected	0.97	1.00	
Satd. Flow (prot)	3301	1441	
Flt Permitted	0.97	1.00	
Satd. Flow (perm)	3301	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	496	616	89
RTOR Reduction (vph)	0	81	0
Lane Group Flow (vph)	816	304	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.0	32.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.19	0.19	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	626	273	
v/s Ratio Prot	c0.25		
v/s Ratio Perm		0.21	
v/c Ratio	1.30	1.11	
Uniform Delay, d1	68.3	68.3	
Progression Factor	1.00	1.00	
Incremental Delay, d2	148.0	88.4	
Delay (s)	216.3	156.8	
Level of Service	F	F	
Approach Delay (s)	197.2		
Approach LOS	F		

Intersection Summary

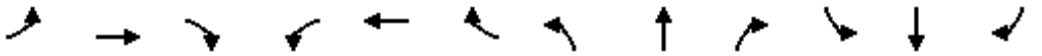


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	222	392	142	219	733	208	234	1188	118	239	1044	207
v/c Ratio	0.93	0.43	0.30	0.62	0.91	0.50	0.90	0.93	0.45	0.88	0.80	0.33
Control Delay	95.3	40.4	13.7	61.5	63.3	11.3	70.6	41.0	32.0	82.7	41.4	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.3	40.4	13.7	61.5	63.3	11.3	70.6	41.0	32.0	82.7	41.4	13.6
Queue Length 50th (ft)	180	138	23	88	304	3	167	541	38	190	401	46
Queue Length 95th (ft)	#334	191	79	129	#411	74	#329	#628	m101	#330	489	109
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	240	922	476	411	821	423	269	1280	286	283	1303	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.43	0.30	0.53	0.89	0.49	0.87	0.93	0.41	0.84	0.80	0.33

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	380	138	212	711	202	227	1152	114	232	1013	201
Future Volume (vph)	215	380	138	212	711	202	227	1152	114	232	1013	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	222	392	142	219	733	208	234	1188	118	239	1044	207
RTOR Reduction (vph)	0	0	78	0	0	172	0	0	99	0	0	79
Lane Group Flow (vph)	222	392	64	219	733	36	234	1188	19	239	1044	128
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	custom
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									6
Actuated Green, G (s)	17.0	32.6	32.6	12.9	28.5	19.2	18.4	45.2	12.9	19.2	46.0	45.2
Effective Green, g (s)	17.0	32.6	32.6	12.9	28.5	19.2	18.4	45.2	12.9	19.2	46.0	45.2
Actuated g/C Ratio	0.14	0.26	0.26	0.10	0.23	0.15	0.15	0.36	0.10	0.15	0.37	0.36
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	240	922	399	354	806	243	260	1279	163	271	1302	542
v/s Ratio Prot	c0.13	0.11		0.06	c0.21	0.02	0.13	c0.34	0.01	0.14	c0.29	
v/s Ratio Perm			0.04									0.09
v/c Ratio	0.93	0.43	0.16	0.62	0.91	0.15	0.90	0.93	0.12	0.88	0.80	0.24
Uniform Delay, d1	53.4	38.4	35.7	53.7	47.0	45.8	52.4	38.4	50.9	51.8	35.4	27.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.76	2.47	1.00	1.00	1.00
Incremental Delay, d2	38.0	0.3	0.2	3.2	14.0	0.3	26.1	10.8	0.3	26.7	5.3	1.0
Delay (s)	91.3	38.7	35.8	56.9	61.0	46.1	66.7	40.1	125.9	78.5	40.7	28.9
Level of Service	F	D	D	E	E	D	E	D	F	E	D	C
Approach Delay (s)		53.6			57.6			50.7			45.1	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	93.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	221	75	1531	112	80	1469
v/c Ratio	0.76	0.24	0.64	0.10	0.52	0.53
Control Delay	65.9	17.1	7.3	4.6	77.6	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.9	17.1	7.3	4.6	77.6	2.5
Queue Length 50th (ft)	172	12	143	10	68	23
Queue Length 95th (ft)	247	53	155	m8	m74	152
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	386	2404	1083	283	2756
Starvation Cap Reductn	0	0	55	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.19	0.65	0.10	0.28	0.53

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	214	73	1485	109	78	1425
Future Volume (vph)	214	73	1485	109	78	1425
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	221	75	1531	112	80	1469
RTOR Reduction (vph)	0	48	0	8	0	0
Lane Group Flow (vph)	221	27	1531	104	80	1469
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	20.6	20.6	84.2	84.2	9.7	97.4
Effective Green, g (s)	20.6	20.6	84.2	84.2	9.7	97.4
Actuated g/C Ratio	0.16	0.16	0.67	0.67	0.08	0.78
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	291	260	2383	1066	137	2757
v/s Ratio Prot	c0.12		c0.43		0.05	c0.42
v/s Ratio Perm		0.02		0.07		
v/c Ratio	0.76	0.11	0.64	0.10	0.58	0.53
Uniform Delay, d1	49.8	44.4	11.7	7.1	55.7	5.2
Progression Factor	1.00	1.00	0.47	0.62	1.28	0.33
Incremental Delay, d2	10.8	0.2	1.0	0.1	4.8	0.6
Delay (s)	60.7	44.5	6.5	4.5	75.9	2.3
Level of Service	E	D	A	A	E	A
Approach Delay (s)	56.6		6.3			6.1
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	44	1549	22	36	1603
Future Vol, veh/h	3	44	1549	22	36	1603
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	45	1581	22	37	1636

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2483	802	0	0	1603	0
Stage 1	1592	-	-	-	-	-
Stage 2	891	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	24	327	-	-	404	-
Stage 1	152	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	22	327	-	-	404	-
Mov Cap-2 Maneuver	22	-	-	-	-	-
Stage 1	152	-	-	-	-	-
Stage 2	328	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.6	0	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	173	404	-
HCM Lane V/C Ratio	-	-	0.277	0.091	-
HCM Control Delay (s)	-	-	33.6	14.8	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	1.1	0.3	-



Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	33	312	185	1626	131	1587
v/c Ratio	0.09	0.87	0.40	0.76	0.64	0.61
Control Delay	3.0	71.6	8.3	22.7	77.3	3.9
Queue Delay	0.0	2.3	0.0	0.0	0.0	0.0
Total Delay	3.0	73.9	8.3	22.7	77.3	3.9
Queue Length 50th (ft)	0	237	0	521	108	118
Queue Length 95th (ft)	9	#385	61	670	172	67
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	389	388	490	2127	283	2629
Starvation Cap Reductn	0	22	0	0	0	57
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.85	0.38	0.76	0.46	0.62

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	32	291	9	178	0	1560	1	126	1502	21
Future Volume (vph)	0	0	32	291	9	178	0	1560	1	126	1502	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1776	1583		3539		1770	3532	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1776	1583		3539		1770	3532	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	33	303	9	185	0	1625	1	131	1565	22
RTOR Reduction (vph)	0	0	27	0	0	147	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	6	0	312	38	0	1626	0	131	1586	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			24.4		25.4	25.4		75.1		14.5	92.6	
Effective Green, g (s)			24.4		25.4	25.4		75.1		14.5	92.6	
Actuated g/C Ratio			0.20		0.20	0.20		0.60		0.12	0.74	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			314		360	321		2126		205	2616	
v/s Ratio Prot								c0.46		c0.07	0.45	
v/s Ratio Perm			0.00		0.18	0.02						
v/c Ratio			0.02		0.87	0.12		0.76		0.64	0.61	
Uniform Delay, d1			40.6		48.2	40.6		18.4		52.8	7.6	
Progression Factor			1.00		1.00	1.00		1.00		1.24	0.37	
Incremental Delay, d2			0.0		19.1	0.2		2.7		5.6	0.9	
Delay (s)			40.7		67.3	40.8		21.1		71.2	3.7	
Level of Service			D		E	D		C		E	A	
Approach Delay (s)		40.7			57.4			21.1			8.9	
Approach LOS		D			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	9.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	136	19	2	234	44	39	162	45	57	49	26
Future Vol, veh/h	25	136	19	2	234	44	39	162	45	57	49	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	45	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	148	21	2	254	48	42	176	49	62	53	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	302	0	0	168	0	0	536	520	158	608	506	278
Stage 1	-	-	-	-	-	-	213	213	-	283	283	-
Stage 2	-	-	-	-	-	-	323	307	-	325	223	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1259	-	-	1410	-	-	455	461	887	408	469	761
Stage 1	-	-	-	-	-	-	789	726	-	724	677	-
Stage 2	-	-	-	-	-	-	689	661	-	687	719	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1259	-	-	1410	-	-	392	450	887	264	458	761
Mov Cap-2 Maneuver	-	-	-	-	-	-	392	450	-	264	458	-
Stage 1	-	-	-	-	-	-	772	710	-	708	676	-
Stage 2	-	-	-	-	-	-	610	660	-	478	704	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.1	21.4	20.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	482	1259	-	-	1410	-	-	370
HCM Lane V/C Ratio	0.555	0.022	-	-	0.002	-	-	0.388
HCM Control Delay (s)	21.4	7.9	-	-	7.6	-	-	20.8
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	3.3	0.1	-	-	0	-	-	1.8

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	39	6	7	36	43	12	129	11	29	34	15
Future Vol, veh/h	11	39	6	7	36	43	12	129	11	29	34	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	41	6	7	38	46	13	137	12	31	36	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	84	0	0	48	0	0	170	167	45	219	147	61
Stage 1	-	-	-	-	-	-	68	68	-	76	76	-
Stage 2	-	-	-	-	-	-	102	99	-	143	71	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1513	-	-	1559	-	-	794	726	1025	737	744	1004
Stage 1	-	-	-	-	-	-	942	838	-	933	832	-
Stage 2	-	-	-	-	-	-	904	813	-	860	836	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1513	-	-	1559	-	-	745	717	1025	615	734	1004
Mov Cap-2 Maneuver	-	-	-	-	-	-	745	717	-	615	734	-
Stage 1	-	-	-	-	-	-	934	831	-	926	828	-
Stage 2	-	-	-	-	-	-	847	809	-	704	829	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.6	11.3	10.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	735	1513	-	-	1559	-	-	719
HCM Lane V/C Ratio	0.22	0.008	-	-	0.005	-	-	0.115
HCM Control Delay (s)	11.3	7.4	0	-	7.3	0	-	10.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	118	0	0	424	72	10	65	76	3	0	44
Future Vol, veh/h	9	118	0	0	424	72	10	65	76	3	0	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	130	0	0	466	79	11	71	84	3	0	48

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	545	0	-	-	-	0	382	694	130	732	-	273
Stage 1	-	-	-	-	-	-	149	149	-	505	-	-
Stage 2	-	-	-	-	-	-	233	545	-	227	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	7.33	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	3.519	-	3.319
Pot Cap-1 Maneuver	1022	-	0	0	-	-	563	366	919	323	0	725
Stage 1	-	-	0	0	-	-	853	773	-	519	0	-
Stage 2	-	-	0	0	-	-	750	518	-	775	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1022	-	-	-	-	-	521	362	919	247	-	725
Mov Cap-2 Maneuver	-	-	-	-	-	-	521	362	-	247	-	-
Stage 1	-	-	-	-	-	-	844	764	-	513	-	-
Stage 2	-	-	-	-	-	-	700	518	-	632	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	14.7	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	537	1022	-	-	-	725
HCM Lane V/C Ratio	0.309	0.01	-	-	-	0.067
HCM Control Delay (s)	14.7	8.6	0	-	-	10.3
HCM Lane LOS	B	A	A	-	-	B
HCM 95th %tile Q(veh)	1.3	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	299	208	25	171	240
Future Vol, veh/h	0	299	208	25	171	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	329	229	27	188	264

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	229	229
Stage 1	-	-	0	0
Stage 2	-	-	229	229
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	759	671
Stage 1	-	-	-	-
Stage 2	-	-	809	715
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	759	0
Mov Cap-2 Maneuver	-	-	759	0
Stage 1	-	-	-	0
Stage 2	-	-	809	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	759	-
HCM Lane V/C Ratio	-	-	0.248	-
HCM Control Delay (s)	-	-	11.3	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	28	9	354	287	47
Future Vol, veh/h	0	28	9	354	287	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	32	10	402	326	53

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	353	380	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	691	1178	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	691	1178	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1178	-	691	-	-
HCM Lane V/C Ratio	0.009	-	0.046	-	-
HCM Control Delay (s)	8.1	0	10.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	48	70	347	299	16
Future Vol, veh/h	14	48	70	347	299	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	52	75	373	322	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	854	330	339	0	-	0
Stage 1	330	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	329	712	1220	-	-	-
Stage 1	728	-	-	-	-	-
Stage 2	594	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	303	712	1220	-	-	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	728	-	-	-	-	-
Stage 2	548	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.5	1.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1220	-	546	-	-
HCM Lane V/C Ratio	0.062	-	0.122	-	-
HCM Control Delay (s)	8.1	0	12.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	18	186	118	297	693	325
v/c Ratio	0.11	0.53	0.48	0.49	0.88	0.37
Control Delay	32.2	30.1	34.7	20.8	33.0	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	30.1	34.7	20.8	33.0	12.9
Queue Length 50th (ft)	7	67	45	86	238	72
Queue Length 95th (ft)	27	131	98	187	#562	164
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	552	717	552	747	788	889
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.26	0.21	0.40	0.88	0.37

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	156	24	114	285	3	129	390	153	10	222	83
Future Volume (vph)	17	156	24	114	285	3	129	390	153	10	222	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1825		1770	1860			1788			1793	
Flt Permitted	0.95	1.00		0.95	1.00			0.86			0.98	
Satd. Flow (perm)	1770	1825		1770	1860			1561			1759	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	161	25	118	294	3	133	402	158	10	229	86
RTOR Reduction (vph)	0	6	0	0	1	0	0	9	0	0	12	0
Lane Group Flow (vph)	18	180	0	118	296	0	0	684	0	0	313	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	14.9		7.5	21.3			32.6			32.6	
Effective Green, g (s)	1.1	14.9		7.5	21.3			32.6			32.6	
Actuated g/C Ratio	0.02	0.22		0.11	0.31			0.47			0.47	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	28	395		192	575			739			833	
v/s Ratio Prot	0.01	0.10		c0.07	c0.16							
v/s Ratio Perm								c0.44			0.18	
v/c Ratio	0.64	0.46		0.61	0.52			0.92			0.38	
Uniform Delay, d1	33.7	23.4		29.3	19.5			17.0			11.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	32.0	0.8		4.1	0.8			17.1			0.1	
Delay (s)	65.7	24.3		33.3	20.3			34.0			11.7	
Level of Service	E	C		C	C			C			B	
Approach Delay (s)		27.9			24.0			34.0			11.7	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	68.8	Sum of lost time (s)	13.8
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	20.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	15	132	223	20	405	240	284	32	15
Future Vol, veh/h	0	0	0	15	132	223	20	405	240	284	32	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	139	235	21	426	253	299	34	16

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1100	1100	-	34	0	-	426	0	0
Stage 1	468	468	-	-	-	-	-	-	-
Stage 2	632	632	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	235	212	0	1578	-	0	1133	-	0
Stage 1	630	561	0	-	-	0	-	-	0
Stage 2	530	474	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	169	0	-	1578	-	-	1133	-	-
Mov Cap-2 Maneuver	169	0	-	-	-	-	-	-	-
Stage 1	619	0	-	-	-	-	-	-	-
Stage 2	387	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	102.9	0.3	8.4
HCM LOS	F		

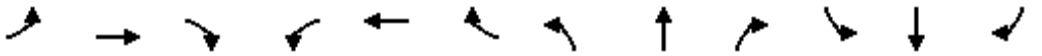
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1578	-	169	-	1133	-
HCM Lane V/C Ratio	0.013	-	0.916	-	0.264	-
HCM Control Delay (s)	7.3	0	102.9	0	9.3	0
HCM Lane LOS	A	A	F	A	A	A
HCM 95th %tile Q(veh)	0	-	6.8	-	1.1	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	575	323	33	145	334	94	42	335	132
v/c Ratio	0.71	0.76	0.08	0.67	0.54	0.16	0.30	0.78	0.30
Control Delay	43.2	51.8	0.4	64.9	37.6	8.2	59.4	54.2	17.6
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	51.9	0.4	64.9	37.6	8.2	59.4	54.2	17.6
Queue Length 50th (ft)	194	214	0	98	194	0	29	214	24
Queue Length 95th (ft)	292	355	0	#211	380	45	74	#446	91
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1242	663	623	281	620	589	281	519	504
Starvation Cap Reductn	0	30	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.51	0.05	0.52	0.54	0.16	0.15	0.65	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	406	76	33	274	31	138	317	89	40	318	125
Future Volume (vph)	65	406	76	33	274	31	138	317	89	40	318	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3445			1853	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		0.99			0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3445			1853	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	427	80	35	288	33	145	334	94	42	335	132
RTOR Reduction (vph)	0	10	0	0	0	25	0	0	63	0	0	66
Lane Group Flow (vph)	0	565	0	0	323	8	145	334	31	42	335	66
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		24.4			24.3	24.3	12.8	35.1	35.1	4.6	26.9	26.9
Effective Green, g (s)		24.4			24.3	24.3	12.8	35.1	35.1	4.6	26.9	26.9
Actuated g/C Ratio		0.23			0.23	0.23	0.12	0.33	0.33	0.04	0.25	0.25
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		786			421	359	211	611	519	76	468	398
v/s Ratio Prot		c0.16			c0.17		c0.08	0.18		0.02	c0.18	
v/s Ratio Perm						0.00			0.02			0.04
v/c Ratio		0.72			0.77	0.02	0.69	0.55	0.06	0.55	0.72	0.17
Uniform Delay, d1		38.1			38.7	32.1	45.1	29.4	24.6	50.1	36.5	31.2
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.2			8.2	0.0	7.2	1.0	0.0	4.9	5.2	0.2
Delay (s)		41.2			46.8	32.1	52.3	30.4	24.6	55.0	41.7	31.4
Level of Service		D			D	C	D	C	C	D	D	C
Approach Delay (s)		41.2			45.4			35.0			40.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	106.9	Sum of lost time (s)	18.5
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	9	512	71	410	105	48	366	138	422
v/c Ratio	0.04	0.78	0.49	0.62	0.17	0.22	0.67	0.46	0.60
Control Delay	17.0	29.5	32.7	23.7	4.7	33.8	28.9	33.8	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	29.5	32.7	23.7	4.7	33.8	28.9	33.8	23.1
Queue Length 50th (ft)	2	181	22	136	0	18	121	50	137
Queue Length 95th (ft)	13	345	73	262	30	57	#276	125	301
Internal Link Dist (ft)		965		430			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	422	1227	271	1240	1089	461	753	461	832
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.42	0.26	0.33	0.10	0.10	0.49	0.30	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	461	41	70	402	103	47	274	84	135	391	23
Future Volume (vph)	9	461	41	70	402	103	47	274	84	135	391	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1840		1770	1863	1583	1770	1797		1770	1848	
Flt Permitted	0.34	1.00		0.22	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	636	1840		409	1863	1583	1770	1797		1770	1848	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	9	470	42	71	410	105	48	280	86	138	399	23
RTOR Reduction (vph)	0	4	0	0	0	68	0	11	0	0	2	0
Lane Group Flow (vph)	9	508	0	71	410	37	48	355	0	138	420	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	22.6	22.6		22.6	22.6	22.6	4.4	20.0		8.5	24.1	
Effective Green, g (s)	22.6	22.6		22.6	22.6	22.6	4.4	20.0		8.5	24.1	
Actuated g/C Ratio	0.35	0.35		0.35	0.35	0.35	0.07	0.31		0.13	0.37	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	221	639		142	647	550	119	552		231	685	
v/s Ratio Prot		c0.28			0.22		0.03	0.20		c0.08	c0.23	
v/s Ratio Perm	0.01			0.17		0.02						
v/c Ratio	0.04	0.80		0.50	0.63	0.07	0.40	0.64		0.60	0.61	
Uniform Delay, d1	14.0	19.1		16.7	17.7	14.2	29.0	19.4		26.6	16.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	6.8		2.8	2.0	0.1	2.2	2.6		4.1	1.6	
Delay (s)	14.1	25.9		19.5	19.8	14.2	31.3	22.0		30.8	18.3	
Level of Service	B	C		B	B	B	C	C		C	B	
Approach Delay (s)		25.7			18.7			23.1			21.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	13.9
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

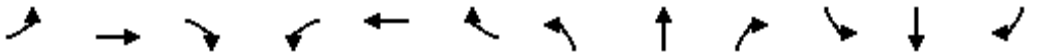


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	251	556	601	451	241	178	1127	614	310	1873	76
v/c Ratio	1.21	1.01	1.02	1.17	0.61	1.16	0.73	0.66	0.82	1.16	0.10
Control Delay	177.1	91.8	95.5	147.6	37.9	174.3	33.7	12.0	73.9	111.4	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	177.1	91.8	95.5	147.6	37.9	174.3	33.7	12.0	73.9	111.4	1.9
Queue Length 50th (ft)	~257	~242	~276	~453	122	~177	407	117	132	~979	0
Queue Length 95th (ft)	#429	#368	#394	#665	215	#328	492	252	#198	#1117	15
Internal Link Dist (ft)		250		609			888			1305	
Turn Bay Length (ft)	225		115		65	195		205	205		65
Base Capacity (vph)	208	553	588	384	392	153	1548	930	390	1619	780
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	1.01	1.02	1.17	0.61	1.16	0.73	0.66	0.79	1.16	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	236	411	112	565	424	227	167	1059	577	291	1761	71
Future Volume (vph)	236	411	112	565	424	227	167	1059	577	291	1761	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	4.2	4.2	3.7	5.5	5.5	3.2	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3426		3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3426		3433	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	251	437	119	601	451	241	178	1127	614	310	1873	76
RTOR Reduction (vph)	0	19	0	0	0	66	0	0	238	0	0	41
Lane Group Flow (vph)	251	537	0	601	451	175	178	1127	376	310	1873	35
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)	15.3	20.3		22.3	26.8	26.8	11.3	56.9	56.9	14.4	59.5	59.5
Effective Green, g (s)	15.3	20.3		22.3	26.8	26.8	11.3	56.9	56.9	14.4	59.5	59.5
Actuated g/C Ratio	0.12	0.16		0.17	0.21	0.21	0.09	0.44	0.44	0.11	0.46	0.46
Clearance Time (s)	3.7	3.7		3.7	4.2	4.2	3.7	5.5	5.5	3.2	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	208	534		588	384	326	153	1548	692	380	1619	724
v/s Ratio Prot	c0.14	0.16		c0.18	c0.24		c0.10	0.32		0.09	c0.53	
v/s Ratio Perm						0.11			0.24			0.02
v/c Ratio	1.21	1.01		1.02	1.17	0.54	1.16	0.73	0.54	0.82	1.16	0.05
Uniform Delay, d1	57.4	54.9		53.9	51.6	46.1	59.4	30.2	27.0	56.5	35.2	19.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	129.4	40.5		42.8	102.7	1.7	123.4	1.7	0.9	12.7	78.0	0.0
Delay (s)	186.7	95.4		96.7	154.3	47.8	182.8	31.9	27.8	69.2	113.3	19.6
Level of Service	F	F		F	F	D	F	C	C	E	F	B
Approach Delay (s)		123.8			107.6			44.6			104.1	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	89.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.1
Intersection Capacity Utilization	108.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

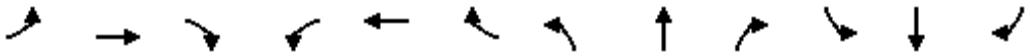


Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	274	863	91	1405	246	1880
v/c Ratio	0.30	0.97	0.59	0.79	0.61	1.08
Control Delay	36.3	63.5	80.9	46.7	60.7	83.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	9.3
Total Delay	36.3	63.5	80.9	46.7	60.7	92.3
Queue Length 50th (ft)	98	371	87	446	220	~1087
Queue Length 95th (ft)	138	#517	144	480	331	#1289
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	915	900	304	1938	404	1742
Starvation Cap Reductn	0	0	0	0	0	281
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.96	0.30	0.72	0.61	1.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	208	42	251	191	404	89	1227	150	241	1820	23
Future Volume (vph)	19	208	42	251	191	404	89	1227	150	241	1820	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.98			0.93		1.00	0.98		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3444			3238		1770	5002		1770	3533	
Flt Permitted		0.79			0.72		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2716			2372		1770	5002		1770	3533	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	19	212	43	256	195	412	91	1252	153	246	1857	23
RTOR Reduction (vph)	0	10	0	0	111	0	0	11	0	0	1	0
Lane Group Flow (vph)	0	264	0	0	752	0	91	1394	0	246	1879	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		49.3			49.3		13.0	52.7		34.3	74.0	
Effective Green, g (s)		49.3			49.3		13.0	52.7		34.3	74.0	
Actuated g/C Ratio		0.33			0.33		0.09	0.35		0.23	0.49	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		892			779		153	1757		404	1742	
v/s Ratio Prot							0.05	c0.28		0.14	c0.53	
v/s Ratio Perm		0.10			c0.32							
v/c Ratio		0.30			0.97		0.59	0.79		0.61	1.08	
Uniform Delay, d1		37.4			49.5		66.0	43.8		51.8	38.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			23.9		6.1	3.8		2.6	46.3	
Delay (s)		37.6			73.4		72.0	47.5		54.4	84.3	
Level of Service		D			E		E	D		D	F	
Approach Delay (s)		37.6			73.4			49.0			80.9	
Approach LOS		D			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	67.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	104.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

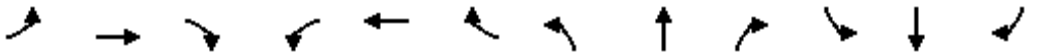


Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	261	540	161	333	734	72	1647	175	1315	820	404
v/c Ratio	0.83	0.84	1.24	1.23	1.23	0.61	1.12	0.81	1.09	1.35	1.16
Control Delay	89.0	78.8	215.1	191.5	146.9	99.3	117.3	101.1	106.7	219.0	142.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	89.0	78.8	215.1	191.5	146.9	99.3	117.4	101.1	106.7	219.0	142.0
Queue Length 50th (ft)	315	325	~251	~259	~747	82	~803	200	~914	~638	~496
Queue Length 95th (ft)	#447	401	#434	#378	#1012	142	#904	#337	#1081	#777	#751
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	346	714	130	271	598	144	1472	215	1202	606	349
Starvation Cap Reductn	0	0	0	0	0	0	56	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.76	1.24	1.23	1.23	0.50	1.16	0.81	1.09	1.35	1.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	440	313	16	250	225	705	69	1527	54	168	1130	132
Future Volume (vph)	440	313	16	250	225	705	69	1527	54	168	1130	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3314		1610	3341	1583	1770	5059		1770	3484	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3314		1610	3341	1583	1770	5059		1770	3484	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	458	326	17	260	234	734	72	1591	56	175	1177	138
RTOR Reduction (vph)	0	2	0	0	0	249	0	2	0	0	0	0
Lane Group Flow (vph)	261	538	0	161	333	485	72	1645	0	175	1315	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	33.5	33.5		14.0	14.0	35.0	11.6	50.0		21.0	59.4	
Effective Green, g (s)	33.5	33.5		14.0	14.0	35.0	11.6	50.0		21.0	59.4	
Actuated g/C Ratio	0.19	0.19		0.08	0.08	0.20	0.07	0.29		0.12	0.35	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	313	645		130	271	321	119	1469		215	1202	
v/s Ratio Prot	0.16	c0.16		0.10	0.10	c0.18	0.04	0.33		0.10	c0.38	
v/s Ratio Perm						0.12						
v/c Ratio	0.83	0.83		1.24	1.23	1.51	0.61	1.12		0.81	1.09	
Uniform Delay, d1	66.6	66.6		79.0	79.0	68.5	78.0	61.0		73.6	56.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.1	9.1		156.6	131.0	246.0	8.4	63.6		20.5	55.6	
Delay (s)	83.7	75.8		235.6	210.0	314.6	86.4	124.6		94.1	111.9	
Level of Service	F	E		F	F	F	F	F		F	F	
Approach Delay (s)		78.4			275.9			123.0			109.8	
Approach LOS		E			F			F			F	

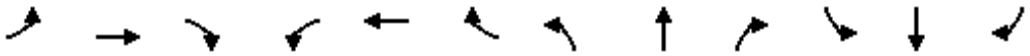
Intersection Summary			
HCM 2000 Control Delay	162.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	172.1	Sum of lost time (s)	21.6
Intersection Capacity Utilization	113.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	401	688	85
Future Volume (vph)	401	688	85
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.93	0.85	
Flt Protected	0.98	1.00	
Satd. Flow (prot)	3265	1441	
Flt Permitted	0.98	1.00	
Satd. Flow (perm)	3265	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	418	717	89
RTOR Reduction (vph)	0	81	0
Lane Group Flow (vph)	820	323	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.0	32.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.19	0.19	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	607	267	
v/s Ratio Prot	c0.25		
v/s Ratio Perm		0.22	
v/c Ratio	1.35	1.21	
Uniform Delay, d1	70.0	70.0	
Progression Factor	1.00	1.00	
Incremental Delay, d2	168.6	123.4	
Delay (s)	238.6	193.5	
Level of Service	F	F	
Approach Delay (s)	223.7		
Approach LOS	F		

Intersection Summary

F - Background Plus Project Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	278	797	280	99	376	201	232	966	82	211	1157	99
v/c Ratio	0.92	0.75	0.53	0.40	0.53	0.43	0.83	0.86	0.38	0.63	0.93	0.17
Control Delay	85.7	44.5	25.6	59.8	47.1	9.0	64.3	54.1	21.3	56.3	54.3	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.7	44.5	25.6	59.8	47.1	9.0	64.3	54.1	21.3	56.3	54.3	12.2
Queue Length 50th (ft)	222	302	114	40	143	0	196	440	3	160	~522	16
Queue Length 95th (ft)	#382	372	200	68	187	65	#305	#553	60	246	#685	58
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	311	1058	531	604	821	463	301	1126	369	335	1240	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.75	0.53	0.16	0.46	0.43	0.77	0.86	0.22	0.63	0.93	0.17

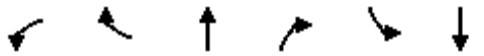
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	773	272	96	365	195	225	937	80	205	1122	96
Future Volume (vph)	270	773	272	96	365	195	225	937	80	205	1122	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	278	797	280	99	376	201	232	966	82	211	1157	99
RTOR Reduction (vph)	0	0	74	0	0	163	0	0	76	0	0	46
Lane Group Flow (vph)	278	797	206	99	376	38	232	966	6	211	1157	53
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	Perm
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									2
Actuated Green, G (s)	21.4	37.4	37.4	9.0	25.0	23.7	19.7	39.8	9.0	23.7	43.8	43.8
Effective Green, g (s)	21.4	37.4	37.4	9.0	25.0	23.7	19.7	39.8	9.0	23.7	43.8	43.8
Actuated g/C Ratio	0.17	0.30	0.30	0.07	0.20	0.19	0.16	0.32	0.07	0.19	0.35	0.35
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	303	1058	457	247	707	300	278	1126	113	335	1240	522
v/s Ratio Prot	c0.16	c0.23		0.03	0.11	0.02	0.13	c0.27	0.00	0.12	c0.33	
v/s Ratio Perm			0.13									0.04
v/c Ratio	0.92	0.75	0.45	0.40	0.53	0.13	0.83	0.86	0.05	0.63	0.93	0.10
Uniform Delay, d1	50.9	39.6	35.5	55.4	44.8	42.1	51.1	39.9	54.0	46.6	39.2	27.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.83	1.15	3.86	1.00	1.00	1.00
Incremental Delay, d2	30.9	3.1	0.7	1.1	0.8	0.2	16.9	7.5	0.2	3.7	13.9	0.4
Delay (s)	81.8	42.7	36.2	56.5	45.5	42.3	59.0	53.3	208.5	50.3	53.0	27.7
Level of Service	F	D	D	E	D	D	E	D	F	D	D	C
Approach Delay (s)		49.4			46.2			64.3			50.9	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	53.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	106	56	1342	114	96	1622
v/c Ratio	0.59	0.26	0.53	0.10	0.56	0.54
Control Delay	65.9	15.4	3.6	1.8	74.3	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.9	15.4	3.6	1.8	74.3	3.3
Queue Length 50th (ft)	83	0	53	0	81	62
Queue Length 95th (ft)	138	39	88	12	m104	m87
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	385	2535	1141	354	2977
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.15	0.53	0.10	0.27	0.54

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	103	54	1302	111	93	1573
Future Volume (vph)	103	54	1302	111	93	1573
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	106	56	1342	114	96	1622
RTOR Reduction (vph)	0	50	0	8	0	0
Lane Group Flow (vph)	106	6	1342	106	96	1622
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	12.8	12.8	89.6	89.6	12.1	105.2
Effective Green, g (s)	12.8	12.8	89.6	89.6	12.1	105.2
Actuated g/C Ratio	0.10	0.10	0.72	0.72	0.10	0.84
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	181	162	2536	1134	171	2978
v/s Ratio Prot	c0.06		0.38		0.05	c0.46
v/s Ratio Perm		0.00		0.07		
v/c Ratio	0.59	0.04	0.53	0.09	0.56	0.54
Uniform Delay, d1	53.6	50.5	8.1	5.4	53.9	2.9
Progression Factor	1.00	1.00	0.32	0.33	1.24	0.87
Incremental Delay, d2	4.8	0.1	0.7	0.1	2.8	0.5
Delay (s)	58.3	50.6	3.3	1.9	69.5	3.0
Level of Service	E	D	A	A	E	A
Approach Delay (s)	55.7		3.2			6.7
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	48	1365	17	97	1579
Future Vol, veh/h	5	48	1365	17	97	1579
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	49	1393	17	99	1611

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2406	705	0	0	1410	0
Stage 1	1402	-	-	-	-	-
Stage 2	1004	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	28	379	-	-	480	-
Stage 1	193	-	-	-	-	-
Stage 2	315	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	22	379	-	-	480	-
Mov Cap-2 Maneuver	22	-	-	-	-	-
Stage 1	193	-	-	-	-	-
Stage 2	250	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	41.9	0	0.8
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	150	480	-
HCM Lane V/C Ratio	-	-	0.361	0.206	-
HCM Control Delay (s)	-	-	41.9	14.4	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	1.5	0.8	-

Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	10	181	157	1238	163	1698
v/c Ratio	0.04	0.70	0.43	0.55	0.69	0.60
Control Delay	0.3	64.8	10.3	15.1	63.4	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	64.8	10.3	15.1	63.4	5.2
Queue Length 50th (ft)	0	141	0	270	132	220
Queue Length 95th (ft)	0	207	58	438	204	166
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	373	384	465	2266	424	2825
Starvation Cap Reductn	0	0	0	0	0	75
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.47	0.34	0.55	0.38	0.62

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	10	165	9	151	0	1185	4	156	1623	7
Future Volume (vph)	0	0	10	165	9	151	0	1185	4	156	1623	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1778	1583		3538		1770	3537	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1778	1583		3538		1770	3537	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	10	172	9	157	0	1234	4	162	1691	7
RTOR Reduction (vph)	0	0	9	0	0	134	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1	0	181	23	0	1238	0	163	1698	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			17.1		18.1	18.1		80.1		16.8	99.9	
Effective Green, g (s)			17.1		18.1	18.1		80.1		16.8	99.9	
Actuated g/C Ratio			0.14		0.14	0.14		0.64		0.13	0.80	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			220		257	229		2267		237	2826	
v/s Ratio Prot								0.35		c0.09	c0.48	
v/s Ratio Perm			0.00		0.10	0.01						
v/c Ratio			0.01		0.70	0.10		0.55		0.69	0.60	
Uniform Delay, d1			46.6		50.9	46.4		12.4		51.6	4.8	
Progression Factor			1.00		1.00	1.00		1.00		0.98	0.78	
Incremental Delay, d2			0.0		8.5	0.2		1.0		7.3	0.9	
Delay (s)			46.6		59.4	46.6		13.4		57.8	4.6	
Level of Service			D		E	D		B		E	A	
Approach Delay (s)		46.6			53.4			13.4			9.3	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	175	24	24	103	9	25	77	42	109	53	26
Future Vol, veh/h	14	175	24	24	103	9	25	77	42	109	53	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	190	26	26	112	10	27	84	46	118	58	28
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.4	9.6	9.5	10.3
HCM LOS	B	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	7%	18%	58%
Vol Thru, %	53%	82%	76%	28%
Vol Right, %	29%	11%	7%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	144	213	136	188
LT Vol	25	14	24	109
Through Vol	77	175	103	53
RT Vol	42	24	9	26
Lane Flow Rate	157	232	148	204
Geometry Grp	1	1	1	1
Degree of Util (X)	0.218	0.32	0.211	0.29
Departure Headway (Hd)	5.015	4.978	5.139	5.114
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	706	713	689	695
Service Time	3.114	3.067	3.239	3.208
HCM Lane V/C Ratio	0.222	0.325	0.215	0.294
HCM Control Delay	9.5	10.4	9.6	10.3
HCM Lane LOS	A	B	A	B
HCM 95th-tile Q	0.8	1.4	0.8	1.2

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	47	97	24	66	35
Future Vol, veh/h	7	47	97	24	66	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	57	118	29	80	43

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	337	133	0	0	148	0
Stage 1	133	-	-	-	-	-
Stage 2	204	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	658	916	-	-	1434	-
Stage 1	893	-	-	-	-	-
Stage 2	830	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	620	916	-	-	1434	-
Mov Cap-2 Maneuver	620	-	-	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	863	1434	-
HCM Lane V/C Ratio	-	-	0.076	0.056	-
HCM Control Delay (s)	-	-	9.5	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	76	23	0	30	41	21	66	11	15	22	10
Future Vol, veh/h	14	76	23	0	30	41	21	66	11	15	22	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	81	24	0	32	44	22	70	12	16	23	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	76	0	0	105	0	0	194	199	93	218	189	54
Stage 1	-	-	-	-	-	-	123	123	-	54	54	-
Stage 2	-	-	-	-	-	-	71	76	-	164	135	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1523	-	-	1486	-	-	765	697	964	738	706	1013
Stage 1	-	-	-	-	-	-	881	794	-	958	850	-
Stage 2	-	-	-	-	-	-	939	832	-	838	785	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1523	-	-	1486	-	-	732	690	964	667	699	1013
Mov Cap-2 Maneuver	-	-	-	-	-	-	732	690	-	667	699	-
Stage 1	-	-	-	-	-	-	872	786	-	948	850	-
Stage 2	-	-	-	-	-	-	904	832	-	746	777	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	10.8	10.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	722	1523	-	-	1486	-	-	736
HCM Lane V/C Ratio	0.144	0.01	-	-	-	-	-	0.068
HCM Control Delay (s)	10.8	7.4	0	-	0	-	-	10.2
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	153	0	0	292	40	6	39	93	5	0	27
Future Vol, veh/h	7	153	0	0	292	40	6	39	93	5	0	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	168	0	0	321	44	7	43	102	5	0	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	365	0	-	-	-	0	344	549	168	599	-	182
Stage 1	-	-	-	-	-	-	184	184	-	343	-	-
Stage 2	-	-	-	-	-	-	160	365	-	256	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	7.33	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	3.519	-	3.319
Pot Cap-1 Maneuver	1192	-	0	0	-	-	598	443	875	399	0	830
Stage 1	-	-	0	0	-	-	817	747	-	646	0	-
Stage 2	-	-	0	0	-	-	827	623	-	748	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1192	-	-	-	-	-	574	440	875	324	-	830
Mov Cap-2 Maneuver	-	-	-	-	-	-	574	440	-	324	-	-
Stage 1	-	-	-	-	-	-	811	742	-	641	-	-
Stage 2	-	-	-	-	-	-	797	623	-	618	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	11.9	9.5
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	672	1192	-	-	-	830
HCM Lane V/C Ratio	0.226	0.006	-	-	-	0.036
HCM Control Delay (s)	11.9	8	0	-	-	9.5
HCM Lane LOS	B	A	A	-	-	A
HCM 95th %tile Q(veh)	0.9	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	62	28	42	28	3	12
Future Vol, veh/h	62	28	42	28	3	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	30	46	30	3	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	76	0	-	0	226	61
Stage 1	-	-	-	-	61	-
Stage 2	-	-	-	-	165	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1523	-	-	-	762	1004
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	864	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1523	-	-	-	728	1004
Mov Cap-2 Maneuver	-	-	-	-	728	-
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	825	-

Approach	EB	WB	SB
HCM Control Delay, s	5.1	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1523	-	-	-	933
HCM Lane V/C Ratio	0.044	-	-	-	0.017
HCM Control Delay (s)	7.5	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	261	293	33	144	128
Future Vol, veh/h	0	261	293	33	144	128
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	287	322	36	158	141

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	322	322
Stage 1	-	-	0	0
Stage 2	-	-	322	322
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	672	595
Stage 1	-	-	-	-
Stage 2	-	-	735	651
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	672	0
Mov Cap-2 Maneuver	-	-	672	0
Stage 1	-	-	-	0
Stage 2	-	-	735	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	672	-
HCM Lane V/C Ratio	-	-	0.235	-
HCM Control Delay (s)	-	-	12	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.9	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	31	26	308	124	44
Future Vol, veh/h	0	31	26	308	124	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	35	30	350	141	50

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	166	191	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	878	1383	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	878	1383	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1383	-	878	-	-
HCM Lane V/C Ratio	0.021	-	0.04	-	-
HCM Control Delay (s)	7.7	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	82	69	365	148	7
Future Vol, veh/h	18	82	69	365	148	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	88	74	392	159	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	704	163	167	0	-	0
Stage 1	163	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	403	882	1411	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	376	882	1411	-	-	-
Mov Cap-2 Maneuver	376	-	-	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	544	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	1.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1411	-	710	-	-
HCM Lane V/C Ratio	0.053	-	0.151	-	-
HCM Control Delay (s)	7.7	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	11	246	53	208	610	171
v/c Ratio	0.06	0.60	0.23	0.37	0.70	0.19
Control Delay	31.4	28.4	31.1	18.8	20.0	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.4	28.4	31.1	18.8	20.0	9.5
Queue Length 50th (ft)	4	89	20	57	184	29
Queue Length 95th (ft)	20	161	54	129	#429	76
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	611	792	611	820	936	976
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.31	0.09	0.25	0.65	0.18

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	208	31	51	196	6	82	372	137	6	99	61
Future Volume (vph)	11	208	31	51	196	6	82	372	137	6	99	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			0.97			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1826		1770	1855			1792			1767	
Flt Permitted	0.95	1.00		0.95	1.00			0.93			0.98	
Satd. Flow (perm)	1770	1826		1770	1855			1682			1739	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	11	214	32	53	202	6	85	384	141	6	102	63
RTOR Reduction (vph)	0	6	0	0	1	0	0	9	0	0	19	0
Lane Group Flow (vph)	11	240	0	53	207	0	0	601	0	0	152	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.0	15.1		4.1	18.2			31.0			31.0	
Effective Green, g (s)	1.0	15.1		4.1	18.2			31.0			31.0	
Actuated g/C Ratio	0.02	0.24		0.06	0.28			0.48			0.48	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	27	430		113	527			814			842	
v/s Ratio Prot	0.01	c0.13		c0.03	c0.11							
v/s Ratio Perm								c0.36			0.09	
v/c Ratio	0.41	0.56		0.47	0.39			0.74			0.18	
Uniform Delay, d1	31.2	21.5		28.9	18.4			13.2			9.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.6	1.6		1.1	0.5			3.0			0.0	
Delay (s)	34.8	23.1		30.0	18.9			16.3			9.4	
Level of Service	C	C		C	B			B			A	
Approach Delay (s)		23.6			21.2			16.3			9.4	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	13.8
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	155	195	5	389	143	146	25	7
Future Vol, veh/h	0	0	0	4	155	195	5	389	143	146	25	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	163	205	5	409	151	154	26	7

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	754	754	-	26	0	-	409	0	0
Stage 1	420	420	-	-	-	-	-	-	-
Stage 2	334	334	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	377	338	0	1588	-	0	1150	-	0
Stage 1	663	589	0	-	-	0	-	-	0
Stage 2	725	643	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	324	0	-	1588	-	-	1150	-	-
Mov Cap-2 Maneuver	324	0	-	-	-	-	-	-	-
Stage 1	660	0	-	-	-	-	-	-	-
Stage 2	626	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.4	0.1	7.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1588	-	324	-	1150	-
HCM Lane V/C Ratio	0.003	-	0.517	-	0.134	-
HCM Control Delay (s)	7.3	0	27.4	0	8.6	0
HCM Lane LOS	A	A	D	A	A	A
HCM 95th %tile Q(veh)	0	-	2.8	-	0.5	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	516	370	45	46	366	159	26	203	80
v/c Ratio	0.65	0.75	0.09	0.29	0.70	0.28	0.18	0.40	0.16
Control Delay	38.3	43.5	0.9	52.2	42.3	7.3	51.9	35.5	7.9
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	43.6	0.9	52.2	42.3	7.3	51.9	35.5	7.9
Queue Length 50th (ft)	157	221	0	29	210	0	16	105	0
Queue Length 95th (ft)	243	364	4	74	#436	55	50	219	36
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1446	771	710	327	602	619	327	602	571
Starvation Cap Reductn	0	33	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.50	0.06	0.14	0.61	0.26	0.08	0.34	0.14

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	395	58	25	327	43	44	348	151	25	193	76
Future Volume (vph)	37	395	58	25	327	43	44	348	151	25	193	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3463			1856	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3463			1856	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	39	416	61	26	344	45	46	366	159	26	203	80
RTOR Reduction (vph)	0	9	0	0	0	33	0	0	115	0	0	58
Lane Group Flow (vph)	0	507	0	0	370	12	46	366	44	26	203	22
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		20.9			24.7	24.7	4.4	26.1	26.1	3.8	25.5	25.5
Effective Green, g (s)		20.9			24.7	24.7	4.4	26.1	26.1	3.8	25.5	25.5
Actuated g/C Ratio		0.22			0.26	0.26	0.05	0.28	0.28	0.04	0.27	0.27
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		769			487	415	82	517	439	71	505	429
v/s Ratio Prot		c0.15			c0.20		c0.03	c0.20		0.01	0.11	
v/s Ratio Perm						0.01			0.03			0.01
v/c Ratio		0.66			0.76	0.03	0.56	0.71	0.10	0.37	0.40	0.05
Uniform Delay, d1		33.3			31.9	25.7	43.9	30.5	25.2	43.9	28.0	25.3
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.1			6.7	0.0	5.1	4.4	0.1	1.2	0.5	0.0
Delay (s)		35.4			38.6	25.8	49.0	34.9	25.3	45.1	28.5	25.4
Level of Service		D			D	C	D	C	C	D	C	C
Approach Delay (s)		35.4			37.2			33.4			29.1	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	27	433	43	436	108	22	366	77	214
v/c Ratio	0.13	0.66	0.21	0.66	0.17	0.10	0.67	0.29	0.29
Control Delay	17.0	22.9	18.4	23.0	4.4	32.4	26.8	31.2	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	22.9	18.4	23.0	4.4	32.4	26.8	31.2	15.9
Queue Length 50th (ft)	7	129	11	131	0	7	110	26	40
Queue Length 95th (ft)	26	263	38	266	29	33	256	77	138
Internal Link Dist (ft)		965		430			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	412	1305	417	1314	1148	531	866	531	947
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.33	0.10	0.33	0.09	0.04	0.42	0.15	0.23

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	406	19	42	427	106	22	272	86	75	198	12
Future Volume (vph)	26	406	19	42	427	106	22	272	86	75	198	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1850		1770	1863	1583	1770	1796		1770	1847	
Flt Permitted	0.31	1.00		0.32	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	585	1850		592	1863	1583	1770	1796		1770	1847	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	27	414	19	43	436	108	22	278	88	77	202	12
RTOR Reduction (vph)	0	2	0	0	0	71	0	12	0	0	2	0
Lane Group Flow (vph)	27	431	0	43	436	37	22	354	0	77	212	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	20.5	20.5		20.5	20.5	20.5	2.1	19.2		6.2	23.3	
Effective Green, g (s)	20.5	20.5		20.5	20.5	20.5	2.1	19.2		6.2	23.3	
Actuated g/C Ratio	0.34	0.34		0.34	0.34	0.34	0.04	0.32		0.10	0.39	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	200	634		202	638	542	62	576		183	719	
v/s Ratio Prot		0.23			c0.23		0.01	c0.20		c0.04	c0.11	
v/s Ratio Perm	0.05			0.07		0.02						
v/c Ratio	0.14	0.68		0.21	0.68	0.07	0.35	0.62		0.42	0.30	
Uniform Delay, d1	13.5	16.8		13.9	16.9	13.2	28.2	17.2		25.1	12.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.6		0.4	2.8	0.0	2.5	1.7		1.1	0.2	
Delay (s)	13.8	19.5		14.3	19.6	13.3	30.7	18.8		26.3	12.8	
Level of Service	B	B		B	B	B	C	B		C	B	
Approach Delay (s)		19.1			18.1			19.5			16.3	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	13.9
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

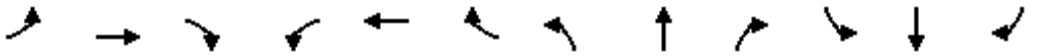


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	250	492	518	389	284	164	1813	481	256	1465	143
v/c Ratio	1.11	0.91	0.94	1.15	0.75	0.92	1.07	0.54	1.02	0.92	0.18
Control Delay	141.0	68.9	75.8	140.5	40.4	103.4	74.2	11.4	116.8	41.1	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	141.0	68.9	75.8	140.5	40.4	103.4	74.2	11.4	116.8	41.1	4.2
Queue Length 50th (ft)	~221	189	206	~354	126	128	~818	105	~106	546	3
Queue Length 95th (ft)	#387	#289	#311	#549	#246	#261	#957	202	#194	#703	40
Internal Link Dist (ft)		250		609			888			1305	
Turn Bay Length (ft)	225		115		65	195		205	205		65
Base Capacity (vph)	225	543	552	338	381	178	1695	897	251	1598	789
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.91	0.94	1.15	0.75	0.92	1.07	0.54	1.02	0.92	0.18

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	359	103	487	366	267	154	1704	452	241	1377	134
Future Volume (vph)	235	359	103	487	366	267	154	1704	452	241	1377	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3421		3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3421		3433	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	250	382	110	518	389	284	164	1813	481	256	1465	143
RTOR Reduction (vph)	0	22	0	0	0	94	0	0	139	0	0	75
Lane Group Flow (vph)	250	470	0	518	389	190	164	1813	342	256	1465	68
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)	15.3	18.3		19.3	21.8	21.8	12.1	57.5	57.5	8.8	54.2	54.2
Effective Green, g (s)	15.3	18.3		19.3	21.8	21.8	12.1	57.5	57.5	8.8	54.2	54.2
Actuated g/C Ratio	0.13	0.15		0.16	0.18	0.18	0.10	0.48	0.48	0.07	0.45	0.45
Clearance Time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	225	521		552	338	287	178	1695	758	251	1598	714
v/s Ratio Prot	c0.14	0.14		c0.15	c0.21		c0.09	c0.51		c0.07	0.41	
v/s Ratio Perm						0.12			0.22			0.04
v/c Ratio	1.11	0.90		0.94	1.15	0.66	0.92	1.07	0.45	1.02	0.92	0.10
Uniform Delay, d1	52.4	50.0		49.8	49.1	45.7	53.5	31.2	20.8	55.6	30.8	18.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	93.0	18.7		23.8	96.5	5.6	45.3	43.2	0.4	62.0	8.6	0.1
Delay (s)	145.4	68.7		73.5	145.6	51.3	98.8	74.4	21.2	117.6	39.4	18.9
Level of Service	F	E		E	F	D	F	E	C	F	D	B
Approach Delay (s)		94.5			91.8			65.6			48.6	
Approach LOS		F			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	69.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	101.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

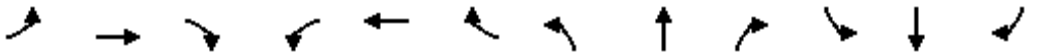


Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	248	667	53	1823	409	1547
v/c Ratio	0.27	0.90	0.46	0.88	1.18	0.79
Control Delay	35.2	62.5	79.2	46.5	155.2	31.9
Queue Delay	0.0	0.0	0.0	3.5	0.0	10.8
Total Delay	35.2	62.5	79.2	49.9	155.2	42.7
Queue Length 50th (ft)	84	307	51	596	~489	643
Queue Length 95th (ft)	118	380	97	#702	#704	835
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	1037	824	304	2077	348	1963
Starvation Cap Reductn	0	0	0	178	0	411
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.81	0.17	0.96	1.18	1.00

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	173	56	251	212	191	52	1610	176	401	1445	72
Future Volume (vph)	14	173	56	251	212	191	52	1610	176	401	1445	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.97			0.96		1.00	0.99		1.00	0.99	
Flt Protected		1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3408			3320		1770	5010		1770	3514	
Flt Permitted		0.89			0.70		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3056			2382		1770	5010		1770	3514	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	14	177	57	256	216	195	53	1643	180	409	1474	73
RTOR Reduction (vph)	0	20	0	0	32	0	0	8	0	0	2	0
Lane Group Flow (vph)	0	228	0	0	635	0	53	1815	0	409	1545	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		44.8			44.8		8.7	61.1		30.4	82.8	
Effective Green, g (s)		44.8			44.8		8.7	61.1		30.4	82.8	
Actuated g/C Ratio		0.30			0.30		0.06	0.41		0.20	0.55	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		912			711		102	2040		358	1939	
v/s Ratio Prot							0.03	c0.36		c0.23	0.44	
v/s Ratio Perm		0.07			c0.27							
v/c Ratio		0.25			0.89		0.52	0.89		1.14	0.80	
Uniform Delay, d1		39.9			50.3		68.6	41.3		59.8	26.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			13.6		4.4	6.3		92.2	3.5	
Delay (s)		40.0			64.0		73.0	47.6		152.0	30.4	
Level of Service		D			E		E	D		F	C	
Approach Delay (s)		40.0			64.0			48.3			55.8	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	53.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

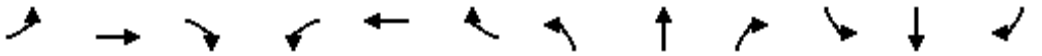


Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	216	437	120	253	642	29	1862	332	1320	818	386
v/c Ratio	0.77	0.76	0.90	0.91	1.05	0.34	1.24	1.50	0.99	1.30	1.09
Control Delay	84.7	74.1	128.8	109.5	80.0	88.8	160.1	294.0	71.8	197.4	117.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	84.7	74.1	128.8	109.5	80.0	88.8	160.3	294.0	71.8	197.4	117.8
Queue Length 50th (ft)	252	251	146	154	~478	32	~927	~504	~803	~590	~418
Queue Length 95th (ft)	362	319	#308	#262	#768	71	#1090	#751	#1055	#770	#697
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	354	725	134	279	612	147	1505	221	1339	629	355
Starvation Cap Reductn	0	0	0	0	0	0	52	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.60	0.90	0.91	1.05	0.20	1.28	1.50	0.99	1.30	1.09

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	384	202	41	165	193	616	28	1679	108	319	1118	149
Future Volume (vph)	384	202	41	165	193	616	28	1679	108	319	1118	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3271		1610	3356	1583	1770	5039		1770	3477	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3271		1610	3356	1583	1770	5039		1770	3477	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	400	210	43	172	201	642	29	1749	112	332	1165	155
RTOR Reduction (vph)	0	5	0	0	0	254	0	4	0	0	0	0
Lane Group Flow (vph)	216	432	0	120	253	388	29	1858	0	332	1320	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	29.3	29.3		14.0	14.0	35.0	7.1	50.9		21.0	64.8	
Effective Green, g (s)	29.3	29.3		14.0	14.0	35.0	7.1	50.9		21.0	64.8	
Actuated g/C Ratio	0.17	0.17		0.08	0.08	0.21	0.04	0.30		0.12	0.38	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	279	567		133	278	328	74	1519		220	1334	
v/s Ratio Prot	c0.13	0.13		0.07	0.08	c0.15	0.02	c0.37		c0.19	0.38	
v/s Ratio Perm						0.10						
v/c Ratio	0.77	0.76		0.90	0.91	1.18	0.39	1.22		1.51	0.99	
Uniform Delay, d1	66.6	66.4		76.7	76.8	66.9	78.7	59.0		73.9	51.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.6	6.0		49.4	31.5	108.6	3.4	106.5		251.2	21.9	
Delay (s)	79.2	72.4		126.1	108.3	175.5	82.2	165.4		325.1	73.5	
Level of Service	E	E		F	F	F	F	F		F	E	
Approach Delay (s)		74.7			152.9			164.2			124.1	
Approach LOS		E			F			F			F	

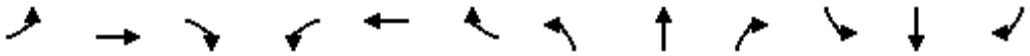
Intersection Summary			
HCM 2000 Control Delay	149.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	168.8	Sum of lost time (s)	21.6
Intersection Capacity Utilization	110.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	476	594	85
Future Volume (vph)	476	594	85
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.94	0.85	
Flt Protected	0.97	1.00	
Satd. Flow (prot)	3300	1441	
Flt Permitted	0.97	1.00	
Satd. Flow (perm)	3300	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	496	619	89
RTOR Reduction (vph)	0	81	0
Lane Group Flow (vph)	818	305	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.0	32.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.19	0.19	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	625	273	
v/s Ratio Prot	c0.25		
v/s Ratio Perm		0.21	
v/c Ratio	1.31	1.12	
Uniform Delay, d1	68.4	68.4	
Progression Factor	1.00	1.00	
Incremental Delay, d2	150.2	89.6	
Delay (s)	218.6	158.0	
Level of Service	F	F	
Approach Delay (s)	199.2		
Approach LOS	F		

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	222	394	143	219	742	208	240	1199	118	239	1046	207
v/c Ratio	0.93	0.43	0.30	0.62	0.92	0.50	0.91	0.94	0.45	0.88	0.81	0.33
Control Delay	95.3	40.4	13.8	61.5	64.3	11.6	73.4	42.5	32.0	82.7	41.8	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.3	40.4	13.8	61.5	64.3	11.6	73.4	42.5	32.0	82.7	41.8	13.7
Queue Length 50th (ft)	180	140	23	88	308	5	173	546	38	190	402	46
Queue Length 95th (ft)	#334	192	80	129	#418	75	#340	#638	m98	#330	491	110
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	240	925	477	411	821	422	269	1277	286	283	1296	620
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.43	0.30	0.53	0.90	0.49	0.89	0.94	0.41	0.84	0.81	0.33

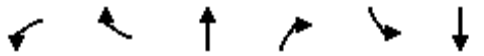
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	382	139	212	720	202	233	1163	114	232	1015	201
Future Volume (vph)	215	382	139	212	720	202	233	1163	114	232	1015	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	222	394	143	219	742	208	240	1199	118	239	1046	207
RTOR Reduction (vph)	0	0	78	0	0	170	0	0	99	0	0	79
Lane Group Flow (vph)	222	394	65	219	742	38	240	1199	19	239	1046	128
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	custom
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									6
Actuated Green, G (s)	17.0	32.7	32.7	12.9	28.6	19.3	18.6	45.0	12.9	19.3	45.7	45.0
Effective Green, g (s)	17.0	32.7	32.7	12.9	28.6	19.3	18.6	45.0	12.9	19.3	45.7	45.0
Actuated g/C Ratio	0.14	0.26	0.26	0.10	0.23	0.15	0.15	0.36	0.10	0.15	0.37	0.36
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	240	925	400	354	809	244	263	1274	163	273	1293	540
v/s Ratio Prot	c0.13	0.11		0.06	c0.21	0.02	0.14	c0.34	0.01	0.14	c0.30	
v/s Ratio Perm			0.04									0.09
v/c Ratio	0.93	0.43	0.16	0.62	0.92	0.16	0.91	0.94	0.12	0.88	0.81	0.24
Uniform Delay, d1	53.4	38.4	35.6	53.7	47.0	45.8	52.4	38.7	50.9	51.7	35.7	28.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.78	0.77	2.47	1.00	1.00	1.00
Incremental Delay, d2	38.0	0.3	0.2	3.2	15.0	0.3	28.0	12.2	0.3	25.3	5.5	1.0
Delay (s)	91.3	38.7	35.8	56.9	62.1	46.1	69.0	41.9	125.9	77.0	41.3	29.0
Level of Service	F	D	D	E	E	D	E	D	F	E	D	C
Approach Delay (s)		53.5			58.3			52.4			45.3	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	226	88	1536	113	82	1470
v/c Ratio	0.76	0.28	0.64	0.10	0.52	0.53
Control Delay	66.1	17.0	7.3	4.6	77.5	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.1	17.0	7.4	4.6	77.5	2.5
Queue Length 50th (ft)	176	15	141	10	71	23
Queue Length 95th (ft)	252	60	156	m8	m76	150
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	393	2394	1079	283	2749
Starvation Cap Reductn	0	0	54	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.22	0.66	0.10	0.29	0.53

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	219	85	1490	110	80	1426
Future Volume (vph)	219	85	1490	110	80	1426
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	226	88	1536	113	82	1470
RTOR Reduction (vph)	0	55	0	9	0	0
Lane Group Flow (vph)	226	33	1536	104	82	1470
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	20.9	20.9	83.9	83.9	9.7	97.1
Effective Green, g (s)	20.9	20.9	83.9	83.9	9.7	97.1
Actuated g/C Ratio	0.17	0.17	0.67	0.67	0.08	0.78
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	295	264	2375	1062	137	2749
v/s Ratio Prot	c0.13		c0.43		c0.05	0.42
v/s Ratio Perm		0.02		0.07		
v/c Ratio	0.77	0.13	0.65	0.10	0.60	0.53
Uniform Delay, d1	49.7	44.3	11.9	7.2	55.8	5.3
Progression Factor	1.00	1.00	0.46	0.61	1.27	0.33
Incremental Delay, d2	11.3	0.2	1.0	0.1	5.3	0.6
Delay (s)	61.0	44.5	6.5	4.5	76.3	2.3
Level of Service	E	D	A	A	E	A
Approach Delay (s)	56.4		6.3			6.2
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	49	1550	22	37	1608
Future Vol, veh/h	4	49	1550	22	37	1608
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	50	1582	22	38	1641

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2489	802	0	0	1604	0
Stage 1	1593	-	-	-	-	-
Stage 2	896	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	24	327	-	-	404	-
Stage 1	152	-	-	-	-	-
Stage 2	359	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	22	327	-	-	404	-
Mov Cap-2 Maneuver	22	-	-	-	-	-
Stage 1	152	-	-	-	-	-
Stage 2	325	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.6	0	0.3
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	160	404	-
HCM Lane V/C Ratio	-	-	0.338	0.093	-
HCM Control Delay (s)	-	-	38.6	14.8	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	1.4	0.3	-



Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	33	313	185	1627	131	1592
v/c Ratio	0.09	0.87	0.39	0.77	0.64	0.61
Control Delay	3.2	71.6	8.3	22.8	77.5	3.8
Queue Delay	0.0	2.4	0.0	0.0	0.0	0.0
Total Delay	3.2	74.0	8.3	22.8	77.5	3.8
Queue Length 50th (ft)	0	238	0	523	108	121
Queue Length 95th (ft)	10	#387	61	671	172	68
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	388	389	491	2126	283	2628
Starvation Cap Reductn	0	23	0	0	0	57
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.86	0.38	0.77	0.46	0.62

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	32	292	9	178	0	1561	1	126	1507	21
Future Volume (vph)	0	0	32	292	9	178	0	1561	1	126	1507	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1776	1583		3539		1770	3532	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1776	1583		3539		1770	3532	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	33	304	9	185	0	1626	1	131	1570	22
RTOR Reduction (vph)	0	0	27	0	0	147	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	6	0	313	38	0	1627	0	131	1591	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			24.4		25.4	25.4		75.1		14.5	92.6	
Effective Green, g (s)			24.4		25.4	25.4		75.1		14.5	92.6	
Actuated g/C Ratio			0.20		0.20	0.20		0.60		0.12	0.74	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			314		360	321		2126		205	2616	
v/s Ratio Prot								c0.46		c0.07	0.45	
v/s Ratio Perm			0.00		0.18	0.02						
v/c Ratio			0.02		0.87	0.12		0.77		0.64	0.61	
Uniform Delay, d1			40.6		48.2	40.6		18.4		52.8	7.6	
Progression Factor			1.00		1.00	1.00		1.00		1.25	0.36	
Incremental Delay, d2			0.0		19.4	0.2		2.7		5.6	0.9	
Delay (s)			40.7		67.6	40.8		21.1		71.4	3.7	
Level of Service			D		E	D		C		E	A	
Approach Delay (s)		40.7			57.7			21.1			8.8	
Approach LOS		D			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	136	22	6	234	44	56	171	74	57	51	26
Future Vol, veh/h	25	136	22	6	234	44	56	171	74	57	51	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	148	24	7	254	48	61	186	80	62	55	28
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.6	13.6	14.1	10.9
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	14%	2%	43%
Vol Thru, %	57%	74%	82%	38%
Vol Right, %	25%	12%	15%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	301	183	284	134
LT Vol	56	25	6	57
Through Vol	171	136	234	51
RT Vol	74	22	44	26
Lane Flow Rate	327	199	309	146
Geometry Grp	1	1	1	1
Degree of Util (X)	0.503	0.32	0.477	0.241
Departure Headway (Hd)	5.533	5.795	5.558	5.946
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	648	617	645	600
Service Time	3.599	3.871	3.626	4.027
HCM Lane V/C Ratio	0.505	0.323	0.479	0.243
HCM Control Delay	14.1	11.6	13.6	10.9
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.8	1.4	2.6	0.9

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	105	196	7	32	47
Future Vol, veh/h	15	105	196	7	32	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	128	239	9	39	57

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	378	243	0	0	248	0
Stage 1	243	-	-	-	-	-
Stage 2	135	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	624	796	-	-	1318	-
Stage 1	797	-	-	-	-	-
Stage 2	891	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	605	796	-	-	1318	-
Mov Cap-2 Maneuver	605	-	-	-	-	-
Stage 1	797	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	3.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	766	1318	-
HCM Lane V/C Ratio	-	-	0.191	0.03	-
HCM Control Delay (s)	-	-	10.8	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	39	7	7	36	44	15	129	11	31	35	17
Future Vol, veh/h	12	39	7	7	36	44	15	129	11	31	35	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	41	7	7	38	47	16	137	12	33	37	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	85	0	0	49	0	0	175	171	45	222	151	62
Stage 1	-	-	-	-	-	-	71	71	-	77	77	-
Stage 2	-	-	-	-	-	-	104	100	-	145	74	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1512	-	-	1558	-	-	788	722	1025	734	741	1003
Stage 1	-	-	-	-	-	-	939	836	-	932	831	-
Stage 2	-	-	-	-	-	-	902	812	-	858	833	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1512	-	-	1558	-	-	736	712	1025	612	731	1003
Mov Cap-2 Maneuver	-	-	-	-	-	-	736	712	-	612	731	-
Stage 1	-	-	-	-	-	-	931	828	-	924	827	-
Stage 2	-	-	-	-	-	-	842	808	-	701	826	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.6	11.4	10.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	730	1512	-	-	1558	-	-	719
HCM Lane V/C Ratio	0.226	0.008	-	-	0.005	-	-	0.123
HCM Control Delay (s)	11.4	7.4	0	-	7.3	0	-	10.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	118	0	0	424	72	10	65	76	3	0	45
Future Vol, veh/h	9	118	0	0	424	72	10	65	76	3	0	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	130	0	0	466	79	11	71	84	3	0	49

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	545	0	-	-	-	0	382	694	130	732	-	273
Stage 1	-	-	-	-	-	-	149	149	-	505	-	-
Stage 2	-	-	-	-	-	-	233	545	-	227	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	7.33	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	3.519	-	3.319
Pot Cap-1 Maneuver	1022	-	0	0	-	-	563	366	919	323	0	725
Stage 1	-	-	0	0	-	-	853	773	-	519	0	-
Stage 2	-	-	0	0	-	-	750	518	-	775	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1022	-	-	-	-	-	520	362	919	247	-	725
Mov Cap-2 Maneuver	-	-	-	-	-	-	520	362	-	247	-	-
Stage 1	-	-	-	-	-	-	844	764	-	513	-	-
Stage 2	-	-	-	-	-	-	699	518	-	632	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	14.7	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	536	1022	-	-	-	725
HCM Lane V/C Ratio	0.31	0.01	-	-	-	0.068
HCM Control Delay (s)	14.7	8.6	0	-	-	10.3
HCM Lane LOS	B	A	A	-	-	B
HCM 95th %tile Q(veh)	1.3	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	28	56	5	17	64
Future Vol, veh/h	11	28	56	5	17	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	30	61	5	18	70

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	66	0	-	0	118	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	54	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1536	-	-	-	878	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	969	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1536	-	-	-	871	1000
Mov Cap-2 Maneuver	-	-	-	-	871	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	961	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1536	-	-	-	970
HCM Lane V/C Ratio	0.008	-	-	-	0.091
HCM Control Delay (s)	7.4	0	-	-	9.1
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	301	237	25	174	244
Future Vol, veh/h	0	301	237	25	174	244
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	331	260	27	191	268

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	260	260
Stage 1	-	-	0	0
Stage 2	-	-	260	260
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	729	645
Stage 1	-	-	-	-
Stage 2	-	-	783	693
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	729	0
Mov Cap-2 Maneuver	-	-	729	0
Stage 1	-	-	-	0
Stage 2	-	-	783	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	729	-
HCM Lane V/C Ratio	-	-	0.262	-
HCM Control Delay (s)	-	-	11.7	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	1.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	45	11	356	287	50
Future Vol, veh/h	0	45	11	356	287	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	51	13	405	326	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	355	383	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	689	1175	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	689	1175	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1175	-	689	-	-
HCM Lane V/C Ratio	0.011	-	0.074	-	-
HCM Control Delay (s)	8.1	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	48	71	349	316	16
Future Vol, veh/h	16	48	71	349	316	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	52	76	375	340	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	876	348	357	0	-	0
Stage 1	348	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	319	695	1202	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	293	695	1202	-	-	-
Mov Cap-2 Maneuver	293	-	-	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	545	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	1.4	0
HCM LOS	B		

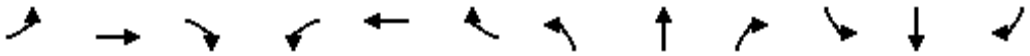
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1202	-	517	-	-
HCM Lane V/C Ratio	0.064	-	0.133	-	-
HCM Control Delay (s)	8.2	0	13	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	18	186	118	298	695	343
v/c Ratio	0.11	0.53	0.48	0.49	0.89	0.40
Control Delay	32.2	30.1	34.7	20.8	34.0	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	30.1	34.7	20.8	34.0	13.6
Queue Length 50th (ft)	7	67	45	87	240	79
Queue Length 95th (ft)	27	131	98	188	#566	179
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	552	717	552	747	783	848
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.26	0.21	0.40	0.89	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	156	24	114	285	4	129	392	153	25	224	83
Future Volume (vph)	17	156	24	114	285	4	129	392	153	25	224	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1825		1770	1859			1788			1793	
Flt Permitted	0.95	1.00		0.95	1.00			0.86			0.93	
Satd. Flow (perm)	1770	1825		1770	1859			1551			1678	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	161	25	118	294	4	133	404	158	26	231	86
RTOR Reduction (vph)	0	6	0	0	1	0	0	9	0	0	11	0
Lane Group Flow (vph)	18	180	0	118	297	0	0	686	0	0	332	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	14.9		7.5	21.3			32.6			32.6	
Effective Green, g (s)	1.1	14.9		7.5	21.3			32.6			32.6	
Actuated g/C Ratio	0.02	0.22		0.11	0.31			0.47			0.47	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	28	395		192	575			734			795	
v/s Ratio Prot	0.01	0.10		c0.07	c0.16							
v/s Ratio Perm								c0.44			0.20	
v/c Ratio	0.64	0.46		0.61	0.52			0.93			0.42	
Uniform Delay, d1	33.7	23.4		29.3	19.5			17.1			11.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	32.0	0.8		4.1	0.8			18.6			0.1	
Delay (s)	65.7	24.3		33.3	20.3			35.7			12.0	
Level of Service	E	C		C	C			D			B	
Approach Delay (s)		27.9			24.0			35.7			12.0	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	68.8	Sum of lost time (s)	13.8
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	20.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	15	132	225	20	405	240	286	32	15
Future Vol, veh/h	0	0	0	15	132	225	20	405	240	286	32	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	139	237	21	426	253	301	34	16

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1104	1104	-	34	0	-	426	0	0
Stage 1	468	468	-	-	-	-	-	-	-
Stage 2	636	636	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	234	211	0	1578	-	0	1133	-	0
Stage 1	630	561	0	-	-	0	-	-	0
Stage 2	527	472	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	168	0	-	1578	-	-	1133	-	-
Mov Cap-2 Maneuver	168	0	-	-	-	-	-	-	-
Stage 1	619	0	-	-	-	-	-	-	-
Stage 2	384	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	104.6	0.3	8.4
HCM LOS	F		

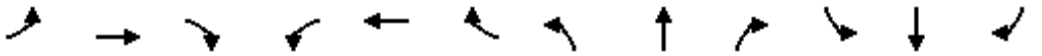
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1578	-	168	-	1133	-
HCM Lane V/C Ratio	0.013	-	0.921	-	0.266	-
HCM Control Delay (s)	7.3	0	104.6	0	9.3	0
HCM Lane LOS	A	A	F	A	A	A
HCM 95th %tile Q(veh)	0	-	6.8	-	1.1	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	575	325	33	145	358	102	42	339	132
v/c Ratio	0.71	0.76	0.08	0.67	0.58	0.17	0.31	0.78	0.30
Control Delay	43.5	52.0	0.4	65.0	38.5	8.0	59.5	54.6	17.6
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.5	52.2	0.4	65.0	38.5	8.0	59.5	54.6	17.6
Queue Length 50th (ft)	194	216	0	98	212	0	29	218	24
Queue Length 95th (ft)	292	358	0	#211	#415	46	74	#453	91
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1236	660	621	280	621	596	280	516	502
Starvation Cap Reductn	0	30	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.52	0.05	0.52	0.58	0.17	0.15	0.66	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	406	76	35	274	31	138	340	97	40	322	125
Future Volume (vph)	65	406	76	35	274	31	138	340	97	40	322	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3445			1852	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		0.99			0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3445			1852	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	427	80	37	288	33	145	358	102	42	339	132
RTOR Reduction (vph)	0	10	0	0	0	25	0	0	68	0	0	66
Lane Group Flow (vph)	0	565	0	0	325	8	145	358	34	42	339	66
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		24.4			24.5	24.5	12.9	35.3	35.3	4.6	27.0	27.0
Effective Green, g (s)		24.4			24.5	24.5	12.9	35.3	35.3	4.6	27.0	27.0
Actuated g/C Ratio		0.23			0.23	0.23	0.12	0.33	0.33	0.04	0.25	0.25
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		783			422	361	212	612	520	75	468	398
v/s Ratio Prot		c0.16			c0.18		c0.08	0.19		0.02	c0.18	
v/s Ratio Perm						0.00			0.02			0.04
v/c Ratio		0.72			0.77	0.02	0.68	0.58	0.06	0.56	0.72	0.17
Uniform Delay, d1		38.3			38.8	32.1	45.2	29.9	24.7	50.4	36.7	31.4
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.3			8.4	0.0	7.1	1.4	0.1	5.6	5.5	0.2
Delay (s)		41.6			47.2	32.1	52.3	31.3	24.7	55.9	42.2	31.6
Level of Service		D			D	C	D	C	C	E	D	C
Approach Delay (s)		41.6			45.8			35.3			40.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	107.3	Sum of lost time (s)	18.5
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	9	521	72	412	105	48	381	138	422
v/c Ratio	0.04	0.79	0.53	0.62	0.17	0.22	0.69	0.46	0.60
Control Delay	17.1	30.6	35.9	24.0	4.7	34.1	29.6	34.2	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	30.6	35.9	24.0	4.7	34.1	29.6	34.2	22.9
Queue Length 50th (ft)	2	190	23	140	0	18	127	51	138
Queue Length 95th (ft)	13	354	77	264	30	57	#311	125	302
Internal Link Dist (ft)		965		430			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	415	1217	255	1230	1081	456	744	456	831
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.43	0.28	0.33	0.10	0.11	0.51	0.30	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	469	41	71	404	103	47	278	95	135	391	23
Future Volume (vph)	9	469	41	71	404	103	47	278	95	135	391	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1840		1770	1863	1583	1770	1792		1770	1848	
Flt Permitted	0.34	1.00		0.21	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	628	1840		386	1863	1583	1770	1792		1770	1848	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	9	479	42	72	412	105	48	284	97	138	399	23
RTOR Reduction (vph)	0	4	0	0	0	69	0	12	0	0	2	0
Lane Group Flow (vph)	9	517	0	72	412	36	48	369	0	138	420	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	22.8	22.8		22.8	22.8	22.8	4.4	20.5		8.5	24.6	
Effective Green, g (s)	22.8	22.8		22.8	22.8	22.8	4.4	20.5		8.5	24.6	
Actuated g/C Ratio	0.35	0.35		0.35	0.35	0.35	0.07	0.31		0.13	0.37	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	217	638		133	646	549	118	559		228	691	
v/s Ratio Prot		c0.28			0.22		0.03	0.21		c0.08	c0.23	
v/s Ratio Perm	0.01			0.19		0.02						
v/c Ratio	0.04	0.81		0.54	0.64	0.07	0.41	0.66		0.61	0.61	
Uniform Delay, d1	14.2	19.5		17.2	18.0	14.3	29.4	19.6		27.0	16.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	7.7		4.4	2.1	0.1	2.3	2.8		4.5	1.5	
Delay (s)	14.3	27.2		21.7	20.1	14.4	31.7	22.4		31.5	18.2	
Level of Service	B	C		C	C	B	C	C		C	B	
Approach Delay (s)		27.0			19.2			23.4			21.5	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	13.9
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

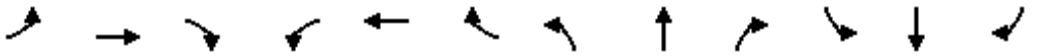


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	260	568	601	453	241	178	1127	614	310	1876	77
v/c Ratio	1.25	1.03	1.02	1.18	0.61	1.16	0.73	0.66	0.82	1.16	0.10
Control Delay	192.1	96.2	95.5	149.4	37.9	174.3	33.7	12.1	73.9	112.1	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	192.1	96.2	95.5	149.4	37.9	174.3	33.7	12.1	73.9	112.1	1.9
Queue Length 50th (ft)	~273	~259	~276	~457	122	~177	407	118	132	~982	0
Queue Length 95th (ft)	#448	#380	#394	#667	215	#328	492	253	#198	#1120	16
Internal Link Dist (ft)		250		609			888			1305	
Turn Bay Length (ft)	225		115		65	195		205	205		65
Base Capacity (vph)	208	554	588	384	392	153	1548	930	390	1619	780
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.25	1.03	1.02	1.18	0.61	1.16	0.73	0.66	0.79	1.16	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	244	422	112	565	426	227	167	1059	577	291	1763	72
Future Volume (vph)	244	422	112	565	426	227	167	1059	577	291	1763	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	4.2	4.2	3.7	5.5	5.5	3.2	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3428		3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3428		3433	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	260	449	119	601	453	241	178	1127	614	310	1876	77
RTOR Reduction (vph)	0	19	0	0	0	66	0	0	238	0	0	42
Lane Group Flow (vph)	260	549	0	601	453	175	178	1127	376	310	1876	35
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)	15.3	20.3		22.3	26.8	26.8	11.3	56.9	56.9	14.4	59.5	59.5
Effective Green, g (s)	15.3	20.3		22.3	26.8	26.8	11.3	56.9	56.9	14.4	59.5	59.5
Actuated g/C Ratio	0.12	0.16		0.17	0.21	0.21	0.09	0.44	0.44	0.11	0.46	0.46
Clearance Time (s)	3.7	3.7		3.7	4.2	4.2	3.7	5.5	5.5	3.2	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	208	535		588	384	326	153	1548	692	380	1619	724
v/s Ratio Prot	c0.15	0.16		c0.18	c0.24		c0.10	0.32		0.09	c0.53	
v/s Ratio Perm						0.11			0.24			0.02
v/c Ratio	1.25	1.03		1.02	1.18	0.54	1.16	0.73	0.54	0.82	1.16	0.05
Uniform Delay, d1	57.4	54.9		53.9	51.6	46.1	59.4	30.2	27.0	56.5	35.2	19.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	145.9	46.0		42.8	104.6	1.7	123.4	1.7	0.9	12.7	78.8	0.0
Delay (s)	203.2	100.8		96.7	156.2	47.8	182.8	31.9	27.8	69.2	114.0	19.6
Level of Service	F	F		F	F	D	F	C	C	E	F	B
Approach Delay (s)		133.0			108.4			44.6			104.7	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	90.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.1
Intersection Capacity Utilization	108.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

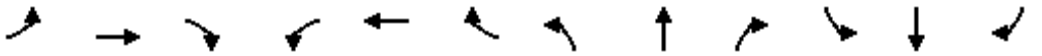


Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	274	863	91	1413	246	1883
v/c Ratio	0.30	0.97	0.59	0.80	0.61	1.08
Control Delay	36.3	63.5	80.9	46.7	61.0	83.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	8.6
Total Delay	36.3	63.5	80.9	46.7	61.0	92.2
Queue Length 50th (ft)	98	371	87	449	220	~1090
Queue Length 95th (ft)	138	#517	144	484	331	#1293
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	915	900	304	1938	402	1742
Starvation Cap Reductn	0	0	0	0	0	280
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.96	0.30	0.73	0.61	1.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	208	42	251	191	404	89	1235	150	241	1823	23
Future Volume (vph)	19	208	42	251	191	404	89	1235	150	241	1823	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.98			0.93		1.00	0.98		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3444			3238		1770	5003		1770	3533	
Flt Permitted		0.79			0.72		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2716			2372		1770	5003		1770	3533	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	19	212	43	256	195	412	91	1260	153	246	1860	23
RTOR Reduction (vph)	0	10	0	0	111	0	0	10	0	0	1	0
Lane Group Flow (vph)	0	264	0	0	752	0	91	1403	0	246	1882	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		49.3			49.3		13.0	52.9		34.1	74.0	
Effective Green, g (s)		49.3			49.3		13.0	52.9		34.1	74.0	
Actuated g/C Ratio		0.33			0.33		0.09	0.35		0.23	0.49	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		892			779		153	1764		402	1742	
v/s Ratio Prot							0.05	c0.28		0.14	c0.53	
v/s Ratio Perm		0.10			c0.32							
v/c Ratio		0.30			0.97		0.59	0.80		0.61	1.08	
Uniform Delay, d1		37.4			49.5		66.0	43.7		52.0	38.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			23.9		6.1	3.8		2.8	47.0	
Delay (s)		37.6			73.4		72.0	47.5		54.8	85.0	
Level of Service		D			E		E	D		D	F	
Approach Delay (s)		37.6			73.4			49.0			81.5	
Approach LOS		D			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	67.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	104.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

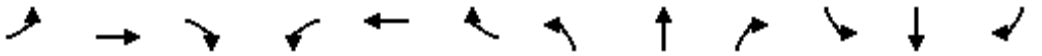


Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	264	546	161	334	734	72	1654	175	1318	820	404
v/c Ratio	0.84	0.84	1.24	1.23	1.23	0.61	1.13	0.81	1.10	1.35	1.16
Control Delay	89.6	79.2	215.2	193.1	148.2	99.2	119.5	101.2	108.3	219.8	142.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	89.6	79.2	215.2	193.1	148.2	99.2	119.7	101.2	108.3	219.8	142.5
Queue Length 50th (ft)	319	329	~252	~262	~752	82	~813	200	~923	~640	~497
Queue Length 95th (ft)	#464	406	#434	#379	#1014	142	#909	#337	#1083	#777	#751
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	345	712	130	271	596	144	1470	215	1200	606	349
Starvation Cap Reductn	0	0	0	0	0	0	56	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.77	1.24	1.23	1.23	0.50	1.17	0.81	1.10	1.35	1.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	444	317	16	250	226	705	69	1534	54	168	1133	132
Future Volume (vph)	444	317	16	250	226	705	69	1534	54	168	1133	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3314		1610	3341	1583	1770	5059		1770	3484	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3314		1610	3341	1583	1770	5059		1770	3484	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	462	330	17	260	235	734	72	1598	56	175	1180	138
RTOR Reduction (vph)	0	2	0	0	0	248	0	2	0	0	0	0
Lane Group Flow (vph)	264	544	0	161	334	486	72	1652	0	175	1318	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	33.7	33.7		14.0	14.0	35.0	11.6	50.0		21.0	59.4	
Effective Green, g (s)	33.7	33.7		14.0	14.0	35.0	11.6	50.0		21.0	59.4	
Actuated g/C Ratio	0.20	0.20		0.08	0.08	0.20	0.07	0.29		0.12	0.34	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	314	648		130	271	321	119	1468		215	1201	
v/s Ratio Prot	0.16	c0.16		0.10	0.10	c0.18	0.04	0.33		0.10	c0.38	
v/s Ratio Perm						0.12						
v/c Ratio	0.84	0.84		1.24	1.23	1.51	0.61	1.13		0.81	1.10	
Uniform Delay, d1	66.7	66.7		79.2	79.2	68.7	78.1	61.2		73.7	56.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.0	9.6		156.6	132.4	247.0	8.4	65.8		20.5	56.9	
Delay (s)	84.7	76.3		235.7	211.6	315.7	86.5	126.9		94.2	113.3	
Level of Service	F	E		F	F	F	F	F		F	F	
Approach Delay (s)		79.0			276.9			125.3			111.1	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	163.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	172.3	Sum of lost time (s)	21.6
Intersection Capacity Utilization	113.9%	ICU Level of Service	H
Analysis Period (min)	15		

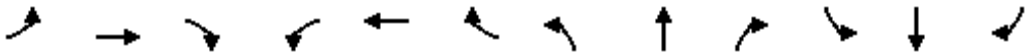
c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	401	688	85
Future Volume (vph)	401	688	85
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.93	0.85	
Flt Protected	0.98	1.00	
Satd. Flow (prot)	3265	1441	
Flt Permitted	0.98	1.00	
Satd. Flow (perm)	3265	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	418	717	89
RTOR Reduction (vph)	0	81	0
Lane Group Flow (vph)	820	323	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.0	32.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.19	0.19	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	606	267	
v/s Ratio Prot	c0.25		
v/s Ratio Perm		0.22	
v/c Ratio	1.35	1.21	
Uniform Delay, d1	70.2	70.2	
Progression Factor	1.00	1.00	
Incremental Delay, d2	169.6	123.4	
Delay (s)	239.7	193.5	
Level of Service	F	F	
Approach Delay (s)	224.5		
Approach LOS	F		

Intersection Summary

G - Cumulative Traffic Conditions



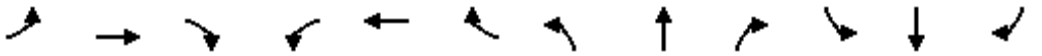
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	312	968	300	102	435	212	237	1043	90	235	1274	110
v/c Ratio	1.00	0.82	0.52	0.41	0.53	0.46	0.86	1.03	0.41	0.72	1.15	0.21
Control Delay	103.3	45.0	25.1	59.9	44.8	9.1	65.9	79.2	25.9	61.8	115.6	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.3	45.0	25.1	59.9	44.8	9.1	65.9	79.2	25.9	61.8	115.6	14.3
Queue Length 50th (ft)	~256	375	125	41	163	0	199	~487	9	181	~652	23
Queue Length 95th (ft)	#446	#478	222	69	217	68	#309	#613	m74	#286	#790	69
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	311	1186	582	604	821	464	297	1016	369	325	1112	517
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.82	0.52	0.17	0.53	0.46	0.80	1.03	0.24	0.72	1.15	0.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

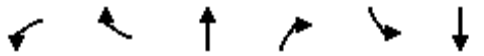
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	303	939	291	99	422	206	230	1012	87	228	1236	107
Future Volume (vph)	303	939	291	99	422	206	230	1012	87	228	1236	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	312	968	300	102	435	212	237	1043	90	235	1274	110
RTOR Reduction (vph)	0	0	70	0	0	173	0	0	83	0	0	49
Lane Group Flow (vph)	312	968	230	102	435	39	237	1043	7	235	1274	61
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	Perm
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									2
Actuated Green, G (s)	22.0	41.9	41.9	9.1	29.0	23.0	19.6	35.9	9.1	23.0	39.3	39.3
Effective Green, g (s)	22.0	41.9	41.9	9.1	29.0	23.0	19.6	35.9	9.1	23.0	39.3	39.3
Actuated g/C Ratio	0.18	0.34	0.34	0.07	0.23	0.18	0.16	0.29	0.07	0.18	0.31	0.31
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	311	1186	512	249	821	291	277	1016	115	325	1112	469
v/s Ratio Prot	c0.18	c0.27		0.03	0.12	0.02	0.13	c0.29	0.00	0.13	c0.36	
v/s Ratio Perm			0.15									0.04
v/c Ratio	1.00	0.82	0.45	0.41	0.53	0.13	0.86	1.03	0.06	0.72	1.15	0.13
Uniform Delay, d1	51.5	38.0	32.5	55.4	42.0	42.7	51.3	44.5	54.0	48.0	42.9	30.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.82	1.06	3.44	1.00	1.00	1.00
Incremental Delay, d2	51.8	4.5	0.6	1.1	0.6	0.2	19.0	32.8	0.2	7.7	76.5	0.6
Delay (s)	103.3	42.5	33.2	56.5	42.7	42.9	60.8	80.2	185.8	55.7	119.3	31.2
Level of Service	F	D	C	E	D	D	E	F	F	E	F	C
Approach Delay (s)		52.7			44.6			83.8			104.1	
Approach LOS		D			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	75.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	124	62	1425	116	107	1752
v/c Ratio	0.62	0.27	0.57	0.10	0.59	0.60
Control Delay	66.1	14.2	3.6	1.6	72.7	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.1	14.2	3.6	1.6	72.7	4.5
Queue Length 50th (ft)	97	0	58	0	91	98
Queue Length 95th (ft)	156	41	79	9	m96	m56
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	390	2479	1117	354	2942
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.16	0.57	0.10	0.30	0.60

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	120	60	1382	113	104	1699
Future Volume (vph)	120	60	1382	113	104	1699
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	62	1425	116	107	1752
RTOR Reduction (vph)	0	55	0	8	0	0
Lane Group Flow (vph)	124	7	1425	108	107	1752
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	14.1	14.1	87.5	87.5	12.9	103.9
Effective Green, g (s)	14.1	14.1	87.5	87.5	12.9	103.9
Actuated g/C Ratio	0.11	0.11	0.70	0.70	0.10	0.83
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	199	178	2477	1108	182	2941
v/s Ratio Prot	c0.07		0.40		0.06	c0.50
v/s Ratio Perm		0.00		0.07		
v/c Ratio	0.62	0.04	0.58	0.10	0.59	0.60
Uniform Delay, d1	52.9	49.4	9.4	6.0	53.5	3.5
Progression Factor	1.00	1.00	0.26	0.25	1.26	1.04
Incremental Delay, d2	6.0	0.1	0.8	0.2	2.2	0.4
Delay (s)	58.9	49.5	3.3	1.7	69.7	4.1
Level of Service	E	D	A	A	E	A
Approach Delay (s)	55.7		3.2			7.8
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	4.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	80	1416	19	201	1618
Future Vol, veh/h	6	80	1416	19	201	1618
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	82	1445	19	205	1651

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2691	732	0	0	1464	0
Stage 1	1455	-	-	-	-	-
Stage 2	1236	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	17	364	-	-	457	-
Stage 1	181	-	-	-	-	-
Stage 2	237	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	9	364	-	-	457	-
Mov Cap-2 Maneuver	9	-	-	-	-	-
Stage 1	181	-	-	-	-	-
Stage 2	131	-	-	-	-	-

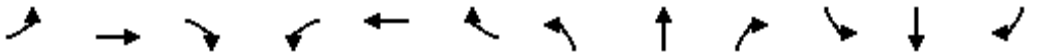
Approach	WB	NB	SB
HCM Control Delay, s	145.4	0	2.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	97	457	-
HCM Lane V/C Ratio	-	-	0.905	0.449	-
HCM Control Delay (s)	-	-	145.4	19.1	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	5.2	2.3	-



Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	10	202	157	1306	163	1739
v/c Ratio	0.04	0.73	0.41	0.59	0.69	0.62
Control Delay	0.2	64.6	9.7	16.6	62.9	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	0.2	64.6	9.7	16.6	62.9	7.5
Queue Length 50th (ft)	0	157	0	305	131	275
Queue Length 95th (ft)	0	225	57	491	209	214
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	370	383	465	2221	424	2784
Starvation Cap Reductn	0	0	0	0	0	110
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.53	0.34	0.59	0.38	0.65

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	10	185	9	151	0	1238	15	156	1663	7
Future Volume (vph)	0	0	10	185	9	151	0	1238	15	156	1663	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1778	1583		3533		1770	3537	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1778	1583		3533		1770	3537	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	10	193	9	157	0	1290	16	162	1732	7
RTOR Reduction (vph)	0	0	9	0	0	132	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1	0	202	25	0	1306	0	163	1739	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			18.6		19.6	19.6		78.6		16.8	98.4	
Effective Green, g (s)			18.6		19.6	19.6		78.6		16.8	98.4	
Actuated g/C Ratio			0.15		0.16	0.16		0.63		0.13	0.79	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			239		278	248		2221		237	2784	
v/s Ratio Prot								0.37		c0.09	c0.49	
v/s Ratio Perm			0.00		0.11	0.02						
v/c Ratio			0.01		0.73	0.10		0.59		0.69	0.62	
Uniform Delay, d1			45.3		50.2	45.1		13.7		51.6	5.6	
Progression Factor			1.00		1.00	1.00		1.00		0.98	1.02	
Incremental Delay, d2			0.0		9.1	0.2		1.1		7.1	0.9	
Delay (s)			45.3		59.3	45.3		14.8		57.4	6.6	
Level of Service			D		E	D		B		E	A	
Approach Delay (s)		45.3			53.2			14.8			11.0	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	9.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	190	22	40	111	9	40	79	60	109	54	26
Future Vol, veh/h	14	190	22	40	111	9	40	79	60	109	54	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	45	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	207	24	43	121	10	43	86	65	118	59	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	130	0	0	230	0	0	505	466	218	537	474	126
Stage 1	-	-	-	-	-	-	249	249	-	213	213	-
Stage 2	-	-	-	-	-	-	256	217	-	324	261	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1455	-	-	1338	-	-	478	494	822	455	489	924
Stage 1	-	-	-	-	-	-	755	701	-	789	726	-
Stage 2	-	-	-	-	-	-	749	723	-	688	692	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1455	-	-	1338	-	-	406	473	822	349	468	924
Mov Cap-2 Maneuver	-	-	-	-	-	-	406	473	-	349	468	-
Stage 1	-	-	-	-	-	-	747	694	-	781	703	-
Stage 2	-	-	-	-	-	-	644	700	-	549	685	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	1.9	15.7	21.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	529	1455	-	-	1338	-	-	415
HCM Lane V/C Ratio	0.368	0.01	-	-	0.032	-	-	0.495
HCM Control Delay (s)	15.7	7.5	-	-	7.8	-	-	21.9
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.7	0	-	-	0.1	-	-	2.7

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	19	106	95	3	35	44	32	74	12	24	43	26
Future Vol, veh/h	19	106	95	3	35	44	32	74	12	24	43	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	113	101	3	37	47	34	79	13	26	46	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	84	0	0	214	0	0	308	294	163	316	321	61
Stage 1	-	-	-	-	-	-	204	204	-	67	67	-
Stage 2	-	-	-	-	-	-	104	90	-	249	254	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1513	-	-	1356	-	-	644	617	882	637	596	1004
Stage 1	-	-	-	-	-	-	798	733	-	943	839	-
Stage 2	-	-	-	-	-	-	902	820	-	755	697	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1513	-	-	1356	-	-	581	607	882	558	586	1004
Mov Cap-2 Maneuver	-	-	-	-	-	-	581	607	-	558	586	-
Stage 1	-	-	-	-	-	-	786	722	-	929	837	-
Stage 2	-	-	-	-	-	-	828	818	-	653	687	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.3	12.3	11.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	619	1513	-	-	1356	-	-	654
HCM Lane V/C Ratio	0.203	0.013	-	-	0.002	-	-	0.151
HCM Control Delay (s)	12.3	7.4	0	-	7.7	0	-	11.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	159	0	0	307	53	6	65	93	22	0	32
Future Vol, veh/h	12	159	0	0	307	53	6	65	93	22	0	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	175	0	0	337	58	7	71	102	24	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	396	0	-	-	-	0	370	597	175	654	-	198
Stage 1	-	-	-	-	-	-	201	201	-	366	-	-
Stage 2	-	-	-	-	-	-	169	396	-	288	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	7.33	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	3.519	-	3.319
Pot Cap-1 Maneuver	1161	-	0	0	-	-	574	416	868	366	0	811
Stage 1	-	-	0	0	-	-	800	734	-	627	0	-
Stage 2	-	-	0	0	-	-	817	603	-	719	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1161	-	-	-	-	-	544	411	868	277	-	811
Mov Cap-2 Maneuver	-	-	-	-	-	-	544	411	-	277	-	-
Stage 1	-	-	-	-	-	-	790	725	-	619	-	-
Stage 2	-	-	-	-	-	-	782	603	-	565	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	13.7	9.6
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	594	1161	-	-	-	811
HCM Lane V/C Ratio	0.303	0.011	-	-	-	0.043
HCM Control Delay (s)	13.7	8.1	0	-	-	9.6
HCM Lane LOS	B	A	A	-	-	A
HCM 95th %tile Q(veh)	1.3	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	28	54	49	43	10	7
Future Vol, veh/h	28	54	49	43	10	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	59	53	47	11	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	89	0	213	60
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	153	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1506	-	775	1005
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	875	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1506	-	747	1005
Mov Cap-2 Maneuver	-	-	-	-	747	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	844	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	835	-	-	1506	-
HCM Lane V/C Ratio	0.022	-	-	0.035	-
HCM Control Delay (s)	9.4	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	279	327	33	175	152
Future Vol, veh/h	0	279	327	33	175	152
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	307	359	36	192	167

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	359	359
Stage 1	-	-	0	0
Stage 2	-	-	359	359
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	640	568
Stage 1	-	-	-	-
Stage 2	-	-	707	627
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	640	0
Mov Cap-2 Maneuver	-	-	640	0
Stage 1	-	-	-	0
Stage 2	-	-	707	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	640	-
HCM Lane V/C Ratio	-	-	0.3	-
HCM Control Delay (s)	-	-	13	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	1.3	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	35	60	326	168	32
Future Vol, veh/h	0	35	60	326	168	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	40	68	370	191	36

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	209	227	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	831	1341	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	831	1341	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	1.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1341	-	831	-	-
HCM Lane V/C Ratio	0.051	-	0.048	-	-
HCM Control Delay (s)	7.8	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	121	77	416	192	10
Future Vol, veh/h	19	121	77	416	192	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	130	83	447	206	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	825	212	217	0	-	0
Stage 1	212	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	342	828	1353	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	314	828	1353	-	-	-
Mov Cap-2 Maneuver	314	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	497	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	1.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1353	-	677	-	-
HCM Lane V/C Ratio	0.061	-	0.222	-	-
HCM Control Delay (s)	7.8	0	11.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.8	-	-

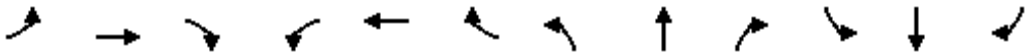


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	18	264	53	288	876	212
v/c Ratio	0.10	0.63	0.25	0.52	0.98	0.26
Control Delay	32.2	29.6	32.0	20.8	46.3	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	29.6	32.0	20.8	46.3	11.1
Queue Length 50th (ft)	7	97	21	79	~407	43
Queue Length 95th (ft)	27	172	55	176	#732	104
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	574	746	574	767	897	806
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.35	0.09	0.38	0.98	0.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	225	31	51	220	59	82	606	161	32	109	65
Future Volume (vph)	17	225	31	51	220	59	82	606	161	32	109	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.97			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1829		1770	1804			1806			1769	
Flt Permitted	0.95	1.00		0.95	1.00			0.95			0.86	
Satd. Flow (perm)	1770	1829		1770	1804			1718			1528	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	232	32	53	227	61	85	625	166	33	112	67
RTOR Reduction (vph)	0	6	0	0	11	0	0	7	0	0	14	0
Lane Group Flow (vph)	18	258	0	53	277	0	0	869	0	0	198	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	16.0		4.2	19.1			32.9			32.9	
Effective Green, g (s)	1.1	16.0		4.2	19.1			32.9			32.9	
Actuated g/C Ratio	0.02	0.24		0.06	0.29			0.49			0.49	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	29	437		111	515			844			751	
v/s Ratio Prot	0.01	0.14		c0.03	c0.15							
v/s Ratio Perm								c0.51			0.13	
v/c Ratio	0.62	0.59		0.48	0.54			1.03			0.26	
Uniform Delay, d1	32.7	22.5		30.3	20.2			17.0			9.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	26.1	2.1		1.2	1.1			38.8			0.1	
Delay (s)	58.8	24.7		31.5	21.3			55.8			10.0	
Level of Service	E	C		C	C			E			A	
Approach Delay (s)		26.9			22.9			55.8			10.0	
Approach LOS		C			C			E			A	

Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	13.8
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	8.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	155	382	5	459	143	156	25	7
Future Vol, veh/h	0	0	0	4	155	382	5	459	143	156	25	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	163	402	5	483	151	164	26	7

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	849	849	-	26	0	-	483	0	0
Stage 1	494	494	-	-	-	-	-	-	-
Stage 2	355	355	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	331	298	0	1588	-	0	1080	-	0
Stage 1	613	546	0	-	-	0	-	-	0
Stage 2	710	630	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	279	0	-	1588	-	-	1080	-	-
Mov Cap-2 Maneuver	279	0	-	-	-	-	-	-	-
Stage 1	611	0	-	-	-	-	-	-	-
Stage 2	601	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	35.5	0.1	7.7
HCM LOS	E		

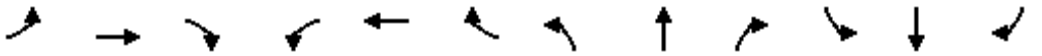
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1588	-	279	-	1080	-
HCM Lane V/C Ratio	0.003	-	0.6	-	0.152	-
HCM Control Delay (s)	7.3	0	35.5	0	8.9	0
HCM Lane LOS	A	A	E	A	A	A
HCM 95th %tile Q(veh)	0	-	3.6	-	0.5	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	642	413	64	49	412	164	29	252	80
v/c Ratio	0.74	0.81	0.13	0.35	0.80	0.30	0.23	0.55	0.18
Control Delay	42.6	51.1	3.9	59.4	52.1	9.9	58.2	44.7	8.3
Queue Delay	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.6	52.0	3.9	59.4	52.1	9.9	58.2	44.7	8.3
Queue Length 50th (ft)	224	278	0	35	293	9	21	163	0
Queue Length 95th (ft)	315	#476	20	82	#546	70	56	288	36
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1232	657	616	278	518	547	278	512	499
Starvation Cap Reductn	0	73	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.71	0.10	0.18	0.80	0.30	0.10	0.49	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	494	79	14	378	61	47	391	156	28	239	76
Future Volume (vph)	37	494	79	14	378	61	47	391	156	28	239	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3460			1859	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3460			1859	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	39	520	83	15	398	64	49	412	164	29	252	80
RTOR Reduction (vph)	0	9	0	0	0	47	0	0	107	0	0	60
Lane Group Flow (vph)	0	633	0	0	413	17	49	412	57	29	252	20
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		26.4			29.0	29.0	6.6	29.5	29.5	4.1	27.0	27.0
Effective Green, g (s)		26.4			29.0	29.0	6.6	29.5	29.5	4.1	27.0	27.0
Actuated g/C Ratio		0.25			0.27	0.27	0.06	0.27	0.27	0.04	0.25	0.25
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		849			501	427	108	511	434	67	467	397
v/s Ratio Prot		c0.18			c0.22		c0.03	c0.22		0.02	0.14	
v/s Ratio Perm						0.01			0.04			0.01
v/c Ratio		0.75			0.82	0.04	0.45	0.81	0.13	0.43	0.54	0.05
Uniform Delay, d1		37.4			36.9	29.0	48.7	36.3	29.3	50.6	34.9	30.5
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.6			10.6	0.0	1.1	9.0	0.1	1.6	1.2	0.1
Delay (s)		41.0			47.4	29.0	49.8	45.4	29.5	52.2	36.1	30.6
Level of Service		D			D	C	D	D	C	D	D	C
Approach Delay (s)		41.0			45.0			41.6			36.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	41.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	107.5	Sum of lost time (s)	18.5
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

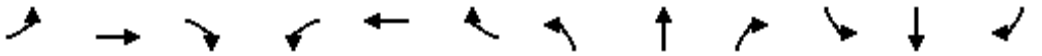
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	468	96	504	113	23	433	79	231
v/c Ratio	0.18	0.68	0.49	0.73	0.17	0.12	0.73	0.34	0.30
Control Delay	18.8	24.2	28.1	26.1	4.0	36.2	31.8	36.1	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	24.2	28.1	26.1	4.0	36.2	31.8	36.1	17.9
Queue Length 50th (ft)	9	172	33	192	0	10	156	33	52
Queue Length 95th (ft)	29	288	83	317	29	36	#399	84	165
Internal Link Dist (ft)		965		430			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	284	1176	332	1186	1048	449	734	449	889
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.40	0.29	0.42	0.11	0.05	0.59	0.18	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	431	27	94	494	111	23	320	104	77	214	13
Future Volume (vph)	29	431	27	94	494	111	23	320	104	77	214	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1846		1770	1863	1583	1770	1794		1770	1847	
Flt Permitted	0.24	1.00		0.28	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	446	1846		523	1863	1583	1770	1794		1770	1847	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	30	440	28	96	504	113	23	327	106	79	218	13
RTOR Reduction (vph)	0	3	0	0	0	72	0	11	0	0	2	0
Lane Group Flow (vph)	30	465	0	96	504	41	23	422	0	79	229	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	24.7	24.7		24.7	24.7	24.7	2.3	23.4		6.5	27.6	
Effective Green, g (s)	24.7	24.7		24.7	24.7	24.7	2.3	23.4		6.5	27.6	
Actuated g/C Ratio	0.36	0.36		0.36	0.36	0.36	0.03	0.34		0.09	0.40	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	160	665		188	671	570	59	612		167	744	
v/s Ratio Prot		0.25			c0.27		0.01	c0.24		c0.04	c0.12	
v/s Ratio Perm	0.07			0.18		0.03						
v/c Ratio	0.19	0.70		0.51	0.75	0.07	0.39	0.69		0.47	0.31	
Uniform Delay, d1	15.0	18.7		17.2	19.2	14.4	32.4	19.4		29.4	13.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	3.0		1.7	4.5	0.0	3.1	3.0		1.5	0.2	
Delay (s)	15.4	21.7		18.9	23.7	14.4	35.5	22.4		30.9	14.1	
Level of Service	B	C		B	C	B	D	C		C	B	
Approach Delay (s)		21.3			21.6			23.0			18.4	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	13.9
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

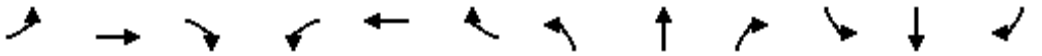


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	266	526	518	495	376	167	2273	481	285	1798	166
v/c Ratio	1.18	0.97	0.94	1.46	0.99	0.94	1.34	0.55	1.14	1.13	0.21
Control Delay	163.4	80.5	75.8	260.5	77.4	107.0	186.3	14.3	147.7	97.0	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	163.4	80.5	75.8	260.5	77.4	107.0	186.3	14.3	147.7	97.0	5.6
Queue Length 50th (ft)	~247	206	206	~525	213	131	~1208	138	~132	~847	13
Queue Length 95th (ft)	#418	#322	#311	#736	#417	#267	#1344	240	#222	#986	53
Internal Link Dist (ft)		250		609			888			1305	
Turn Bay Length (ft)	225		115		65	195		205	205		65
Base Capacity (vph)	225	542	552	338	381	178	1695	869	251	1598	789
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.97	0.94	1.46	0.99	0.94	1.34	0.55	1.14	1.13	0.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	250	389	105	487	465	353	157	2137	452	268	1690	156
Future Volume (vph)	250	389	105	487	465	353	157	2137	452	268	1690	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3426		3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3426		3433	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	266	414	112	518	495	376	167	2273	481	285	1798	166
RTOR Reduction (vph)	0	20	0	0	0	94	0	0	111	0	0	75
Lane Group Flow (vph)	266	506	0	518	495	282	167	2273	370	285	1798	91
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)	15.3	18.3		19.3	21.8	21.8	12.1	57.5	57.5	8.8	54.2	54.2
Effective Green, g (s)	15.3	18.3		19.3	21.8	21.8	12.1	57.5	57.5	8.8	54.2	54.2
Actuated g/C Ratio	0.13	0.15		0.16	0.18	0.18	0.10	0.48	0.48	0.07	0.45	0.45
Clearance Time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	225	522		552	338	287	178	1695	758	251	1598	714
v/s Ratio Prot	c0.15	0.15		c0.15	c0.27		c0.09	c0.64		c0.08	0.51	
v/s Ratio Perm						0.18			0.23			0.06
v/c Ratio	1.18	0.97		0.94	1.46	0.98	0.94	1.34	0.49	1.14	1.13	0.13
Uniform Delay, d1	52.4	50.6		49.8	49.1	48.9	53.6	31.2	21.2	55.6	32.9	19.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	118.1	31.1		23.8	224.6	48.0	49.2	157.5	0.5	98.3	65.1	0.1
Delay (s)	170.4	81.7		73.5	273.7	96.9	102.8	188.8	21.7	153.9	98.0	19.2
Level of Service	F	F		E	F	F	F	F	C	F	F	B
Approach Delay (s)		111.5			151.2			156.4			99.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	133.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	119.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

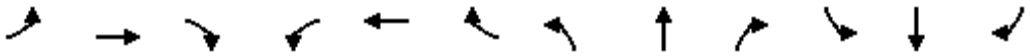


Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	279	758	88	2332	423	1894
v/c Ratio	0.29	0.95	0.58	1.17	1.26	1.08
Control Delay	33.4	66.7	80.8	122.6	186.3	81.2
Queue Delay	0.0	0.0	0.0	0.1	0.0	10.5
Total Delay	33.4	66.7	80.8	122.8	186.3	91.7
Queue Length 50th (ft)	92	352	84	~1012	~517	~1102
Queue Length 95th (ft)	132	#481	142	#1101	#734	#1303
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	998	823	304	1993	336	1760
Starvation Cap Reductn	0	0	0	106	0	276
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.92	0.29	1.24	1.26	1.28

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	187	71	262	238	243	86	2109	176	415	1781	75
Future Volume (vph)	16	187	71	262	238	243	86	2109	176	415	1781	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.96			0.95		1.00	0.99		1.00	0.99	
Flt Protected		1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3392			3307		1770	5026		1770	3518	
Flt Permitted		0.86			0.70		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2925			2353		1770	5026		1770	3518	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	16	191	72	267	243	248	88	2152	180	423	1817	77
RTOR Reduction (vph)	0	24	0	0	40	0	0	6	0	0	2	0
Lane Group Flow (vph)	0	255	0	0	718	0	88	2326	0	423	1893	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		48.5			48.5		12.8	59.3		28.5	75.0	
Effective Green, g (s)		48.5			48.5		12.8	59.3		28.5	75.0	
Actuated g/C Ratio		0.32			0.32		0.09	0.40		0.19	0.50	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		945			760		151	1986		336	1759	
v/s Ratio Prot							0.05	c0.46		c0.24	0.54	
v/s Ratio Perm		0.09			c0.31							
v/c Ratio		0.27			0.94		0.58	1.17		1.26	1.08	
Uniform Delay, d1		37.6			49.4		66.0	45.4		60.8	37.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			20.2		5.6	82.8		138.4	45.1	
Delay (s)		37.8			69.7		71.7	128.1		199.2	82.6	
Level of Service		D			E		E	F		F	F	
Approach Delay (s)		37.8			69.7			126.1			103.9	
Approach LOS		D			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	105.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	112.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

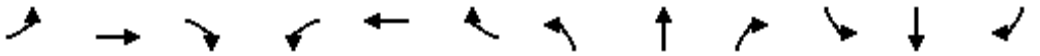


Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	269	540	132	275	602	65	2403	358	1726	921	435
v/c Ratio	0.86	0.84	1.02	1.01	1.02	0.57	1.64	1.67	1.45	1.52	1.25
Control Delay	91.5	78.7	157.1	133.0	72.8	97.5	326.9	360.0	245.2	285.5	174.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	91.5	78.7	157.1	133.0	72.8	97.5	327.0	360.0	245.2	285.5	174.6
Queue Length 50th (ft)	327	323	~178	~184	~446	74	~1477	~601	~1437	~765	~581
Queue Length 95th (ft)	#478	400	#345	#295	#700	131	#1555	#818	#1598	#902	#836
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	345	704	130	272	592	144	1468	215	1193	607	349
Starvation Cap Reductn	0	0	0	0	0	0	44	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.77	1.02	1.01	1.02	0.45	1.69	1.67	1.45	1.52	1.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	506	215	56	176	215	578	62	2197	109	344	1352	305
Future Volume (vph)	506	215	56	176	215	578	62	2197	109	344	1352	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3258		1610	3359	1583	1770	5049		1770	3441	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3258		1610	3359	1583	1770	5049		1770	3441	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	527	224	58	183	224	602	65	2289	114	358	1408	318
RTOR Reduction (vph)	0	5	0	0	0	243	0	3	0	0	0	0
Lane Group Flow (vph)	269	535	0	132	275	359	65	2400	0	358	1726	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	33.7	33.7		14.0	14.0	35.0	11.2	50.0		21.0	59.8	
Effective Green, g (s)	33.7	33.7		14.0	14.0	35.0	11.2	50.0		21.0	59.8	
Actuated g/C Ratio	0.20	0.20		0.08	0.08	0.20	0.07	0.29		0.12	0.35	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	314	637		130	272	321	115	1465		215	1194	
v/s Ratio Prot	c0.17	0.16		0.08	0.08	c0.14	0.04	c0.48		c0.20	0.50	
v/s Ratio Perm						0.09						
v/c Ratio	0.86	0.84		1.02	1.01	1.12	0.57	1.64		1.67	1.45	
Uniform Delay, d1	67.0	66.7		79.2	79.2	68.7	78.2	61.2		75.7	56.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.9	9.7		83.1	57.4	86.0	6.2	290.4		319.0	205.3	
Delay (s)	86.9	76.4		162.2	136.6	154.7	84.4	351.5		394.6	261.5	
Level of Service	F	E		F	F	F	F	F		F	F	
Approach Delay (s)		79.9			150.7			344.5			284.4	
Approach LOS		E			F			F			F	

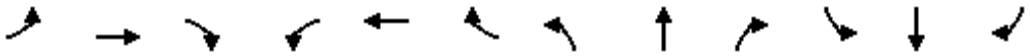
Intersection Summary			
HCM 2000 Control Delay	265.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	172.3	Sum of lost time (s)	21.6
Intersection Capacity Utilization	127.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	465	687	150
Future Volume (vph)	465	687	150
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.93	0.85	
Flt Protected	0.97	1.00	
Satd. Flow (prot)	3271	1441	
Flt Permitted	0.97	1.00	
Satd. Flow (perm)	3271	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	484	716	156
RTOR Reduction (vph)	0	81	0
Lane Group Flow (vph)	921	354	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.0	32.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.19	0.19	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	607	267	
v/s Ratio Prot	c0.28		
v/s Ratio Perm		0.25	
v/c Ratio	1.52	1.32	
Uniform Delay, d1	70.2	70.2	
Progression Factor	1.00	1.00	
Incremental Delay, d2	241.2	169.6	
Delay (s)	311.3	239.7	
Level of Service	F	F	
Approach Delay (s)	288.4		
Approach LOS	F		

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	241	470	151	224	904	234	262	1330	120	252	1119	238
v/c Ratio	0.98	0.50	0.31	0.63	1.10	0.58	0.97	1.07	0.46	0.91	0.89	0.39
Control Delay	105.0	41.4	15.1	61.6	107.4	18.4	82.9	70.9	32.1	88.0	48.0	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.0	41.4	15.1	61.6	107.4	18.4	82.9	70.9	32.1	88.0	48.0	15.0
Queue Length 50th (ft)	~198	171	28	90	~436	35	198	~647	38	202	443	59
Queue Length 95th (ft)	#369	230	87	131	#567	118	m#376	#757	m84	#355	#540	130
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	247	948	486	411	821	408	269	1242	286	283	1271	613
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.50	0.31	0.55	1.10	0.57	0.97	1.07	0.42	0.89	0.88	0.39

Intersection Summary

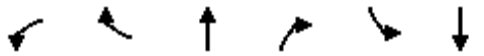
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	456	146	217	877	227	254	1290	116	244	1085	231
Future Volume (vph)	234	456	146	217	877	227	254	1290	116	244	1085	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	241	470	151	224	904	234	262	1330	120	252	1119	238
RTOR Reduction (vph)	0	0	77	0	0	156	0	0	99	0	0	86
Lane Group Flow (vph)	241	470	74	224	904	78	262	1330	21	252	1119	152
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	custom
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									6
Actuated Green, G (s)	17.5	33.5	33.5	13.0	29.0	19.5	19.0	43.9	13.0	19.5	44.4	43.9
Effective Green, g (s)	17.5	33.5	33.5	13.0	29.0	19.5	19.0	43.9	13.0	19.5	44.4	43.9
Actuated g/C Ratio	0.14	0.27	0.27	0.10	0.23	0.16	0.15	0.35	0.10	0.16	0.36	0.35
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	247	948	410	357	821	246	269	1242	164	276	1257	526
v/s Ratio Prot	c0.14	0.13		0.07	c0.26	0.05	0.15	c0.38	0.01	0.14	c0.32	
v/s Ratio Perm			0.05									0.10
v/c Ratio	0.98	0.50	0.18	0.63	1.10	0.32	0.97	1.07	0.13	0.91	0.89	0.29
Uniform Delay, d1	53.5	38.6	35.2	53.7	48.0	46.8	52.8	40.5	50.9	51.9	38.0	29.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.66	2.44	1.00	1.00	1.00
Incremental Delay, d2	50.0	0.4	0.2	3.4	62.8	0.7	38.8	43.2	0.3	32.2	9.7	1.4
Delay (s)	103.5	39.0	35.4	57.1	110.8	47.6	80.2	70.1	124.3	84.1	47.7	30.7
Level of Service	F	D	D	E	F	D	F	E	F	F	D	C
Approach Delay (s)		56.4			91.1			75.4			50.9	
Approach LOS		E			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	69.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	236	99	1679	116	88	1551
v/c Ratio	0.78	0.30	0.73	0.11	0.54	0.57
Control Delay	66.7	17.4	8.5	4.7	75.0	3.6
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	66.7	17.4	8.6	4.7	75.0	3.6
Queue Length 50th (ft)	184	19	126	6	67	22
Queue Length 95th (ft)	264	66	193	m19	m75	558
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	397	2310	1041	283	2734
Starvation Cap Reductn	0	0	40	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.25	0.74	0.11	0.31	0.57

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	229	96	1629	113	85	1504
Future Volume (vph)	229	96	1629	113	85	1504
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	236	99	1679	116	88	1551
RTOR Reduction (vph)	0	59	0	9	0	0
Lane Group Flow (vph)	236	40	1679	107	88	1551
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	21.4	21.4	81.6	81.6	11.5	96.6
Effective Green, g (s)	21.4	21.4	81.6	81.6	11.5	96.6
Actuated g/C Ratio	0.17	0.17	0.65	0.65	0.09	0.77
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	303	271	2310	1033	162	2734
v/s Ratio Prot	c0.13		c0.47		0.05	c0.44
v/s Ratio Perm		0.03		0.07		
v/c Ratio	0.78	0.15	0.73	0.10	0.54	0.57
Uniform Delay, d1	49.5	44.0	14.3	8.1	54.2	5.7
Progression Factor	1.00	1.00	0.44	0.58	1.24	0.47
Incremental Delay, d2	11.9	0.3	1.4	0.1	2.6	0.6
Delay (s)	61.5	44.3	7.7	4.8	69.8	3.3
Level of Service	E	D	A	A	E	A
Approach Delay (s)	56.4		7.5			6.9
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	6.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	156	1586	37	66	1667
Future Vol, veh/h	8	156	1586	37	66	1667
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	159	1618	38	67	1701

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2622	828	0	0	1656	0
Stage 1	1637	-	-	-	-	-
Stage 2	985	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	19	314	-	-	385	-
Stage 1	144	-	-	-	-	-
Stage 2	322	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	16	314	-	-	385	-
Mov Cap-2 Maneuver	16	-	-	-	-	-
Stage 1	144	-	-	-	-	-
Stage 2	266	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	129.9	0	0.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	165	385	-
HCM Lane V/C Ratio	-	-	1.014	0.175	-
HCM Control Delay (s)	-	-	129.9	16.3	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	8.1	0.6	-

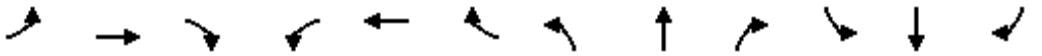


Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	33	398	185	1682	131	1658
v/c Ratio	0.08	0.92	0.35	0.85	0.64	0.67
Control Delay	4.8	74.1	7.7	28.4	80.5	4.3
Queue Delay	0.0	2.3	0.0	0.0	0.0	0.0
Total Delay	4.8	76.4	7.7	28.4	80.5	4.3
Queue Length 50th (ft)	0	~342	0	538	110	96
Queue Length 95th (ft)	14	#547	61	713	170	73
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	421	433	526	1981	283	2572
Starvation Cap Reductn	0	9	0	0	0	67
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.94	0.35	0.85	0.46	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	32	373	9	178	0	1612	3	126	1571	21
Future Volume (vph)	0	0	32	373	9	178	0	1612	3	126	1571	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1776	1583		3538		1770	3532	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1776	1583		3538		1770	3532	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	33	389	9	185	0	1679	3	131	1636	22
RTOR Reduction (vph)	0	0	25	0	0	140	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	8	0	398	45	0	1682	0	131	1657	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			29.5		30.5	30.5		70.0		14.5	87.5	
Effective Green, g (s)			29.5		30.5	30.5		70.0		14.5	87.5	
Actuated g/C Ratio			0.24		0.24	0.24		0.56		0.12	0.70	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			380		433	386		1981		205	2472	
v/s Ratio Prot								c0.48		0.07	c0.47	
v/s Ratio Perm			0.00		0.22	0.03						
v/c Ratio			0.02		0.92	0.12		0.85		0.64	0.67	
Uniform Delay, d1			36.7		46.0	36.8		23.1		52.8	10.6	
Progression Factor			1.00		1.00	1.00		1.00		1.31	0.29	
Incremental Delay, d2			0.0		24.3	0.1		4.8		5.5	1.2	
Delay (s)			36.7		70.3	36.9		27.8		74.7	4.3	
Level of Service			D		E	D		C		E	A	
Approach Delay (s)		36.7			59.7			27.8			9.5	
Approach LOS		D			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	16.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	142	25	20	248	44	64	173	96	57	52	26
Future Vol, veh/h	25	142	25	20	248	44	64	173	96	57	52	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	45	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	154	27	22	270	48	70	188	104	62	57	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	317	0	0	182	0	0	601	583	168	705	573	293
Stage 1	-	-	-	-	-	-	222	222	-	337	337	-
Stage 2	-	-	-	-	-	-	379	361	-	368	236	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1243	-	-	1393	-	-	412	424	876	351	430	746
Stage 1	-	-	-	-	-	-	780	720	-	677	641	-
Stage 2	-	-	-	-	-	-	643	626	-	652	710	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1243	-	-	1393	-	-	345	408	876	192	414	746
Mov Cap-2 Maneuver	-	-	-	-	-	-	345	408	-	192	414	-
Stage 1	-	-	-	-	-	-	763	704	-	662	631	-
Stage 2	-	-	-	-	-	-	554	616	-	412	695	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.5	35.4	28.7
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	463	1243	-	-	1393	-	-	295
HCM Lane V/C Ratio	0.782	0.022	-	-	0.016	-	-	0.497
HCM Control Delay (s)	35.4	8	-	-	7.6	-	-	28.7
HCM Lane LOS	E	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	6.9	0.1	-	-	0	-	-	2.6

Intersection	
Int Delay, s/veh	9.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	36	45	20	8	65	67	85	147	14	34	48	30
Future Vol, veh/h	36	45	20	8	65	67	85	147	14	34	48	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	48	21	9	69	71	90	156	15	36	51	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	140	0	0	69	0	0	298	292	59	343	268	105
Stage 1	-	-	-	-	-	-	135	135	-	122	122	-
Stage 2	-	-	-	-	-	-	163	157	-	221	146	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1443	-	-	1532	-	-	654	619	1007	611	638	949
Stage 1	-	-	-	-	-	-	868	785	-	882	795	-
Stage 2	-	-	-	-	-	-	839	768	-	781	776	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1443	-	-	1532	-	-	577	599	1007	469	617	949
Mov Cap-2 Maneuver	-	-	-	-	-	-	577	599	-	469	617	-
Stage 1	-	-	-	-	-	-	845	764	-	858	790	-
Stage 2	-	-	-	-	-	-	754	763	-	595	755	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.7	0.4	15.4	12.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	605	1443	-	-	1532	-	-	616
HCM Lane V/C Ratio	0.433	0.027	-	-	0.006	-	-	0.193
HCM Control Delay (s)	15.4	7.6	0	-	7.4	0	-	12.2
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	2.2	0.1	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	119	0	0	477	75	10	70	76	48	0	74
Future Vol, veh/h	10	119	0	0	477	75	10	70	76	48	0	74
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	131	0	0	524	82	11	77	84	53	0	81

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	607	0	-	-	-	0	415	760	131	798	-	303
Stage 1	-	-	-	-	-	-	153	153	-	565	-	-
Stage 2	-	-	-	-	-	-	262	607	-	233	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	7.33	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	3.519	-	3.319
Pot Cap-1 Maneuver	969	-	0	0	-	-	535	335	918	290	0	694
Stage 1	-	-	0	0	-	-	849	770	-	478	0	-
Stage 2	-	-	0	0	-	-	721	485	-	769	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	969	-	-	-	-	-	468	331	918	215	-	694
Mov Cap-2 Maneuver	-	-	-	-	-	-	468	331	-	215	-	-
Stage 1	-	-	-	-	-	-	839	761	-	472	-	-
Stage 2	-	-	-	-	-	-	637	485	-	621	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0	16.1	10.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	494	969	-	-	-	694
HCM Lane V/C Ratio	0.347	0.011	-	-	-	0.117
HCM Control Delay (s)	16.1	8.8	0	-	-	10.9
HCM Lane LOS	C	A	A	-	-	B
HCM 95th %tile Q(veh)	1.5	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	4.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	28	10	9	58	60	40
Future Vol, veh/h	28	10	9	58	60	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	11	10	63	65	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	41	0	119	36
Stage 1	-	-	-	-	36	-
Stage 2	-	-	-	-	83	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1568	-	877	1037
Stage 1	-	-	-	-	986	-
Stage 2	-	-	-	-	940	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1568	-	871	1037
Mov Cap-2 Maneuver	-	-	-	-	871	-
Stage 1	-	-	-	-	986	-
Stage 2	-	-	-	-	933	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	931	-	-	1568	-
HCM Lane V/C Ratio	0.117	-	-	0.006	-
HCM Control Delay (s)	9.4	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	391	266	25	182	272
Future Vol, veh/h	0	391	266	25	182	272
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	430	292	27	200	299

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	292	292
Stage 1	-	-	0	0
Stage 2	-	-	292	292
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	699	619
Stage 1	-	-	-	-
Stage 2	-	-	758	671
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	699	0
Mov Cap-2 Maneuver	-	-	699	0
Stage 1	-	-	-	0
Stage 2	-	-	758	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	699	-
HCM Lane V/C Ratio	-	-	0.286	-
HCM Control Delay (s)	-	-	12.2	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	1.2	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	68	19	446	297	47
Future Vol, veh/h	0	68	19	446	297	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	77	22	507	338	53

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	364	391	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	681	1168	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	681	1168	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1168	-	681	-	-
HCM Lane V/C Ratio	0.018	-	0.113	-	-
HCM Control Delay (s)	8.1	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	59	123	447	348	17
Future Vol, veh/h	17	59	123	447	348	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	63	132	481	374	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1128	383	392	0	-	0
Stage 1	383	-	-	-	-	-
Stage 2	745	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	226	664	1167	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	469	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	191	664	1167	-	-	-
Mov Cap-2 Maneuver	191	-	-	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	397	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.4	1.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1167	-	427	-	-
HCM Lane V/C Ratio	0.113	-	0.191	-	-
HCM Control Delay (s)	8.5	0	15.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.4	-	0.7	-	-

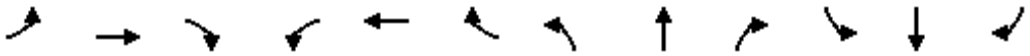


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	19	232	118	343	774	541
v/c Ratio	0.12	0.59	0.49	0.54	1.07	1.08
Control Delay	33.6	31.2	36.1	21.1	78.0	86.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	31.2	36.1	21.1	78.0	86.5
Queue Length 50th (ft)	8	87	47	102	~379	~265
Queue Length 95th (ft)	29	163	101	217	#711	#536
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	536	699	536	754	721	502
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.33	0.22	0.45	1.07	1.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	201	24	114	315	17	129	456	166	163	254	108
Future Volume (vph)	18	201	24	114	315	17	129	456	166	163	254	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	1833		1770	1848			1792			1783	
Flt Permitted	0.95	1.00		0.95	1.00			0.81			0.56	
Satd. Flow (perm)	1770	1833		1770	1848			1470			1019	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	207	25	118	325	18	133	470	171	168	262	111
RTOR Reduction (vph)	0	5	0	0	2	0	0	9	0	0	9	0
Lane Group Flow (vph)	19	227	0	118	341	0	0	765	0	0	532	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.2	16.9		7.6	23.3			32.7			32.7	
Effective Green, g (s)	1.2	16.9		7.6	23.3			32.7			32.7	
Actuated g/C Ratio	0.02	0.24		0.11	0.33			0.46			0.46	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	29	436		189	606			677			469	
v/s Ratio Prot	0.01	0.12		c0.07	c0.18							
v/s Ratio Perm								0.52			c0.52	
v/c Ratio	0.66	0.52		0.62	0.56			1.13			1.14	
Uniform Delay, d1	34.7	23.5		30.3	19.7			19.1			19.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	33.9	1.0		4.6	1.2			76.1			84.1	
Delay (s)	68.6	24.6		34.9	20.9			95.3			103.3	
Level of Service	E	C		C	C			F			F	
Approach Delay (s)		27.9			24.4			95.3			103.3	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	73.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	71.0	Sum of lost time (s)	13.8
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	28.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	15	132	280	20	427	240	315	32	15
Future Vol, veh/h	0	0	0	15	132	280	20	427	240	315	32	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	139	295	21	449	253	332	34	16

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1189	1189	-	34	0	-	449	0	0
Stage 1	492	492	-	-	-	-	-	-	-
Stage 2	697	697	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	208	188	0	1578	-	0	1111	-	0
Stage 1	615	548	0	-	-	0	-	-	0
Stage 2	494	443	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	142	0	-	1578	-	-	1111	-	-
Mov Cap-2 Maneuver	142	0	-	-	-	-	-	-	-
Stage 1	604	0	-	-	-	-	-	-	-
Stage 2	343	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	163.8	0.3	8.7
HCM LOS	F		

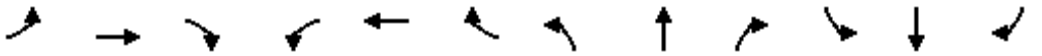
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1578	-	142	-	1111	-
HCM Lane V/C Ratio	0.013	-	1.09	-	0.298	-
HCM Control Delay (s)	7.3	0	163.8	0	9.6	0
HCM Lane LOS	A	A	F	A	A	A
HCM 95th %tile Q(veh)	0	-	8.5	-	1.3	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	656	413	35	166	465	98	48	373	132
v/c Ratio	0.78	0.87	0.07	0.79	0.83	0.18	0.38	0.88	0.31
Control Delay	49.8	62.8	0.3	80.6	57.0	10.9	67.0	70.2	18.9
Queue Delay	0.0	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.8	67.0	0.3	80.6	57.0	10.9	67.0	70.2	18.9
Queue Length 50th (ft)	265	322	0	135	371	6	39	306	30
Queue Length 95th (ft)	338	#505	0	#259	#651	53	82	#524	91
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1060	564	543	239	557	535	239	441	442
Starvation Cap Reductn	0	88	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.87	0.06	0.69	0.83	0.18	0.20	0.85	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	479	80	35	357	33	158	442	93	46	354	125
Future Volume (vph)	65	479	80	35	357	33	158	442	93	46	354	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3453			1854	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		0.99			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3453			1854	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	504	84	37	376	35	166	465	98	48	373	132
RTOR Reduction (vph)	0	9	0	0	0	26	0	0	62	0	0	67
Lane Group Flow (vph)	0	647	0	0	413	9	166	465	36	48	373	65
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		29.1			31.0	31.0	14.3	36.1	36.1	6.7	28.5	28.5
Effective Green, g (s)		29.1			31.0	31.0	14.3	36.1	36.1	6.7	28.5	28.5
Actuated g/C Ratio		0.24			0.26	0.26	0.12	0.30	0.30	0.06	0.23	0.23
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		827			473	404	208	553	470	97	437	371
v/s Ratio Prot		c0.19			c0.22		c0.09	c0.25		0.03	0.20	
v/s Ratio Perm						0.01			0.02			0.04
v/c Ratio		0.78			0.87	0.02	0.80	0.84	0.08	0.49	0.85	0.17
Uniform Delay, d1		43.2			43.3	33.8	52.1	40.0	30.7	55.7	44.5	37.1
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		4.9			16.2	0.0	17.7	11.1	0.1	1.4	14.9	0.2
Delay (s)		48.0			59.5	33.9	69.9	51.0	30.7	57.2	59.3	37.3
Level of Service		D			E	C	E	D	C	E	E	D
Approach Delay (s)		48.0			57.5			52.6			53.9	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	52.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	121.4	Sum of lost time (s)	18.5
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

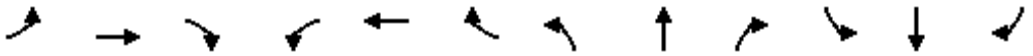
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	582	84	439	108	56	573	143	457
v/c Ratio	0.07	0.93	0.85	0.70	0.18	0.30	0.96	0.55	0.57
Control Delay	17.5	47.1	84.0	28.0	4.4	38.0	56.9	40.0	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	47.1	84.0	28.0	4.4	38.0	56.9	40.0	24.2
Queue Length 50th (ft)	3	252	35	172	0	23	235	59	161
Queue Length 95th (ft)	15	407	#119	281	29	68	#613	138	#411
Internal Link Dist (ft)		965		430			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	271	1006	161	1015	911	364	596	364	803
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.58	0.52	0.43	0.12	0.15	0.96	0.39	0.57

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	528	42	82	430	106	55	399	163	140	421	26
Future Volume (vph)	11	528	42	82	430	106	55	399	163	140	421	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1842		1770	1863	1583	1770	1782		1770	1846	
Flt Permitted	0.27	1.00		0.16	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	499	1842		296	1863	1583	1770	1782		1770	1846	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	11	539	43	84	439	108	56	407	166	143	430	27
RTOR Reduction (vph)	0	3	0	0	0	73	0	14	0	0	2	0
Lane Group Flow (vph)	11	579	0	84	439	35	56	559	0	143	455	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	25.2	25.2		25.2	25.2	25.2	5.1	26.6		11.0	32.5	
Effective Green, g (s)	25.2	25.2		25.2	25.2	25.2	5.1	26.6		11.0	32.5	
Actuated g/C Ratio	0.33	0.33		0.33	0.33	0.33	0.07	0.35		0.14	0.42	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	163	605		97	612	520	117	618		253	782	
v/s Ratio Prot		c0.31			0.24		0.03	c0.31		c0.08	0.25	
v/s Ratio Perm	0.02			0.28		0.02						
v/c Ratio	0.07	0.96		0.87	0.72	0.07	0.48	0.90		0.57	0.58	
Uniform Delay, d1	17.7	25.2		24.2	22.6	17.7	34.5	23.8		30.6	16.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	25.9		50.6	4.0	0.1	3.1	16.7		2.9	1.1	
Delay (s)	17.9	51.1		74.8	26.6	17.7	37.6	40.6		33.5	18.0	
Level of Service	B	D		E	C	B	D	D		C	B	
Approach Delay (s)		50.5			31.5			40.3			21.7	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	76.7	Sum of lost time (s)	13.9
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

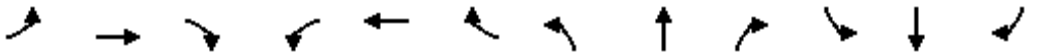


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	298	670	601	494	286	180	1352	614	389	2320	78
v/c Ratio	1.43	1.21	1.02	1.29	0.74	1.12	0.88	0.68	1.00	1.43	0.10
Control Delay	260.6	156.8	95.5	188.8	46.9	161.0	41.6	14.1	102.2	228.3	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	260.6	156.8	95.5	188.8	46.9	161.0	41.6	14.1	102.2	228.3	2.4
Queue Length 50th (ft)	~339	~357	~276	~529	167	~175	540	146	171	~1391	0
Queue Length 95th (ft)	#521	#484	#394	#744	273	#325	644	286	#278	#1523	18
Internal Link Dist (ft)		250		609			888			1305	
Turn Bay Length (ft)	225		115		65	195		205	205		65
Base Capacity (vph)	208	552	588	384	389	160	1538	907	390	1619	778
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.43	1.21	1.02	1.29	0.74	1.13	0.88	0.68	1.00	1.43	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	280	515	115	565	464	269	169	1271	577	366	2181	73
Future Volume (vph)	280	515	115	565	464	269	169	1271	577	366	2181	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3443		3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3443		3433	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	298	548	122	601	494	286	180	1352	614	389	2320	78
RTOR Reduction (vph)	0	14	0	0	0	63	0	0	220	0	0	42
Lane Group Flow (vph)	298	656	0	601	494	223	180	1352	394	389	2320	36
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)	15.3	20.3		22.3	26.8	26.8	11.8	56.5	56.5	14.8	59.5	59.5
Effective Green, g (s)	15.3	20.3		22.3	26.8	26.8	11.8	56.5	56.5	14.8	59.5	59.5
Actuated g/C Ratio	0.12	0.16		0.17	0.21	0.21	0.09	0.43	0.43	0.11	0.46	0.46
Clearance Time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	208	537		588	384	326	160	1538	687	390	1619	724
v/s Ratio Prot	c0.17	0.19		c0.18	c0.27		c0.10	0.38		0.11	c0.66	
v/s Ratio Perm						0.14			0.25			0.02
v/c Ratio	1.43	1.22		1.02	1.29	0.68	1.12	0.88	0.57	1.00	1.43	0.05
Uniform Delay, d1	57.4	54.9		53.9	51.6	47.7	59.1	33.6	27.7	57.6	35.2	19.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	220.1	115.4		42.8	147.3	5.9	108.7	6.1	1.2	44.6	198.5	0.0
Delay (s)	277.4	170.2		96.7	198.9	53.6	167.8	39.7	28.8	102.2	233.7	19.6
Level of Service	F	F		F	F	D	F	D	C	F	F	B
Approach Delay (s)		203.2			124.3			47.3			209.4	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	144.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	124.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

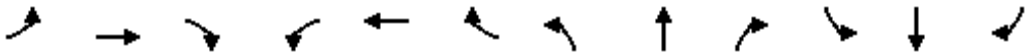


Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	359	905	109	1691	289	2348
v/c Ratio	0.43	1.05	0.63	0.88	0.84	1.39
Control Delay	37.6	84.9	80.9	49.4	79.8	211.5
Queue Delay	0.0	0.0	0.0	2.0	0.0	0.4
Total Delay	37.6	84.9	80.9	51.4	79.8	211.9
Queue Length 50th (ft)	132	~446	104	554	277	~1614
Queue Length 95th (ft)	182	#584	166	621	#436	#1811
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	838	858	304	1940	344	1689
Starvation Cap Reductn	0	0	0	131	0	183
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	1.05	0.36	0.93	0.84	1.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	245	80	253	206	428	107	1504	153	283	2278	24
Future Volume (vph)	26	245	80	253	206	428	107	1504	153	283	2278	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.97			0.93		1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3405			3237		1770	5015		1770	3534	
Flt Permitted		0.72			0.68		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2458			2234		1770	5015		1770	3534	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	27	250	82	258	210	437	109	1535	156	289	2324	24
RTOR Reduction (vph)	0	19	0	0	113	0	0	8	0	0	1	0
Lane Group Flow (vph)	0	340	0	0	792	0	109	1683	0	289	2347	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		50.0			50.0		14.6	57.1		29.2	71.7	
Effective Green, g (s)		50.0			50.0		14.6	57.1		29.2	71.7	
Actuated g/C Ratio		0.33			0.33		0.10	0.38		0.19	0.48	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		819			744		172	1909		344	1689	
v/s Ratio Prot							0.06	c0.34		0.16	c0.66	
v/s Ratio Perm		0.14			c0.35							
v/c Ratio		0.42			1.06		0.63	0.88		0.84	1.39	
Uniform Delay, d1		38.7			50.0		65.1	43.3		58.2	39.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			51.7		7.4	6.3		16.6	179.2	
Delay (s)		39.0			101.7		72.5	49.6		74.8	218.3	
Level of Service		D			F		E	D		E	F	
Approach Delay (s)		39.0			101.7			51.0			202.6	
Approach LOS		D			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	128.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	121.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



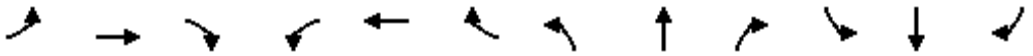
Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	404	820	168	345	759	91	1949	208	1750	913	483
v/c Ratio	1.19	1.18	1.31	1.30	1.31	0.72	1.35	0.99	1.52	1.68dr	1.40
Control Delay	168.1	153.6	242.4	216.8	183.3	108.5	208.7	133.0	277.2	297.3	236.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	168.1	153.6	242.4	216.8	183.3	108.5	208.8	133.0	277.2	297.3	236.6
Queue Length 50th (ft)	~614	~619	~272	~277	~844	104	~1076	243	~1489	~758	~708
Queue Length 95th (ft)	#862	#765	#458	#395	#1107	#180	#1165	#425	#1622	#894	#971
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	339	693	128	266	578	141	1442	211	1152	591	344
Starvation Cap Reductn	0	0	0	0	0	0	51	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	1.18	1.31	1.30	1.31	0.65	1.40	0.99	1.52	1.54	1.40

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	776	345	55	252	240	729	87	1809	62	200	1461	219
Future Volume (vph)	776	345	55	252	240	729	87	1809	62	200	1461	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3274		1610	3344	1583	1770	5060		1770	3470	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3274		1610	3344	1583	1770	5060		1770	3470	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	808	359	57	262	250	759	91	1884	65	208	1522	228
RTOR Reduction (vph)	0	3	0	0	0	236	0	2	0	0	0	0
Lane Group Flow (vph)	404	817	0	168	345	523	91	1947	0	208	1750	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	37.0	37.0		14.0	14.0	35.0	12.7	50.0		21.0	58.3	
Effective Green, g (s)	37.0	37.0		14.0	14.0	35.0	12.7	50.0		21.0	58.3	
Actuated g/C Ratio	0.21	0.21		0.08	0.08	0.20	0.07	0.28		0.12	0.33	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	339	689		128	266	315	128	1440		211	1152	
v/s Ratio Prot	c0.25	0.25		0.10	0.10	c0.20	0.05	0.38		0.12	c0.50	
v/s Ratio Perm						0.13						
v/c Ratio	1.19	1.19		1.31	1.30	1.66	0.71	1.35		0.99	1.52	
Uniform Delay, d1	69.3	69.3		80.8	80.8	70.3	79.7	62.8		77.2	58.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	111.8	97.8		185.4	158.6	310.6	17.0	163.1		57.4	238.1	
Delay (s)	181.1	167.1		266.2	239.4	380.9	96.6	225.9		134.6	296.7	
Level of Service	F	F		F	F	F	F	F		F	F	
Approach Delay (s)		171.7			327.4			220.1			279.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	263.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	175.6	Sum of lost time (s)	21.6
Intersection Capacity Utilization	141.2%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

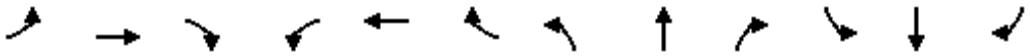
c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	411	817	112
Future Volume (vph)	411	817	112
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.92	0.85	
Flt Protected	0.98	1.00	
Satd. Flow (prot)	3250	1441	
Flt Permitted	0.98	1.00	
Satd. Flow (perm)	3250	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	428	851	117
RTOR Reduction (vph)	0	82	0
Lane Group Flow (vph)	913	401	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.0	32.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.18	0.18	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	592	262	
v/s Ratio Prot	c0.28		
v/s Ratio Perm		0.28	
v/c Ratio	1.68dr	1.53	
Uniform Delay, d1	71.8	71.8	
Progression Factor	1.00	1.00	
Incremental Delay, d2	252.4	257.5	
Delay (s)	324.2	329.3	
Level of Service	F	F	
Approach Delay (s)	325.9		
Approach LOS	F		

Intersection Summary

H - Cumulative Plus Project Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	312	978	307	102	437	212	238	1045	90	235	1287	110
v/c Ratio	1.00	0.82	0.53	0.41	0.53	0.46	0.86	1.03	0.41	0.72	1.16	0.21
Control Delay	103.3	45.5	25.7	59.9	44.8	9.1	65.8	79.1	26.2	61.8	120.3	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.3	45.5	25.7	59.9	44.8	9.1	65.8	79.1	26.2	61.8	120.3	14.3
Queue Length 50th (ft)	~256	381	130	41	164	0	198	~490	9	181	~664	23
Queue Length 95th (ft)	#446	#491	230	69	218	68	#310	#615	m73	#286	#803	69
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	311	1186	582	604	821	464	297	1016	369	325	1112	517
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.82	0.53	0.17	0.53	0.46	0.80	1.03	0.24	0.72	1.16	0.21

Intersection Summary

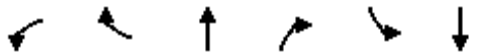
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	303	949	298	99	424	206	231	1014	87	228	1248	107
Future Volume (vph)	303	949	298	99	424	206	231	1014	87	228	1248	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	312	978	307	102	437	212	238	1045	90	235	1287	110
RTOR Reduction (vph)	0	0	70	0	0	173	0	0	83	0	0	49
Lane Group Flow (vph)	312	978	237	102	437	39	238	1045	7	235	1287	61
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	Perm
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									2
Actuated Green, G (s)	22.0	41.9	41.9	9.1	29.0	23.0	19.6	35.9	9.1	23.0	39.3	39.3
Effective Green, g (s)	22.0	41.9	41.9	9.1	29.0	23.0	19.6	35.9	9.1	23.0	39.3	39.3
Actuated g/C Ratio	0.18	0.34	0.34	0.07	0.23	0.18	0.16	0.29	0.07	0.18	0.31	0.31
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	311	1186	512	249	821	291	277	1016	115	325	1112	469
v/s Ratio Prot	c0.18	c0.28		0.03	0.12	0.02	0.13	c0.30	0.00	0.13	c0.36	
v/s Ratio Perm			0.16									0.04
v/c Ratio	1.00	0.82	0.46	0.41	0.53	0.13	0.86	1.03	0.06	0.72	1.16	0.13
Uniform Delay, d1	51.5	38.2	32.7	55.4	42.1	42.7	51.4	44.5	54.0	48.0	42.9	30.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.81	1.05	3.48	1.00	1.00	1.00
Incremental Delay, d2	51.8	4.8	0.7	1.1	0.7	0.2	19.2	33.3	0.2	7.7	81.2	0.6
Delay (s)	103.3	43.0	33.4	56.5	42.7	42.9	60.8	80.2	188.2	55.7	124.1	31.2
Level of Service	F	D	C	E	D	D	E	F	F	E	F	C
Approach Delay (s)		52.9			44.6			83.9			108.0	
Approach LOS		D			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	76.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	99.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	125	64	1426	122	121	1757
v/c Ratio	0.62	0.27	0.58	0.11	0.62	0.60
Control Delay	66.1	14.2	3.7	1.6	72.4	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.1	14.2	3.7	1.6	72.4	4.5
Queue Length 50th (ft)	98	0	57	0	103	100
Queue Length 95th (ft)	157	42	80	10	m103	m53
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	392	2448	1104	354	2940
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.16	0.58	0.11	0.34	0.60

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	121	62	1383	118	117	1704
Future Volume (vph)	121	62	1383	118	117	1704
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	125	64	1426	122	121	1757
RTOR Reduction (vph)	0	57	0	9	0	0
Lane Group Flow (vph)	125	7	1426	113	121	1757
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	14.1	14.1	86.5	86.5	13.9	103.9
Effective Green, g (s)	14.1	14.1	86.5	86.5	13.9	103.9
Actuated g/C Ratio	0.11	0.11	0.69	0.69	0.11	0.83
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	199	178	2448	1095	196	2941
v/s Ratio Prot	c0.07		0.40		0.07	c0.50
v/s Ratio Perm		0.00		0.07		
v/c Ratio	0.63	0.04	0.58	0.10	0.62	0.60
Uniform Delay, d1	52.9	49.4	9.9	6.4	53.0	3.5
Progression Factor	1.00	1.00	0.25	0.23	1.27	1.03
Incremental Delay, d2	6.1	0.1	0.9	0.2	2.5	0.4
Delay (s)	59.0	49.5	3.4	1.6	69.6	4.0
Level of Service	E	D	A	A	E	A
Approach Delay (s)	55.8		3.3			8.3
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	4.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	81	1421	22	206	1619
Future Vol, veh/h	6	81	1421	22	206	1619
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	83	1450	22	210	1652

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2707	736	0	0	1472	0
Stage 1	1461	-	-	-	-	-
Stage 2	1246	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	17	361	-	-	454	-
Stage 1	180	-	-	-	-	-
Stage 2	234	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	9	361	-	-	454	-
Mov Cap-2 Maneuver	9	-	-	-	-	-
Stage 1	180	-	-	-	-	-
Stage 2	126	-	-	-	-	-

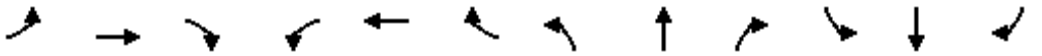
Approach	WB	NB	SB
HCM Control Delay, s	144.7	0	2.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	98	454	-
HCM Lane V/C Ratio	-	-	0.906	0.463	-
HCM Control Delay (s)	-	-	144.7	19.6	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	5.2	2.4	-



Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	10	202	157	1314	163	1740
v/c Ratio	0.04	0.73	0.41	0.59	0.69	0.62
Control Delay	0.2	64.6	9.7	16.7	62.9	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	0.2	64.6	9.7	16.7	62.9	7.4
Queue Length 50th (ft)	0	157	0	308	132	277
Queue Length 95th (ft)	0	225	57	495	209	215
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	369	383	465	2221	424	2784
Starvation Cap Reductn	0	0	0	0	0	112
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.53	0.34	0.59	0.38	0.65

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	10	185	9	151	0	1246	15	156	1664	7
Future Volume (vph)	0	0	10	185	9	151	0	1246	15	156	1664	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1778	1583		3533		1770	3537	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1778	1583		3533		1770	3537	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	10	193	9	157	0	1298	16	162	1733	7
RTOR Reduction (vph)	0	0	9	0	0	132	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1	0	202	25	0	1314	0	163	1740	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			18.6		19.6	19.6		78.6		16.8	98.4	
Effective Green, g (s)			18.6		19.6	19.6		78.6		16.8	98.4	
Actuated g/C Ratio			0.15		0.16	0.16		0.63		0.13	0.79	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			239		278	248		2221		237	2784	
v/s Ratio Prot								0.37		c0.09	c0.49	
v/s Ratio Perm			0.00		0.11	0.02						
v/c Ratio			0.01		0.73	0.10		0.59		0.69	0.62	
Uniform Delay, d1			45.3		50.2	45.1		13.7		51.6	5.6	
Progression Factor			1.00		1.00	1.00		1.00		0.98	1.01	
Incremental Delay, d2			0.0		9.1	0.2		1.2		7.1	0.9	
Delay (s)			45.3		59.3	45.3		14.9		57.4	6.6	
Level of Service			D		E	D		B		E	A	
Approach Delay (s)		45.3			53.2			14.9			10.9	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	190	40	61	111	9	43	81	65	109	64	26
Future Vol, veh/h	14	190	40	61	111	9	43	81	65	109	64	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	207	43	66	121	10	47	88	71	118	70	28
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.9	11.1	10.9	11.5
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	6%	34%	55%
Vol Thru, %	43%	78%	61%	32%
Vol Right, %	34%	16%	5%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	189	244	181	199
LT Vol	43	14	61	109
Through Vol	81	190	111	64
RT Vol	65	40	9	26
Lane Flow Rate	205	265	197	216
Geometry Grp	1	1	1	1
Degree of Util (X)	0.31	0.395	0.306	0.336
Departure Headway (Hd)	5.432	5.366	5.597	5.595
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	659	668	641	640
Service Time	3.483	3.412	3.647	3.646
HCM Lane V/C Ratio	0.311	0.397	0.307	0.338
HCM Control Delay	10.9	11.9	11.1	11.5
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.3	1.9	1.3	1.5

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	56	133	29	115	51
Future Vol, veh/h	9	56	133	29	115	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	68	162	35	140	62

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	523	180	0	0	198	0
Stage 1	180	-	-	-	-	-
Stage 2	343	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	514	863	-	-	1375	-
Stage 1	851	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	460	863	-	-	1375	-
Mov Cap-2 Maneuver	460	-	-	-	-	-
Stage 1	851	-	-	-	-	-
Stage 2	644	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	5.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	770	1375	-
HCM Lane V/C Ratio	-	-	0.103	0.102	-
HCM Control Delay (s)	-	-	10.2	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.3	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	23	106	99	3	35	49	33	74	12	24	43	26
Future Vol, veh/h	23	106	99	3	35	49	33	74	12	24	43	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	113	105	3	37	52	35	79	13	26	46	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	89	0	0	218	0	0	320	310	165	330	337	63
Stage 1	-	-	-	-	-	-	214	214	-	70	70	-
Stage 2	-	-	-	-	-	-	106	96	-	260	267	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1506	-	-	1352	-	-	633	605	879	623	584	1002
Stage 1	-	-	-	-	-	-	788	725	-	940	837	-
Stage 2	-	-	-	-	-	-	900	815	-	745	688	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1506	-	-	1352	-	-	569	593	879	543	572	1002
Mov Cap-2 Maneuver	-	-	-	-	-	-	569	593	-	543	572	-
Stage 1	-	-	-	-	-	-	774	712	-	923	835	-
Stage 2	-	-	-	-	-	-	826	813	-	641	676	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.3	12.5	11.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	606	1506	-	-	1352	-	-	640
HCM Lane V/C Ratio	0.209	0.016	-	-	0.002	-	-	0.155
HCM Control Delay (s)	12.5	7.4	0	-	7.7	0	-	11.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	159	0	0	307	53	6	65	93	22	0	32
Future Vol, veh/h	12	159	0	0	307	53	6	65	93	22	0	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	175	0	0	337	58	7	71	102	24	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	396	0	-	-	-	0	370	597	175	654	-	198
Stage 1	-	-	-	-	-	-	201	201	-	366	-	-
Stage 2	-	-	-	-	-	-	169	396	-	288	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	7.33	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	3.519	-	3.319
Pot Cap-1 Maneuver	1161	-	0	0	-	-	574	416	868	366	0	811
Stage 1	-	-	0	0	-	-	800	734	-	627	0	-
Stage 2	-	-	0	0	-	-	817	603	-	719	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1161	-	-	-	-	-	544	411	868	277	-	811
Mov Cap-2 Maneuver	-	-	-	-	-	-	544	411	-	277	-	-
Stage 1	-	-	-	-	-	-	790	725	-	619	-	-
Stage 2	-	-	-	-	-	-	782	603	-	565	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	13.7	9.6
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	594	1161	-	-	-	811
HCM Lane V/C Ratio	0.303	0.011	-	-	-	0.043
HCM Control Delay (s)	13.7	8.1	0	-	-	9.6
HCM Lane LOS	B	A	A	-	-	A
HCM 95th %tile Q(veh)	1.3	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	62	28	54	49	43	28	10	0	7	3	0	12
Future Vol, veh/h	62	28	54	49	43	28	10	0	7	3	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	30	59	53	47	30	11	0	8	3	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	89	0	0	370	379	60	366	392	62
Stage 1	-	-	-	-	-	-	195	195	-	168	168	-
Stage 2	-	-	-	-	-	-	175	184	-	198	224	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1522	-	-	1506	-	-	587	553	1005	590	544	1003
Stage 1	-	-	-	-	-	-	807	739	-	834	759	-
Stage 2	-	-	-	-	-	-	827	747	-	804	718	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1522	-	-	1506	-	-	543	508	1005	549	499	1003
Mov Cap-2 Maneuver	-	-	-	-	-	-	543	508	-	549	499	-
Stage 1	-	-	-	-	-	-	769	704	-	795	731	-
Stage 2	-	-	-	-	-	-	786	719	-	760	684	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.2	3.1	10.5	9.3
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	670	1522	-	-	1506	-	-	861
HCM Lane V/C Ratio	0.028	0.044	-	-	0.035	-	-	0.019
HCM Control Delay (s)	10.5	7.5	0	-	7.5	0	-	9.3
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	279	332	33	190	173
Future Vol, veh/h	0	279	332	33	190	173
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	307	365	36	209	190

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	365	365
Stage 1	-	-	0	0
Stage 2	-	-	365	365
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	635	563
Stage 1	-	-	-	-
Stage 2	-	-	702	623
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	635	0
Mov Cap-2 Maneuver	-	-	635	0
Stage 1	-	-	-	0
Stage 2	-	-	702	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	635	-
HCM Lane V/C Ratio	-	-	0.329	-
HCM Control Delay (s)	-	-	13.4	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	1.4	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	38	73	326	168	47
Future Vol, veh/h	0	38	73	326	168	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	43	83	370	191	53

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	218	244	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	822	1322	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	822	1322	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	1.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1322	-	822	-	-
HCM Lane V/C Ratio	0.063	-	0.053	-	-
HCM Control Delay (s)	7.9	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	121	82	429	195	10
Future Vol, veh/h	19	121	82	429	195	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	130	88	461	210	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	853	215	220	0	-	0
Stage 1	215	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	330	825	1349	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	526	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	301	825	1349	-	-	-
Mov Cap-2 Maneuver	301	-	-	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	480	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	1.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1349	-	667	-	-
HCM Lane V/C Ratio	0.065	-	0.226	-	-
HCM Control Delay (s)	7.9	0	12	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

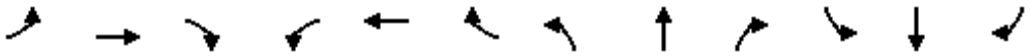


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	18	264	53	292	890	215
v/c Ratio	0.10	0.63	0.25	0.53	0.99	0.27
Control Delay	32.2	29.5	32.0	20.9	49.6	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	29.5	32.0	20.9	49.6	11.2
Queue Length 50th (ft)	7	97	21	80	~418	44
Queue Length 95th (ft)	27	172	55	179	#747	106
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	573	746	573	766	898	792
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.35	0.09	0.38	0.99	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	225	31	51	220	63	82	620	161	35	109	65
Future Volume (vph)	17	225	31	51	220	63	82	620	161	35	109	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.97			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1829		1770	1801			1807			1770	
Flt Permitted	0.95	1.00		0.95	1.00			0.95			0.84	
Satd. Flow (perm)	1770	1829		1770	1801			1719			1501	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	232	32	53	227	65	85	639	166	36	112	67
RTOR Reduction (vph)	0	6	0	0	11	0	0	7	0	0	14	0
Lane Group Flow (vph)	18	258	0	53	281	0	0	883	0	0	201	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	16.1		4.2	19.2			32.9			32.9	
Effective Green, g (s)	1.1	16.1		4.2	19.2			32.9			32.9	
Actuated g/C Ratio	0.02	0.24		0.06	0.29			0.49			0.49	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	29	439		110	516			844			737	
v/s Ratio Prot	0.01	0.14		c0.03	c0.16							
v/s Ratio Perm								c0.51			0.13	
v/c Ratio	0.62	0.59		0.48	0.54			1.05			0.27	
Uniform Delay, d1	32.7	22.5		30.3	20.2			17.1			10.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	26.1	2.0		1.2	1.2			43.7			0.1	
Delay (s)	58.8	24.5		31.6	21.4			60.7			10.1	
Level of Service	E	C		C	C			E			B	
Approach Delay (s)		26.7			22.9			60.7			10.1	
Approach LOS		C			C			E			B	

Intersection Summary			
HCM 2000 Control Delay	41.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	13.8
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	8.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	155	394	5	461	143	156	25	7
Future Vol, veh/h	0	0	0	4	155	394	5	461	143	156	25	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	163	415	5	485	151	164	26	7

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	851	851	-	26	0	-	485	0	0
Stage 1	496	496	-	-	-	-	-	-	-
Stage 2	355	355	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	330	297	0	1588	-	0	1078	-	0
Stage 1	612	545	0	-	-	0	-	-	0
Stage 2	710	630	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	278	0	-	1588	-	-	1078	-	-
Mov Cap-2 Maneuver	278	0	-	-	-	-	-	-	-
Stage 1	610	0	-	-	-	-	-	-	-
Stage 2	601	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	35.8	0.1	7.7
HCM LOS	E		

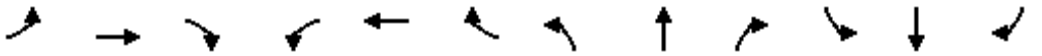
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1588	-	278	-	1078	-
HCM Lane V/C Ratio	0.003	-	0.602	-	0.152	-
HCM Control Delay (s)	7.3	0	35.8	0	8.9	0
HCM Lane LOS	A	A	E	A	A	A
HCM 95th %tile Q(veh)	0	-	3.6	-	0.5	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	642	425	64	49	416	165	29	276	80
v/c Ratio	0.74	0.82	0.13	0.35	0.81	0.30	0.23	0.61	0.18
Control Delay	43.0	52.1	3.9	59.9	53.3	10.2	58.6	46.7	8.3
Queue Delay	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	53.4	3.9	59.9	53.3	10.2	58.6	46.7	8.3
Queue Length 50th (ft)	228	289	0	35	301	10	21	184	0
Queue Length 95th (ft)	315	#501	20	82	#555	71	56	316	36
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1215	647	609	274	516	545	274	505	493
Starvation Cap Reductn	0	83	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.75	0.11	0.18	0.81	0.30	0.11	0.55	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	494	79	26	378	61	47	395	157	28	262	76
Future Volume (vph)	37	494	79	26	378	61	47	395	157	28	262	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3460			1857	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3460			1857	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	39	520	83	27	398	64	49	416	165	29	276	80
RTOR Reduction (vph)	0	9	0	0	0	46	0	0	107	0	0	60
Lane Group Flow (vph)	0	633	0	0	425	18	49	416	58	29	276	20
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		26.6			29.8	29.8	6.6	29.7	29.7	4.1	27.2	27.2
Effective Green, g (s)		26.6			29.8	29.8	6.6	29.7	29.7	4.1	27.2	27.2
Actuated g/C Ratio		0.24			0.27	0.27	0.06	0.27	0.27	0.04	0.25	0.25
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		846			509	433	107	509	432	66	466	396
v/s Ratio Prot		c0.18			c0.23		c0.03	c0.22		0.02	0.15	
v/s Ratio Perm						0.01			0.04			0.01
v/c Ratio		0.75			0.83	0.04	0.46	0.82	0.13	0.44	0.59	0.05
Uniform Delay, d1		38.0			37.1	29.0	49.3	37.0	29.8	51.2	35.9	30.9
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.6			11.3	0.0	1.1	9.8	0.1	1.7	2.0	0.1
Delay (s)		41.6			48.4	29.0	50.5	46.8	29.9	52.9	37.9	31.0
Level of Service		D			D	C	D	D	C	D	D	C
Approach Delay (s)		41.6			45.9			42.7			37.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	108.7	Sum of lost time (s)	18.5
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

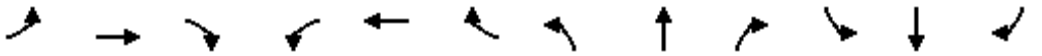
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	469	100	516	113	23	436	79	231
v/c Ratio	0.19	0.67	0.51	0.74	0.17	0.12	0.74	0.34	0.30
Control Delay	18.9	23.9	28.3	26.3	4.0	36.7	32.6	36.6	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	23.9	28.3	26.3	4.0	36.7	32.6	36.6	18.3
Queue Length 50th (ft)	9	174	34	199	0	10	160	33	53
Queue Length 95th (ft)	29	289	87	328	29	36	#407	84	166
Internal Link Dist (ft)		965		430			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	271	1165	332	1174	1039	441	722	441	879
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.40	0.30	0.44	0.11	0.05	0.60	0.18	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	432	27	98	506	111	23	321	106	77	214	13
Future Volume (vph)	29	432	27	98	506	111	23	321	106	77	214	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1846		1770	1863	1583	1770	1794		1770	1847	
Flt Permitted	0.23	1.00		0.28	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	429	1846		528	1863	1583	1770	1794		1770	1847	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	30	441	28	100	516	113	23	328	108	79	218	13
RTOR Reduction (vph)	0	3	0	0	0	72	0	11	0	0	2	0
Lane Group Flow (vph)	30	466	0	100	516	41	23	425	0	79	229	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	25.4	25.4		25.4	25.4	25.4	2.3	23.6		6.6	27.9	
Effective Green, g (s)	25.4	25.4		25.4	25.4	25.4	2.3	23.6		6.6	27.9	
Actuated g/C Ratio	0.37	0.37		0.37	0.37	0.37	0.03	0.34		0.09	0.40	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	156	674		192	680	578	58	609		168	741	
v/s Ratio Prot		0.25			c0.28		0.01	c0.24		c0.04	c0.12	
v/s Ratio Perm	0.07			0.19		0.03						
v/c Ratio	0.19	0.69		0.52	0.76	0.07	0.40	0.70		0.47	0.31	
Uniform Delay, d1	15.0	18.7		17.3	19.4	14.4	32.9	19.9		29.8	14.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	2.8		1.9	4.6	0.0	3.2	3.2		1.5	0.2	
Delay (s)	15.5	21.6		19.2	24.0	14.4	36.1	23.1		31.3	14.4	
Level of Service	B	C		B	C	B	D	C		C	B	
Approach Delay (s)		21.2			21.9			23.7			18.7	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	69.5	Sum of lost time (s)	13.9
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

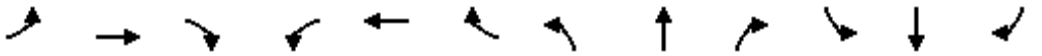


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	267	528	518	509	376	167	2273	481	285	1811	170
v/c Ratio	1.19	0.97	0.94	1.51	1.03	0.98	1.34	0.55	1.14	1.13	0.22
Control Delay	164.9	81.3	75.8	277.6	90.4	117.4	186.3	14.3	147.7	100.2	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	164.9	81.3	75.8	277.6	90.4	117.4	186.3	14.3	147.7	100.2	8.6
Queue Length 50th (ft)	~249	207	206	~548	~244	131	~1208	138	~132	~858	27
Queue Length 95th (ft)	#419	#324	#311	#760	#441	#273	#1344	240	#222	#997	70
Internal Link Dist (ft)		250		609			888			1305	
Turn Bay Length (ft)	225		115		65	195		205	205		65
Base Capacity (vph)	225	542	552	338	366	171	1695	869	251	1598	773
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.97	0.94	1.51	1.03	0.98	1.34	0.55	1.14	1.13	0.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	251	391	105	487	478	353	157	2137	452	268	1702	160
Future Volume (vph)	251	391	105	487	478	353	157	2137	452	268	1702	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	4.2	4.2	3.7	5.5	5.5	3.2	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3427		3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3427		3433	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	267	416	112	518	509	376	167	2273	481	285	1811	170
RTOR Reduction (vph)	0	20	0	0	0	79	0	0	111	0	0	59
Lane Group Flow (vph)	267	508	0	518	509	297	167	2273	370	285	1811	111
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)	15.3	18.3		19.3	21.8	21.8	11.6	57.5	57.5	8.8	54.2	54.2
Effective Green, g (s)	15.3	18.3		19.3	21.8	21.8	11.6	57.5	57.5	8.8	54.2	54.2
Actuated g/C Ratio	0.13	0.15		0.16	0.18	0.18	0.10	0.48	0.48	0.07	0.45	0.45
Clearance Time (s)	3.7	3.7		3.7	4.2	4.2	3.7	5.5	5.5	3.2	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	225	522		552	338	287	171	1695	758	251	1598	714
v/s Ratio Prot	c0.15	0.15		c0.15	c0.27		0.09	c0.64		c0.08	0.51	
v/s Ratio Perm						0.19			0.23			0.07
v/c Ratio	1.19	0.97		0.94	1.51	1.03	0.98	1.34	0.49	1.14	1.13	0.16
Uniform Delay, d1	52.4	50.6		49.8	49.1	49.1	54.1	31.2	21.2	55.6	32.9	19.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	119.7	32.2		23.8	242.5	62.1	61.3	157.5	0.5	98.3	68.4	0.1
Delay (s)	172.0	82.8		73.5	291.6	111.2	115.4	188.8	21.7	153.9	101.3	19.5
Level of Service	F	F		E	F	F	F	F	C	F	F	B
Approach Delay (s)		112.8			162.7			157.1			101.8	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	136.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.1
Intersection Capacity Utilization	120.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	279	759	88	2333	423	1910
v/c Ratio	0.29	0.95	0.58	1.17	1.26	1.09
Control Delay	33.4	66.6	80.8	123.5	186.3	84.9
Queue Delay	0.0	0.0	0.0	0.1	0.0	6.5
Total Delay	33.4	66.6	80.8	123.6	186.3	91.4
Queue Length 50th (ft)	92	353	84	~1013	~517	~1120
Queue Length 95th (ft)	132	#482	142	#1101	#734	#1318
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	998	823	304	1990	336	1759
Starvation Cap Reductn	0	0	0	106	0	273
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.92	0.29	1.24	1.26	1.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	187	71	263	238	243	86	2110	176	415	1796	75
Future Volume (vph)	16	187	71	263	238	243	86	2110	176	415	1796	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.96			0.95		1.00	0.99		1.00	0.99	
Flt Protected		1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3392			3307		1770	5026		1770	3518	
Flt Permitted		0.86			0.70		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2926			2353		1770	5026		1770	3518	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	16	191	72	268	243	248	88	2153	180	423	1833	77
RTOR Reduction (vph)	0	24	0	0	40	0	0	6	0	0	2	0
Lane Group Flow (vph)	0	255	0	0	719	0	88	2327	0	423	1908	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		48.6			48.6		12.8	59.2		28.5	74.9	
Effective Green, g (s)		48.6			48.6		12.8	59.2		28.5	74.9	
Actuated g/C Ratio		0.32			0.32		0.09	0.39		0.19	0.50	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		948			762		151	1983		336	1756	
v/s Ratio Prot							0.05	c0.46		c0.24	0.54	
v/s Ratio Perm		0.09			c0.31							
v/c Ratio		0.27			0.94		0.58	1.17		1.26	1.09	
Uniform Delay, d1		37.6			49.4		66.0	45.4		60.8	37.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			20.0		5.6	83.8		138.4	49.3	
Delay (s)		37.7			69.4		71.7	129.2		199.2	86.8	
Level of Service		D			E		E	F		F	F	
Approach Delay (s)		37.7			69.4			127.1			107.2	
Approach LOS		D			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	107.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	112.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

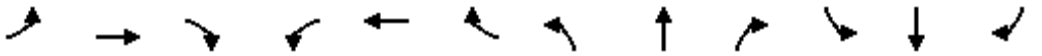


Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	269	542	134	278	602	65	2404	358	1738	923	436
v/c Ratio	0.85	0.84	1.03	1.02	1.02	0.57	1.64	1.67	1.46	1.52	1.25
Control Delay	90.7	78.5	160.6	135.4	73.1	97.6	328.1	361.3	249.7	287.8	176.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	90.7	78.5	160.6	135.4	73.1	97.6	328.2	361.3	249.7	287.8	176.0
Queue Length 50th (ft)	327	325	~182	~188	~446	74	~1478	~601	~1452	~768	~584
Queue Length 95th (ft)	#478	402	#350	#298	#700	131	#1556	#818	#1612	#904	#841
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	345	703	130	272	591	143	1466	215	1193	606	348
Starvation Cap Reductn	0	0	0	0	0	0	44	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.77	1.03	1.02	1.02	0.45	1.69	1.67	1.46	1.52	1.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	507	216	56	177	219	578	62	2198	109	344	1363	305
Future Volume (vph)	507	216	56	177	219	578	62	2198	109	344	1363	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3258		1610	3360	1583	1770	5049		1770	3442	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3258		1610	3360	1583	1770	5049		1770	3442	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	528	225	58	184	228	602	65	2290	114	358	1420	318
RTOR Reduction (vph)	0	5	0	0	0	243	0	3	0	0	0	0
Lane Group Flow (vph)	269	537	0	134	278	359	65	2401	0	358	1738	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	34.0	34.0		14.0	14.0	35.0	11.2	50.0		21.0	59.8	
Effective Green, g (s)	34.0	34.0		14.0	14.0	35.0	11.2	50.0		21.0	59.8	
Actuated g/C Ratio	0.20	0.20		0.08	0.08	0.20	0.06	0.29		0.12	0.35	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	317	641		130	272	321	114	1462		215	1192	
v/s Ratio Prot	c0.17	0.16		0.08	0.08	c0.14	0.04	c0.48		c0.20	0.50	
v/s Ratio Perm						0.09						
v/c Ratio	0.85	0.84		1.03	1.02	1.12	0.57	1.64		1.67	1.46	
Uniform Delay, d1	66.8	66.7		79.3	79.3	68.8	78.4	61.3		75.8	56.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.6	9.4		87.4	60.4	85.9	6.7	292.2		319.0	210.8	
Delay (s)	85.4	76.0		166.7	139.7	154.7	85.1	353.5		394.8	267.2	
Level of Service	F	E		F	F	F	F	F		F	F	
Approach Delay (s)		79.1			152.2			346.4			289.0	
Approach LOS		E			F			F			F	

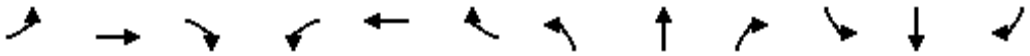
Intersection Summary			
HCM 2000 Control Delay	267.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	172.6	Sum of lost time (s)	21.6
Intersection Capacity Utilization	127.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	465	690	150
Future Volume (vph)	465	690	150
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.93	0.85	
Flt Protected	0.97	1.00	
Satd. Flow (prot)	3270	1441	
Flt Permitted	0.97	1.00	
Satd. Flow (perm)	3270	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	484	719	156
RTOR Reduction (vph)	0	81	0
Lane Group Flow (vph)	923	355	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.0	32.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.19	0.19	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	606	267	
v/s Ratio Prot	c0.28		
v/s Ratio Perm		0.25	
v/c Ratio	1.52	1.33	
Uniform Delay, d1	70.3	70.3	
Progression Factor	1.00	1.00	
Incremental Delay, d2	243.7	171.1	
Delay (s)	314.0	241.4	
Level of Service	F	F	
Approach Delay (s)	290.7		
Approach LOS	F		

Intersection Summary



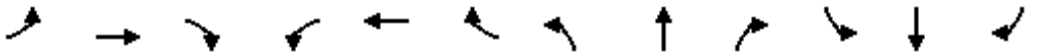
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	241	472	152	224	913	234	268	1341	120	252	1121	238
v/c Ratio	0.98	0.50	0.31	0.63	1.11	0.58	1.00	1.08	0.46	0.91	0.89	0.39
Control Delay	105.0	41.4	15.2	61.6	111.1	18.8	87.5	74.6	32.2	88.0	48.2	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.0	41.4	15.2	61.6	111.1	18.8	87.5	74.6	32.2	88.0	48.2	15.0
Queue Length 50th (ft)	~198	172	29	90	~444	36	205	~654	39	202	444	59
Queue Length 95th (ft)	#369	231	89	131	#576	120	m#385	#767	m82	#355	#542	130
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	247	948	486	411	821	407	269	1242	286	283	1271	613
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.50	0.31	0.55	1.11	0.57	1.00	1.08	0.42	0.89	0.88	0.39

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	458	147	217	886	227	260	1301	116	244	1087	231
Future Volume (vph)	234	458	147	217	886	227	260	1301	116	244	1087	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	241	472	152	224	913	234	268	1341	120	252	1121	238
RTOR Reduction (vph)	0	0	77	0	0	154	0	0	99	0	0	86
Lane Group Flow (vph)	241	472	75	224	913	80	268	1341	21	252	1121	152
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	custom
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									6
Actuated Green, G (s)	17.5	33.5	33.5	13.0	29.0	19.5	19.0	43.9	13.0	19.5	44.4	43.9
Effective Green, g (s)	17.5	33.5	33.5	13.0	29.0	19.5	19.0	43.9	13.0	19.5	44.4	43.9
Actuated g/C Ratio	0.14	0.27	0.27	0.10	0.23	0.16	0.15	0.35	0.10	0.16	0.36	0.35
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	247	948	410	357	821	246	269	1242	164	276	1257	526
v/s Ratio Prot	c0.14	0.13		0.07	c0.26	0.05	0.15	c0.38	0.01	0.14	c0.32	
v/s Ratio Perm			0.05									0.10
v/c Ratio	0.98	0.50	0.18	0.63	1.11	0.32	1.00	1.08	0.13	0.91	0.89	0.29
Uniform Delay, d1	53.5	38.6	35.2	53.7	48.0	46.9	53.0	40.5	50.9	51.9	38.0	29.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.68	2.46	1.00	1.00	1.00
Incremental Delay, d2	50.0	0.4	0.2	3.4	66.8	0.8	44.5	46.4	0.3	32.2	9.8	1.4
Delay (s)	103.5	39.1	35.4	57.1	114.8	47.7	85.5	74.0	125.3	84.1	47.9	30.7
Level of Service	F	D	D	E	F	D	F	E	F	F	D	C
Approach Delay (s)		56.4			93.9			79.3			51.0	
Approach LOS		E			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	71.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	241	111	1685	118	90	1552
v/c Ratio	0.79	0.33	0.73	0.11	0.55	0.57
Control Delay	67.1	17.9	8.5	4.7	75.0	3.7
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	67.1	17.9	8.6	4.7	75.0	3.7
Queue Length 50th (ft)	188	23	124	5	66	22
Queue Length 95th (ft)	269	73	195	m19	m78	570
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	403	2297	1036	283	2727
Starvation Cap Reductn	0	0	38	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.28	0.75	0.11	0.32	0.57

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	234	108	1634	114	87	1505
Future Volume (vph)	234	108	1634	114	87	1505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	241	111	1685	118	90	1552
RTOR Reduction (vph)	0	64	0	9	0	0
Lane Group Flow (vph)	241	47	1685	109	90	1552
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	21.7	21.7	81.1	81.1	11.7	96.3
Effective Green, g (s)	21.7	21.7	81.1	81.1	11.7	96.3
Actuated g/C Ratio	0.17	0.17	0.65	0.65	0.09	0.77
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	307	274	2296	1027	165	2726
v/s Ratio Prot	c0.14		c0.48		0.05	c0.44
v/s Ratio Perm		0.03		0.07		
v/c Ratio	0.79	0.17	0.73	0.11	0.55	0.57
Uniform Delay, d1	49.4	44.0	14.7	8.3	54.1	5.9
Progression Factor	1.00	1.00	0.43	0.57	1.24	0.47
Incremental Delay, d2	12.4	0.3	1.5	0.1	2.6	0.6
Delay (s)	61.8	44.3	7.7	4.9	69.7	3.4
Level of Service	E	D	A	A	E	A
Approach Delay (s)	56.3		7.5			7.0
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	7.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	161	1587	37	67	1672
Future Vol, veh/h	9	161	1587	37	67	1672
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	164	1619	38	68	1706

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2628	829	0	0	1657	0
Stage 1	1638	-	-	-	-	-
Stage 2	990	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	19	314	-	-	385	-
Stage 1	144	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	16	314	-	-	385	-
Mov Cap-2 Maneuver	16	-	-	-	-	-
Stage 1	144	-	-	-	-	-
Stage 2	263	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	158.2	0	0.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	158	385	-
HCM Lane V/C Ratio	-	-	1.098	0.178	-
HCM Control Delay (s)	-	-	158.2	16.4	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	9.1	0.6	-



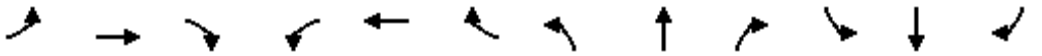
Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	33	399	185	1683	131	1664
v/c Ratio	0.08	0.92	0.35	0.85	0.64	0.67
Control Delay	5.0	74.1	7.6	28.5	80.1	4.2
Queue Delay	0.0	2.3	0.0	0.0	0.0	0.0
Total Delay	5.0	76.4	7.6	28.5	80.1	4.2
Queue Length 50th (ft)	0	~344	0	538	109	89
Queue Length 95th (ft)	15	#549	61	714	m170	73
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	422	434	527	1979	283	2572
Starvation Cap Reductn	0	9	0	0	0	66
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.94	0.35	0.85	0.46	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	32	374	9	178	0	1613	3	126	1576	21
Future Volume (vph)	0	0	32	374	9	178	0	1613	3	126	1576	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1776	1583		3538		1770	3532	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1776	1583		3538		1770	3532	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	33	390	9	185	0	1680	3	131	1642	22
RTOR Reduction (vph)	0	0	25	0	0	140	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	8	0	399	45	0	1683	0	131	1663	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			29.6		30.6	30.6		69.9		14.5	87.4	
Effective Green, g (s)			29.6		30.6	30.6		69.9		14.5	87.4	
Actuated g/C Ratio			0.24		0.24	0.24		0.56		0.12	0.70	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			381		434	387		1978		205	2469	
v/s Ratio Prot								c0.48		0.07	c0.47	
v/s Ratio Perm			0.00		0.22	0.03						
v/c Ratio			0.02		0.92	0.12		0.85		0.64	0.67	
Uniform Delay, d1			36.6		46.0	36.7		23.2		52.8	10.7	
Progression Factor			1.00		1.00	1.00		1.00		1.30	0.27	
Incremental Delay, d2			0.0		24.3	0.1		4.8		5.4	1.3	
Delay (s)			36.6		70.3	36.8		28.0		74.2	4.2	
Level of Service			D		E	D		C		E	A	
Approach Delay (s)		36.6			59.7			28.0			9.3	
Approach LOS		D			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	17.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	142	28	24	248	44	81	182	125	57	54	26
Future Vol, veh/h	25	142	28	24	248	44	81	182	125	57	54	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	154	30	26	270	48	88	198	136	62	59	28
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.3	17.4	20.9	12.1
HCM LOS	B	C	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	13%	8%	42%
Vol Thru, %	47%	73%	78%	39%
Vol Right, %	32%	14%	14%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	388	195	316	137
LT Vol	81	25	24	57
Through Vol	182	142	248	54
RT Vol	125	28	44	26
Lane Flow Rate	422	212	343	149
Geometry Grp	1	1	1	1
Degree of Util (X)	0.687	0.377	0.583	0.272
Departure Headway (Hd)	5.863	6.401	6.106	6.576
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	616	562	591	545
Service Time	3.908	4.457	4.155	4.638
HCM Lane V/C Ratio	0.685	0.377	0.58	0.273
HCM Control Delay	20.9	13.3	17.4	12.1
HCM Lane LOS	C	B	C	B
HCM 95th-tile Q	5.4	1.7	3.7	1.1

Intersection	
Int Delay, s/veh	4.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	155	233	8	41	65
Future Vol, veh/h	27	155	233	8	41	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	189	284	10	50	79

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	468	289	0	0	294	0
Stage 1	289	-	-	-	-	-
Stage 2	179	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	553	750	-	-	1268	-
Stage 1	760	-	-	-	-	-
Stage 2	852	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	530	750	-	-	1268	-
Mov Cap-2 Maneuver	530	-	-	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	817	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	3.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	706	1268	-
HCM Lane V/C Ratio	-	-	0.314	0.039	-
HCM Control Delay (s)	-	-	12.4	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.1	-

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	37	45	21	8	65	68	88	147	14	36	49	32
Future Vol, veh/h	37	45	21	8	65	68	88	147	14	36	49	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	48	22	9	69	72	94	156	15	38	52	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	141	0	0	70	0	0	303	297	59	345	271	105
Stage 1	-	-	-	-	-	-	138	138	-	122	122	-
Stage 2	-	-	-	-	-	-	165	159	-	223	149	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1442	-	-	1531	-	-	649	615	1007	609	636	949
Stage 1	-	-	-	-	-	-	865	782	-	882	795	-
Stage 2	-	-	-	-	-	-	837	766	-	780	774	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1442	-	-	1531	-	-	570	594	1007	466	614	949
Mov Cap-2 Maneuver	-	-	-	-	-	-	570	594	-	466	614	-
Stage 1	-	-	-	-	-	-	841	760	-	857	790	-
Stage 2	-	-	-	-	-	-	749	761	-	593	752	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.7	0.4	15.7	12.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	599	1442	-	-	1531	-	-	613
HCM Lane V/C Ratio	0.442	0.027	-	-	0.006	-	-	0.203
HCM Control Delay (s)	15.7	7.6	0	-	7.4	0	-	12.4
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	2.3	0.1	-	-	0	-	-	0.8

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	119	0	0	477	75	10	70	76	48	0	75
Future Vol, veh/h	10	119	0	0	477	75	10	70	76	48	0	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	131	0	0	524	82	11	77	84	53	0	82

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	607	0	-	-	-	0	415	760	131	798	-	303
Stage 1	-	-	-	-	-	-	153	153	-	565	-	-
Stage 2	-	-	-	-	-	-	262	607	-	233	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	7.33	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	3.519	-	3.319
Pot Cap-1 Maneuver	969	-	0	0	-	-	535	335	918	290	0	694
Stage 1	-	-	0	0	-	-	849	770	-	478	0	-
Stage 2	-	-	0	0	-	-	721	485	-	769	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	969	-	-	-	-	-	467	331	918	215	-	694
Mov Cap-2 Maneuver	-	-	-	-	-	-	467	331	-	215	-	-
Stage 1	-	-	-	-	-	-	839	761	-	472	-	-
Stage 2	-	-	-	-	-	-	635	485	-	621	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0	16.1	10.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	494	969	-	-	-	694
HCM Lane V/C Ratio	0.347	0.011	-	-	-	0.119
HCM Control Delay (s)	16.1	8.8	0	-	-	10.9
HCM Lane LOS	C	A	A	-	-	B
HCM 95th %tile Q(veh)	1.5	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	28	10	9	58	5	60	0	40	17	0	64
Future Vol, veh/h	11	28	10	9	58	5	60	0	40	17	0	64
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	30	11	10	63	5	65	0	43	18	0	70

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	68	0	0	41	0	0	180	148	36	167	150	66
Stage 1	-	-	-	-	-	-	60	60	-	85	85	-
Stage 2	-	-	-	-	-	-	120	88	-	82	65	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1533	-	-	1568	-	-	782	743	1037	797	742	998
Stage 1	-	-	-	-	-	-	951	845	-	923	824	-
Stage 2	-	-	-	-	-	-	884	822	-	926	841	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1533	-	-	1568	-	-	719	732	1037	755	731	998
Mov Cap-2 Maneuver	-	-	-	-	-	-	719	732	-	755	731	-
Stage 1	-	-	-	-	-	-	943	838	-	916	818	-
Stage 2	-	-	-	-	-	-	817	816	-	880	834	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.9	10.1	9.3
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	820	1533	-	-	1568	-	-	935
HCM Lane V/C Ratio	0.133	0.008	-	-	0.006	-	-	0.094
HCM Control Delay (s)	10.1	7.4	0	-	7.3	0	-	9.3
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	393	295	25	185	276
Future Vol, veh/h	0	393	295	25	185	276
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	432	324	27	203	303

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	324	324
Stage 1	-	-	0	0
Stage 2	-	-	324	324
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	670	594
Stage 1	-	-	-	-
Stage 2	-	-	733	650
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	670	0
Mov Cap-2 Maneuver	-	-	670	0
Stage 1	-	-	-	0
Stage 2	-	-	733	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	670	-
HCM Lane V/C Ratio	-	-	0.303	-
HCM Control Delay (s)	-	-	12.7	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	1.3	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	85	21	448	297	50
Future Vol, veh/h	0	85	21	448	297	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	97	24	509	338	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	366	394	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	679	1165	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	679	1165	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1165	-	679	-	-
HCM Lane V/C Ratio	0.02	-	0.142	-	-
HCM Control Delay (s)	8.2	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	59	124	449	365	17
Future Vol, veh/h	19	59	124	449	365	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	63	133	483	392	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1151	402	411	0	-	0
Stage 1	402	-	-	-	-	-
Stage 2	749	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	219	648	1148	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	467	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	184	648	1148	-	-	-
Mov Cap-2 Maneuver	184	-	-	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	393	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.3	1.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1148	-	401	-	-
HCM Lane V/C Ratio	0.116	-	0.209	-	-
HCM Control Delay (s)	8.5	0	16.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.4	-	0.8	-	-

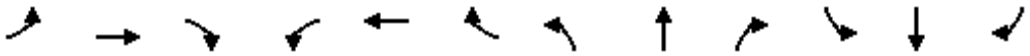


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	19	232	118	344	776	559
v/c Ratio	0.12	0.59	0.49	0.54	1.08	1.17
Control Delay	33.6	31.2	36.1	21.1	79.3	118.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	31.2	36.1	21.1	79.3	118.9
Queue Length 50th (ft)	8	87	47	102	~381	~292
Queue Length 95th (ft)	29	163	101	217	#714	#570
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	536	699	536	754	720	479
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.33	0.22	0.46	1.08	1.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	201	24	114	315	18	129	458	166	178	256	108
Future Volume (vph)	18	201	24	114	315	18	129	458	166	178	256	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	1833		1770	1847			1792			1783	
Flt Permitted	0.95	1.00		0.95	1.00			0.81			0.54	
Satd. Flow (perm)	1770	1833		1770	1847			1467			973	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	207	25	118	325	19	133	472	171	184	264	111
RTOR Reduction (vph)	0	5	0	0	2	0	0	9	0	0	8	0
Lane Group Flow (vph)	19	227	0	118	342	0	0	767	0	0	551	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.2	16.9		7.6	23.3			32.7			32.7	
Effective Green, g (s)	1.2	16.9		7.6	23.3			32.7			32.7	
Actuated g/C Ratio	0.02	0.24		0.11	0.33			0.46			0.46	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	29	436		189	606			675			448	
v/s Ratio Prot	0.01	0.12		c0.07	c0.19							
v/s Ratio Perm								0.52			c0.57	
v/c Ratio	0.66	0.52		0.62	0.56			1.14			1.23	
Uniform Delay, d1	34.7	23.5		30.3	19.7			19.1			19.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	33.9	1.0		4.6	1.2			78.6			121.6	
Delay (s)	68.6	24.6		34.9	20.9			97.7			140.8	
Level of Service	E	C		C	C			F			F	
Approach Delay (s)		27.9			24.5			97.7			140.8	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	84.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	71.0	Sum of lost time (s)	13.8
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	29.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	15	132	282	20	427	240	317	32	15
Future Vol, veh/h	0	0	0	15	132	282	20	427	240	317	32	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	139	297	21	449	253	334	34	16

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1193	1193	-	34	0	-	449	0	0
Stage 1	492	492	-	-	-	-	-	-	-
Stage 2	701	701	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	206	187	0	1578	-	0	1111	-	0
Stage 1	615	548	0	-	-	0	-	-	0
Stage 2	492	441	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	140	0	-	1578	-	-	1111	-	-
Mov Cap-2 Maneuver	140	0	-	-	-	-	-	-	-
Stage 1	604	0	-	-	-	-	-	-	-
Stage 2	341	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	169.9	0.3	8.7
HCM LOS	F		

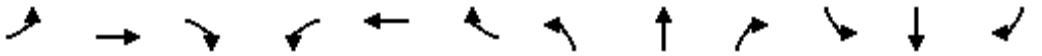
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1578	-	140	-	1111	-
HCM Lane V/C Ratio	0.013	-	1.105	-	0.3	-
HCM Control Delay (s)	7.3	0	169.9	0	9.6	0
HCM Lane LOS	A	A	F	A	A	A
HCM 95th %tile Q(veh)	0	-	8.6	-	1.3	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	656	415	35	166	489	106	48	377	132
v/c Ratio	0.78	0.87	0.07	0.80	0.87	0.20	0.39	0.88	0.31
Control Delay	50.1	63.5	0.3	81.0	60.7	12.2	67.2	70.3	18.8
Queue Delay	0.0	4.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.1	68.4	0.3	81.0	60.7	12.2	67.2	70.3	18.8
Queue Length 50th (ft)	266	324	0	136	399	11	39	311	30
Queue Length 95th (ft)	338	#510	0	#259	#696	61	82	#533	91
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1053	560	540	238	560	537	238	438	439
Starvation Cap Reductn	0	90	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.88	0.06	0.70	0.87	0.20	0.20	0.86	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	479	80	37	357	33	158	465	101	46	358	125
Future Volume (vph)	65	479	80	37	357	33	158	465	101	46	358	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3453			1854	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		0.99			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3453			1854	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	504	84	39	376	35	166	489	106	48	377	132
RTOR Reduction (vph)	0	9	0	0	0	26	0	0	62	0	0	67
Lane Group Flow (vph)	0	647	0	0	415	9	166	489	44	48	377	65
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		29.1			31.2	31.2	14.3	36.4	36.4	6.7	28.8	28.8
Effective Green, g (s)		29.1			31.2	31.2	14.3	36.4	36.4	6.7	28.8	28.8
Actuated g/C Ratio		0.24			0.26	0.26	0.12	0.30	0.30	0.05	0.24	0.24
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		824			474	405	207	556	472	97	440	373
v/s Ratio Prot		c0.19			c0.22		c0.09	c0.26		0.03	0.20	
v/s Ratio Perm						0.01			0.03			0.04
v/c Ratio		0.79			0.88	0.02	0.80	0.88	0.09	0.49	0.86	0.17
Uniform Delay, d1		43.5			43.5	33.9	52.4	40.7	30.8	56.0	44.6	37.1
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		4.9			16.4	0.0	18.6	14.7	0.1	1.4	15.1	0.2
Delay (s)		48.4			59.9	34.0	71.1	55.4	30.9	57.4	59.7	37.3
Level of Service		D			E	C	E	E	C	E	E	D
Approach Delay (s)		48.4			57.8			55.4			54.2	
Approach LOS		D			E			E			D	

Intersection Summary			
HCM 2000 Control Delay	53.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	121.9	Sum of lost time (s)	18.5
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		

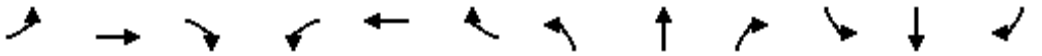
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	590	85	441	108	56	589	143	457
v/c Ratio	0.06	0.94	0.86	0.70	0.18	0.30	0.99	0.55	0.57
Control Delay	17.3	47.2	87.0	27.7	4.3	38.4	64.6	40.3	24.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	47.2	87.0	27.7	4.3	38.4	64.6	40.3	24.6
Queue Length 50th (ft)	3	257	36	173	0	24	251	60	166
Queue Length 95th (ft)	15	415	#122	282	29	68	#633	138	#411
Internal Link Dist (ft)		965		430			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	271	999	157	1008	906	361	593	361	799
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.59	0.54	0.44	0.12	0.16	0.99	0.40	0.57

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	536	42	83	432	106	55	403	174	140	421	26
Future Volume (vph)	11	536	42	83	432	106	55	403	174	140	421	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1842		1770	1863	1583	1770	1778		1770	1846	
Flt Permitted	0.27	1.00		0.16	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	502	1842		290	1863	1583	1770	1778		1770	1846	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	11	547	43	85	441	108	56	411	178	143	430	27
RTOR Reduction (vph)	0	3	0	0	0	72	0	15	0	0	2	0
Lane Group Flow (vph)	11	587	0	85	441	36	56	574	0	143	455	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	25.7	25.7		25.7	25.7	25.7	5.1	26.6		11.1	32.6	
Effective Green, g (s)	25.7	25.7		25.7	25.7	25.7	5.1	26.6		11.1	32.6	
Actuated g/C Ratio	0.33	0.33		0.33	0.33	0.33	0.07	0.34		0.14	0.42	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	166	612		96	619	526	116	611		254	778	
v/s Ratio Prot		c0.32			0.24		0.03	c0.32		c0.08	0.25	
v/s Ratio Perm	0.02			0.29		0.02						
v/c Ratio	0.07	0.96		0.89	0.71	0.07	0.48	0.94		0.56	0.59	
Uniform Delay, d1	17.6	25.3		24.4	22.6	17.6	34.8	24.6		30.8	17.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	26.1		56.1	3.9	0.1	3.1	22.3		2.8	1.1	
Delay (s)	17.8	51.4		80.5	26.4	17.7	38.0	46.9		33.7	18.3	
Level of Service	B	D		F	C	B	D	D		C	B	
Approach Delay (s)		50.8			32.2			46.1			22.0	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	77.3	Sum of lost time (s)	13.9
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

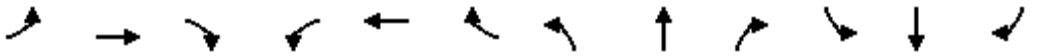


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	306	682	601	496	286	180	1352	614	389	2322	79
v/c Ratio	1.47	1.24	1.02	1.29	0.74	1.12	0.88	0.68	1.00	1.43	0.10
Control Delay	275.8	165.0	95.5	190.8	46.9	161.0	41.6	14.1	102.2	228.8	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	275.8	165.0	95.5	190.8	46.9	161.0	41.6	14.1	102.2	228.8	2.5
Queue Length 50th (ft)	~353	~368	~276	~532	167	~175	540	146	171	~1393	0
Queue Length 95th (ft)	#537	#495	#394	#749	273	#325	644	286	#278	#1525	19
Internal Link Dist (ft)		250		609			888			1305	
Turn Bay Length (ft)	225		115		65	195		205	205		65
Base Capacity (vph)	208	552	588	384	389	160	1538	907	390	1619	778
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.47	1.24	1.02	1.29	0.74	1.13	0.88	0.68	1.00	1.43	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	526	115	565	466	269	169	1271	577	366	2183	74
Future Volume (vph)	288	526	115	565	466	269	169	1271	577	366	2183	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3444		3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3444		3433	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	306	560	122	601	496	286	180	1352	614	389	2322	79
RTOR Reduction (vph)	0	14	0	0	0	63	0	0	220	0	0	43
Lane Group Flow (vph)	306	668	0	601	496	223	180	1352	394	389	2322	36
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)	15.3	20.3		22.3	26.8	26.8	11.8	56.5	56.5	14.8	59.5	59.5
Effective Green, g (s)	15.3	20.3		22.3	26.8	26.8	11.8	56.5	56.5	14.8	59.5	59.5
Actuated g/C Ratio	0.12	0.16		0.17	0.21	0.21	0.09	0.43	0.43	0.11	0.46	0.46
Clearance Time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	208	537		588	384	326	160	1538	687	390	1619	724
v/s Ratio Prot	c0.17	0.19		c0.18	c0.27		c0.10	0.38		0.11	c0.66	
v/s Ratio Perm						0.14			0.25			0.02
v/c Ratio	1.47	1.24		1.02	1.29	0.68	1.12	0.88	0.57	1.00	1.43	0.05
Uniform Delay, d1	57.4	54.9		53.9	51.6	47.7	59.1	33.6	27.7	57.6	35.2	19.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	236.3	124.5		42.8	149.5	5.9	108.7	6.1	1.2	44.6	199.0	0.0
Delay (s)	293.6	179.4		96.7	201.1	53.6	167.8	39.7	28.8	102.2	234.3	19.6
Level of Service	F	F		F	F	D	F	D	C	F	F	B
Approach Delay (s)		214.8			125.2			47.3			209.8	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	146.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	124.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

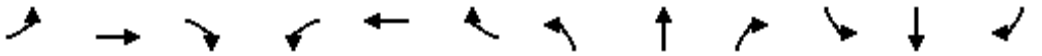


Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	359	905	109	1699	289	2352
v/c Ratio	0.43	1.05	0.63	0.89	0.84	1.39
Control Delay	37.6	84.9	80.9	49.6	79.9	212.5
Queue Delay	0.0	0.0	0.0	2.1	0.0	0.4
Total Delay	37.6	84.9	80.9	51.7	79.9	212.9
Queue Length 50th (ft)	132	~446	104	558	277	~1618
Queue Length 95th (ft)	182	#584	166	626	#436	#1816
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	838	858	304	1940	344	1689
Starvation Cap Reductn	0	0	0	130	0	182
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	1.05	0.36	0.94	0.84	1.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	245	80	253	206	428	107	1512	153	283	2281	24
Future Volume (vph)	26	245	80	253	206	428	107	1512	153	283	2281	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.97			0.93		1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3405			3237		1770	5015		1770	3534	
Flt Permitted		0.72			0.68		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2458			2234		1770	5015		1770	3534	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	27	250	82	258	210	437	109	1543	156	289	2328	24
RTOR Reduction (vph)	0	19	0	0	113	0	0	8	0	0	1	0
Lane Group Flow (vph)	0	340	0	0	792	0	109	1691	0	289	2351	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		50.0			50.0		14.6	57.2		29.1	71.7	
Effective Green, g (s)		50.0			50.0		14.6	57.2		29.1	71.7	
Actuated g/C Ratio		0.33			0.33		0.10	0.38		0.19	0.48	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		819			744		172	1912		343	1689	
v/s Ratio Prot							0.06	c0.34		0.16	c0.67	
v/s Ratio Perm		0.14			c0.35							
v/c Ratio		0.42			1.06		0.63	0.88		0.84	1.39	
Uniform Delay, d1		38.7			50.0		65.1	43.3		58.2	39.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			51.7		7.4	6.4		16.9	180.2	
Delay (s)		39.0			101.7		72.5	49.7		75.1	219.4	
Level of Service		D			F		E	D		E	F	
Approach Delay (s)		39.0			101.7			51.1			203.6	
Approach LOS		D			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	128.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	121.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



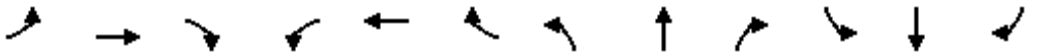
Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	406	828	168	346	759	91	1957	208	1753	913	483
v/c Ratio	1.20	1.19	1.31	1.30	1.31	0.72	1.36	0.99	1.52	1.68dr	1.40
Control Delay	170.1	157.7	242.4	218.1	183.3	108.5	211.0	133.0	278.3	297.3	236.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	170.1	157.7	242.4	218.1	183.3	108.5	211.1	133.0	278.3	297.3	236.6
Queue Length 50th (ft)	~619	~630	~272	~278	~844	104	~1083	243	~1493	~758	~708
Queue Length 95th (ft)	#865	#776	#458	#397	#1107	#180	#1171	#425	#1626	#894	#971
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	339	693	128	266	578	141	1442	211	1152	591	344
Starvation Cap Reductn	0	0	0	0	0	0	51	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.20	1.19	1.31	1.30	1.31	0.65	1.41	0.99	1.52	1.54	1.40

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	780	349	55	252	241	729	87	1816	62	200	1464	219
Future Volume (vph)	780	349	55	252	241	729	87	1816	62	200	1464	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3275		1610	3344	1583	1770	5060		1770	3470	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3275		1610	3344	1583	1770	5060		1770	3470	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	812	364	57	262	251	759	91	1892	65	208	1525	228
RTOR Reduction (vph)	0	3	0	0	0	236	0	2	0	0	0	0
Lane Group Flow (vph)	406	825	0	168	346	523	91	1955	0	208	1753	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	37.0	37.0		14.0	14.0	35.0	12.7	50.0		21.0	58.3	
Effective Green, g (s)	37.0	37.0		14.0	14.0	35.0	12.7	50.0		21.0	58.3	
Actuated g/C Ratio	0.21	0.21		0.08	0.08	0.20	0.07	0.28		0.12	0.33	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	339	690		128	266	315	128	1440		211	1152	
v/s Ratio Prot	c0.25	0.25		0.10	0.10	c0.20	0.05	0.39		0.12	c0.51	
v/s Ratio Perm						0.13						
v/c Ratio	1.20	1.20		1.31	1.30	1.66	0.71	1.36		0.99	1.52	
Uniform Delay, d1	69.3	69.3		80.8	80.8	70.3	79.7	62.8		77.2	58.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	114.0	101.7		185.4	160.1	310.6	17.0	165.5		57.4	239.2	
Delay (s)	183.3	171.0		266.2	240.9	380.9	96.6	228.3		134.6	297.9	
Level of Service	F	F		F	F	F	F	F		F	F	
Approach Delay (s)		175.1			327.7			222.5			280.6	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	264.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	175.6	Sum of lost time (s)	21.6
Intersection Capacity Utilization	141.5%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	411	817	112
Future Volume (vph)	411	817	112
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.92	0.85	
Flt Protected	0.98	1.00	
Satd. Flow (prot)	3250	1441	
Flt Permitted	0.98	1.00	
Satd. Flow (perm)	3250	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	428	851	117
RTOR Reduction (vph)	0	82	0
Lane Group Flow (vph)	913	401	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.0	32.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.18	0.18	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	592	262	
v/s Ratio Prot	c0.28		
v/s Ratio Perm		0.28	
v/c Ratio	1.68dr	1.53	
Uniform Delay, d1	71.8	71.8	
Progression Factor	1.00	1.00	
Incremental Delay, d2	252.4	257.5	
Delay (s)	324.2	329.3	
Level of Service	F	F	
Approach Delay (s)	325.9		
Approach LOS	F		

Intersection Summary

I - Queuing Summary

1180 1190 Main Street Queuing Summary

Scenarios Analyzed	Turning Movement	El Camino Real												Lathrop Street										Main Street												Middlefield Road						Woodside Rd								
		Jefferson Ave #1			Maple St #2			Beech St #3			Chestnut St #4			Maple Street #5			Elm Street #6			Beech St #7			Chesnut St #8			Maple St #10			Elm St #11			Beech St #12			Chestnut St #13			Pine St #14			Main St #15			Chestnut St #16			Middlefield Rd #17			Bay Rd #18			Broadway #19		
		Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM
Existing Traffic	EBL	200	**380**	**331**										45	0	3																	50	19	27							50	25	13	245	**352**	**285**				375	249	351
	EBR	60	**190**	78																																															
	WBL	90	56	115										25	0	0																	120	51	96							60	34	64	405	**710**	**710**				70	**245**	**308**
	WBR				90	37	43																																	115	0	0							115	**561**	**350**
	NBL	165	**302**	**325**																																			90	69	**183**	85	29	53	225	198	205	160	91	110	180	60	92
	NBR	190	42	78	50	13	4																																					265	117	139						
	SBL	220	224	**266**	120	86	69	90	18	8	50	**185**	**170**											40	18	23													95	41	58	80	68	**112**	225	178	148	175	**245**	**249**	140	**370**	**239**
	SBR	160	58	106																																			45	31	**73**												
	SEL																																															220	**489**	**696**
Existing + Project Traffic	EBL	200	**380**	**331**										45	3	3																	50	19	27							50	25	13	245	**354**	**300**				375	257	358
	EBR	60	**196**	79																																															
	WBL	90	56	115										25	3	0																	120	51	96							60	36	65	405	**723**	**710**				70	**253**	**308**
	WBR				90	37	48																																	115	0	0							115	**564**	**351**
	NBL	165	**303**	**338**																																			90	70	**184**	85	29	53	225	198	205	160	91	110	180	60	92
	NBR	190	42	77	50	13	4																																					265	117	139						
	SBL	220	224	**266**	120	100	70	90	18	8	50	**185**	**170**											40	20	23													95	42	58	80	69	**113**	225	178	148	175	**245**	**250**	140	**370**	**239**
	SBR	160	58	106																																			45	31	**73**												
	SEL																																															220	**494**	**696**
Background Traffic	EBL	200	**382**	**334**										45	0	3																	50	20	27							50	26	13	225	**386**	**429**				375	361	**447**
	EBR	60	**193**	79																																															
	WBL	90	68	**129**										25	0	0																	120	54	98							60	35	73	115	**311**	**394**				70	**308**	**434**
	WBR				90	39	53																																	115	4	0							65	**246**	**215**				115	**768**	**1012**
	NBL	165	**305**	**329**																																			90	73	**211**	85	32	57	195	**261**	**328**	160	97	144	180	71	142
	NBR	190	59	101	50	13	8																																					205	202	**252**						
	SBL	220	**246**	**330**	120	93	74	90	18	8	50	**203**	**172**											40	20	25													95	50	74	80	76	**125**	205	194	198	175	**704**	**331**	140	**751**	**337**
	SBR	160	58	109																																			45	36	**91**												
	SEL																																																	220	**768**	**777**
Background + Project Traffic	EBL	200	**382**	**334**										45	3	5																	50	20	27							50	26	13	225	**387**	**448**				375	362	**464**
	EBR	60	**200**	80																																															
	WBL	90	68	**129**										25	3	0																	120	54	98							60	38	77	115	**311**	**394**				70	**308**	**434**
	WBR				90	39	60																																	115	4	0							65	**246**	**215**				115	**768**	**1014**
	NBL	165	**305**	**340**																																			90	74	**211**	85	33	57	195	**261**	**328**	160	97	144	180	71	142
	NBR	190	60	98	50	12	8																																					205	202	**253**						
	SBL	220	**246**	**330**	120	104	76	90	20	8	50	**204**	**172**											40	23	28													95	50	74	80	77	**125**	205	194	198	175	**704**	**331**	140	**751**	**337**
	SBR	160	58	110																																			45	36	**91**							65	40	16						
	SEL																																															220	**770**	**777**

Queues that exceed the available storage are shown in **BOLD** and are shaded.
Queues that are a significant impact are shown in red and **BOLD** and are shaded.

1180 1190 Main Street Queuing Summary

Scenarios Analyzed	Turning Movement	El Camino Real												Lathrop Street										Main Street												Middlefield Road						Woodside Rd								
		Jefferson Ave #1			Maple St #2			Beech St #3			Chestnut St #4			Maple Street #5			Elm Street #6			Beech St #7			Chesnut St #8			Maple St #10			Elm St #11			Beech St #12			Chestnut St #13			Pine St #14			Main St #15			Chestnut St #16			Middlefield Rd #17			Bay Rd #18			Broadway #19		
		Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM
Cumulative Traffic	EBL	200	**446**	**369**										45	0	3																	50	27	29							50	29	15	225	**418**	**521**				375	**478**	**862**
	EBR	60	**222**	**87**																																															
	WBL	90	69	**131**										25	3	0																	120	55	101							60	83	**119**	115	**311**	**394**				70	**345**	**458**
	WBR				90	41	66																																	115	20	0				65	**417**	**273**				115	**700**	**1107**
	NBL	165	**309**	**376**																																			90	82	**259**	85	36	68	195	**267**	**325**	160	142	166	180	131	180
	NBR	190	74	84	50	9	19																																				205	**240**	**286**						
	SBL	220	**286**	**355**	120	96	75	90	58	15	50	**209**	**170**											40	33	30												95	56	82	80	84	**138**	205	222	**278**	175	**734**	**436**	140	**818**	**425**
	SBR	160	69	130																																			45	36	**91**				65	53	18						
	SEL																																															220	**902**	**894**
Cumulative + Project Traffic	EBL	200	**446**	**369**										45	3	5																	50	27	29							50	29	15	225	**419**	**537**				375	**478**	**865**
	EBR	60	**230**	**89**																																														
	WBL	90	38	**131**										25	10	5																	120	55	101							60	**87**	**122**	115	**311**	**394**				70	**350**	**458**
	WBR				90	42	73																																	115	20	0				65	**441**	**273**				115	**700**	**1107**
	NBL	165	**310**	**385**																																			90	82	**259**	85	36	68	195	**273**	**325**	160	142	166	180	131	180
	NBR	190	73	82	50	10	19																																				205	**240**	**286**						
	SBL	220	**286**	**355**	120	103	78	90	60	15	50	**209**	**170**											40	35	33												95	56	82	80	84	**138**	205	222	**278**	175	**734**	**436**	140	**818**	**425**
	SBR	160	69	130																																			45	36	**91**				65	70	19						
	SEL																																															220	**904**	**894**

Queues that exceed the available storage are shown in**BOLD** and are shaded.
Queues that are a significant impact are shown in red and **BOLD** and are shaded.

J - Signal Warrants

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **El Camino Real** NB SB # OF APPROACH LANES: **3**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	2,896	52		Y			Y			Y			Y				
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	3,033	47		Y			Y			Y			Y				
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	5,929	99		2	0	**0**	2	0	**0**	2	0	**0**	2	0	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **FranklinStreet / Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	251	117						Y						Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	390	196			Y			Y			Y			Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			641	313		0	1	**0**	0	2	**0**	0	1	**0**	0	2	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	119	42															
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	205	56															
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	324	98		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	170	80						Y						Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	140	105						Y						Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	310	185		0	0	**0**	0	2	**0**	0	0	**0**	0	2	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Chestnut Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	458	138						Y			Y			Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	557	151			Y			Y		Y	Y	**Y**		Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,015	289		0	1	**0**	0	2	**0**	1	2	**1**	0	2	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street - Maple Street** NB WB # OF APPROACH LANES: **1**

MINOR STREET: **Main Sreet** SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	244	199			Y			Y			Y			Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	178	199			Y			Y			Y			Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			422	398		0	2	**0**	0	2	**0**	0	2	**0**	0	2	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	459	16								Y							
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	683	20		Y						Y			Y				
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,142	36		1	0	**0**	0	0	**0**	2	0	**0**	1	0	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	491	93						Y		Y				Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	710	57		Y						Y			Y				
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,201	150		1	0	**0**	0	1	**0**	2	0	**0**	1	1	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Pine Street / SR 84** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	499	323			Y			Y		Y	Y	**Y**		Y		**Y**	
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	688	313		Y	Y	**Y**		Y		Y	Y	**Y**	Y	Y	**Y**	**Y**	
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,187	636		1	2	**1**	0	2	**0**	2	2	**2**	1	2	**1**	**2**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **El Camino Real** NB SB # OF APPROACH LANES: **3**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	2,910	53		Y			Y			Y			Y				
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	3,040	53		Y			Y			Y			Y				
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	5,950	106		2	0	**0**	2	0	**0**	2	0	**0**	2	0	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **FranklinStreet / Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	290	127						Y			Y			Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	397	251			Y			Y			Y			Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			687	378		0	1	**0**	0	2	**0**	0	2	**0**	0	2	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	181	54															
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	216	120						Y			Y			Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	397	174		0	0	**0**	0	1	**0**	0	1	**0**	0	1	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	183	81						Y						Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	143	108						Y						Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			326	189		0	0	**0**	0	2	**0**	0	0	**0**	0	2	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Chestnut Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	458	138						Y			Y			Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	557	151			Y			Y		Y	Y	**Y**		Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,015	289		0	1	**0**	0	2	**0**	1	2	**1**	0	2	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

MINOR STREET: **Project Driveway** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	148	15															
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	92	81						Y						Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	240	96		0	0	**0**	0	1	**0**	0	0	**0**	0	1	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street - Maple Street** NB WB # OF APPROACH LANES: **1**

MINOR STREET: **Main Sreet** SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	249	235			Y			Y			Y			Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	207	367			Y			Y			Y			Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	456	602		0	2	**0**	0	2	**0**	0	2	**0**	0	2	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	487	19								Y							
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	690	37		Y						Y			Y				
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,177	56		1	0	**0**	0	0	**0**	2	0	**0**	1	0	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	561	93		Y				Y		Y				Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	728	59		Y						Y			Y				
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,289	152		2	0	**0**	0	1	**0**	2	0	**0**	1	1	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18

Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Pine Street / SR 84** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	501	335		Y	Y	**Y**		Y		Y	Y	**Y**		Y		**Y**	
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	690	315		Y	Y	**Y**		Y		Y	Y	**Y**	Y	Y	**Y**	**Y**	
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			1,191	650		2	2	**2**	0	2	**0**	2	2	**2**	1	2	**1**	**2**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **El Camino Real** NB SB # OF APPROACH LANES: **3**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	3,044	52		Y			Y			Y			Y				
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	3,210	47		Y			Y			Y			Y				
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	6,254	99		2	0	**0**	2	0	**0**	2	0	**0**	2	0	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **FranklinStreet / Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	309	178			Y			Y			Y			Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	460	246			Y			Y			Y			Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			769	424		0	2	**0**	0	2	**0**	0	2	**0**	0	2	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	160	42															
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	271	56															
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	431	98		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	171	97						Y						Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	142	152			Y			Y			Y			Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	313	249		0	1	**0**	0	2	**0**	0	1	**0**	0	2	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Chestnut Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	492	138						Y		Y	Y	**Y**		Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	623	151		Y	Y	**Y**		Y		Y	Y	**Y**		Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,115	289		1	1	**1**	0	2	**0**	2	2	**2**	0	2	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	321	236			Y			Y			Y			Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	233	411			Y			Y			Y			Y		**Y**	
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	554	647		0	2	**0**	0	2	**0**	0	2	**0**	0	2	**0**	**1**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	474	28								Y							
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	697	28		Y						Y			Y				
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,171	56		1	0	**0**	0	0	**0**	2	0	**0**	1	0	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	568	100		Y				Y		Y				Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	732	62		Y						Y			Y	Y	**Y**		
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,300	162		2	0	**0**	0	1	**0**	2	0	**0**	1	2	**1**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Pine Street / SR 84** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	570	342		Y	Y	**Y**		Y		Y	Y	**Y**		Y		**Y**	
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	756	370		Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,326	712		2	2	**2**	1	2	**1**	2	2	**2**	1	2	**1**	**2**	**1**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **El Camino Real** NB SB # OF APPROACH LANES: **3**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	3,058	53		Y			Y			Y			Y				
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	3,217	53		Y			Y			Y			Y				
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			6,275	106		2	0	**0**	2	0	**0**	2	0	**0**	2	0	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **FranklinStreet / Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	349	188			Y			Y			Y			Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	467	301			Y			Y			Y			Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			816	489		0	2	**0**	0	2	**0**	0	2	**0**	0	2	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	222	54															
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	282	120						Y			Y			Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	504	174		0	0	**0**	0	1	**0**	0	1	**0**	0	1	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	183	98						Y						Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	145	155			Y			Y			Y			Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			328	253		0	1	**0**	0	2	**0**	0	1	**0**	0	2	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Chestnut Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	492	138						Y		Y	Y	**Y**		Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	623	151		Y	Y	**Y**		Y		Y	Y	**Y**		Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			1,115	289		1	1	**1**	0	2	**0**	2	2	**2**	0	2	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

MINOR STREET: **Project Driveway** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	160	15															
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	100	81						Y						Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			260	96		0	0	**0**	0	1	**0**	0	0	**0**	0	1	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	326	272			Y			Y			Y			Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	262	418			Y			Y			Y			Y		**Y**	
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	588	690		0	2	**0**	0	2	**0**	0	2	**0**	0	2	**0**	**1**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	502	31		Y						Y							
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	704	45		Y						Y			Y				
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,206	76		2	0	**0**	0	0	**0**	2	0	**0**	1	0	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	587	100		Y				Y		Y				Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	752	64		Y			Y			Y			Y	Y	**Y**		
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,339	164		2	0	**0**	1	1	**0**	2	0	**0**	1	2	**1**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Pine Street / SR 84** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Existing Plus Background Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	572	354		Y	Y	**Y**		Y		Y	Y	**Y**		Y		**Y**	
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	758	372		Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,330	726		2	2	**2**	1	2	**1**	2	2	**2**	1	2	**1**	**2**	**1**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **El Camino Real** NB SB # OF APPROACH LANES: **3**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	3,254	86		Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	3,356	164		Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	6,610	250		2	1	**1**	2	2	**2**	2	1	**1**	2	2	**2**	**2**	**1**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **FranklinStreet / Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	386	189			Y			Y			Y			Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	504	333			Y			Y		Y	Y	**Y**		Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			890	522		0	2	**0**	0	2	**0**	1	2	**1**	0	2	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	266	53															
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	336	118						Y						Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	602	171		0	0	**0**	0	1	**0**	0	0	**0**	0	1	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	302	118						Y						Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	241	246			Y			Y			Y			Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	543	364		0	1	**0**	0	2	**0**	0	1	**0**	0	2	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Chestnut Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	531	164			Y			Y		Y	Y	**Y**		Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	681	156		Y	Y	**Y**		Y		Y	Y	**Y**		Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,212	320		1	2	**1**	0	2	**0**	2	2	**2**	0	2	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Elm Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Private Driveway** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	174	17															
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	105	100						Y						Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	279	117		0	0	**0**	0	1	**0**	0	0	**0**	0	1	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	360	327			Y			Y			Y			Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	291	454			Y			Y			Y			Y		**Y**	
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	651	781		0	2	**0**	0	2	**0**	0	2	**0**	0	2	**0**	**1**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	586	35		Y						Y							
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	809	68		Y			Y			Y			Y	Y	**Y**		
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,395	103		2	0	**0**	1	0	**0**	2	0	**0**	1	1	**1**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	695	140		Y				Y		Y	Y	**Y**	Y	Y	**Y**		
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	935	76		Y			Y	Y	**Y**	Y			Y	Y	**Y**		
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,630	216		2	0	**0**	1	2	**1**	2	1	**1**	2	2	**2**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Pine Street / SR 84** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	652	541		Y	Y	**Y**		Y		Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	809	427		Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			1,461	968		2	2	**2**	1	2	**1**	2	2	**2**	2	2	**2**	**2**	**2**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **El Camino Real** NB SB # OF APPROACH LANES: **3**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	3,268	87		Y			Y	Y	**Y**	Y			Y	Y	**Y**	**Y**	
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	3,363	170		Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	6,631	257		2	1	**1**	2	2	**2**	2	1	**1**	2	2	**2**	**2**	**1**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **FranklinStreet / Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	426	199			Y			Y			Y			Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	511	388			Y			Y		Y	Y	**Y**		Y		**Y**	
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			937	587		0	2	**0**	0	2	**0**	1	2	**1**	0	2	**0**	**1**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	328	65												Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	347	182			Y			Y			Y			Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	675	247		0	1	**0**	0	1	**0**	0	1	**0**	0	2	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	315	119						Y						Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	244	249			Y			Y			Y			Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	559	368		0	1	**0**	0	2	**0**	0	1	**0**	0	2	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Chestnut Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	531	164			Y			Y		Y	Y	**Y**		Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	681	156		Y	Y	**Y**		Y		Y	Y	**Y**		Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			1,212	320		1	2	**1**	0	2	**0**	2	2	**2**	0	2	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Elm Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Project Driveway** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	264	17															
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	121	81						Y						Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	385	98		0	0	**0**	0	1	**0**	0	0	**0**	0	1	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES →				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	365	362			Y			Y			Y			Y		**Y**	
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	318	461			Y			Y			Y			Y		**Y**	
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	683	823		0	2	**0**	0	2	**0**	0	2	**0**	0	2	**0**	**2**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	614	38		Y						Y			Y				
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	816	85		Y			Y	Y	**Y**	Y			Y	Y	**Y**		
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,430	123		2	0	**0**	1	1	**1**	2	0	**0**	2	1	**1**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	716	140		Y				Y		Y	Y	**Y**	Y	Y	**Y**		
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	955	78		Y			Y	Y	**Y**	Y			Y	Y	**Y**		
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			1,671	218		2	0	**0**	1	2	**1**	2	1	**1**	2	2	**2**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Pine Street / SR 84** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Main Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

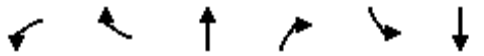
COMMENTS: **Cumulative Plus Project Conditions**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	654	553		Y	Y	**Y**		Y		Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	811	429		Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			1,465	982		2	2	**2**	1	2	**1**	2	2	**2**	2	2	**2**	**2**	**2**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

10/30/18
Kimley-Horn and Associates

K - Mitigation Outputs



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	161	1587	37	67	1672
Future Volume (vph)	9	161	1587	37	67	1672
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		4.0		3.5	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frt	0.87		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1620		3527		1770	3539
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1620		3527		1770	3539
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	9	164	1619	38	68	1706
RTOR Reduction (vph)	147	0	1	0	0	0
Lane Group Flow (vph)	26	0	1656	0	68	1706
Turn Type	Prot		NA		Prot	NA
Protected Phases	4		6		5	2
Permitted Phases						
Actuated Green, G (s)	8.6		97.0		8.9	109.4
Effective Green, g (s)	8.6		97.0		8.9	109.4
Actuated g/C Ratio	0.07		0.78		0.07	0.88
Clearance Time (s)	3.0		4.0		3.5	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	111		2736		126	3097
v/s Ratio Prot	c0.02		c0.47		0.04	c0.48
v/s Ratio Perm						
v/c Ratio	0.23		0.61		0.54	0.55
Uniform Delay, d1	55.1		5.9		56.1	1.9
Progression Factor	1.00		2.24		0.93	0.68
Incremental Delay, d2	1.1		0.6		3.6	0.6
Delay (s)	56.2		13.8		55.9	1.9
Level of Service	E		B		E	A
Approach Delay (s)	56.2		13.8			3.9
Approach LOS	E		B			A

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

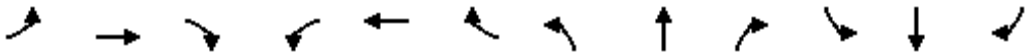
Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	161	1587	37	67	1672
Future Vol, veh/h	0	161	1587	37	67	1672
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	164	1619	38	68	1706

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	829	0	0	1657	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	314	-	-	385	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	314	-	-	385	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.4	0	0.6
HCM LOS	D		

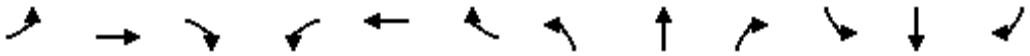
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	314	385	-
HCM Lane V/C Ratio	-	-	0.523	0.178	-
HCM Control Delay (s)	-	-	28.4	16.4	-
HCM Lane LOS	-	-	D	C	-
HCM 95th %tile Q(veh)	-	-	2.9	0.6	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	201	24	114	315	17	129	459	166	178	256	108
Future Volume (vph)	18	201	24	114	315	17	129	459	166	178	256	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	1833		1770	1848			1792			1783	
Flt Permitted	0.95	1.00		0.95	1.00			0.80			0.55	
Satd. Flow (perm)	1770	1833		1770	1848			1453			997	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	207	25	118	325	18	133	473	171	184	264	111
RTOR Reduction (vph)	0	4	0	0	2	0	0	6	0	0	5	0
Lane Group Flow (vph)	19	228	0	118	341	0	0	771	0	0	554	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	2.9	28.6		12.7	38.4			69.9			69.9	
Effective Green, g (s)	2.9	28.6		12.7	38.4			69.9			69.9	
Actuated g/C Ratio	0.02	0.23		0.10	0.31			0.56			0.56	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	41	419		179	567			812			557	
v/s Ratio Prot	0.01	0.12		c0.07	c0.18							
v/s Ratio Perm								0.53			c0.56	
v/c Ratio	0.46	0.54		0.66	0.60			0.95			0.99	
Uniform Delay, d1	60.3	42.5		54.1	36.8			25.9			27.4	
Progression Factor	0.70	1.02		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.0	1.4		6.5	4.7			19.9			36.6	
Delay (s)	45.4	44.9		60.6	41.5			45.8			63.9	
Level of Service	D	D		E	D			D			E	
Approach Delay (s)		44.9			46.4			45.8			63.9	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	50.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	13.8
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	15	132	282	20	427	240	317	32	15
Future Volume (vph)	0	0	0	15	132	282	20	427	240	317	32	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.6	4.6		4.6			4.6	
Lane Util. Factor					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		0.95			0.99	
Flt Protected					0.99	1.00		1.00			0.96	
Satd. Flow (prot)					1853	1583		1772			1775	
Flt Permitted					0.99	1.00		0.99			0.38	
Satd. Flow (perm)					1853	1583		1750			706	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	16	139	297	21	449	253	334	34	16
RTOR Reduction (vph)	0	0	0	0	0	242	0	24	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	155	55	0	699	0	0	382	0
Turn Type				Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases					8			2			6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					11.5	11.5		40.9			40.9	
Effective Green, g (s)					11.5	11.5		40.9			40.9	
Actuated g/C Ratio					0.19	0.19		0.66			0.66	
Clearance Time (s)					4.6	4.6		4.6			4.6	
Vehicle Extension (s)					3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)					345	295		1161			468	
v/s Ratio Prot												
v/s Ratio Perm					0.08	0.04		0.40			c0.54	
v/c Ratio					0.45	0.19		0.60			0.82	
Uniform Delay, d1					22.2	21.1		5.8			7.6	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.9	0.3		0.9			10.5	
Delay (s)					23.2	21.4		6.7			18.1	
Level of Service					C	C		A			B	
Approach Delay (s)		0.0			22.0			6.7			18.1	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	9.2
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

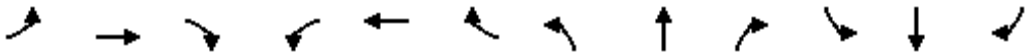
Intersection	
Intersection Delay, s/veh	63.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	15	132	282	20	427	240	317	32	15
Future Vol, veh/h	0	0	0	15	132	282	20	427	240	317	32	15
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	139	297	21	449	253	334	34	16
Number of Lanes	0	0	0	0	1	1	0	1	0	0	1	0

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	16	114	23.2
HCM LOS	C	F	C

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	3%	10%	0%	87%
Vol Thru, %	62%	90%	0%	9%
Vol Right, %	35%	0%	100%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	687	147	282	364
LT Vol	20	15	0	317
Through Vol	427	132	0	32
RT Vol	240	0	282	15
Lane Flow Rate	723	155	297	383
Geometry Grp	2	7	7	2
Degree of Util (X)	1.169	0.311	0.533	0.686
Departure Headway (Hd)	5.817	7.679	6.907	6.743
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	629	470	525	540
Service Time	3.83	5.379	4.607	4.743
HCM Lane V/C Ratio	1.149	0.33	0.566	0.709
HCM Control Delay	114	13.8	17.2	23.2
HCM Lane LOS	F	B	C	C
HCM 95th-tile Q	24.2	1.3	3.1	5.2

L - Lathrop Street Closure Analysis Outputs



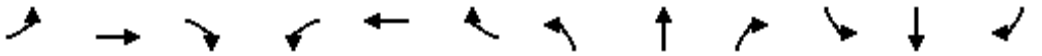
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	312	964	304	102	432	212	240	1043	90	235	1274	110
v/c Ratio	1.00	0.81	0.52	0.41	0.53	0.46	0.86	1.03	0.41	0.72	1.15	0.21
Control Delay	103.3	44.8	25.4	59.9	44.7	9.1	66.4	77.7	25.9	61.8	116.5	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.3	44.8	25.4	59.9	44.7	9.1	66.4	77.7	25.9	61.8	116.5	14.3
Queue Length 50th (ft)	~256	373	127	41	162	0	197	~488	10	181	~652	23
Queue Length 95th (ft)	#446	473	226	69	216	68	#315	#614	m71	#286	#790	69
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	311	1186	582	604	821	464	297	1016	369	325	1110	516
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.81	0.52	0.17	0.53	0.46	0.81	1.03	0.24	0.72	1.15	0.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

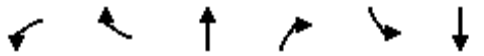
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	303	935	295	99	419	206	233	1012	87	228	1236	107
Future Volume (vph)	303	935	295	99	419	206	233	1012	87	228	1236	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	312	964	304	102	432	212	240	1043	90	235	1274	110
RTOR Reduction (vph)	0	0	70	0	0	173	0	0	83	0	0	49
Lane Group Flow (vph)	312	964	234	102	432	39	240	1043	7	235	1274	61
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	Perm
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									2
Actuated Green, G (s)	22.0	41.9	41.9	9.1	29.0	23.0	19.7	35.9	9.1	23.0	39.2	39.2
Effective Green, g (s)	22.0	41.9	41.9	9.1	29.0	23.0	19.7	35.9	9.1	23.0	39.2	39.2
Actuated g/C Ratio	0.18	0.34	0.34	0.07	0.23	0.18	0.16	0.29	0.07	0.18	0.31	0.31
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	311	1186	512	249	821	291	278	1016	115	325	1109	467
v/s Ratio Prot	c0.18	c0.27		0.03	0.12	0.02	0.14	c0.29	0.00	0.13	c0.36	
v/s Ratio Perm			0.15									0.04
v/c Ratio	1.00	0.81	0.46	0.41	0.53	0.13	0.86	1.03	0.06	0.72	1.15	0.13
Uniform Delay, d1	51.5	38.0	32.6	55.4	42.0	42.7	51.3	44.5	54.0	48.0	42.9	30.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.81	1.03	3.44	1.00	1.00	1.00
Incremental Delay, d2	51.8	4.4	0.7	1.1	0.6	0.2	19.9	32.8	0.2	7.7	77.7	0.6
Delay (s)	103.3	42.3	33.3	56.5	42.6	42.9	61.6	78.6	185.7	55.7	120.6	31.3
Level of Service	F	D	C	E	D	D	E	E	F	E	F	C
Approach Delay (s)		52.6			44.6			82.6			105.2	
Approach LOS		D			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	75.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	135	58	1454	181	85	1790
v/c Ratio	0.65	0.24	0.58	0.16	0.53	0.61
Control Delay	66.1	13.9	3.8	1.8	74.7	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.1	13.9	3.8	1.8	74.7	4.9
Queue Length 50th (ft)	106	0	60	0	73	108
Queue Length 95th (ft)	167	39	92	15	m78	m65
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	387	2500	1130	354	2921
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.15	0.58	0.16	0.24	0.61

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	131	56	1410	176	82	1736
Future Volume (vph)	131	56	1410	176	82	1736
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	135	58	1454	181	85	1790
RTOR Reduction (vph)	0	51	0	12	0	0
Lane Group Flow (vph)	135	7	1454	169	85	1790
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	14.8	14.8	88.4	88.4	11.3	103.2
Effective Green, g (s)	14.8	14.8	88.4	88.4	11.3	103.2
Actuated g/C Ratio	0.12	0.12	0.71	0.71	0.09	0.83
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	209	187	2502	1119	160	2921
v/s Ratio Prot	c0.08		0.41		0.05	c0.51
v/s Ratio Perm		0.00		0.11		
v/c Ratio	0.65	0.04	0.58	0.15	0.53	0.61
Uniform Delay, d1	52.6	48.8	9.1	6.0	54.3	3.8
Progression Factor	1.00	1.00	0.28	0.27	1.29	1.01
Incremental Delay, d2	6.7	0.1	0.9	0.2	1.6	0.4
Delay (s)	59.3	48.9	3.5	1.8	71.6	4.3
Level of Service	E	D	A	A	E	A
Approach Delay (s)	56.2		3.3			7.4
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	18.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	123	1485	19	230	1616
Future Vol, veh/h	8	123	1485	19	230	1616
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	126	1515	19	235	1649

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2819	767	0	0	1535	0
Stage 1	1525	-	-	-	-	-
Stage 2	1294	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	14	345	-	-	429	-
Stage 1	166	-	-	-	-	-
Stage 2	221	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 6	345	-	-	429	-
Mov Cap-2 Maneuver	~ 6	-	-	-	-	-
Stage 1	166	-	-	-	-	-
Stage 2	100	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 459.5	0	2.9
HCM LOS	F		

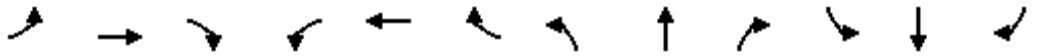
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	78	429	-
HCM Lane V/C Ratio	-	-	1.714	0.547	-
HCM Control Delay (s)	-	-	$ 459.5	23.1	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	11.4	3.2	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	10	223	181	1321	153	1753
v/c Ratio	0.03	0.75	0.44	0.60	0.67	0.64
Control Delay	0.2	65.1	9.3	17.1	62.9	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	0.2	65.1	9.3	17.1	62.9	8.0
Queue Length 50th (ft)	0	174	0	315	124	287
Queue Length 95th (ft)	0	249	60	492	197	230
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	369	383	483	2204	424	2748
Starvation Cap Reductn	0	0	0	0	0	119
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.58	0.37	0.60	0.36	0.67

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	10	205	9	174	0	1254	14	147	1676	7
Future Volume (vph)	0	0	10	205	9	174	0	1254	14	147	1676	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1777	1583		3533		1770	3537	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1777	1583		3533		1770	3537	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	10	214	9	181	0	1306	15	153	1746	7
RTOR Reduction (vph)	0	0	8	0	0	151	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	2	0	223	30	0	1321	0	153	1753	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			19.9		20.9	20.9		78.0		16.1	97.1	
Effective Green, g (s)			19.9		20.9	20.9		78.0		16.1	97.1	
Actuated g/C Ratio			0.16		0.17	0.17		0.62		0.13	0.78	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			256		297	264		2204		227	2747	
v/s Ratio Prot								0.37		c0.09	c0.50	
v/s Ratio Perm			0.00		0.13	0.02						
v/c Ratio			0.01		0.75	0.11		0.60		0.67	0.64	
Uniform Delay, d1			44.2		49.6	44.2		14.1		51.9	6.2	
Progression Factor			1.00		1.00	1.00		1.00		0.98	1.00	
Incremental Delay, d2			0.0		10.2	0.2		1.2		6.7	1.0	
Delay (s)			44.2		59.8	44.4		15.3		57.5	7.2	
Level of Service			D		E	D		B		E	A	
Approach Delay (s)		44.2			52.9			15.3			11.2	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	76	191	111	9	109	51
Future Vol, veh/h	76	191	111	9	109	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	45	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	83	208	121	10	118	55

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	130	0	-	0	499	126
Stage 1	-	-	-	-	126	-
Stage 2	-	-	-	-	373	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1455	-	-	-	531	924
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	696	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1455	-	-	-	501	924
Mov Cap-2 Maneuver	-	-	-	-	501	-
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	656	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1455	-	-	-	587
HCM Lane V/C Ratio	0.057	-	-	-	0.296
HCM Control Delay (s)	7.6	-	-	-	13.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.2

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	113	111	13	68	34	33	17	13	65	45	38
Future Vol, veh/h	33	113	111	13	68	34	33	17	13	65	45	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	120	118	14	72	36	35	18	14	69	48	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	109	0	0	238	0	0	411	385	179	383	427	90
Stage 1	-	-	-	-	-	-	249	249	-	118	118	-
Stage 2	-	-	-	-	-	-	162	136	-	265	309	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1481	-	-	1329	-	-	551	549	864	575	520	968
Stage 1	-	-	-	-	-	-	755	701	-	887	798	-
Stage 2	-	-	-	-	-	-	840	784	-	740	660	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1481	-	-	1329	-	-	475	528	864	535	500	968
Mov Cap-2 Maneuver	-	-	-	-	-	-	475	528	-	535	500	-
Stage 1	-	-	-	-	-	-	734	681	-	862	789	-
Stage 2	-	-	-	-	-	-	748	775	-	689	642	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.9	12.6	13.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	540	1481	-	-	1329	-	-	590
HCM Lane V/C Ratio	0.124	0.024	-	-	0.01	-	-	0.267
HCM Control Delay (s)	12.6	7.5	0	-	7.7	0	-	13.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	1.1

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	146	0	0	324	19	6	37	85	23	0	58
Future Vol, veh/h	20	146	0	0	324	19	6	37	85	23	0	58
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	160	0	0	356	21	7	41	93	25	0	64

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	377	0	-	-	-	0	382	581	160	637	-	188
Stage 1	-	-	-	-	-	-	204	204	-	366	-	-
Stage 2	-	-	-	-	-	-	178	377	-	271	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	7.33	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	3.519	-	3.319
Pot Cap-1 Maneuver	1180	-	0	0	-	-	563	424	884	376	0	823
Stage 1	-	-	0	0	-	-	797	732	-	627	0	-
Stage 2	-	-	0	0	-	-	807	615	-	734	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1180	-	-	-	-	-	511	416	884	306	-	823
Mov Cap-2 Maneuver	-	-	-	-	-	-	511	416	-	306	-	-
Stage 1	-	-	-	-	-	-	781	717	-	614	-	-
Stage 2	-	-	-	-	-	-	745	615	-	607	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0	12.1	9.7
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	650	1180	-	-	-	823
HCM Lane V/C Ratio	0.216	0.019	-	-	-	0.077
HCM Control Delay (s)	12.1	8.1	0	-	-	9.7
HCM Lane LOS	B	A	A	-	-	A
HCM 95th %tile Q(veh)	0.8	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	13	44	79	42	10	7
Future Vol, veh/h	13	44	79	42	10	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	48	86	46	11	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	62	0	255	38
Stage 1	-	-	-	-	38	-
Stage 2	-	-	-	-	217	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1541	-	734	1034
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	819	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1541	-	692	1034
Mov Cap-2 Maneuver	-	-	-	-	692	-
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	772	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.9	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	801	-	-	1541	-
HCM Lane V/C Ratio	0.023	-	-	0.056	-
HCM Control Delay (s)	9.6	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	327	268	33	239	118
Future Vol, veh/h	0	327	268	33	239	118
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	359	295	36	263	130

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	295	295
Stage 1	-	-	0	0
Stage 2	-	-	295	295
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	696	616
Stage 1	-	-	-	-
Stage 2	-	-	755	669
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	696	0
Mov Cap-2 Maneuver	-	-	696	0
Stage 1	-	-	-	0
Stage 2	-	-	755	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	696	-
HCM Lane V/C Ratio	-	-	0.377	-
HCM Control Delay (s)	-	-	13.3	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	1.8	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	19	59	374	200	64
Future Vol, veh/h	0	19	59	374	200	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	67	425	227	73

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	264	300	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	775	1261	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	775	1261	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1261	-	775	-	-
HCM Lane V/C Ratio	0.053	-	0.028	-	-
HCM Control Delay (s)	8	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	67	122	77	367	175	43
Future Vol, veh/h	67	122	77	367	175	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	131	83	395	188	46

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	771	211	234	0	-	0
Stage 1	211	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	368	829	1333	-	-	-
Stage 1	824	-	-	-	-	-
Stage 2	572	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	339	829	1333	-	-	-
Mov Cap-2 Maneuver	339	-	-	-	-	-
Stage 1	824	-	-	-	-	-
Stage 2	526	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.4	1.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1333	-	548	-	-
HCM Lane V/C Ratio	0.062	-	0.371	-	-
HCM Control Delay (s)	7.9	0	15.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.7	-	-

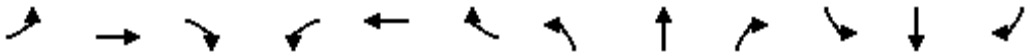


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	18	266	53	275	846	198
v/c Ratio	0.10	0.64	0.25	0.50	0.92	0.25
Control Delay	32.3	30.1	32.0	20.3	35.7	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	30.1	32.0	20.3	35.7	11.0
Queue Length 50th (ft)	7	99	21	74	~331	39
Queue Length 95th (ft)	27	174	56	167	#693	98
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	575	748	575	768	921	787
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.36	0.09	0.36	0.92	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	231	27	51	207	60	54	605	161	36	95	61
Future Volume (vph)	17	231	27	51	207	60	54	605	161	36	95	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.97			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1833		1770	1800			1807			1766	
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.83	
Satd. Flow (perm)	1770	1833		1770	1800			1756			1486	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	238	28	53	213	62	56	624	166	37	98	63
RTOR Reduction (vph)	0	5	0	0	11	0	0	8	0	0	15	0
Lane Group Flow (vph)	18	261	0	53	264	0	0	838	0	0	183	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	15.9		4.2	19.0			32.9			32.9	
Effective Green, g (s)	1.1	15.9		4.2	19.0			32.9			32.9	
Actuated g/C Ratio	0.02	0.24		0.06	0.28			0.49			0.49	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	29	436		111	511			864			731	
v/s Ratio Prot	0.01	c0.14		c0.03	c0.15							
v/s Ratio Perm								c0.48			0.12	
v/c Ratio	0.62	0.60		0.48	0.52			0.97			0.25	
Uniform Delay, d1	32.6	22.6		30.2	20.0			16.5			9.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	26.1	2.2		1.2	0.9			23.4			0.1	
Delay (s)	58.7	24.8		31.4	20.9			39.9			9.9	
Level of Service	E	C		C	C			D			A	
Approach Delay (s)		27.0			22.6			39.9			9.9	
Approach LOS		C			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	66.8	Sum of lost time (s)	13.8
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	155	365	5	459	143	137	25	7
Future Vol, veh/h	0	0	0	4	155	365	5	459	143	137	25	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	163	384	5	483	151	144	26	7

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	809	809	-	26	0	-	483	0	0
Stage 1	494	494	-	-	-	-	-	-	-
Stage 2	315	315	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	350	314	0	1588	-	0	1080	-	0
Stage 1	613	546	0	-	-	0	-	-	0
Stage 2	740	656	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	302	0	-	1588	-	-	1080	-	-
Mov Cap-2 Maneuver	302	0	-	-	-	-	-	-	-
Stage 1	611	0	-	-	-	-	-	-	-
Stage 2	640	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	30.8	0.1	7.5
HCM LOS	D		

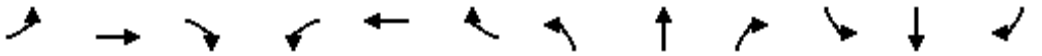
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1588	-	302	-	1080	-
HCM Lane V/C Ratio	0.003	-	0.554	-	0.134	-
HCM Control Delay (s)	7.3	0	30.8	0	8.8	0
HCM Lane LOS	A	A	D	A	A	A
HCM 95th %tile Q(veh)	0	-	3.1	-	0.5	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	657	414	64	53	406	158	29	266	80
v/c Ratio	0.74	0.82	0.13	0.37	0.79	0.29	0.23	0.59	0.18
Control Delay	42.6	52.3	3.9	60.3	52.2	9.7	58.9	46.6	8.3
Queue Delay	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.6	53.2	3.9	60.3	52.2	9.7	58.9	46.6	8.3
Queue Length 50th (ft)	231	282	0	38	291	7	21	176	0
Queue Length 95th (ft)	324	#481	20	86	#532	66	57	305	37
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1211	648	609	274	515	543	274	505	493
Starvation Cap Reductn	0	75	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.72	0.11	0.19	0.79	0.29	0.11	0.53	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	494	93	13	380	61	50	386	150	28	253	76
Future Volume (vph)	37	494	93	13	380	61	50	386	150	28	253	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3450			1860	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3450			1860	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	39	520	98	14	400	64	53	406	158	29	266	80
RTOR Reduction (vph)	0	10	0	0	0	47	0	0	105	0	0	60
Lane Group Flow (vph)	0	647	0	0	414	17	53	406	53	29	266	20
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		27.3			29.2	29.2	6.8	29.7	29.7	4.1	27.0	27.0
Effective Green, g (s)		27.3			29.2	29.2	6.8	29.7	29.7	4.1	27.0	27.0
Actuated g/C Ratio		0.25			0.27	0.27	0.06	0.27	0.27	0.04	0.25	0.25
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		865			499	424	110	508	432	66	462	392
v/s Ratio Prot		c0.19			c0.22		c0.03	c0.22		0.02	0.14	
v/s Ratio Perm						0.01			0.03			0.01
v/c Ratio		0.75			0.83	0.04	0.48	0.80	0.12	0.44	0.58	0.05
Uniform Delay, d1		37.6			37.5	29.4	49.3	36.8	29.7	51.2	35.9	31.1
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.6			10.9	0.0	1.2	8.6	0.1	1.7	1.7	0.1
Delay (s)		41.1			48.4	29.5	50.5	45.4	29.9	52.9	37.6	31.2
Level of Service		D			D	C	D	D	C	D	D	C
Approach Delay (s)		41.1			45.9			41.8			37.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	41.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	108.8	Sum of lost time (s)	18.5
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

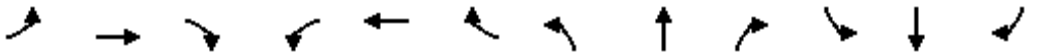
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	466	96	506	113	23	443	79	232
v/c Ratio	0.19	0.68	0.50	0.74	0.17	0.12	0.73	0.34	0.30
Control Delay	19.1	24.4	28.5	26.5	4.0	36.4	32.0	36.3	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	24.4	28.5	26.5	4.0	36.4	32.0	36.3	17.9
Queue Length 50th (ft)	9	172	33	193	0	10	161	33	52
Queue Length 95th (ft)	29	287	83	319	29	36	#414	84	166
Internal Link Dist (ft)		965		430			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	274	1169	329	1179	1043	440	719	440	881
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.40	0.29	0.43	0.11	0.05	0.62	0.18	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	429	27	94	496	111	23	324	110	77	215	13
Future Volume (vph)	29	429	27	94	496	111	23	324	110	77	215	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1846		1770	1863	1583	1770	1792		1770	1847	
Flt Permitted	0.23	1.00		0.28	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	434	1846		520	1863	1583	1770	1792		1770	1847	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	30	438	28	96	506	113	23	331	112	79	219	13
RTOR Reduction (vph)	0	3	0	0	0	73	0	12	0	0	2	0
Lane Group Flow (vph)	30	463	0	96	506	40	23	431	0	79	230	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	24.9	24.9		24.9	24.9	24.9	2.4	24.2		6.5	28.3	
Effective Green, g (s)	24.9	24.9		24.9	24.9	24.9	2.4	24.2		6.5	28.3	
Actuated g/C Ratio	0.36	0.36		0.36	0.36	0.36	0.03	0.35		0.09	0.41	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	155	661		186	667	567	61	623		165	752	
v/s Ratio Prot		0.25			c0.27		0.01	c0.24		c0.04	c0.12	
v/s Ratio Perm	0.07			0.18		0.03						
v/c Ratio	0.19	0.70		0.52	0.76	0.07	0.38	0.69		0.48	0.31	
Uniform Delay, d1	15.4	19.1		17.6	19.7	14.7	32.8	19.5		29.9	14.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	3.1		1.8	4.7	0.0	2.8	3.1		1.6	0.2	
Delay (s)	15.8	22.2		19.4	24.4	14.7	35.6	22.5		31.5	14.1	
Level of Service	B	C		B	C	B	D	C		C	B	
Approach Delay (s)		21.8			22.2			23.2			18.5	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	69.5	Sum of lost time (s)	13.9
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

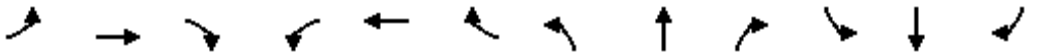


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	270	526	518	495	376	167	2273	481	285	1797	167
v/c Ratio	1.20	0.97	0.94	1.46	0.99	0.94	1.34	0.55	1.14	1.12	0.21
Control Delay	169.4	80.5	75.8	260.5	77.4	107.0	186.3	14.3	147.7	96.8	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	169.4	80.5	75.8	260.5	77.4	107.0	186.3	14.3	147.7	96.8	5.7
Queue Length 50th (ft)	~253	206	206	~525	213	131	~1208	138	~132	~846	13
Queue Length 95th (ft)	#424	#322	#311	#736	#417	#267	#1344	240	#222	#985	53
Internal Link Dist (ft)		250		609			888			1305	
Turn Bay Length (ft)	225		115		65	195		205	205		65
Base Capacity (vph)	225	542	552	338	381	178	1695	869	251	1598	789
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.20	0.97	0.94	1.46	0.99	0.94	1.34	0.55	1.14	1.12	0.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	254	389	105	487	465	353	157	2137	452	268	1689	157
Future Volume (vph)	254	389	105	487	465	353	157	2137	452	268	1689	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3426		3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3426		3433	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	270	414	112	518	495	376	167	2273	481	285	1797	167
RTOR Reduction (vph)	0	20	0	0	0	94	0	0	111	0	0	75
Lane Group Flow (vph)	270	506	0	518	495	282	167	2273	370	285	1797	92
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)	15.3	18.3		19.3	21.8	21.8	12.1	57.5	57.5	8.8	54.2	54.2
Effective Green, g (s)	15.3	18.3		19.3	21.8	21.8	12.1	57.5	57.5	8.8	54.2	54.2
Actuated g/C Ratio	0.13	0.15		0.16	0.18	0.18	0.10	0.48	0.48	0.07	0.45	0.45
Clearance Time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	225	522		552	338	287	178	1695	758	251	1598	714
v/s Ratio Prot	c0.15	0.15		c0.15	c0.27		c0.09	c0.64		c0.08	0.51	
v/s Ratio Perm						0.18			0.23			0.06
v/c Ratio	1.20	0.97		0.94	1.46	0.98	0.94	1.34	0.49	1.14	1.12	0.13
Uniform Delay, d1	52.4	50.6		49.8	49.1	48.9	53.6	31.2	21.2	55.6	32.9	19.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	124.7	31.1		23.8	224.6	48.0	49.2	157.5	0.5	98.3	64.8	0.1
Delay (s)	177.0	81.7		73.5	273.7	96.9	102.8	188.8	21.7	153.9	97.7	19.2
Level of Service	F	F		E	F	F	F	F	C	F	F	B
Approach Delay (s)		114.0			151.2			156.4			99.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	133.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	120.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

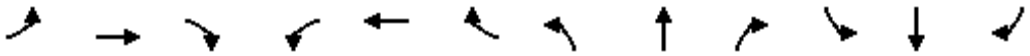


Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	282	758	88	2336	423	1895
v/c Ratio	0.30	0.95	0.58	1.17	1.26	1.08
Control Delay	33.7	66.7	80.8	124.1	186.3	81.8
Queue Delay	0.0	0.0	0.0	0.1	0.0	10.1
Total Delay	33.7	66.7	80.8	124.2	186.3	91.9
Queue Length 50th (ft)	93	352	84	~1015	~517	~1103
Queue Length 95th (ft)	134	#482	142	#1104	#734	#1303
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	976	822	304	1990	336	1759
Starvation Cap Reductn	0	0	0	106	0	276
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.92	0.29	1.24	1.26	1.28

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	188	71	262	238	243	86	2113	176	415	1781	76
Future Volume (vph)	18	188	71	262	238	243	86	2113	176	415	1781	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.96			0.95		1.00	0.99		1.00	0.99	
Flt Protected		1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3393			3307		1770	5027		1770	3517	
Flt Permitted		0.84			0.70		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2859			2348		1770	5027		1770	3517	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	18	192	72	267	243	248	88	2156	180	423	1817	78
RTOR Reduction (vph)	0	23	0	0	40	0	0	6	0	0	2	0
Lane Group Flow (vph)	0	259	0	0	718	0	88	2330	0	423	1893	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		48.6			48.6		12.8	59.2		28.5	74.9	
Effective Green, g (s)		48.6			48.6		12.8	59.2		28.5	74.9	
Actuated g/C Ratio		0.32			0.32		0.09	0.39		0.19	0.50	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		926			760		151	1983		336	1756	
v/s Ratio Prot							0.05	c0.46		c0.24	0.54	
v/s Ratio Perm		0.09			c0.31							
v/c Ratio		0.28			0.94		0.58	1.17		1.26	1.08	
Uniform Delay, d1		37.7			49.4		66.0	45.4		60.8	37.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			20.2		5.6	84.4		138.4	46.0	
Delay (s)		37.9			69.6		71.7	129.8		199.2	83.6	
Level of Service		D			E		E	F		F	F	
Approach Delay (s)		37.9			69.6			127.7			104.7	
Approach LOS		D			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	106.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	112.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

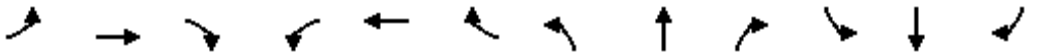


Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	268	537	132	275	602	65	2409	358	1726	921	435
v/c Ratio	0.85	0.84	1.02	1.01	1.02	0.57	1.64	1.67	1.45	1.52	1.25
Control Delay	91.3	78.5	157.1	132.9	72.7	97.5	328.3	360.0	244.9	285.3	174.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	91.3	78.5	157.1	132.9	72.7	97.5	328.4	360.0	244.9	285.3	174.3
Queue Length 50th (ft)	325	321	~178	~184	~446	74	~1483	~601	~1437	~765	~581
Queue Length 95th (ft)	#474	398	#345	#295	#700	131	#1561	#818	#1598	#902	#836
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	346	705	130	272	592	144	1468	215	1194	607	349
Starvation Cap Reductn	0	0	0	0	0	0	43	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.76	1.02	1.01	1.02	0.45	1.69	1.67	1.45	1.52	1.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	504	213	56	176	215	578	62	2201	111	344	1352	305
Future Volume (vph)	504	213	56	176	215	578	62	2201	111	344	1352	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3257		1610	3359	1583	1770	5049		1770	3441	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3257		1610	3359	1583	1770	5049		1770	3441	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	525	222	58	183	224	602	65	2293	116	358	1408	318
RTOR Reduction (vph)	0	5	0	0	0	243	0	3	0	0	0	0
Lane Group Flow (vph)	268	532	0	132	275	359	65	2406	0	358	1726	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	33.6	33.6		14.0	14.0	35.0	11.2	50.0		21.0	59.8	
Effective Green, g (s)	33.6	33.6		14.0	14.0	35.0	11.2	50.0		21.0	59.8	
Actuated g/C Ratio	0.20	0.20		0.08	0.08	0.20	0.07	0.29		0.12	0.35	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	314	635		130	273	321	115	1466		215	1194	
v/s Ratio Prot	c0.17	0.16		0.08	0.08	c0.14	0.04	c0.48		c0.20	0.50	
v/s Ratio Perm						0.09						
v/c Ratio	0.85	0.84		1.02	1.01	1.12	0.57	1.64		1.67	1.45	
Uniform Delay, d1	66.9	66.7		79.1	79.1	68.6	78.1	61.1		75.6	56.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.6	9.5		83.1	56.3	86.1	6.2	291.7		319.0	205.3	
Delay (s)	86.5	76.1		162.2	135.4	154.7	84.4	352.8		394.6	261.5	
Level of Service	F	E		F	F	F	F	F		F	F	
Approach Delay (s)		79.6			150.4			345.7			284.3	
Approach LOS		E			F			F			F	

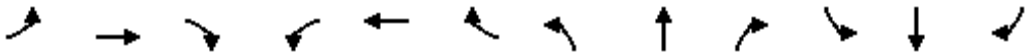
Intersection Summary			
HCM 2000 Control Delay	265.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	172.2	Sum of lost time (s)	21.6
Intersection Capacity Utilization	127.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	465	687	150
Future Volume (vph)	465	687	150
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.93	0.85	
Flt Protected	0.97	1.00	
Satd. Flow (prot)	3271	1441	
Flt Permitted	0.97	1.00	
Satd. Flow (perm)	3271	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	484	716	156
RTOR Reduction (vph)	0	81	0
Lane Group Flow (vph)	921	354	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.0	32.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.19	0.19	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	607	267	
v/s Ratio Prot	c0.28		
v/s Ratio Perm		0.25	
v/c Ratio	1.52	1.32	
Uniform Delay, d1	70.1	70.1	
Progression Factor	1.00	1.00	
Incremental Delay, d2	241.2	169.6	
Delay (s)	311.3	239.7	
Level of Service	F	F	
Approach Delay (s)	288.3		
Approach LOS	F		

Intersection Summary



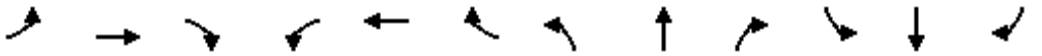
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	241	468	153	224	893	234	273	1330	120	252	1119	238
v/c Ratio	0.98	0.49	0.31	0.63	1.09	0.58	1.01	1.07	0.46	0.91	0.89	0.39
Control Delay	105.0	41.3	15.3	61.6	103.0	17.7	92.6	67.9	32.8	88.0	48.0	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.0	41.3	15.3	61.6	103.0	17.7	92.6	67.9	32.8	88.0	48.0	15.0
Queue Length 50th (ft)	~198	170	30	90	~426	33	~216	~629	39	202	443	59
Queue Length 95th (ft)	#369	229	90	131	#557	115	m#400	#758	m83	#355	#540	130
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	247	948	486	411	821	411	269	1242	286	283	1271	613
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.49	0.31	0.55	1.09	0.57	1.01	1.07	0.42	0.89	0.88	0.39

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

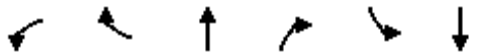
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	454	148	217	866	227	265	1290	116	244	1085	231
Future Volume (vph)	234	454	148	217	866	227	265	1290	116	244	1085	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	241	468	153	224	893	234	273	1330	120	252	1119	238
RTOR Reduction (vph)	0	0	77	0	0	159	0	0	99	0	0	86
Lane Group Flow (vph)	241	468	76	224	893	75	273	1330	21	252	1119	152
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	custom
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									6
Actuated Green, G (s)	17.5	33.5	33.5	13.0	29.0	19.5	19.0	43.9	13.0	19.5	44.4	43.9
Effective Green, g (s)	17.5	33.5	33.5	13.0	29.0	19.5	19.0	43.9	13.0	19.5	44.4	43.9
Actuated g/C Ratio	0.14	0.27	0.27	0.10	0.23	0.16	0.15	0.35	0.10	0.16	0.36	0.35
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	247	948	410	357	821	246	269	1242	164	276	1257	526
v/s Ratio Prot	c0.14	0.13		0.07	c0.25	0.05	0.15	c0.38	0.01	0.14	c0.32	
v/s Ratio Perm			0.05									0.10
v/c Ratio	0.98	0.49	0.19	0.63	1.09	0.31	1.01	1.07	0.13	0.91	0.89	0.29
Uniform Delay, d1	53.5	38.6	35.2	53.7	48.0	46.8	53.0	40.5	50.9	51.9	38.0	29.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.58	2.51	1.00	1.00	1.00
Incremental Delay, d2	50.0	0.4	0.2	3.4	58.0	0.7	49.5	43.1	0.3	32.2	9.7	1.4
Delay (s)	103.5	39.0	35.5	57.1	106.0	47.5	91.4	66.5	127.8	84.1	47.7	30.7
Level of Service	F	D	D	E	F	D	F	E	F	F	D	C
Approach Delay (s)		56.4			87.7			74.8			50.9	
Approach LOS		E			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	68.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	99.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	240	82	1753	241	65	1566
v/c Ratio	0.79	0.26	0.73	0.22	0.46	0.57
Control Delay	67.1	18.0	7.7	4.4	75.9	4.1
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	67.1	18.0	7.7	4.4	75.9	4.1
Queue Length 50th (ft)	187	16	115	15	46	21
Queue Length 95th (ft)	268	60	207	m39	m57	600
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	387	2403	1090	283	2729
Starvation Cap Reductn	0	0	43	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.21	0.74	0.22	0.23	0.57

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	233	80	1700	234	63	1519
Future Volume (vph)	233	80	1700	234	63	1519
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	240	82	1753	241	65	1566
RTOR Reduction (vph)	0	48	0	16	0	0
Lane Group Flow (vph)	240	34	1753	225	65	1566
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	21.6	21.6	84.2	84.2	8.7	96.4
Effective Green, g (s)	21.6	21.6	84.2	84.2	8.7	96.4
Actuated g/C Ratio	0.17	0.17	0.67	0.67	0.07	0.77
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	305	273	2383	1066	123	2729
v/s Ratio Prot	c0.14		c0.50		0.04	c0.44
v/s Ratio Perm		0.02		0.14		
v/c Ratio	0.79	0.12	0.74	0.21	0.53	0.57
Uniform Delay, d1	49.5	43.7	13.2	7.8	56.2	5.9
Progression Factor	1.00	1.00	0.41	0.54	1.26	0.53
Incremental Delay, d2	12.6	0.2	1.4	0.3	2.8	0.6
Delay (s)	62.1	43.9	6.9	4.5	73.8	3.7
Level of Service	E	D	A	A	E	A
Approach Delay (s)	57.4		6.6			6.5
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	46.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	212	1732	38	103	1679
Future Vol, veh/h	15	212	1732	38	103	1679
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	216	1767	39	105	1713

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2854	903	0	0	1806	0
Stage 1	1787	-	-	-	-	-
Stage 2	1067	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 13	280	-	-	337	-
Stage 1	119	-	-	-	-	-
Stage 2	292	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 9	280	-	-	337	-
Mov Cap-2 Maneuver	~ 9	-	-	-	-	-
Stage 1	119	-	-	-	-	-
Stage 2	201	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 761.3	0	1.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	94	337	-
HCM Lane V/C Ratio	-	-	2.464	0.312	-
HCM Control Delay (s)	-	-	$ 761.3	20.5	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	21.3	1.3	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



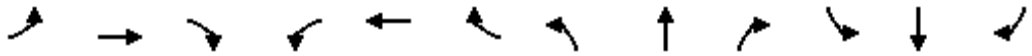
Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	33	419	225	1728	110	1673
v/c Ratio	0.08	0.96	0.41	0.86	0.60	0.68
Control Delay	5.2	81.0	8.4	28.2	78.7	4.1
Queue Delay	0.0	2.3	0.0	0.0	0.0	0.0
Total Delay	5.2	83.3	8.4	28.2	78.7	4.1
Queue Length 50th (ft)	0	~382	5	544	88	53
Queue Length 95th (ft)	16	#586	72	723	m146	72
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	424	438	554	2012	283	2572
Starvation Cap Reductn	0	6	0	0	0	67
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.97	0.41	0.86	0.39	0.67

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	32	394	9	216	0	1656	3	106	1585	21
Future Volume (vph)	0	0	32	394	9	216	0	1656	3	106	1585	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1776	1583		3538		1770	3532	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1776	1583		3538		1770	3532	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	33	410	9	225	0	1725	3	110	1651	22
RTOR Reduction (vph)	0	0	25	0	0	164	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	8	0	419	61	0	1728	0	110	1672	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			29.8		30.8	30.8		71.1		13.1	87.2	
Effective Green, g (s)			29.8		30.8	30.8		71.1		13.1	87.2	
Actuated g/C Ratio			0.24		0.25	0.25		0.57		0.10	0.70	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			384		437	390		2012		185	2463	
v/s Ratio Prot								c0.49		0.06	c0.47	
v/s Ratio Perm			0.00		0.24	0.04						
v/c Ratio			0.02		0.96	0.16		0.86		0.59	0.68	
Uniform Delay, d1			36.4		46.5	36.9		22.7		53.4	10.9	
Progression Factor			1.00		1.00	1.00		1.00		1.28	0.26	
Incremental Delay, d2			0.0		32.2	0.2		5.0		4.3	1.3	
Delay (s)			36.5		78.7	37.1		27.8		72.4	4.1	
Level of Service			D		E	D		C		E	A	
Approach Delay (s)		36.5			64.2			27.8			8.3	
Approach LOS		D			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	146	143	248	44	57	42
Future Vol, veh/h	146	143	248	44	57	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	45	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	155	270	48	62	46

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	317	0	-	0	766	293
Stage 1	-	-	-	-	293	-
Stage 2	-	-	-	-	473	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1243	-	-	-	371	746
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1243	-	-	-	324	746
Mov Cap-2 Maneuver	-	-	-	-	324	-
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	547	-

Approach	EB	WB	SB
HCM Control Delay, s	4.2	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1243	-	-	-	426
HCM Lane V/C Ratio	0.128	-	-	-	0.253
HCM Control Delay (s)	8.3	-	-	-	16.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	1

Intersection	
Int Delay, s/veh	10

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	40	62	42	9	106	38	92	88	24	92	80	46
Future Vol, veh/h	40	62	42	9	106	38	92	88	24	92	80	46
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	66	45	10	113	40	98	94	26	98	85	49

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	153	0	0	111	0	0	392	345	88	385	348	133
Stage 1	-	-	-	-	-	-	173	173	-	152	152	-
Stage 2	-	-	-	-	-	-	219	172	-	233	196	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1428	-	-	1479	-	-	567	578	970	573	576	916
Stage 1	-	-	-	-	-	-	829	756	-	850	772	-
Stage 2	-	-	-	-	-	-	783	756	-	770	739	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1428	-	-	1479	-	-	460	556	970	472	554	916
Mov Cap-2 Maneuver	-	-	-	-	-	-	460	556	-	472	554	-
Stage 1	-	-	-	-	-	-	802	732	-	823	767	-
Stage 2	-	-	-	-	-	-	654	751	-	633	715	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0.4	16.3	15.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	533	1428	-	-	1479	-	-	560
HCM Lane V/C Ratio	0.407	0.03	-	-	0.006	-	-	0.414
HCM Control Delay (s)	16.3	7.6	0	-	7.5	0	-	15.9
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2	0.1	-	-	0	-	-	2

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	119	0	0	501	2	10	29	76	49	0	129
Future Vol, veh/h	7	119	0	0	501	2	10	29	76	49	0	129
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	131	0	0	551	2	11	32	84	54	0	142

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	553	0	-	-	-	0	421	699	131	756	-	276
Stage 1	-	-	-	-	-	-	146	146	-	552	-	-
Stage 2	-	-	-	-	-	-	275	553	-	204	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	7.33	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	3.519	-	3.319
Pot Cap-1 Maneuver	1015	-	0	0	-	-	530	363	918	310	0	722
Stage 1	-	-	0	0	-	-	856	776	-	486	0	-
Stage 2	-	-	0	0	-	-	708	513	-	797	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1015	-	-	-	-	-	423	360	918	261	-	722
Mov Cap-2 Maneuver	-	-	-	-	-	-	423	360	-	261	-	-
Stage 1	-	-	-	-	-	-	849	770	-	482	-	-
Stage 2	-	-	-	-	-	-	569	513	-	689	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	12.4	11.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	615	1015	-	-	-	722
HCM Lane V/C Ratio	0.205	0.008	-	-	-	0.196
HCM Control Delay (s)	12.4	8.6	0	-	-	11.2
HCM Lane LOS	B	A	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	-	0.7

Intersection	
Int Delay, s/veh	5.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	17	8	15	59	60	40
Future Vol, veh/h	17	8	15	59	60	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	9	16	64	65	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	27	0	120	23
Stage 1	-	-	-	-	23	-
Stage 2	-	-	-	-	97	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1587	-	876	1054
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	927	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1587	-	867	1054
Mov Cap-2 Maneuver	-	-	-	-	867	-
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	918	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	933	-	-	1587	-
HCM Lane V/C Ratio	0.117	-	-	0.01	-
HCM Control Delay (s)	9.4	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	475	170	25	201	256
Future Vol, veh/h	0	475	170	25	201	256
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	522	187	27	221	281

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	187	187
Stage 1	-	-	0	0
Stage 2	-	-	187	187
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	802	708
Stage 1	-	-	-	-
Stage 2	-	-	845	745
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	802	0
Mov Cap-2 Maneuver	-	-	802	0
Stage 1	-	-	-	0
Stage 2	-	-	845	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	802	-
HCM Lane V/C Ratio	-	-	0.275	-
HCM Control Delay (s)	-	-	11.2	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	1.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	60	19	530	310	55
Future Vol, veh/h	0	60	19	530	310	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	68	22	602	352	63

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	384	415	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	664	1144	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	664	1144	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1144	-	664	-	-
HCM Lane V/C Ratio	0.019	-	0.103	-	-
HCM Control Delay (s)	8.2	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	101	60	124	447	341	29
Future Vol, veh/h	101	60	124	447	341	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	65	133	481	367	31

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1129	382	398	0	-	0
Stage 1	382	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	226	665	1161	-	-	-
Stage 1	690	-	-	-	-	-
Stage 2	468	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	191	665	1161	-	-	-
Mov Cap-2 Maneuver	191	-	-	-	-	-
Stage 1	690	-	-	-	-	-
Stage 2	395	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	42.7	1.8	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1161	-	260	-	-
HCM Lane V/C Ratio	0.115	-	0.666	-	-
HCM Control Delay (s)	8.5	0	42.7	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0.4	-	4.3	-	-

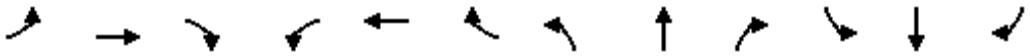


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	19	233	118	346	723	535
v/c Ratio	0.12	0.59	0.49	0.54	0.92	1.09
Control Delay	33.7	31.3	36.1	21.0	38.9	92.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	31.3	36.1	21.0	38.9	92.1
Queue Length 50th (ft)	8	88	47	103	270	~265
Queue Length 95th (ft)	29	165	101	219	#622	#537
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	536	699	536	755	787	489
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.33	0.22	0.46	0.92	1.09

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	205	21	114	315	20	81	454	166	166	245	108
Future Volume (vph)	18	205	21	114	315	20	81	454	166	166	245	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	1836		1770	1846			1793			1782	
Flt Permitted	0.95	1.00		0.95	1.00			0.89			0.55	
Satd. Flow (perm)	1770	1836		1770	1846			1605			994	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	211	22	118	325	21	84	468	171	171	253	111
RTOR Reduction (vph)	0	5	0	0	3	0	0	10	0	0	9	0
Lane Group Flow (vph)	19	228	0	118	343	0	0	713	0	0	526	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.2	17.0		7.6	23.4			32.7			32.7	
Effective Green, g (s)	1.2	17.0		7.6	23.4			32.7			32.7	
Actuated g/C Ratio	0.02	0.24		0.11	0.33			0.46			0.46	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	29	438		189	607			738			457	
v/s Ratio Prot	0.01	0.12		c0.07	c0.19							
v/s Ratio Perm								0.44			c0.53	
v/c Ratio	0.66	0.52		0.62	0.57			0.97			1.15	
Uniform Delay, d1	34.7	23.5		30.4	19.7			18.7			19.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	33.9	1.1		4.6	1.2			24.6			90.8	
Delay (s)	68.6	24.6		34.9	20.9			43.2			110.0	
Level of Service	E	C		C	C			D			F	
Approach Delay (s)		28.0			24.5			43.2			110.0	
Approach LOS		C			C			D			F	

Intersection Summary			
HCM 2000 Control Delay	55.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	71.1	Sum of lost time (s)	13.8
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	26.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	15	132	230	20	427	240	303	32	15
Future Vol, veh/h	0	0	0	15	132	230	20	427	240	303	32	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	139	242	21	449	253	319	34	16

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1164	1164	-	34	0	-	449	0	0
Stage 1	492	492	-	-	-	-	-	-	-
Stage 2	672	672	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	215	194	0	1578	-	0	1111	-	0
Stage 1	615	548	0	-	-	0	-	-	0
Stage 2	508	454	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	149	0	-	1578	-	-	1111	-	-
Mov Cap-2 Maneuver	149	0	-	-	-	-	-	-	-
Stage 1	604	0	-	-	-	-	-	-	-
Stage 2	359	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	144.4	0.3	8.6
HCM LOS	F		

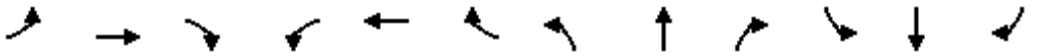
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1578	-	149	-	1111	-
HCM Lane V/C Ratio	0.013	-	1.039	-	0.287	-
HCM Control Delay (s)	7.3	0	144.4	0	9.5	0
HCM Lane LOS	A	A	F	A	A	A
HCM 95th %tile Q(veh)	0	-	8	-	1.2	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	660	415	36	174	451	94	48	373	132
v/c Ratio	0.78	0.87	0.08	0.81	0.81	0.18	0.39	0.89	0.31
Control Delay	50.0	63.8	0.3	82.6	55.1	10.0	67.5	71.9	18.9
Queue Delay	0.0	4.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.0	68.7	0.3	82.6	55.1	10.0	67.5	71.9	18.9
Queue Length 50th (ft)	268	325	0	143	358	4	39	307	30
Queue Length 95th (ft)	341	#509	0	#275	#624	50	82	#524	91
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1046	557	537	236	558	536	236	435	437
Starvation Cap Reductn	0	88	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.88	0.07	0.74	0.81	0.18	0.20	0.86	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	479	84	33	361	34	165	428	89	46	354	125
Future Volume (vph)	65	479	84	33	361	34	165	428	89	46	354	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3451			1855	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		0.99			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3451			1855	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	504	88	35	380	36	174	451	94	48	373	132
RTOR Reduction (vph)	0	9	0	0	0	27	0	0	62	0	0	68
Lane Group Flow (vph)	0	651	0	0	415	9	174	451	32	48	373	64
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		29.5			31.3	31.3	14.7	36.5	36.5	6.7	28.5	28.5
Effective Green, g (s)		29.5			31.3	31.3	14.7	36.5	36.5	6.7	28.5	28.5
Actuated g/C Ratio		0.24			0.26	0.26	0.12	0.30	0.30	0.05	0.23	0.23
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		831			473	404	212	555	471	96	433	368
v/s Ratio Prot		c0.19			c0.22		c0.10	c0.24		0.03	0.20	
v/s Ratio Perm						0.01			0.02			0.04
v/c Ratio		0.78			0.88	0.02	0.82	0.81	0.07	0.50	0.86	0.18
Uniform Delay, d1		43.5			43.8	34.1	52.6	39.8	30.8	56.3	45.1	37.6
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		4.9			16.6	0.0	20.9	8.9	0.1	1.5	16.0	0.2
Delay (s)		48.4			60.3	34.2	73.5	48.7	30.9	57.8	61.1	37.8
Level of Service		D			E	C	E	D	C	E	E	D
Approach Delay (s)		48.4			58.3			52.4			55.2	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	53.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	122.5	Sum of lost time (s)	18.5
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

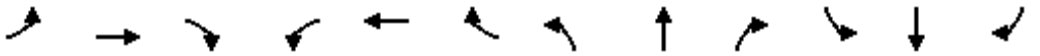
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	582	86	442	108	56	578	143	458
v/c Ratio	0.07	0.93	0.88	0.70	0.18	0.30	0.97	0.55	0.57
Control Delay	17.4	45.7	89.7	27.9	4.4	38.2	59.9	40.2	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	45.7	89.7	27.9	4.4	38.2	59.9	40.2	24.5
Queue Length 50th (ft)	3	252	37	174	0	24	244	60	166
Queue Length 95th (ft)	15	407	#124	283	29	68	#620	138	#412
Internal Link Dist (ft)		965		430			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	269	1001	157	1009	907	362	594	362	800
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.58	0.55	0.44	0.12	0.15	0.97	0.40	0.57

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	528	42	84	433	106	55	401	166	140	422	26
Future Volume (vph)	11	528	42	84	433	106	55	401	166	140	422	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1842		1770	1863	1583	1770	1781		1770	1846	
Flt Permitted	0.27	1.00		0.16	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	498	1842		291	1863	1583	1770	1781		1770	1846	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	11	539	43	86	442	108	56	409	169	143	431	27
RTOR Reduction (vph)	0	3	0	0	0	72	0	14	0	0	2	0
Lane Group Flow (vph)	11	579	0	86	442	36	56	564	0	143	456	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	25.6	25.6		25.6	25.6	25.6	5.1	26.7		11.0	32.6	
Effective Green, g (s)	25.6	25.6		25.6	25.6	25.6	5.1	26.7		11.0	32.6	
Actuated g/C Ratio	0.33	0.33		0.33	0.33	0.33	0.07	0.35		0.14	0.42	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	165	610		96	617	524	116	615		252	779	
v/s Ratio Prot		c0.31			0.24		0.03	c0.32		c0.08	0.25	
v/s Ratio Perm	0.02			0.30		0.02						
v/c Ratio	0.07	0.95		0.90	0.72	0.07	0.48	0.92		0.57	0.59	
Uniform Delay, d1	17.6	25.2		24.5	22.6	17.6	34.8	24.2		30.9	17.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	24.1		58.9	4.0	0.1	3.1	18.4		2.9	1.1	
Delay (s)	17.8	49.3		83.4	26.6	17.7	37.9	42.6		33.8	18.2	
Level of Service	B	D		F	C	B	D	D		C	B	
Approach Delay (s)		48.7			32.8			42.2			21.9	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	13.9
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

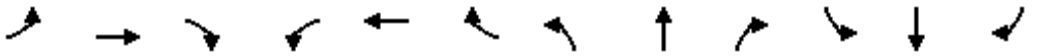


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	301	670	601	494	286	180	1357	614	389	2316	82
v/c Ratio	1.45	1.21	1.02	1.29	0.74	1.12	0.88	0.68	1.00	1.43	0.11
Control Delay	266.3	156.8	95.5	188.8	46.9	161.0	41.8	14.2	102.2	227.2	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	266.3	156.8	95.5	188.8	46.9	161.0	41.8	14.2	102.2	227.2	2.8
Queue Length 50th (ft)	~345	~357	~276	~529	167	~175	543	147	171	~1387	0
Queue Length 95th (ft)	#528	#484	#394	#744	273	#325	648	287	#278	#1520	21
Internal Link Dist (ft)		250		609			888			1305	
Turn Bay Length (ft)	225		115		65	195		205	205		65
Base Capacity (vph)	208	552	588	384	389	160	1538	907	390	1619	778
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.45	1.21	1.02	1.29	0.74	1.13	0.88	0.68	1.00	1.43	0.11

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	283	515	115	565	464	269	169	1276	577	366	2177	77
Future Volume (vph)	283	515	115	565	464	269	169	1276	577	366	2177	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3443		3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3443		3433	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	301	548	122	601	494	286	180	1357	614	389	2316	82
RTOR Reduction (vph)	0	14	0	0	0	63	0	0	219	0	0	44
Lane Group Flow (vph)	301	656	0	601	494	223	180	1357	395	389	2316	38
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)	15.3	20.3		22.3	26.8	26.8	11.8	56.5	56.5	14.8	59.5	59.5
Effective Green, g (s)	15.3	20.3		22.3	26.8	26.8	11.8	56.5	56.5	14.8	59.5	59.5
Actuated g/C Ratio	0.12	0.16		0.17	0.21	0.21	0.09	0.43	0.43	0.11	0.46	0.46
Clearance Time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	208	537		588	384	326	160	1538	687	390	1619	724
v/s Ratio Prot	c0.17	0.19		c0.18	c0.27		c0.10	0.38		0.11	c0.65	
v/s Ratio Perm						0.14			0.25			0.02
v/c Ratio	1.45	1.22		1.02	1.29	0.68	1.12	0.88	0.57	1.00	1.43	0.05
Uniform Delay, d1	57.4	54.9		53.9	51.6	47.7	59.1	33.7	27.7	57.6	35.2	19.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	226.1	115.4		42.8	147.3	5.9	108.7	6.3	1.2	44.6	197.4	0.0
Delay (s)	283.5	170.2		96.7	198.9	53.6	167.8	40.0	28.9	102.2	232.6	19.6
Level of Service	F	F		F	F	D	F	D	C	F	F	B
Approach Delay (s)		205.3			124.3			47.5			208.1	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	144.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	124.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

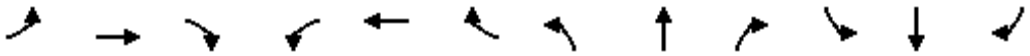


Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	360	905	109	1699	289	2351
v/c Ratio	0.43	1.06	0.63	0.89	0.84	1.39
Control Delay	37.7	85.3	80.9	49.6	79.9	212.3
Queue Delay	0.0	0.0	0.0	2.1	0.0	0.4
Total Delay	37.7	85.3	80.9	51.7	79.9	212.6
Queue Length 50th (ft)	133	~447	104	558	277	~1617
Queue Length 95th (ft)	183	#585	166	626	#436	#1815
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	830	857	304	1940	344	1689
Starvation Cap Reductn	0	0	0	130	0	182
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	1.06	0.36	0.94	0.84	1.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	245	80	253	206	428	107	1512	153	283	2278	26
Future Volume (vph)	27	245	80	253	206	428	107	1512	153	283	2278	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.97			0.93		1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3405			3237		1770	5015		1770	3533	
Flt Permitted		0.71			0.68		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2435			2232		1770	5015		1770	3533	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	28	250	82	258	210	437	109	1543	156	289	2324	27
RTOR Reduction (vph)	0	19	0	0	113	0	0	8	0	0	1	0
Lane Group Flow (vph)	0	341	0	0	792	0	109	1691	0	289	2350	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		50.0			50.0		14.6	57.2		29.1	71.7	
Effective Green, g (s)		50.0			50.0		14.6	57.2		29.1	71.7	
Actuated g/C Ratio		0.33			0.33		0.10	0.38		0.19	0.48	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		811			744		172	1912		343	1688	
v/s Ratio Prot							0.06	c0.34		0.16	c0.67	
v/s Ratio Perm		0.14			c0.35							
v/c Ratio		0.42			1.06		0.63	0.88		0.84	1.39	
Uniform Delay, d1		38.8			50.0		65.1	43.3		58.2	39.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			51.7		7.4	6.4		16.9	180.3	
Delay (s)		39.1			101.7		72.5	49.7		75.1	219.5	
Level of Service		D			F		E	D		E	F	
Approach Delay (s)		39.1			101.7			51.1			203.7	
Approach LOS		D			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	128.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	121.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



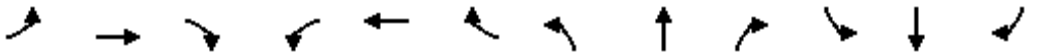
Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	398	813	167	346	759	91	1947	207	1743	915	483
v/c Ratio	1.17	1.17	1.30	1.30	1.31	0.72	1.35	0.98	1.51	1.69dr	1.40
Control Delay	162.3	150.7	239.7	218.1	183.3	108.5	208.1	131.8	273.7	298.7	236.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	162.3	150.7	239.7	218.1	183.3	108.5	208.3	131.8	273.7	298.7	236.6
Queue Length 50th (ft)	~597	~610	~269	~278	~844	104	~1074	242	~1480	~760	~708
Queue Length 95th (ft)	#845	#756	#452	#397	#1107	#180	#1163	#422	#1613	#897	#971
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	339	692	128	266	578	141	1442	211	1153	591	344
Starvation Cap Reductn	0	0	0	0	0	0	51	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.17	1.17	1.30	1.30	1.31	0.65	1.40	0.98	1.51	1.55	1.40

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	765	343	55	254	238	729	87	1806	63	199	1457	216
Future Volume (vph)	765	343	55	254	238	729	87	1806	63	199	1457	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3274		1610	3343	1583	1770	5059		1770	3471	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3274		1610	3343	1583	1770	5059		1770	3471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	797	357	57	265	248	759	91	1881	66	207	1518	225
RTOR Reduction (vph)	0	3	0	0	0	236	0	2	0	0	0	0
Lane Group Flow (vph)	398	810	0	167	346	523	91	1945	0	207	1743	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	37.0	37.0		14.0	14.0	35.0	12.7	50.0		21.0	58.3	
Effective Green, g (s)	37.0	37.0		14.0	14.0	35.0	12.7	50.0		21.0	58.3	
Actuated g/C Ratio	0.21	0.21		0.08	0.08	0.20	0.07	0.28		0.12	0.33	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	339	689		128	266	315	128	1440		211	1152	
v/s Ratio Prot	0.25	c0.25		0.10	0.10	c0.20	0.05	0.38		0.12	c0.50	
v/s Ratio Perm						0.13						
v/c Ratio	1.17	1.18		1.30	1.30	1.66	0.71	1.35		0.98	1.51	
Uniform Delay, d1	69.3	69.3		80.8	80.8	70.3	79.7	62.8		77.1	58.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	105.0	93.7		182.4	160.1	310.6	17.0	162.4		56.3	235.4	
Delay (s)	174.3	163.0		263.2	240.9	380.9	96.6	225.2		133.4	294.0	
Level of Service	F	F		F	F	F	F	F		F	F	
Approach Delay (s)		166.7			327.4			219.5			277.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	262.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	175.6	Sum of lost time (s)	21.6
Intersection Capacity Utilization	140.8%	ICU Level of Service	H
Analysis Period (min)	15		

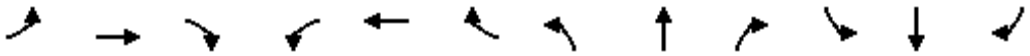
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	412	818	112
Future Volume (vph)	412	818	112
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.92	0.85	
Flt Protected	0.98	1.00	
Satd. Flow (prot)	3250	1441	
Flt Permitted	0.98	1.00	
Satd. Flow (perm)	3250	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	429	852	117
RTOR Reduction (vph)	0	82	0
Lane Group Flow (vph)	915	401	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.0	32.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.18	0.18	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	592	262	
v/s Ratio Prot	c0.28		
v/s Ratio Perm		0.28	
v/c Ratio	1.69dr	1.53	
Uniform Delay, d1	71.8	71.8	
Progression Factor	1.00	1.00	
Incremental Delay, d2	253.9	257.5	
Delay (s)	325.7	329.3	
Level of Service	F	F	
Approach Delay (s)	326.9		
Approach LOS	F		

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	312	964	322	102	432	212	243	1045	90	235	1286	110
v/c Ratio	1.00	0.81	0.55	0.41	0.53	0.46	0.87	1.03	0.41	0.72	1.16	0.21
Control Delay	103.3	44.8	26.8	59.9	44.7	9.1	66.6	77.6	25.8	61.8	122.3	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.3	44.8	26.8	59.9	44.7	9.1	66.6	77.6	25.8	61.8	122.3	14.3
Queue Length 50th (ft)	~256	373	142	41	162	0	200	~490	12	181	~663	23
Queue Length 95th (ft)	#446	473	246	69	216	68	#320	#615	m70	#286	#802	69
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	311	1186	582	604	821	464	297	1016	369	325	1106	514
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.81	0.55	0.17	0.53	0.46	0.82	1.03	0.24	0.72	1.16	0.21

Intersection Summary

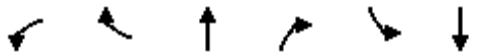
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	303	935	312	99	419	206	236	1014	87	228	1247	107
Future Volume (vph)	303	935	312	99	419	206	236	1014	87	228	1247	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1492
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	312	964	322	102	432	212	243	1045	90	235	1286	110
RTOR Reduction (vph)	0	0	70	0	0	173	0	0	83	0	0	49
Lane Group Flow (vph)	312	964	252	102	432	39	243	1045	7	235	1286	61
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	Perm
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									2
Actuated Green, G (s)	22.0	41.9	41.9	9.1	29.0	23.0	19.8	35.9	9.1	23.0	39.1	39.1
Effective Green, g (s)	22.0	41.9	41.9	9.1	29.0	23.0	19.8	35.9	9.1	23.0	39.1	39.1
Actuated g/C Ratio	0.18	0.34	0.34	0.07	0.23	0.18	0.16	0.29	0.07	0.18	0.31	0.31
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	311	1186	512	249	821	291	280	1016	115	325	1106	466
v/s Ratio Prot	c0.18	c0.27		0.03	0.12	0.02	0.14	c0.30	0.00	0.13	c0.36	
v/s Ratio Perm			0.16									0.04
v/c Ratio	1.00	0.81	0.49	0.41	0.53	0.13	0.87	1.03	0.06	0.72	1.16	0.13
Uniform Delay, d1	51.5	38.0	33.1	55.4	42.0	42.7	51.3	44.5	54.0	48.0	43.0	30.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.81	1.01	3.42	1.00	1.00	1.00
Incremental Delay, d2	51.8	4.4	0.7	1.1	0.6	0.2	20.3	33.3	0.2	7.7	83.4	0.6
Delay (s)	103.3	42.3	33.8	56.5	42.6	42.9	61.7	78.4	184.9	55.7	126.4	31.4
Level of Service	F	D	C	E	D	D	E	E	F	E	F	C
Approach Delay (s)		52.5			44.6			82.4			109.8	
Approach LOS		D			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	76.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	135	58	1459	181	85	1820
v/c Ratio	0.65	0.24	0.58	0.16	0.53	0.62
Control Delay	66.1	13.9	3.9	1.9	74.4	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.1	13.9	3.9	1.9	74.4	5.1
Queue Length 50th (ft)	106	0	62	0	73	114
Queue Length 95th (ft)	167	39	92	16	m78	m66
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	387	2500	1130	354	2921
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.15	0.58	0.16	0.24	0.62

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	131	56	1415	176	82	1765
Future Volume (vph)	131	56	1415	176	82	1765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	135	58	1459	181	85	1820
RTOR Reduction (vph)	0	51	0	12	0	0
Lane Group Flow (vph)	135	7	1459	169	85	1820
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	14.8	14.8	88.4	88.4	11.3	103.2
Effective Green, g (s)	14.8	14.8	88.4	88.4	11.3	103.2
Actuated g/C Ratio	0.12	0.12	0.71	0.71	0.09	0.83
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	209	187	2502	1119	160	2921
v/s Ratio Prot	c0.08		0.41		0.05	c0.51
v/s Ratio Perm		0.00		0.11		
v/c Ratio	0.65	0.04	0.58	0.15	0.53	0.62
Uniform Delay, d1	52.6	48.8	9.1	6.0	54.3	3.9
Progression Factor	1.00	1.00	0.30	0.29	1.29	1.04
Incremental Delay, d2	6.7	0.1	0.9	0.2	1.5	0.4
Delay (s)	59.3	48.9	3.6	2.0	71.5	4.5
Level of Service	E	D	A	A	E	A
Approach Delay (s)	56.2		3.4			7.5
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	24.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	125	1488	23	249	1626
Future Vol, veh/h	8	125	1488	23	249	1626
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	128	1518	23	254	1659

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2868	771	0	0	1542	0
Stage 1	1530	-	-	-	-	-
Stage 2	1338	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	13	343	-	-	427	-
Stage 1	165	-	-	-	-	-
Stage 2	209	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 5	343	-	-	427	-
Mov Cap-2 Maneuver	~ 5	-	-	-	-	-
Stage 1	165	-	-	-	-	-
Stage 2	85	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 594.6	0	3.3
HCM LOS	F		

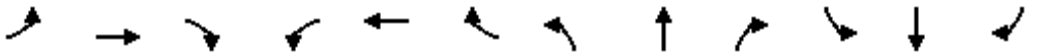
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	68	427	-
HCM Lane V/C Ratio	-	-	1.996	0.595	-
HCM Control Delay (s)	-	-	$ 594.6	25.1	-
HCM Lane LOS	-	-	F	D	-
HCM 95th %tile Q(veh)	-	-	12.5	3.8	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	10	224	184	1325	164	1753
v/c Ratio	0.03	0.75	0.44	0.61	0.69	0.64
Control Delay	0.2	65.1	9.2	17.7	63.4	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	0.2	65.1	9.2	17.7	63.4	8.0
Queue Length 50th (ft)	0	174	0	324	132	283
Queue Length 95th (ft)	0	249	61	503	210	241
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	369	383	486	2181	424	2746
Starvation Cap Reductn	0	0	0	0	0	129
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.58	0.38	0.61	0.39	0.67

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	10	206	9	177	0	1258	14	157	1676	7
Future Volume (vph)	0	0	10	206	9	177	0	1258	14	157	1676	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1777	1583		3533		1770	3537	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1777	1583		3533		1770	3537	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	10	215	9	184	0	1310	15	164	1746	7
RTOR Reduction (vph)	0	0	8	0	0	153	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	2	0	224	31	0	1325	0	164	1753	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			19.9		20.9	20.9		77.2		16.9	97.1	
Effective Green, g (s)			19.9		20.9	20.9		77.2		16.9	97.1	
Actuated g/C Ratio			0.16		0.17	0.17		0.62		0.14	0.78	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			256		297	264		2181		239	2747	
v/s Ratio Prot								0.37		c0.09	c0.50	
v/s Ratio Perm			0.00		0.13	0.02						
v/c Ratio			0.01		0.75	0.12		0.61		0.69	0.64	
Uniform Delay, d1			44.2		49.6	44.2		14.6		51.5	6.2	
Progression Factor			1.00		1.00	1.00		1.00		0.99	1.00	
Incremental Delay, d2			0.0		10.4	0.2		1.3		6.9	1.0	
Delay (s)			44.2		60.0	44.4		15.9		57.9	7.1	
Level of Service			D		E	D		B		E	A	
Approach Delay (s)		44.2			53.0			15.9			11.5	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	76	191	111	9	109	51
Future Vol, veh/h	76	191	111	9	109	51
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	83	208	121	10	118	55
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	10.3	8.6	9.4
HCM LOS	B	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	28%	0%	68%
Vol Thru, %	72%	93%	0%
Vol Right, %	0%	7%	32%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	267	120	160
LT Vol	76	0	109
Through Vol	191	111	0
RT Vol	0	9	51
Lane Flow Rate	290	130	174
Geometry Grp	1	1	1
Degree of Util (X)	0.369	0.169	0.234
Departure Headway (Hd)	4.578	4.656	4.846
Convergence, Y/N	Yes	Yes	Yes
Cap	786	768	739
Service Time	2.611	2.694	2.887
HCM Lane V/C Ratio	0.369	0.169	0.235
HCM Control Delay	10.3	8.6	9.4
HCM Lane LOS	B	A	A
HCM 95th-tile Q	1.7	0.6	0.9

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	55	113	111	13	68	52	33	27	13	68	48	41
Future Vol, veh/h	55	113	111	13	68	52	33	27	13	68	48	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	59	120	118	14	72	55	35	29	14	72	51	44

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	128	0	0	238	0	0	471	451	179	446	483	100
Stage 1	-	-	-	-	-	-	296	296	-	128	128	-
Stage 2	-	-	-	-	-	-	175	155	-	318	355	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1458	-	-	1329	-	-	503	504	864	523	483	956
Stage 1	-	-	-	-	-	-	712	668	-	876	790	-
Stage 2	-	-	-	-	-	-	827	769	-	693	630	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1458	-	-	1329	-	-	420	475	864	469	455	956
Mov Cap-2 Maneuver	-	-	-	-	-	-	420	475	-	469	455	-
Stage 1	-	-	-	-	-	-	679	637	-	835	781	-
Stage 2	-	-	-	-	-	-	730	761	-	621	600	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.8	13.8	14.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	485	1458	-	-	1329	-	-	535
HCM Lane V/C Ratio	0.16	0.04	-	-	0.01	-	-	0.312
HCM Control Delay (s)	13.8	7.6	0	-	7.7	0	-	14.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	1.3

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	146	0	0	324	19	6	37	85	23	0	62
Future Vol, veh/h	29	146	0	0	324	19	6	37	85	23	0	62
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	160	0	0	356	21	7	41	93	25	0	68

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	377	0	-	-	-	0	402	601	160	657	-	188
Stage 1	-	-	-	-	-	-	224	224	-	366	-	-
Stage 2	-	-	-	-	-	-	178	377	-	291	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	7.33	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	3.519	-	3.319
Pot Cap-1 Maneuver	1180	-	0	0	-	-	546	413	884	364	0	823
Stage 1	-	-	0	0	-	-	778	718	-	627	0	-
Stage 2	-	-	0	0	-	-	807	615	-	716	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1180	-	-	-	-	-	489	401	884	294	-	823
Mov Cap-2 Maneuver	-	-	-	-	-	-	489	401	-	294	-	-
Stage 1	-	-	-	-	-	-	755	696	-	608	-	-
Stage 2	-	-	-	-	-	-	740	615	-	585	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0	12.2	9.8
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	638	1180	-	-	-	823
HCM Lane V/C Ratio	0.22	0.027	-	-	-	0.083
HCM Control Delay (s)	12.2	8.1	0	-	-	9.8
HCM Lane LOS	B	A	A	-	-	A
HCM 95th %tile Q(veh)	0.8	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	50	13	44	79	42	40	10	0	7	6	0	9
Future Vol, veh/h	50	13	44	79	42	40	10	0	7	6	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	14	48	86	46	43	11	0	8	7	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	89	0	0	62	0	0	391	408	38	390	410	67
Stage 1	-	-	-	-	-	-	147	147	-	239	239	-
Stage 2	-	-	-	-	-	-	244	261	-	151	171	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1506	-	-	1541	-	-	568	533	1034	569	531	997
Stage 1	-	-	-	-	-	-	856	775	-	764	708	-
Stage 2	-	-	-	-	-	-	760	692	-	851	757	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1506	-	-	1541	-	-	522	483	1034	524	481	997
Mov Cap-2 Maneuver	-	-	-	-	-	-	522	483	-	524	481	-
Stage 1	-	-	-	-	-	-	824	746	-	736	666	-
Stage 2	-	-	-	-	-	-	708	651	-	813	729	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.5	3.7	10.6	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	656	1506	-	-	1541	-	-	733
HCM Lane V/C Ratio	0.028	0.036	-	-	0.056	-	-	0.022
HCM Control Delay (s)	10.6	7.5	0	-	7.5	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.2	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	330	268	33	263	118
Future Vol, veh/h	0	330	268	33	263	118
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	363	295	36	289	130

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	295	295
Stage 1	-	-	0	0
Stage 2	-	-	295	295
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	696	616
Stage 1	-	-	-	-
Stage 2	-	-	755	669
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	696	0
Mov Cap-2 Maneuver	-	-	696	0
Stage 1	-	-	-	0
Stage 2	-	-	755	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	696	-
HCM Lane V/C Ratio	-	-	0.415	-
HCM Control Delay (s)	-	-	13.8	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	2	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	25	75	377	200	87
Future Vol, veh/h	0	25	75	377	200	87
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	28	85	428	227	99

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	277	326	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	762	1234	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	762	1234	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	1.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1234	-	762	-	-
HCM Lane V/C Ratio	0.069	-	0.037	-	-
HCM Control Delay (s)	8.1	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	70	122	95	383	182	43
Future Vol, veh/h	70	122	95	383	182	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	131	102	412	196	46

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	835	219	242	0	-	0
Stage 1	219	-	-	-	-	-
Stage 2	616	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	338	821	1324	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	539	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	304	821	1324	-	-	-
Mov Cap-2 Maneuver	304	-	-	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	485	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.9	1.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1324	-	507	-	-
HCM Lane V/C Ratio	0.077	-	0.407	-	-
HCM Control Delay (s)	7.9	0	16.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	2	-	-

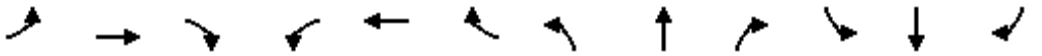


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	18	266	53	279	877	204
v/c Ratio	0.10	0.64	0.25	0.50	0.95	0.27
Control Delay	32.3	30.0	32.0	20.4	41.2	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	30.0	32.0	20.4	41.2	11.4
Queue Length 50th (ft)	7	99	21	75	~399	41
Queue Length 95th (ft)	27	174	56	170	#727	103
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	575	747	575	767	920	754
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.36	0.09	0.36	0.95	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	231	27	51	207	64	54	635	161	42	95	61
Future Volume (vph)	17	231	27	51	207	64	54	635	161	42	95	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.96			0.97			0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	1833		1770	1797			1809			1766	
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.80	
Satd. Flow (perm)	1770	1833		1770	1797			1758			1426	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	238	28	53	213	66	56	655	166	43	98	63
RTOR Reduction (vph)	0	5	0	0	12	0	0	7	0	0	14	0
Lane Group Flow (vph)	18	261	0	53	267	0	0	870	0	0	190	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.1	16.0		4.2	19.1			32.9			32.9	
Effective Green, g (s)	1.1	16.0		4.2	19.1			32.9			32.9	
Actuated g/C Ratio	0.02	0.24		0.06	0.29			0.49			0.49	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	29	438		111	513			864			701	
v/s Ratio Prot	0.01	0.14		c0.03	c0.15							
v/s Ratio Perm								c0.49			0.13	
v/c Ratio	0.62	0.60		0.48	0.52			1.01			0.27	
Uniform Delay, d1	32.7	22.6		30.3	20.1			17.0			10.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	26.1	2.2		1.2	1.0			32.3			0.1	
Delay (s)	58.8	24.8		31.5	21.0			49.3			10.0	
Level of Service	E	C		C	C			D			B	
Approach Delay (s)		26.9			22.7			49.3			10.0	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	13.8
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	155	389	5	466	143	137	25	7
Future Vol, veh/h	0	0	0	4	155	389	5	466	143	137	25	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	163	409	5	491	151	144	26	7

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	816	816	-	26	0	-	491	0	0
Stage 1	501	501	-	-	-	-	-	-	-
Stage 2	315	315	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	347	311	0	1588	-	0	1072	-	0
Stage 1	609	543	0	-	-	0	-	-	0
Stage 2	740	656	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	299	0	-	1588	-	-	1072	-	-
Mov Cap-2 Maneuver	299	0	-	-	-	-	-	-	-
Stage 1	607	0	-	-	-	-	-	-	-
Stage 2	639	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31.3	0.1	7.5
HCM LOS	D		

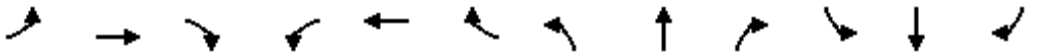
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1588	-	299	-	1072	-
HCM Lane V/C Ratio	0.003	-	0.56	-	0.135	-
HCM Control Delay (s)	7.3	0	31.3	0	8.9	0
HCM Lane LOS	A	A	D	A	A	A
HCM 95th %tile Q(veh)	0	-	3.2	-	0.5	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	660	425	64	54	408	158	29	277	80
v/c Ratio	0.74	0.83	0.13	0.38	0.79	0.29	0.23	0.62	0.18
Control Delay	43.1	53.5	3.9	61.1	53.0	9.8	59.4	47.7	8.3
Queue Delay	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	54.9	3.9	61.1	53.0	9.8	59.4	47.7	8.3
Queue Length 50th (ft)	236	291	0	39	297	8	21	188	0
Queue Length 95th (ft)	326	#503	20	88	#537	67	57	319	37
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1195	638	601	270	514	541	270	498	488
Starvation Cap Reductn	0	83	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.77	0.11	0.20	0.79	0.29	0.11	0.56	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	494	96	24	380	61	51	388	150	28	263	76
Future Volume (vph)	37	494	96	24	380	61	51	388	150	28	263	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3448			1857	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3448			1857	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	39	520	101	25	400	64	54	408	158	29	277	80
RTOR Reduction (vph)	0	11	0	0	0	47	0	0	105	0	0	60
Lane Group Flow (vph)	0	649	0	0	425	17	54	408	53	29	277	20
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		27.6			29.9	29.9	6.8	30.0	30.0	4.2	27.4	27.4
Effective Green, g (s)		27.6			29.9	29.9	6.8	30.0	30.0	4.2	27.4	27.4
Actuated g/C Ratio		0.25			0.27	0.27	0.06	0.27	0.27	0.04	0.25	0.25
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		863			503	429	109	507	430	67	463	393
v/s Ratio Prot		c0.19			c0.23		c0.03	c0.22		0.02	0.15	
v/s Ratio Perm						0.01			0.03			0.01
v/c Ratio		0.75			0.84	0.04	0.50	0.80	0.12	0.43	0.60	0.05
Uniform Delay, d1		38.1			38.0	29.6	50.0	37.4	30.2	51.8	36.5	31.5
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.7			12.3	0.0	1.3	9.0	0.1	1.6	2.1	0.1
Delay (s)		41.9			50.3	29.6	51.3	46.4	30.3	53.5	38.6	31.6
Level of Service		D			D	C	D	D	C	D	D	C
Approach Delay (s)		41.9			47.6			42.7			38.3	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	110.2	Sum of lost time (s)	18.5
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

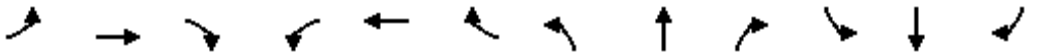
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	466	100	516	113	23	449	79	232
v/c Ratio	0.19	0.68	0.52	0.74	0.17	0.13	0.74	0.35	0.30
Control Delay	19.2	24.2	28.9	26.9	4.0	36.9	32.7	36.9	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	24.2	28.9	26.9	4.0	36.9	32.7	36.9	18.2
Queue Length 50th (ft)	9	172	34	199	0	10	166	33	53
Queue Length 95th (ft)	30	286	87	328	29	36	#424	84	167
Internal Link Dist (ft)		965		430			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	261	1157	327	1167	1033	430	703	430	871
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.40	0.31	0.44	0.11	0.05	0.64	0.18	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	429	27	98	506	111	23	325	115	77	215	13
Future Volume (vph)	29	429	27	98	506	111	23	325	115	77	215	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1846		1770	1863	1583	1770	1790		1770	1847	
Flt Permitted	0.22	1.00		0.28	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	417	1846		523	1863	1583	1770	1790		1770	1847	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	30	438	28	100	516	113	23	332	117	79	219	13
RTOR Reduction (vph)	0	3	0	0	0	72	0	12	0	0	2	0
Lane Group Flow (vph)	30	463	0	100	516	41	23	437	0	79	230	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	25.5	25.5		25.5	25.5	25.5	2.4	24.6		6.6	28.8	
Effective Green, g (s)	25.5	25.5		25.5	25.5	25.5	2.4	24.6		6.6	28.8	
Actuated g/C Ratio	0.36	0.36		0.36	0.36	0.36	0.03	0.35		0.09	0.41	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	150	666		188	672	571	60	623		165	753	
v/s Ratio Prot		0.25			c0.28		0.01	c0.24		c0.04	c0.12	
v/s Ratio Perm	0.07			0.19		0.03						
v/c Ratio	0.20	0.70		0.53	0.77	0.07	0.38	0.70		0.48	0.31	
Uniform Delay, d1	15.5	19.2		17.8	19.9	14.8	33.4	19.8		30.4	14.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	2.9		2.2	5.0	0.0	3.0	3.3		1.6	0.2	
Delay (s)	16.0	22.2		20.1	25.0	14.8	36.3	23.2		32.0	14.3	
Level of Service	B	C		C	C	B	D	C		C	B	
Approach Delay (s)		21.8			22.7			23.8			18.8	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.6	Sum of lost time (s)	13.9
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

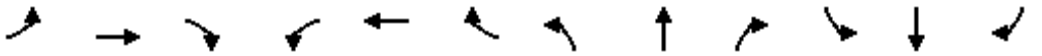


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	273	528	518	509	376	167	2273	481	285	1821	169
v/c Ratio	1.21	0.97	0.94	1.51	0.99	0.94	1.34	0.55	1.14	1.14	0.21
Control Delay	174.0	81.3	75.8	277.6	77.4	107.0	186.3	14.3	147.7	102.7	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	174.0	81.3	75.8	277.6	77.4	107.0	186.3	14.3	147.7	102.7	5.8
Queue Length 50th (ft)	~258	207	206	~548	213	131	~1208	138	~132	~866	14
Queue Length 95th (ft)	#431	#324	#311	#760	#417	#267	#1344	240	#222	#1005	55
Internal Link Dist (ft)		250		609			888			1305	
Turn Bay Length (ft)	225		115		65	195		205	205		65
Base Capacity (vph)	225	542	552	338	381	178	1695	869	251	1598	789
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.97	0.94	1.51	0.99	0.94	1.34	0.55	1.14	1.14	0.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	257	391	105	487	478	353	157	2137	452	268	1712	159
Future Volume (vph)	257	391	105	487	478	353	157	2137	452	268	1712	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3427		3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3427		3433	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	273	416	112	518	509	376	167	2273	481	285	1821	169
RTOR Reduction (vph)	0	20	0	0	0	94	0	0	111	0	0	75
Lane Group Flow (vph)	273	508	0	518	509	282	167	2273	370	285	1821	94
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)	15.3	18.3		19.3	21.8	21.8	12.1	57.5	57.5	8.8	54.2	54.2
Effective Green, g (s)	15.3	18.3		19.3	21.8	21.8	12.1	57.5	57.5	8.8	54.2	54.2
Actuated g/C Ratio	0.13	0.15		0.16	0.18	0.18	0.10	0.48	0.48	0.07	0.45	0.45
Clearance Time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	225	522		552	338	287	178	1695	758	251	1598	714
v/s Ratio Prot	c0.15	0.15		c0.15	c0.27		c0.09	c0.64		c0.08	0.51	
v/s Ratio Perm						0.18			0.23			0.06
v/c Ratio	1.21	0.97		0.94	1.51	0.98	0.94	1.34	0.49	1.14	1.14	0.13
Uniform Delay, d1	52.4	50.6		49.8	49.1	48.9	53.6	31.2	21.2	55.6	32.9	19.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	129.7	32.2		23.8	242.5	48.0	49.2	157.5	0.5	98.3	70.9	0.1
Delay (s)	182.0	82.8		73.5	291.6	96.9	102.8	188.8	21.7	153.9	103.8	19.3
Level of Service	F	F		E	F	F	F	F	C	F	F	B
Approach Delay (s)		116.6			158.9			156.4			103.8	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	136.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	120.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

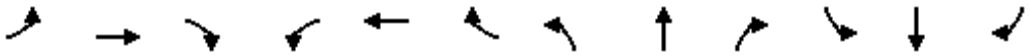


Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	282	758	88	2339	423	1921
v/c Ratio	0.30	0.95	0.58	1.18	1.26	1.09
Control Delay	33.7	66.7	80.8	124.7	186.3	87.2
Queue Delay	0.0	0.0	0.0	0.1	0.0	3.9
Total Delay	33.7	66.7	80.8	124.8	186.3	91.0
Queue Length 50th (ft)	93	352	84	~1017	~517	~1132
Queue Length 95th (ft)	134	#482	142	#1106	#734	#1331
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	976	822	304	1990	336	1759
Starvation Cap Reductn	0	0	0	106	0	271
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.92	0.29	1.24	1.26	1.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	188	71	262	238	243	86	2115	177	415	1806	76
Future Volume (vph)	18	188	71	262	238	243	86	2115	177	415	1806	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.96			0.95		1.00	0.99		1.00	0.99	
Flt Protected		1.00			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3393			3307		1770	5026		1770	3518	
Flt Permitted		0.84			0.70		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2859			2348		1770	5026		1770	3518	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	18	192	72	267	243	248	88	2158	181	423	1843	78
RTOR Reduction (vph)	0	23	0	0	40	0	0	6	0	0	2	0
Lane Group Flow (vph)	0	259	0	0	718	0	88	2333	0	423	1919	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		48.6			48.6		12.8	59.2		28.5	74.9	
Effective Green, g (s)		48.6			48.6		12.8	59.2		28.5	74.9	
Actuated g/C Ratio		0.32			0.32		0.09	0.39		0.19	0.50	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		926			760		151	1983		336	1756	
v/s Ratio Prot							0.05	c0.46		c0.24	0.55	
v/s Ratio Perm		0.09			c0.31							
v/c Ratio		0.28			0.94		0.58	1.18		1.26	1.09	
Uniform Delay, d1		37.7			49.4		66.0	45.4		60.8	37.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			20.2		5.6	85.1		138.4	51.7	
Delay (s)		37.9			69.6		71.7	130.5		199.2	89.2	
Level of Service		D			E		E	F		F	F	
Approach Delay (s)		37.9			69.6			128.3			109.1	
Approach LOS		D			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	108.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

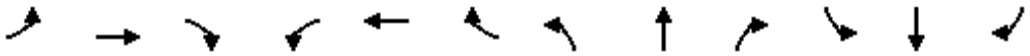


Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	268	538	134	278	602	65	2411	358	1738	929	440
v/c Ratio	0.85	0.84	1.03	1.02	1.02	0.57	1.64	1.67	1.45	1.53	1.26
Control Delay	91.1	78.5	160.1	134.9	72.8	97.5	329.0	360.0	248.5	290.7	180.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	91.1	78.5	160.1	134.9	72.8	97.5	329.1	360.0	248.5	290.7	180.0
Queue Length 50th (ft)	325	321	~182	~188	~446	74	~1484	~601	~1452	~775	~594
Queue Length 95th (ft)	#474	398	#350	#298	#700	131	#1562	#818	#1612	#911	#849
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	345	704	130	272	592	144	1468	215	1195	607	349
Starvation Cap Reductn	0	0	0	0	0	0	43	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.76	1.03	1.02	1.02	0.45	1.69	1.67	1.45	1.53	1.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	505	213	56	177	219	578	62	2203	111	344	1363	305
Future Volume (vph)	505	213	56	177	219	578	62	2203	111	344	1363	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3257		1610	3360	1583	1770	5049		1770	3442	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3257		1610	3360	1583	1770	5049		1770	3442	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	526	222	58	184	228	602	65	2295	116	358	1420	318
RTOR Reduction (vph)	0	5	0	0	0	243	0	3	0	0	0	0
Lane Group Flow (vph)	268	533	0	134	278	359	65	2408	0	358	1738	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	33.7	33.7		14.0	14.0	35.0	11.2	50.0		21.0	59.8	
Effective Green, g (s)	33.7	33.7		14.0	14.0	35.0	11.2	50.0		21.0	59.8	
Actuated g/C Ratio	0.20	0.20		0.08	0.08	0.20	0.07	0.29		0.12	0.35	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	314	637		130	273	321	115	1465		215	1194	
v/s Ratio Prot	c0.17	0.16		0.08	0.08	c0.14	0.04	c0.48		c0.20	0.50	
v/s Ratio Perm						0.09						
v/c Ratio	0.85	0.84		1.03	1.02	1.12	0.57	1.64		1.67	1.46	
Uniform Delay, d1	66.9	66.7		79.2	79.2	68.7	78.2	61.2		75.7	56.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.6	9.4		87.4	59.2	86.0	6.2	292.8		319.0	209.7	
Delay (s)	86.5	76.0		166.5	138.4	154.7	84.4	354.0		394.6	266.0	
Level of Service	F	E		F	F	F	F	F		F	F	
Approach Delay (s)		79.5			151.8			346.9			288.0	
Approach LOS		E			F			F			F	

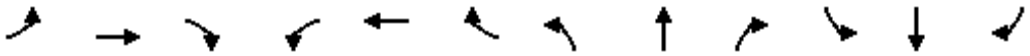
Intersection Summary			
HCM 2000 Control Delay	268.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	172.3	Sum of lost time (s)	21.6
Intersection Capacity Utilization	127.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	465	700	150
Future Volume (vph)	465	700	150
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.93	0.85	
Flt Protected	0.97	1.00	
Satd. Flow (prot)	3269	1441	
Flt Permitted	0.97	1.00	
Satd. Flow (perm)	3269	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	484	729	156
RTOR Reduction (vph)	0	81	0
Lane Group Flow (vph)	929	359	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.0	32.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.19	0.19	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	607	267	
v/s Ratio Prot	c0.28		
v/s Ratio Perm		0.25	
v/c Ratio	1.53	1.34	
Uniform Delay, d1	70.2	70.2	
Progression Factor	1.00	1.00	
Incremental Delay, d2	247.0	177.3	
Delay (s)	317.1	247.5	
Level of Service	F	F	
Approach Delay (s)	294.7		
Approach LOS	F		

Intersection Summary



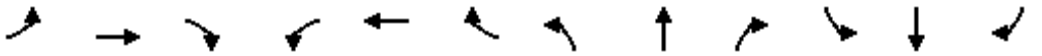
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	241	468	156	224	893	234	290	1341	120	252	1121	238
v/c Ratio	0.98	0.49	0.32	0.63	1.09	0.58	1.08	1.08	0.46	0.91	0.89	0.39
Control Delay	105.0	41.3	15.7	61.6	103.0	17.7	108.7	70.9	32.6	88.0	48.2	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.0	41.3	15.7	61.6	103.0	17.7	108.7	70.9	32.6	88.0	48.2	15.0
Queue Length 50th (ft)	~198	170	32	90	~426	33	~256	~638	39	202	444	59
Queue Length 95th (ft)	#369	229	92	131	#557	115	m#428	#768	m81	#355	#542	130
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	247	948	486	411	821	411	269	1242	286	283	1271	613
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.49	0.32	0.55	1.09	0.57	1.08	1.08	0.42	0.89	0.88	0.39

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

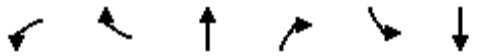
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	454	151	217	866	227	281	1301	116	244	1087	231
Future Volume (vph)	234	454	151	217	866	227	281	1301	116	244	1087	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	241	468	156	224	893	234	290	1341	120	252	1121	238
RTOR Reduction (vph)	0	0	77	0	0	159	0	0	99	0	0	86
Lane Group Flow (vph)	241	468	79	224	893	75	290	1341	21	252	1121	152
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	custom
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									6
Actuated Green, G (s)	17.5	33.5	33.5	13.0	29.0	19.5	19.0	43.9	13.0	19.5	44.4	43.9
Effective Green, g (s)	17.5	33.5	33.5	13.0	29.0	19.5	19.0	43.9	13.0	19.5	44.4	43.9
Actuated g/C Ratio	0.14	0.27	0.27	0.10	0.23	0.16	0.15	0.35	0.10	0.16	0.36	0.35
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	247	948	410	357	821	246	269	1242	164	276	1257	526
v/s Ratio Prot	c0.14	0.13		0.07	c0.25	0.05	0.16	c0.38	0.01	0.14	c0.32	
v/s Ratio Perm			0.05									0.10
v/c Ratio	0.98	0.49	0.19	0.63	1.09	0.31	1.08	1.08	0.13	0.91	0.89	0.29
Uniform Delay, d1	53.5	38.6	35.3	53.7	48.0	46.8	53.0	40.5	50.9	51.9	38.0	29.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.57	2.50	1.00	1.00	1.00
Incremental Delay, d2	50.0	0.4	0.2	3.4	58.0	0.7	67.8	46.2	0.2	32.2	9.8	1.4
Delay (s)	103.5	39.0	35.5	57.1	106.0	47.5	109.5	69.5	127.3	84.1	47.9	30.7
Level of Service	F	D	D	E	F	D	F	E	F	F	D	C
Approach Delay (s)		56.4			87.7			80.1			51.0	
Approach LOS		E			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	69.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	100.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	240	82	1779	241	65	1571
v/c Ratio	0.79	0.26	0.74	0.22	0.46	0.58
Control Delay	67.1	18.0	7.7	4.3	76.3	4.1
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	67.1	18.0	7.8	4.3	76.3	4.1
Queue Length 50th (ft)	187	16	121	16	46	21
Queue Length 95th (ft)	268	60	215	m41	m58	601
Internal Link Dist (ft)	480		90			1235
Turn Bay Length (ft)		90		50	120	
Base Capacity (vph)	382	387	2403	1090	283	2729
Starvation Cap Reductn	0	0	40	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.21	0.75	0.22	0.23	0.58

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	233	80	1726	234	63	1524
Future Volume (vph)	233	80	1726	234	63	1524
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1583	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	240	82	1779	241	65	1571
RTOR Reduction (vph)	0	48	0	16	0	0
Lane Group Flow (vph)	240	34	1779	225	65	1571
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4		6		
Actuated Green, G (s)	21.6	21.6	84.2	84.2	8.7	96.4
Effective Green, g (s)	21.6	21.6	84.2	84.2	8.7	96.4
Actuated g/C Ratio	0.17	0.17	0.67	0.67	0.07	0.77
Clearance Time (s)	3.0	3.0	4.0	4.0	3.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	305	273	2383	1066	123	2729
v/s Ratio Prot	c0.14		c0.50		0.04	c0.44
v/s Ratio Perm		0.02		0.14		
v/c Ratio	0.79	0.12	0.75	0.21	0.53	0.58
Uniform Delay, d1	49.5	43.7	13.4	7.8	56.2	5.9
Progression Factor	1.00	1.00	0.40	0.53	1.27	0.53
Incremental Delay, d2	12.6	0.2	1.5	0.3	2.8	0.6
Delay (s)	62.1	43.9	6.9	4.4	74.2	3.7
Level of Service	E	D	A	A	E	A
Approach Delay (s)	57.4		6.6			6.5
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	53.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	225	1745	38	106	1680
Future Vol, veh/h	16	225	1745	38	106	1680
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	230	1781	39	108	1714

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2873	910	0	0	1819	0
Stage 1	1800	-	-	-	-	-
Stage 2	1073	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 13	277	-	-	333	-
Stage 1	117	-	-	-	-	-
Stage 2	290	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 9	277	-	-	333	-
Mov Cap-2 Maneuver	~ 9	-	-	-	-	-
Stage 1	117	-	-	-	-	-
Stage 2	196	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 841.4	0	1.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	93	333	-
HCM Lane V/C Ratio	-	-	2.644	0.325	-
HCM Control Delay (s)	-	-	$ 841.4	20.9	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	23.1	1.4	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBR	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	33	425	240	1729	113	1674
v/c Ratio	0.08	0.97	0.43	0.86	0.60	0.68
Control Delay	5.2	84.3	8.8	28.4	78.4	4.0
Queue Delay	0.0	2.8	0.0	0.0	0.0	0.0
Total Delay	5.2	87.1	8.8	28.4	78.4	4.0
Queue Length 50th (ft)	0	~392	8	548	91	53
Queue Length 95th (ft)	16	#596	78	727	m151	74
Internal Link Dist (ft)		35		678		635
Turn Bay Length (ft)					50	
Base Capacity (vph)	423	437	561	2009	283	2572
Starvation Cap Reductn	0	6	0	0	0	69
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.99	0.43	0.86	0.40	0.67

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	32	399	9	230	0	1657	3	108	1586	21
Future Volume (vph)	0	0	32	399	9	230	0	1657	3	108	1586	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Lane Util. Factor			1.00		1.00	1.00		0.95		1.00	0.95	
Frt			0.86		1.00	0.85		1.00		1.00	1.00	
Flt Protected			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (prot)			1611		1776	1583		3538		1770	3532	
Flt Permitted			1.00		0.95	1.00		1.00		0.95	1.00	
Satd. Flow (perm)			1611		1776	1583		3538		1770	3532	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	33	416	9	240	0	1726	3	112	1652	22
RTOR Reduction (vph)	0	0	25	0	0	172	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	8	0	425	68	0	1729	0	113	1673	0
Turn Type			Perm	Perm	NA	Perm		NA		Prot	NA	
Protected Phases					4			6		5	2	
Permitted Phases			8	4	4	4						
Actuated Green, G (s)			29.8		30.8	30.8		70.9		13.3	87.2	
Effective Green, g (s)			29.8		30.8	30.8		70.9		13.3	87.2	
Actuated g/C Ratio			0.24		0.25	0.25		0.57		0.11	0.70	
Clearance Time (s)			4.0		3.0	3.0		4.0		3.0	4.0	
Vehicle Extension (s)			3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)			384		437	390		2006		188	2463	
v/s Ratio Prot								c0.49		0.06	c0.47	
v/s Ratio Perm			0.00		0.24	0.04						
v/c Ratio			0.02		0.97	0.17		0.86		0.60	0.68	
Uniform Delay, d1			36.4		46.7	37.1		22.9		53.3	10.9	
Progression Factor			1.00		1.00	1.00		1.00		1.27	0.25	
Incremental Delay, d2			0.0		35.7	0.2		5.2		4.5	1.3	
Delay (s)			36.5		82.4	37.3		28.1		72.3	4.0	
Level of Service			D		F	D		C		E	A	
Approach Delay (s)		36.5			66.1			28.1			8.3	
Approach LOS		D			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	146	143	248	44	57	42
Future Vol, veh/h	146	143	248	44	57	42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	155	270	48	62	46
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	10.9	10.4	9.2
HCM LOS	B	B	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	51%	0%	58%
Vol Thru, %	49%	85%	0%
Vol Right, %	0%	15%	42%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	289	292	99
LT Vol	146	0	57
Through Vol	143	248	0
RT Vol	0	44	42
Lane Flow Rate	314	317	108
Geometry Grp	1	1	1
Degree of Util (X)	0.407	0.395	0.155
Departure Headway (Hd)	4.659	4.478	5.191
Convergence, Y/N	Yes	Yes	Yes
Cap	770	803	688
Service Time	2.697	2.515	3.25
HCM Lane V/C Ratio	0.408	0.395	0.157
HCM Control Delay	10.9	10.4	9.2
HCM Lane LOS	B	B	A
HCM 95th-tile Q	2	1.9	0.5

Intersection	
Int Delay, s/veh	11.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	44	62	42	9	106	41	92	90	24	106	99	60
Future Vol, veh/h	44	62	42	9	106	41	92	90	24	106	99	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	47	66	45	10	113	44	98	96	26	113	105	64

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	156	0	0	111	0	0	420	358	88	397	358	135
Stage 1	-	-	-	-	-	-	182	182	-	154	154	-
Stage 2	-	-	-	-	-	-	238	176	-	243	204	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1424	-	-	1479	-	-	544	568	970	563	568	914
Stage 1	-	-	-	-	-	-	820	749	-	848	770	-
Stage 2	-	-	-	-	-	-	765	753	-	761	733	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1424	-	-	1479	-	-	417	544	970	459	544	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	417	544	-	459	544	-
Stage 1	-	-	-	-	-	-	791	723	-	818	765	-
Stage 2	-	-	-	-	-	-	609	748	-	620	707	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.3	0.4	17.7	18
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	501	1424	-	-	1479	-	-	554
HCM Lane V/C Ratio	0.437	0.033	-	-	0.006	-	-	0.509
HCM Control Delay (s)	17.7	7.6	0	-	7.5	0	-	18
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.2	0.1	-	-	0	-	-	2.9

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	119	0	0	501	2	10	29	76	49	0	147
Future Vol, veh/h	9	119	0	0	501	2	10	29	76	49	0	147
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	131	0	0	551	2	11	32	84	54	0	162

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	553	0	-	-	-	0	426	704	131	760	-	276
Stage 1	-	-	-	-	-	-	151	151	-	552	-	-
Stage 2	-	-	-	-	-	-	275	553	-	208	-	-
Critical Hdwy	4.13	-	-	-	-	-	7.33	6.53	6.23	7.33	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	-	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319	3.519	-	3.319
Pot Cap-1 Maneuver	1015	-	0	0	-	-	525	361	918	308	0	722
Stage 1	-	-	0	0	-	-	851	772	-	486	0	-
Stage 2	-	-	0	0	-	-	708	513	-	793	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1015	-	-	-	-	-	404	357	918	259	-	722
Mov Cap-2 Maneuver	-	-	-	-	-	-	404	357	-	259	-	-
Stage 1	-	-	-	-	-	-	842	764	-	481	-	-
Stage 2	-	-	-	-	-	-	550	513	-	683	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	12.5	11.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	609	1015	-	-	-	722
HCM Lane V/C Ratio	0.208	0.01	-	-	-	0.224
HCM Control Delay (s)	12.5	8.6	0	-	-	11.4
HCM Lane LOS	B	A	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	-	0.9

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	17	8	15	59	7	60	0	40	35	0	46
Future Vol, veh/h	9	17	8	15	59	7	60	0	40	35	0	46
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	18	9	16	64	8	65	0	43	38	0	50

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	72	0	0	27	0	0	168	146	23	165	148	68
Stage 1	-	-	-	-	-	-	42	42	-	101	101	-
Stage 2	-	-	-	-	-	-	126	104	-	64	47	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1528	-	-	1587	-	-	796	745	1054	800	743	995
Stage 1	-	-	-	-	-	-	972	860	-	905	811	-
Stage 2	-	-	-	-	-	-	878	809	-	947	856	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1528	-	-	1587	-	-	746	732	1054	757	730	995
Mov Cap-2 Maneuver	-	-	-	-	-	-	746	732	-	757	730	-
Stage 1	-	-	-	-	-	-	965	854	-	899	802	-
Stage 2	-	-	-	-	-	-	825	800	-	902	850	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	1.4	9.9	9.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	845	1528	-	-	1587	-	-	876
HCM Lane V/C Ratio	0.129	0.006	-	-	0.01	-	-	0.101
HCM Control Delay (s)	9.9	7.4	0	-	7.3	0	-	9.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	489	170	25	206	256
Future Vol, veh/h	0	489	170	25	206	256
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	Yield	-	None
Storage Length	-	0	-	-	40	-
Veh in Median Storage, #	-	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	537	187	27	226	281

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	187	187
Stage 1	-	-	0	0
Stage 2	-	-	187	187
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	802	708
Stage 1	-	-	-	-
Stage 2	-	-	845	745
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	802	0
Mov Cap-2 Maneuver	-	-	802	0
Stage 1	-	-	-	0
Stage 2	-	-	845	0

Approach	NB	SB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	802	-
HCM Lane V/C Ratio	-	-	0.282	-
HCM Control Delay (s)	-	-	11.2	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	1.2	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	95	22	544	310	59
Future Vol, veh/h	0	95	22	544	310	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	108	25	618	352	67

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	386	419	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	662	1140	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	662	1140	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1140	-	662	-	-
HCM Lane V/C Ratio	0.022	-	0.163	-	-
HCM Control Delay (s)	8.2	0	11.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

Intersection	
Int Delay, s/veh	10.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	115	60	127	449	375	29
Future Vol, veh/h	115	60	127	449	375	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	124	65	137	483	403	31

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1175	419	434	0	-	0
Stage 1	419	-	-	-	-	-
Stage 2	756	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	212	634	1126	-	-	-
Stage 1	664	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	177	634	1126	-	-	-
Mov Cap-2 Maneuver	177	-	-	-	-	-
Stage 1	664	-	-	-	-	-
Stage 2	387	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	62.3	1.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1126	-	235	-	-
HCM Lane V/C Ratio	0.121	-	0.801	-	-
HCM Control Delay (s)	8.6	0	62.3	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.4	-	6	-	-

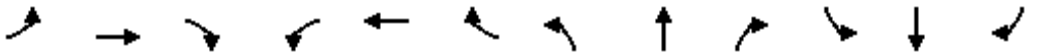


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	19	233	118	347	729	570
v/c Ratio	0.12	0.59	0.49	0.54	0.93	1.26
Control Delay	33.7	31.3	36.1	21.1	40.8	157.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	31.3	36.1	21.1	40.8	157.5
Queue Length 50th (ft)	8	88	47	103	275	~315
Queue Length 95th (ft)	29	165	101	219	#631	#597
Internal Link Dist (ft)		20		40	245	550
Turn Bay Length (ft)	50					
Base Capacity (vph)	535	698	535	754	783	452
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.33	0.22	0.46	0.93	1.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	205	21	114	315	21	81	460	166	198	247	108
Future Volume (vph)	18	205	21	114	315	21	81	460	166	198	247	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	1836		1770	1845			1793			1782	
Flt Permitted	0.95	1.00		0.95	1.00			0.89			0.51	
Satd. Flow (perm)	1770	1836		1770	1845			1598			919	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	211	22	118	325	22	84	474	171	204	255	111
RTOR Reduction (vph)	0	5	0	0	3	0	0	10	0	0	8	0
Lane Group Flow (vph)	19	228	0	118	344	0	0	719	0	0	562	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	1.2	17.0		7.6	23.4			32.7			32.7	
Effective Green, g (s)	1.2	17.0		7.6	23.4			32.7			32.7	
Actuated g/C Ratio	0.02	0.24		0.11	0.33			0.46			0.46	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	29	438		189	607			734			422	
v/s Ratio Prot	0.01	0.12		c0.07	c0.19							
v/s Ratio Perm								0.45			c0.61	
v/c Ratio	0.66	0.52		0.62	0.57			0.98			1.33	
Uniform Delay, d1	34.7	23.5		30.4	19.7			18.9			19.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	33.9	1.1		4.6	1.2			27.6			164.7	
Delay (s)	68.6	24.6		34.9	20.9			46.5			183.9	
Level of Service	E	C		C	C			D			F	
Approach Delay (s)		28.0			24.5			46.5			183.9	
Approach LOS		C			C			D			F	

Intersection Summary			
HCM 2000 Control Delay	77.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	71.1	Sum of lost time (s)	13.8
Intersection Capacity Utilization	105.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	26.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	15	132	235	20	428	240	306	32	15
Future Vol, veh/h	0	0	0	15	132	235	20	428	240	306	32	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	230	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	139	247	21	451	253	322	34	16

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1171	1171	-	34	0	-	451	0	0
Stage 1	493	493	-	-	-	-	-	-	-
Stage 2	678	678	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	213	193	0	1578	-	0	1109	-	0
Stage 1	614	547	0	-	-	0	-	-	0
Stage 2	504	452	0	-	-	0	-	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	147	0	-	1578	-	-	1109	-	-
Mov Cap-2 Maneuver	147	0	-	-	-	-	-	-	-
Stage 1	603	0	-	-	-	-	-	-	-
Stage 2	355	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	149.7	0.3	8.7
HCM LOS	F		

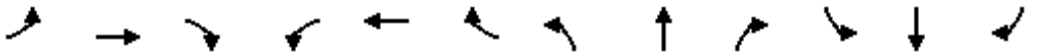
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	1578	-	147	-	1109	-
HCM Lane V/C Ratio	0.013	-	1.053	-	0.29	-
HCM Control Delay (s)	7.3	0	149.7	0	9.6	0
HCM Lane LOS	A	A	F	A	A	A
HCM 95th %tile Q(veh)	0	-	8.1	-	1.2	-



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	660	417	36	177	462	94	48	374	132
v/c Ratio	0.78	0.87	0.08	0.82	0.82	0.17	0.39	0.89	0.31
Control Delay	50.3	64.2	0.3	83.4	56.4	10.0	67.6	72.3	18.9
Queue Delay	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	69.9	0.3	83.4	56.4	10.0	67.6	72.3	18.9
Queue Length 50th (ft)	269	327	0	146	371	4	39	309	30
Queue Length 95th (ft)	341	#514	0	#282	#645	50	82	#528	91
Internal Link Dist (ft)	438	355			260			368	
Turn Bay Length (ft)			115	90			95		45
Base Capacity (vph)	1041	555	535	235	560	538	235	433	436
Starvation Cap Reductn	0	90	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.90	0.07	0.75	0.82	0.17	0.20	0.86	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	479	84	35	361	34	168	439	89	46	355	125
Future Volume (vph)	65	479	84	35	361	34	168	439	89	46	355	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor		0.95			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3451			1855	1583	1770	1863	1583	1770	1863	1583
Flt Permitted		0.99			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3451			1855	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	504	88	37	380	36	177	462	94	48	374	132
RTOR Reduction (vph)	0	9	0	0	0	27	0	0	62	0	0	68
Lane Group Flow (vph)	0	651	0	0	417	9	177	462	32	48	374	65
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	2		6	6		7	4		3	8	
Permitted Phases						6			4			8
Actuated Green, G (s)		29.6			31.5	31.5	14.9	36.8	36.8	6.8	28.7	28.7
Effective Green, g (s)		29.6			31.5	31.5	14.9	36.8	36.8	6.8	28.7	28.7
Actuated g/C Ratio		0.24			0.26	0.26	0.12	0.30	0.30	0.06	0.23	0.23
Clearance Time (s)		4.6			4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)		3.0			3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)		829			474	404	214	556	472	97	433	368
v/s Ratio Prot		c0.19			c0.22		c0.10	c0.25		0.03	0.20	
v/s Ratio Perm						0.01			0.02			0.04
v/c Ratio		0.79			0.88	0.02	0.83	0.83	0.07	0.49	0.86	0.18
Uniform Delay, d1		43.8			44.0	34.3	52.9	40.3	30.9	56.5	45.4	37.8
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		4.9			16.8	0.0	21.3	10.2	0.1	1.4	16.2	0.2
Delay (s)		48.7			60.8	34.3	74.2	50.5	31.0	58.0	61.6	38.0
Level of Service		D			E	C	E	D	C	E	E	D
Approach Delay (s)		48.7			58.7			53.7			55.6	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	53.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	123.2	Sum of lost time (s)	18.5
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

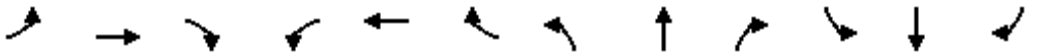


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	582	86	444	108	56	612	143	458
v/c Ratio	0.07	0.93	0.88	0.70	0.18	0.30	1.03	0.55	0.57
Control Delay	17.4	45.5	89.7	28.0	4.4	38.3	74.4	40.2	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	45.5	89.7	28.0	4.4	38.3	74.4	40.2	24.5
Queue Length 50th (ft)	3	252	37	175	0	24	~278	60	167
Queue Length 95th (ft)	15	407	#124	285	29	68	#666	138	#412
Internal Link Dist (ft)		965		430			1005		277
Turn Bay Length (ft)	50		60			85		80	
Base Capacity (vph)	267	1000	157	1009	907	362	592	362	800
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.58	0.55	0.44	0.12	0.15	1.03	0.40	0.57

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	528	42	84	435	106	55	406	194	140	422	26
Future Volume (vph)	11	528	42	84	435	106	55	406	194	140	422	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1842		1770	1863	1583	1770	1772		1770	1846	
Flt Permitted	0.26	1.00		0.16	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	493	1842		291	1863	1583	1770	1772		1770	1846	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	11	539	43	86	444	108	56	414	198	143	431	27
RTOR Reduction (vph)	0	3	0	0	0	72	0	16	0	0	2	0
Lane Group Flow (vph)	11	579	0	86	444	36	56	596	0	143	456	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	25.6	25.6		25.6	25.6	25.6	5.1	26.7		11.0	32.6	
Effective Green, g (s)	25.6	25.6		25.6	25.6	25.6	5.1	26.7		11.0	32.6	
Actuated g/C Ratio	0.33	0.33		0.33	0.33	0.33	0.07	0.35		0.14	0.42	
Clearance Time (s)	4.7	4.7		4.7	4.7	4.7	4.6	4.6		4.6	4.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	163	610		96	617	524	116	612		252	779	
v/s Ratio Prot		c0.31			0.24		0.03	c0.34		c0.08	0.25	
v/s Ratio Perm	0.02			0.30		0.02						
v/c Ratio	0.07	0.95		0.90	0.72	0.07	0.48	0.97		0.57	0.59	
Uniform Delay, d1	17.6	25.2		24.5	22.6	17.6	34.8	24.9		30.9	17.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	24.1		58.9	4.0	0.1	3.1	29.5		2.9	1.1	
Delay (s)	17.8	49.3		83.4	26.7	17.7	37.9	54.4		33.8	18.2	
Level of Service	B	D		F	C	B	D	D		C	B	
Approach Delay (s)		48.7			32.8			53.0			21.9	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	39.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	13.9
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

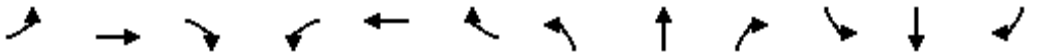


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	319	683	601	496	286	180	1357	614	389	2320	82
v/c Ratio	1.53	1.24	1.02	1.29	0.74	1.12	0.88	0.68	1.00	1.43	0.11
Control Delay	300.8	165.7	95.5	190.8	46.9	161.0	41.8	14.2	102.2	228.3	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	300.8	165.7	95.5	190.8	46.9	161.0	41.8	14.2	102.2	228.3	2.8
Queue Length 50th (ft)	~376	~370	~276	~532	167	~175	543	147	171	~1391	0
Queue Length 95th (ft)	#565	#496	#394	#749	273	#325	648	287	#278	#1523	21
Internal Link Dist (ft)		250		609			888			1305	
Turn Bay Length (ft)	225		115		65	195		205	205		65
Base Capacity (vph)	208	552	588	384	389	160	1538	907	390	1619	778
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.53	1.24	1.02	1.29	0.74	1.13	0.88	0.68	1.00	1.43	0.11

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	300	527	115	565	466	269	169	1276	577	366	2181	77
Future Volume (vph)	300	527	115	565	466	269	169	1276	577	366	2181	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3444		3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3444		3433	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	319	561	122	601	496	286	180	1357	614	389	2320	82
RTOR Reduction (vph)	0	14	0	0	0	63	0	0	219	0	0	44
Lane Group Flow (vph)	319	669	0	601	496	223	180	1357	395	389	2320	38
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)	15.3	20.3		22.3	26.8	26.8	11.8	56.5	56.5	14.8	59.5	59.5
Effective Green, g (s)	15.3	20.3		22.3	26.8	26.8	11.8	56.5	56.5	14.8	59.5	59.5
Actuated g/C Ratio	0.12	0.16		0.17	0.21	0.21	0.09	0.43	0.43	0.11	0.46	0.46
Clearance Time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	208	537		588	384	326	160	1538	687	390	1619	724
v/s Ratio Prot	c0.18	0.19		c0.18	c0.27		c0.10	0.38		0.11	c0.66	
v/s Ratio Perm						0.14			0.25			0.02
v/c Ratio	1.53	1.25		1.02	1.29	0.68	1.12	0.88	0.57	1.00	1.43	0.05
Uniform Delay, d1	57.4	54.9		53.9	51.6	47.7	59.1	33.7	27.7	57.6	35.2	19.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	262.9	125.3		42.8	149.5	5.9	108.7	6.3	1.2	44.6	198.5	0.0
Delay (s)	320.2	180.2		96.7	201.1	53.6	167.8	40.0	28.9	102.2	233.7	19.6
Level of Service	F	F		F	F	D	F	D	C	F	F	B
Approach Delay (s)		224.8			125.2			47.5			209.1	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	148.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	125.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

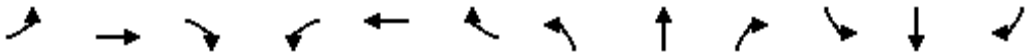


Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	361	905	109	1715	289	2357
v/c Ratio	0.44	1.06	0.63	0.89	0.85	1.40
Control Delay	37.9	85.7	80.9	50.1	80.3	213.8
Queue Delay	0.0	0.0	0.0	2.5	0.0	0.4
Total Delay	37.9	85.7	80.9	52.6	80.3	214.2
Queue Length 50th (ft)	134	~448	104	567	277	~1624
Queue Length 95th (ft)	184	#585	166	634	#436	#1820
Internal Link Dist (ft)	429	363		615		550
Turn Bay Length (ft)			160		175	
Base Capacity (vph)	829	856	304	1940	342	1689
Starvation Cap Reductn	0	0	0	130	0	181
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	1.06	0.36	0.95	0.85	1.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	246	80	253	206	428	107	1526	155	283	2283	26
Future Volume (vph)	27	246	80	253	206	428	107	1526	155	283	2283	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.95	
Frt		0.97			0.93		1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3405			3237		1770	5015		1770	3533	
Flt Permitted		0.71			0.68		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2435			2231		1770	5015		1770	3533	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	28	251	82	258	210	437	109	1557	158	289	2330	27
RTOR Reduction (vph)	0	18	0	0	113	0	0	8	0	0	1	0
Lane Group Flow (vph)	0	343	0	0	792	0	109	1707	0	289	2356	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		50.0			50.0		14.6	57.3		29.0	71.7	
Effective Green, g (s)		50.0			50.0		14.6	57.3		29.0	71.7	
Actuated g/C Ratio		0.33			0.33		0.10	0.38		0.19	0.48	
Clearance Time (s)		4.2			4.2		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		811			743		172	1915		342	1688	
v/s Ratio Prot							0.06	c0.34		0.16	c0.67	
v/s Ratio Perm		0.14			c0.36							
v/c Ratio		0.42			1.07		0.63	0.89		0.85	1.40	
Uniform Delay, d1		38.8			50.0		65.1	43.4		58.3	39.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			52.2		7.4	6.8		17.1	181.9	
Delay (s)		39.2			102.2		72.5	50.2		75.5	221.0	
Level of Service		D			F		E	D		E	F	
Approach Delay (s)		39.2			102.2			51.5			205.1	
Approach LOS		D			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	129.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	121.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



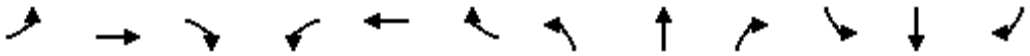
Lane Group	EBL	EBT	WBL	WBT	WBR2	NBL2	NBT	SBL	SBT	SEL	SER
Lane Group Flow (vph)	400	816	167	347	759	91	1963	207	1744	916	485
v/c Ratio	1.18	1.18	1.30	1.30	1.31	0.72	1.36	0.98	1.51	1.69dr	1.41
Control Delay	164.2	151.6	239.7	219.5	183.3	108.5	212.7	131.8	274.1	299.4	238.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	164.2	151.6	239.7	219.5	183.3	108.5	212.8	131.8	274.1	299.4	238.9
Queue Length 50th (ft)	~603	~614	~269	~280	~844	104	~1088	242	~1481	~761	~714
Queue Length 95th (ft)	#849	#760	#452	#397	#1107	#180	#1177	#422	#1614	#898	#976
Internal Link Dist (ft)		498		605			550		344	357	
Turn Bay Length (ft)	375		70		115	180		140		220	
Base Capacity (vph)	339	693	128	266	578	141	1442	211	1153	591	344
Starvation Cap Reductn	0	0	0	0	0	0	51	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	1.18	1.30	1.30	1.31	0.65	1.41	0.98	1.51	1.55	1.41

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	769	344	55	254	239	729	87	1819	65	199	1458	216
Future Volume (vph)	769	344	55	254	239	729	87	1819	65	199	1458	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Lane Util. Factor	0.91	0.91		0.91	0.91	1.00	1.00	0.91		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1610	3274		1610	3343	1583	1770	5059		1770	3471	
Flt Permitted	0.95	0.98		0.95	0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1610	3274		1610	3343	1583	1770	5059		1770	3471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	801	358	57	265	249	759	91	1895	68	207	1519	225
RTOR Reduction (vph)	0	3	0	0	0	236	0	2	0	0	0	0
Lane Group Flow (vph)	400	813	0	167	347	523	91	1961	0	207	1744	0
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	7		8	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	37.0	37.0		14.0	14.0	35.0	12.7	50.0		21.0	58.3	
Effective Green, g (s)	37.0	37.0		14.0	14.0	35.0	12.7	50.0		21.0	58.3	
Actuated g/C Ratio	0.21	0.21		0.08	0.08	0.20	0.07	0.28		0.12	0.33	
Clearance Time (s)	3.7	3.7		3.7	3.7	3.6	3.6	4.5		3.6	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	339	689		128	266	315	128	1440		211	1152	
v/s Ratio Prot	c0.25	0.25		0.10	0.10	c0.20	0.05	0.39		0.12	c0.50	
v/s Ratio Perm						0.13						
v/c Ratio	1.18	1.18		1.30	1.30	1.66	0.71	1.36		0.98	1.51	
Uniform Delay, d1	69.3	69.3		80.8	80.8	70.3	79.7	62.8		77.1	58.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	107.3	95.4		182.4	161.6	310.6	17.0	167.3		56.3	235.8	
Delay (s)	176.6	164.7		263.2	242.4	380.9	96.6	230.1		133.4	294.4	
Level of Service	F	F		F	F	F	F	F		F	F	
Approach Delay (s)		168.6			327.7			224.2			277.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	264.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	175.6	Sum of lost time (s)	21.6
Intersection Capacity Utilization	141.1%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group



Movement	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	412	821	112
Future Volume (vph)	412	821	112
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.1	6.1	
Lane Util. Factor	0.97	0.91	
Frt	0.92	0.85	
Flt Protected	0.98	1.00	
Satd. Flow (prot)	3249	1441	
Flt Permitted	0.98	1.00	
Satd. Flow (perm)	3249	1441	
Peak-hour factor, PHF	0.96	0.96	0.96
Adj. Flow (vph)	429	855	117
RTOR Reduction (vph)	0	82	0
Lane Group Flow (vph)	916	403	0
Turn Type	Prot	Perm	
Protected Phases	3		
Permitted Phases		3	
Actuated Green, G (s)	32.0	32.0	
Effective Green, g (s)	32.0	32.0	
Actuated g/C Ratio	0.18	0.18	
Clearance Time (s)	6.1	6.1	
Vehicle Extension (s)	3.0	3.0	
Lane Grp Cap (vph)	592	262	
v/s Ratio Prot	c0.28		
v/s Ratio Perm		0.28	
v/c Ratio	1.69dr	1.54	
Uniform Delay, d1	71.8	71.8	
Progression Factor	1.00	1.00	
Incremental Delay, d2	254.6	260.8	
Delay (s)	326.4	332.6	
Level of Service	F	F	
Approach Delay (s)	328.5		
Approach LOS	F		

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	125	1488	23	249	1626
Future Volume (vph)	8	125	1488	23	249	1626
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		4.0		8.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frt	0.87		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1621		3531		1770	3539
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1621		3531		1770	3539
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	8	128	1518	23	254	1659
RTOR Reduction (vph)	120	0	1	0	0	0
Lane Group Flow (vph)	16	0	1540	0	254	1659
Turn Type	Prot		NA		Prot	NA
Protected Phases	4		6		5	2
Permitted Phases						
Actuated Green, G (s)	7.9		78.1		24.0	110.1
Effective Green, g (s)	7.9		78.1		24.0	110.1
Actuated g/C Ratio	0.06		0.62		0.19	0.88
Clearance Time (s)	3.0		4.0		8.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	102		2206		339	3117
v/s Ratio Prot	c0.01		c0.44		c0.14	0.47
v/s Ratio Perm						
v/c Ratio	0.16		0.70		0.75	0.53
Uniform Delay, d1	55.4		15.6		47.7	1.7
Progression Factor	1.00		1.31		0.71	3.29
Incremental Delay, d2	0.7		1.6		7.1	0.5
Delay (s)	56.1		22.0		41.1	6.0
Level of Service	E		C		D	A
Approach Delay (s)	56.1		22.0			10.7
Approach LOS	E		C			B

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

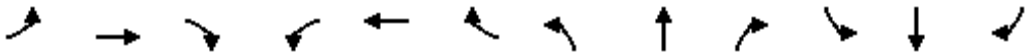
Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	125	1488	23	249	1626
Future Vol, veh/h	0	125	1488	23	249	1626
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	128	1518	23	254	1659

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	771	0	0	1542	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	343	-	-	427	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	343	-	-	427	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.6	0	3.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	343	427	-
HCM Lane V/C Ratio	-	-	0.372	0.595	-
HCM Control Delay (s)	-	-	21.6	25.1	-
HCM Lane LOS	-	-	C	D	-
HCM 95th %tile Q(veh)	-	-	1.7	3.8	-



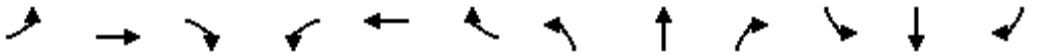
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	241	468	156	224	893	234	290	1341	120	252	1121	238
v/c Ratio	1.03	0.49	0.32	0.65	1.06	0.62	0.95	1.03	0.47	1.02	0.94	0.37
Control Delay	120.9	40.7	15.3	63.3	92.3	20.7	71.0	54.2	34.0	115.4	56.2	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	120.9	40.7	15.3	63.3	92.3	20.7	71.0	54.2	34.0	115.4	56.2	13.8
Queue Length 50th (ft)	~209	169	32	90	~415	37	217	~627	46	~211	461	56
Queue Length 95th (ft)	#375	224	90	132	#546	123	m#398	#740	m82	#385	#602	124
Internal Link Dist (ft)		699			788			1235			586	
Turn Bay Length (ft)	200		60	90			165		190	220		160
Base Capacity (vph)	233	958	491	379	846	379	304	1302	272	247	1189	637
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.49	0.32	0.59	1.06	0.62	0.95	1.03	0.44	1.02	0.94	0.37

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	454	151	217	866	227	281	1301	116	244	1087	231
Future Volume (vph)	234	454	151	217	866	227	281	1301	116	244	1087	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1530	3433	3539	1583	1770	3539	1583	1770	3539	1500
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	241	468	156	224	893	234	290	1341	120	252	1121	238
RTOR Reduction (vph)	0	0	77	0	0	157	0	0	99	0	0	86
Lane Group Flow (vph)	241	468	79	224	893	77	290	1341	21	252	1121	152
Confl. Peds. (#/hr)	50		17	17		50	31		34	34		31
Turn Type	Prot	NA	Perm	Prot	NA	Over	Prot	NA	Over	Prot	NA	custom
Protected Phases	3	8		7	4	5	1	6	7	5	2	
Permitted Phases			8									6
Actuated Green, G (s)	16.5	33.9	33.9	12.5	29.9	17.5	21.5	46.0	12.5	17.5	42.0	46.0
Effective Green, g (s)	16.5	33.9	33.9	12.5	29.9	17.5	21.5	46.0	12.5	17.5	42.0	46.0
Actuated g/C Ratio	0.13	0.27	0.27	0.10	0.24	0.14	0.17	0.37	0.10	0.14	0.34	0.37
Clearance Time (s)	3.5	4.1	4.1	3.5	4.1	3.5	3.5	4.0	3.5	3.5	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	233	959	414	343	846	221	304	1302	158	247	1189	552
v/s Ratio Prot	c0.14	0.13		0.07	c0.25	0.05	0.16	c0.38	0.01	0.14	c0.32	
v/s Ratio Perm			0.05									0.10
v/c Ratio	1.03	0.49	0.19	0.65	1.06	0.35	0.95	1.03	0.13	1.02	0.94	0.28
Uniform Delay, d1	54.2	38.3	35.0	54.2	47.5	48.6	51.3	39.5	51.3	53.8	40.3	27.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.61	2.55	1.00	1.00	1.00
Incremental Delay, d2	68.2	0.4	0.2	4.4	46.7	0.9	30.9	28.7	0.3	62.6	15.6	1.2
Delay (s)	122.4	38.7	35.2	58.6	94.2	49.5	67.6	52.9	131.1	116.3	55.9	29.0
Level of Service	F	D	D	E	F	D	E	D	F	F	E	C
Approach Delay (s)		61.4			80.6			60.7			61.4	
Approach LOS		E			F			E			E	

Intersection Summary			
HCM 2000 Control Delay	65.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	100.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	225	1745	38	106	1680
Future Volume (vph)	16	225	1745	38	106	1680
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		4.0		3.5	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frt	0.87		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1622		3528		1770	3539
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1622		3528		1770	3539
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	16	230	1781	39	108	1714
RTOR Reduction (vph)	181	0	1	0	0	0
Lane Group Flow (vph)	65	0	1819	0	108	1714
Turn Type	Prot		NA		Prot	NA
Protected Phases	4		6		5	2
Permitted Phases						
Actuated Green, G (s)	10.8		90.9		12.8	107.2
Effective Green, g (s)	10.8		90.9		12.8	107.2
Actuated g/C Ratio	0.09		0.73		0.10	0.86
Clearance Time (s)	3.0		4.0		3.5	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	140		2565		181	3035
v/s Ratio Prot	c0.04		c0.52		0.06	c0.48
v/s Ratio Perm						
v/c Ratio	0.47		0.71		0.60	0.56
Uniform Delay, d1	54.4		9.6		53.6	2.5
Progression Factor	1.00		0.72		1.22	0.12
Incremental Delay, d2	2.4		1.0		4.3	0.6
Delay (s)	56.8		7.8		69.7	0.9
Level of Service	E		A		E	A
Approach Delay (s)	56.8		7.8			5.0
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

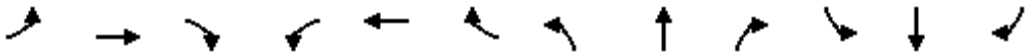
Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	225	1745	38	106	1680
Future Vol, veh/h	0	225	1745	38	106	1680
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	90	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	230	1781	39	108	1714

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	910	0	0	1819	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	277	-	-	333	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	277	-	-	333	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	59.1	0	1.2
HCM LOS	F		

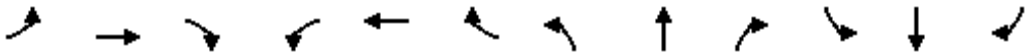
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	277	333	-
HCM Lane V/C Ratio	-	-	0.829	0.325	-
HCM Control Delay (s)	-	-	59.1	20.9	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	6.8	1.4	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	205	21	114	315	21	81	460	166	198	247	108
Future Volume (vph)	18	205	21	114	315	21	81	460	166	198	247	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	1836		1770	1845			1793			1782	
Flt Permitted	0.95	1.00		0.95	1.00			0.88			0.54	
Satd. Flow (perm)	1770	1836		1770	1845			1584			983	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	19	211	22	118	325	22	84	474	171	204	255	111
RTOR Reduction (vph)	0	4	0	0	2	0	0	6	0	0	5	0
Lane Group Flow (vph)	19	229	0	118	345	0	0	723	0	0	565	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	3	8		7	4			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	6.5	24.1		11.9	29.5			70.2			70.2	
Effective Green, g (s)	6.5	24.1		11.9	29.5			70.2			70.2	
Actuated g/C Ratio	0.05	0.20		0.10	0.25			0.59			0.59	
Clearance Time (s)	4.6	4.6		4.6	4.6			4.6			4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0			2.0			2.0	
Lane Grp Cap (vph)	95	368		175	453			926			575	
v/s Ratio Prot	0.01	0.12		c0.07	c0.19							
v/s Ratio Perm								0.46			c0.57	
v/c Ratio	0.20	0.62		0.67	0.76			0.78			0.98	
Uniform Delay, d1	54.3	43.8		52.2	42.0			19.0			24.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	4.7	7.7		7.8	7.4			4.0			32.8	
Delay (s)	58.9	51.5		60.0	49.4			23.0			57.1	
Level of Service	E	D		E	D			C			E	
Approach Delay (s)		52.1			52.1			23.0			57.1	
Approach LOS		D			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.8
Intersection Capacity Utilization	105.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	15	132	235	20	428	240	306	32	15
Future Volume (vph)	0	0	0	15	132	235	20	428	240	306	32	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.6	4.6		4.6			4.6	
Lane Util. Factor					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		0.95			0.99	
Flt Protected					0.99	1.00		1.00			0.96	
Satd. Flow (prot)					1853	1583		1772			1775	
Flt Permitted					0.99	1.00		0.99			0.38	
Satd. Flow (perm)					1853	1583		1750			712	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	16	139	247	21	451	253	322	34	16
RTOR Reduction (vph)	0	0	0	0	0	207	0	20	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	155	40	0	705	0	0	370	0
Turn Type				Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases					8			2			6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)					11.9	11.9		53.1			53.1	
Effective Green, g (s)					11.9	11.9		53.1			53.1	
Actuated g/C Ratio					0.16	0.16		0.72			0.72	
Clearance Time (s)					4.6	4.6		4.6			4.6	
Vehicle Extension (s)					3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)					297	253		1252			509	
v/s Ratio Prot												
v/s Ratio Perm					0.08	0.03		0.40			c0.52	
v/c Ratio					0.52	0.16		0.56			0.73	
Uniform Delay, d1					28.5	26.8		5.0			6.3	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					1.7	0.3		1.8			8.8	
Delay (s)					30.2	27.1		6.9			15.1	
Level of Service					C	C		A			B	
Approach Delay (s)		0.0			28.3			6.9			15.1	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	74.2	Sum of lost time (s)	9.2
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	57.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	15	132	235	20	428	240	306	32	15
Future Vol, veh/h	0	0	0	15	132	235	20	428	240	306	32	15
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	139	247	21	451	253	322	34	16
Number of Lanes	0	0	0	0	1	1	0	1	0	0	1	0

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	14.4	99.7	20.8
HCM LOS	B	F	C

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	3%	10%	0%	87%
Vol Thru, %	62%	90%	0%	9%
Vol Right, %	35%	0%	100%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	688	147	235	353
LT Vol	20	15	0	306
Through Vol	428	132	0	32
RT Vol	240	0	235	15
Lane Flow Rate	724	155	247	372
Geometry Grp	2	7	7	2
Degree of Util (X)	1.132	0.308	0.447	0.649
Departure Headway (Hd)	5.629	7.58	6.808	6.549
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	645	477	532	554
Service Time	3.652	5.28	4.508	4.549
HCM Lane V/C Ratio	1.122	0.325	0.464	0.671
HCM Control Delay	99.7	13.6	14.9	20.8
HCM Lane LOS	F	B	B	C
HCM 95th-tile Q	22.5	1.3	2.3	4.7



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	319	683	601	496	286	180	1357	614	389	2320	82
v/c Ratio	1.22	1.00	1.32	1.52	0.78	1.35	0.90	0.69	0.94	1.39	0.10
Control Delay	173.5	84.9	201.3	286.4	47.9	244.4	43.7	15.7	88.0	207.3	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	173.5	84.9	201.3	286.4	47.9	244.4	43.7	15.7	88.0	207.3	6.1
Queue Length 50th (ft)	~328	298	~336	~582	149	~198	550	163	170	~1366	6
Queue Length 95th (ft)	#518	#433	#454	#799	#283	#349	657	308	#267	#1497	35
Internal Link Dist (ft)		250		609			888			1305	
Turn Bay Length (ft)	225		115		65	195		205	205		65
Base Capacity (vph)	262	684	456	326	365	133	1513	889	414	1674	784
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	1.00	1.32	1.52	0.78	1.35	0.90	0.69	0.94	1.39	0.10

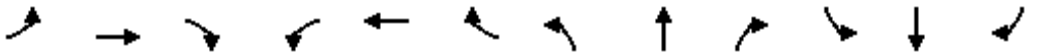
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

17: Woodside Road & Middlefield Road

Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	300	527	115	565	466	269	169	1276	577	366	2181	77
Future Volume (vph)	300	527	115	565	466	269	169	1276	577	366	2181	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3444		3433	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3444		3433	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	319	561	122	601	496	286	180	1357	614	389	2320	82
RTOR Reduction (vph)	0	14	0	0	0	87	0	0	212	0	0	36
Lane Group Flow (vph)	319	669	0	601	496	199	180	1357	402	389	2320	46
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)	19.3	25.3		17.3	22.8	22.8	9.8	55.6	55.6	15.7	61.5	61.5
Effective Green, g (s)	19.3	25.3		17.3	22.8	22.8	9.8	55.6	55.6	15.7	61.5	61.5
Actuated g/C Ratio	0.15	0.19		0.13	0.18	0.18	0.08	0.43	0.43	0.12	0.47	0.47
Clearance Time (s)	3.7	3.7		3.7	4.2	4.2	3.2	5.5	5.5	3.2	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	262	670		456	326	277	133	1513	677	414	1674	748
v/s Ratio Prot	0.18	0.19		c0.18	c0.27		c0.10	0.38		c0.11	c0.66	
v/s Ratio Perm						0.13			0.25			0.03
v/c Ratio	1.22	1.00		1.32	1.52	0.72	1.35	0.90	0.59	0.94	1.39	0.06
Uniform Delay, d1	55.4	52.3		56.4	53.6	50.6	60.1	34.5	28.5	56.7	34.2	18.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	127.4	34.0		157.9	249.8	8.5	200.2	7.4	1.4	29.0	177.4	0.0
Delay (s)	182.8	86.3		214.3	303.4	59.1	260.3	41.9	29.9	85.7	211.7	18.6
Level of Service	F	F		F	F	E	F	D	C	F	F	B
Approach Delay (s)		117.0			214.1			56.8			188.5	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	144.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	125.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **El Camino Real** NB SB # OF APPROACH LANES: **3**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	3,350	131		Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	3,552	227		Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	6,902	358		2	1	**1**	2	2	**2**	2	2	**2**	2	2	**2**	**2**	**2**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **FranklinStreet / Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				→		**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	387	160			Y			Y			Y			Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	581	99						Y		Y				Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			968	259		0	1	**0**	0	2	**0**	1	1	**0**	0	2	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	372	148						Y			Y			Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	297	204			Y			Y			Y			Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	669	352		0	1	**0**	0	2	**0**	0	2	**0**	0	2	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Chestnut Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				→		**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	509	128						Y		Y	Y	**Y**		Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	629	178		Y	Y	**Y**		Y		Y	Y	**Y**		Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			1,138	306		1	1	**1**	0	2	**0**	2	2	**2**	0	2	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Elm Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Private Driveway** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	178	17															
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	99	100						Y						Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	277	117		0	0	**0**	0	1	**0**	0	0	**0**	0	1	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	301	357			Y			Y			Y			Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	195	457			Y			Y			Y			Y		**Y**	
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	496	814		0	2	**0**	0	2	**0**	0	2	**0**	0	2	**0**	**1**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	697	19		Y						Y			Y				
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	914	60		Y			Y			Y			Y	Y	**Y**		
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,611	79		2	0	**0**	1	0	**0**	2	0	**0**	2	1	**1**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	662	189		Y	Y	**Y**		Y		Y	Y	**Y**	Y	Y	**Y**		
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	941	161		Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,603	350		2	2	**2**	1	2	**1**	2	2	**2**	2	2	**2**	**1**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Pine Street / SR 84** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	633	524		Y	Y	**Y**		Y		Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	797	377		Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	1,430	901		2	2	**2**	1	2	**1**	2	2	**2**	2	2	**2**	**2**	**2**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **El Camino Real** NB SB # OF APPROACH LANES: **3**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	3,386	133		Y			Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	3,569	241		Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	6,955	374		2	1	**1**	2	2	**2**	2	2	**2**	2	2	**2**	**2**	**2**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **FranklinStreet / Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	387	160			Y			Y			Y			Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	581	99						Y		Y				Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	968	259		0	1	**0**	0	2	**0**	1	1	**0**	0	2	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	412	157			Y			Y		Y	Y	**Y**		Y			
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	304	265			Y			Y			Y			Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	716	422		0	2	**0**	0	2	**0**	1	2	**1**	0	2	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Chestnut Street** EB WB # OF APPROACH LANES: **2**

MINOR STREET: **Lathrop Street** NB SB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				→		**600**	**150**		**900**	**75**		**480**	**120**		**720**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	518	128						Y		Y	Y	**Y**		Y			
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	631	196		Y	Y	**Y**		Y		Y	Y	**Y**		Y			
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			1,149	324		1	1	**1**	0	2	**0**	2	2	**2**	0	2	**0**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Elm Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Private Driveway** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
				MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM TO 07:30 AM																	
07:30 AM TO 08:30 AM	268	17															
08:30 AM TO 09:30 AM																	
09:30 AM TO 10:30 AM																	
10:30 AM TO 11:30 AM																	
11:00 AM TO 12:00 PM																	
12:30 PM TO 01:30 PM																	
01:30 PM TO 02:30 PM																	
02:30 PM TO 03:30 PM																	
03:30 PM TO 04:30 PM																	
04:30 PM TO 05:30 PM																	
05:30 PM TO 06:30 PM	115	81						Y						Y			
06:30 PM TO 07:30 PM																	
07:30 PM TO 08:30 PM																	
08:30 PM TO 09:30 PM																	
09:30 PM TO 10:30 PM																	
	383	98		0	0	**0**	0	1	**0**	0	0	**0**	0	1	**0**	**0**	**0**
				8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
				NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Maple Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				→		**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	301	381			Y			Y			Y			Y		**Y**	
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	195	462			Y			Y			Y			Y		**Y**	
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			496	843		0	2	**0**	0	2	**0**	0	2	**0**	0	2	**0**	**2**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Elm Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				→		**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	739	25		Y						Y			Y				
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	935	95		Y			Y	Y	**Y**	Y			Y	Y	**Y**		
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			1,674	120		2	0	**0**	1	1	**1**	2	0	**0**	2	1	**1**	**0**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

10/30/18
Kimley-Horn and Associates

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Main Street** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Beech Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES				→		**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	703	192		Y	Y	**Y**		Y		Y	Y	**Y**	Y	Y	**Y**	**Y**	
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	980	175		Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			1,683	367		2	2	**2**	1	2	**1**	2	2	**2**	2	2	**2**	**2**	**0**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**NOT SATISFIED**

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TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2010 MUTCD)

MAJOR STREET: **Pine Street / SR 84** NB SB # OF APPROACH LANES: **1**

MINOR STREET: **Main Street** EB WB # OF APPROACH LANES: **1**

CITY, STATE: **Redwood City, California**

COMMENTS: **Cumulative Plus Project Conditions (Lathrop Closure)**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N) **N**
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N) **N**

			MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	Ped Count CROSSING MAJOR ST	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
						MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
THRESHOLD VALUES						**500**	**150**		**750**	**75**		**400**	**120**		**600**	**60**		**60**	**75**
06:30 AM	TO	07:30 AM																	
07:30 AM	TO	08:30 AM	640	548		Y	Y	**Y**		Y		Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
08:30 AM	TO	09:30 AM																	
09:30 AM	TO	10:30 AM																	
10:30 AM	TO	11:30 AM																	
11:00 AM	TO	12:00 PM																	
12:30 PM	TO	01:30 PM																	
01:30 PM	TO	02:30 PM																	
02:30 PM	TO	03:30 PM																	
03:30 PM	TO	04:30 PM																	
04:30 PM	TO	05:30 PM																	
05:30 PM	TO	06:30 PM	801	382		Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	Y	Y	**Y**	**Y**	**Y**
06:30 PM	TO	07:30 PM																	
07:30 PM	TO	08:30 PM																	
08:30 PM	TO	09:30 PM																	
09:30 PM	TO	10:30 PM																	
			1,441	930		2	2	**2**	1	2	**1**	2	2	**2**	2	2	**2**	**2**	**2**
						8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
						NOT SATISFIED			**NOT SATISFIED**			**NOT SATISFIED**						**NOT SATISFIED**	**SATISFIED**

10/30/18
Kimley-Horn and Associates

1180 1190 Main Street Queuing Summary
(Lathrop Street Closure)

Scenarios Analyzed	Turning Movement	El Camino Real												Lathrop Street										Main Street												Middlefield Road						Woodside Rd								
		Jefferson Ave #1			Maple St #2			Beech St #3			Chestnut St #4			Maple Street #5			Elm Street #6			Beech St #7			Chesnut St #8			Maple St #10			Elm St #11			Beech St #12			Chestnut St #13			Pine St #14			Main St #15			Chestnut St #16			Middlefield Rd #17			Bay Rd #18			Broadway #19		
		Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM	Link	AM	PM
Cumulative Alt Traffic	EBL	200	**446**	**369**										45	5	10																	50	27	29							50	29	15	225	**424**	**528**				375	**474**	**845**
	EBR	60	**226**	**90**																																														
	WBL	90	69	**131**																													120	56	101							60	83	**124**	115	**311**	**394**				70	**345**	**452**
	WBR				90	39	60																																	115	20	0				65	**417**	**273**				115	**700**	**1107**
	NBL	165	**315**	**400**																																			90	86	**275**	85	36	68	195	**267**	**325**	160	142	166	180	131	180
	NBR	190	71	83	50	15	39																																				205	**240**	**287**						
	SBL	220	**286**	**355**	120	78	57	90	80	33	50	**197**	**146**													40	45	28												95	57	82	80	84	**138**	205	222	**278**	175	**734**	**436**	140	**818**	**422**
	SBR	160	69	130																																			45	37	**91**				65	53	21						
	SEL																																															220	**902**	**897**
Cumulative Alt + Project Traffic	EBL	200	**446**	**369**										45	10	10																	50	27	29							50	30	15	225	**431**	**565**				375	**474**	**849**
	EBR	60	**246**	**92**																																														
	WBL	90	69	**131**																													120	56	101							60	**87**	**124**	115	**311**	**394**				70	**350**	**452**
	WBR				90	39	60																																	115	20	0				65	**417**	**273**				115	**700**	**1107**
	NBL	165	**320**	**428**																																			90	88	**282**	85	36	68	195	**267**	**325**	160	134	166	180	131	180
	NBR	190	70	81	50	16	41																																				205	**240**	**287**						
	SBL	220	**286**	**355**	120	78	58	90	95	35	50	**210**	**151**													40	50	30												95	57	82	80	84	**138**	205	222	**278**	175	**734**	**436**	140	**818**	**422**
	SBR	160	69	130																																			45	37	**91**				65	55	21						
	SEL																																															220	**911**	**898**

Queues that exceed the available storage are shown in**BOLD** and are shaded.
Queues that are a significant impact are shown in red and **BOLD** and are shaded.

Appendix I TDM PLAN

.

Transportation Demand Management (TDM) Plan
1180/1190 Main St, Redwood City, CA



Prepared For: Premia, LLC
801 Hamilton Street
Redwood City, CA 94063

Prepared By: SANDIS
636 9th Street
Oakland, CA 94607
(510) 873-8866
February 26, 2018
Revised May 4, 2018

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Section 1 – Introduction and Project Description

This report introduces the Transportation Demand Management (TDM) plan for the commercial development located at 1180/1190 Main Street. A vicinity map can be found on Figure 1.

The proposed project site includes a 1.312 Acre (57,111 Square Feet) lot with no existing uses. The proposed development will consists of a new three story building purposed for general office space with 110,000 Gross Square Feet (GSF) of floor area . A site plan can be found on Figure 2A and the ground floor plan on Figure 2B.

Trip Generation Estimates

Vehicle trip generation estimates are calculated to provide the number of anticipated vehicle trips (employees, deliveries, visitors, etc.) that are produced by the project site's specific land use during a specified time period. The number of vehicle trips generated by the project site was estimated using trip generation rates for a general office use facility (ITE Land Use 710 – General Office) published in the Institute of Transportation Engineers' (ITE), *Trip Generation, 9th Edition (2012).*

The estimated number of vehicle trips for the proposed project site after a transit credit is applied is forecast to be 191 AM peak hour trips and 190 PM peak hour trips. The complete details of the trip generation calculation can be found in Table 1.

Trip Reduction Goals

The goal of this TDM plan is to identify trip reduction methods to be implemented in order to reduce the number of new AM and PM peak hour single occupant vehicle (SOV) trips by shifting at least 60% of the total project trips to alternative modes of transportation.

Table 1 - Trip Generation Table

Use	Size/ Unit	AM Peak Hour			PM Peak Hour		
		Factor	Trips In/Out	Total Trips	Factor	Trips In/Out	Total Trips
Proposed Project							
General Office Building (710)	110 ksf	(1)	181/25	206	(1)	34/168	202
Total			181/25	206		34/168	202
Transit Credit		(2)	(13/2)	(15)	(2)	(2/10)	(12)
Project Traffic			168/23	191		32/158	190
Existing Conditions							
Existing Traffic			0/0	0		0/0	0
Net Project Related Trip Generation							
			+168/+23	**+191**		**+32/+158**	**+190**
TDM Plan Peak Hour Trip Reduction		(3)	(168/23)	(191)	(3)	(32/159)	(191)
Anticipated Project Peak Hour Trips with TDM Plan							
			0/0	**0**		**0/-1**	**-1**

(1) Trip Generation, General Office Building (710), Institute of Transportation Engineers, 9th Edition
AM: Ln(t) = 0.8Ln(x) + 1.57 @ 88%/12%, PM: T = 1.12(X) + 78.45 @ 17%/83%
(2) Transit Reduction Rate, 7.3% AM/6% PM. Table 9.7; Downtown Precise Plan DEIR, August 2010
(3) Trip Reduction Credit Resulting from TDM Design Measures

Figure 1

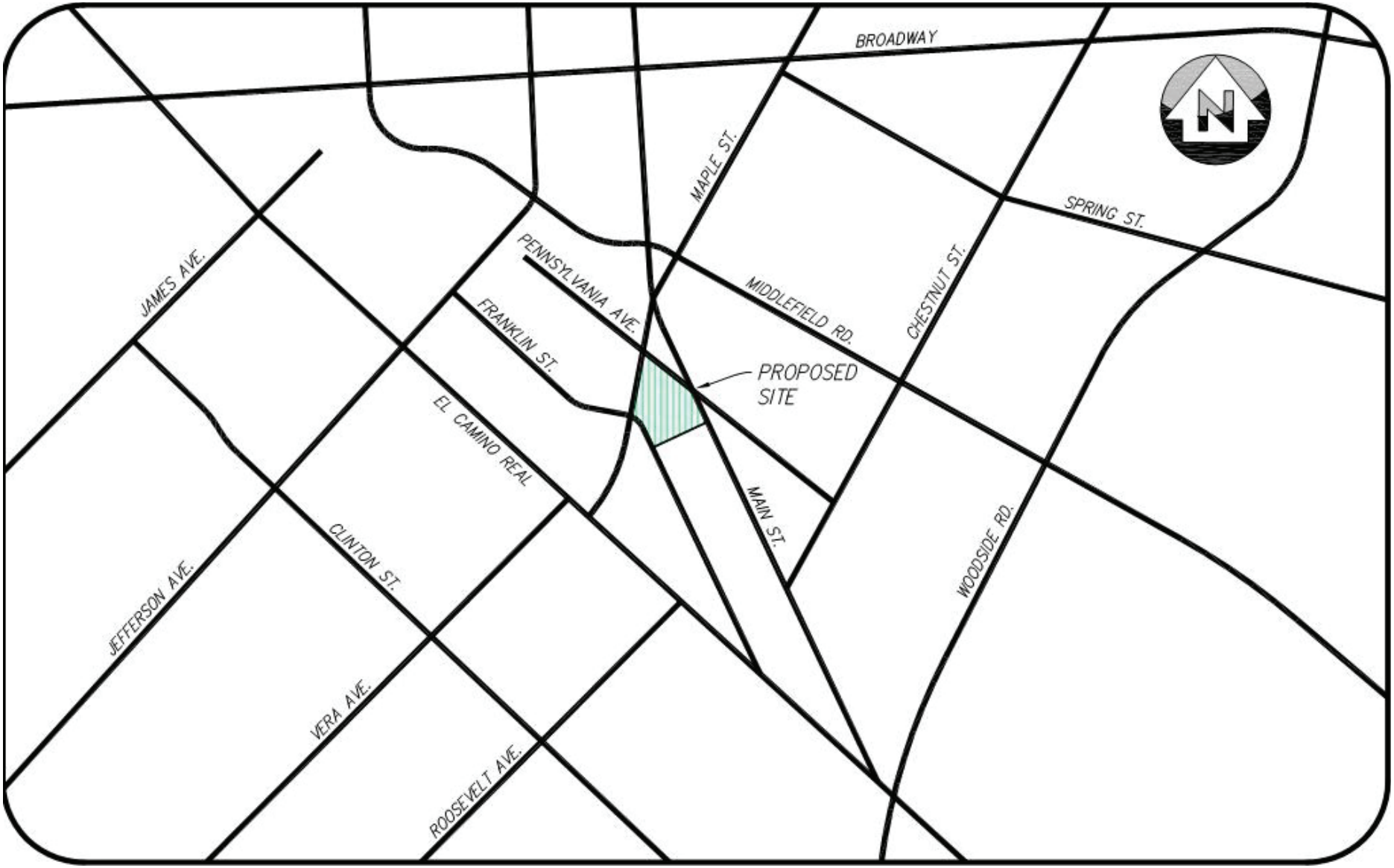
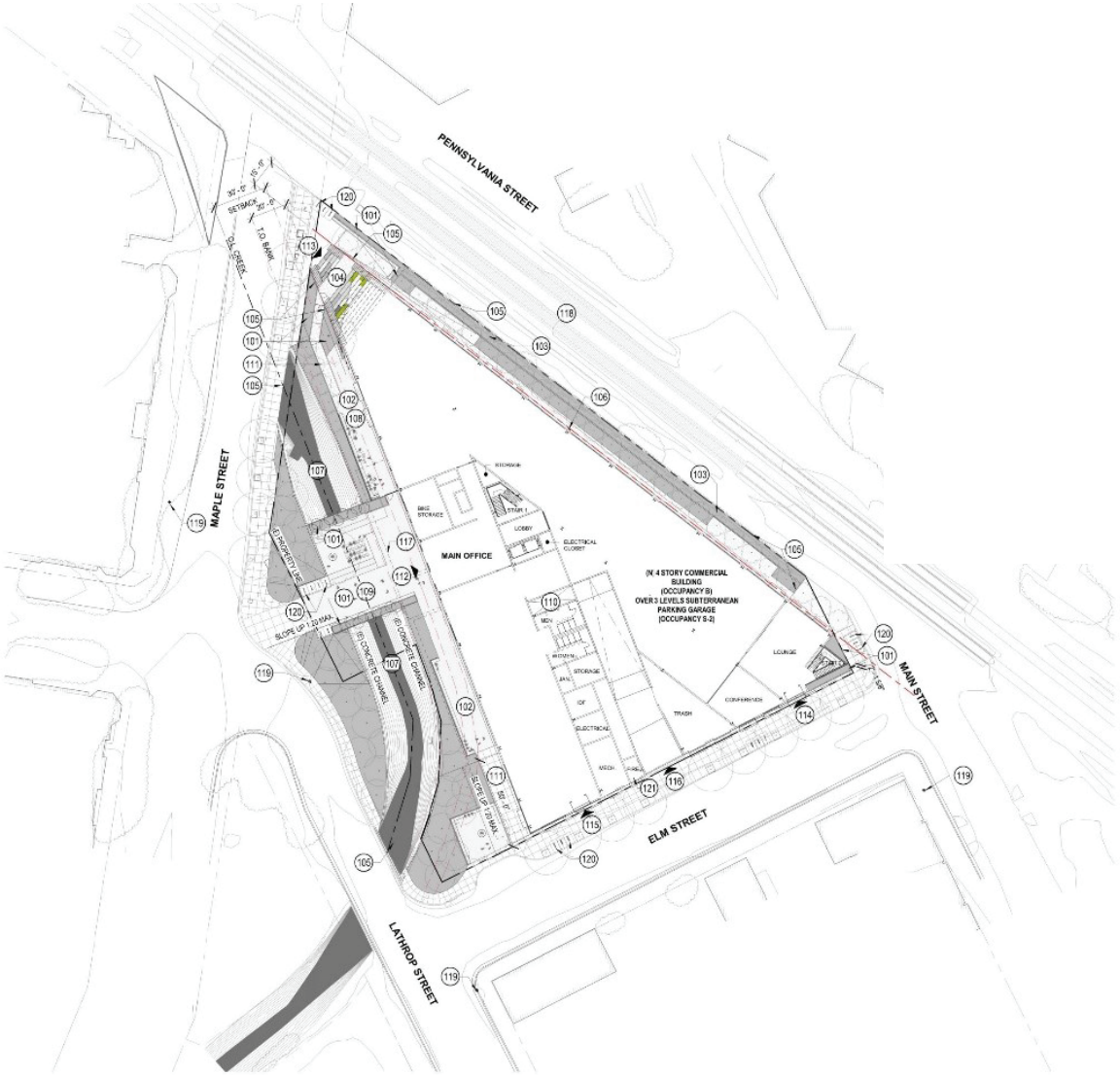

BROADWAY
MAPLE ST.
SPRING ST.
JAMES AVE.
PENNSYLVANIA AVE.
MIDDLEFIELD RD.
CHESTNUT ST.
FRANKLIN ST.
PROPOSED SITE
EL CAMINO REAL
MAIN ST.
WOODSIDE RD.
CLINTON ST.
JEFFERSON AVE.
VERA AVE.
ROOSEVELT AVE.
N

Figure 2


PENNSYLVANIA STREET
MAPLE STREET
MAIN OFFICE
(N 4 STORY COMMERCIAL BUILDING (OCCUPANCY B) OVER 3 LEVELS SUBTERRANEAN PARKING GARAGE (OCCUPANCY S-2)
MAIN STREET
ELM STREET
LATHROP STREET
SETBACK
T.O. BANK
OIL CREEK
PROPERTY LINE
CONCRETE CHANNEL
SLOPE UP 1:2 MAX.
SLOPE UP 1:1 MAX.
LOBBY
ELECTRICAL CLOSET
LOUNGE
TRASH
STORAGE
MEN
WOMEN
ELECTRICAL
MECH

Section 2 – Existing Transportation Facilities and Services

The following transportation facilities provide alternate modes of transportation to the conventional single-occupant vehicle (SOV):

- Commuter Rail
- SamTrans
- Pedestrian Facilities

This section discusses the existing and planned facilities located in proximity to 1180 Main Street. Schedules for transit systems in the area are subject to change and can be found at: http://www.samtrans.com/schedulesandmaps.html

A local transit map and the surrounding networks can be found on Figure 3.

Commuter Rail – CALTRAIN

Caltrain provides intercity commuter rail service between Santa Clara County, San Mateo County and San Francisco County. Currently, there is one Caltrain Stations located in proximity to 1180 Main Street — the Redwood City Station.

The Redwood City station is located approximately 0.27 miles from the project site. This close proximity provides convenient transit access to and from the project site for users. The station is also equipped with 18 bike racks and 50 bike lockers which are available through a rental agreement.

Redwood City Caltrain Station Schedule

Northbound Weekdays

5:09,
5:44, 6:30, 6:45, 6:51*, 7:30, 7:45*, 7:51*, 8:33, 8:45*, 8:51*, 9:23, 9:54, 10:29, 10:54, 11:49,* **12:49, 1:49, 2:54, 3:19, 3:46, 4:25*, 4:31*, 4:52, 5:25*, 5:33*, 5:53, 6:25*, 6:31*, 6:52, 7:19, 7:29, 8:09, 9:09, 10:09, 11:09**

Southbound Weekdays

5:45,
6:15, 6:51, 7:14, 7:20*, 7:30, 8:14, 8:20, 8:30, 9:14, 9:20, 9:30, 9:57, 10:19, 10:57, 11:57,* **12:57, 1:57, 2:57, 3:19, 3:57, 4:19, 5:08, 5:24*, 5:30*, 6:08, 6:24*, 6:30*, 7:08, 7:24*, 7:30*, 8:20, 9:30, 10:30, 11:30,** *12:51*

am - italics | **pm - bold**
yellow - limited-stop | red - baby bullet

Samtrans Bus Routes

The project site area is serviced by San Mateo County Transit District (SamTrans) with provides access through San Mateo County and to San Francisco County as well as Santa Clara county. Detailed information on services and routes can be found at: http://www.samtrans.com/schedulesandmaps.html

Pedestrian Facilities

The nearby pedestrian facilities are comprised of sidewalks, warning devices and signals, crosswalks, and trails. The area has an extensive pedestrian facility network that provide access to local transit facilities as well as local commercial areas. However, currently no sidewalk exists along the project frontage on Maple St and Lathrop St. This project will install new sidewalks along Maple St and Lathrop St frontage

to encourage walking trips over vehicle trips and improve pedestrian connectivity for the area as a whole.

Bicycle Facilities

The nearby bicycle infrastructure is comprised of Class II bike facilities. Currently, there are Class II bicycle lanes located on Middlefield Rd and Maple St. These existing facilities provide access to local transit facilities as well as local commercial areas. The existing bicycle facilities are shown on figure 4.

Figure 3

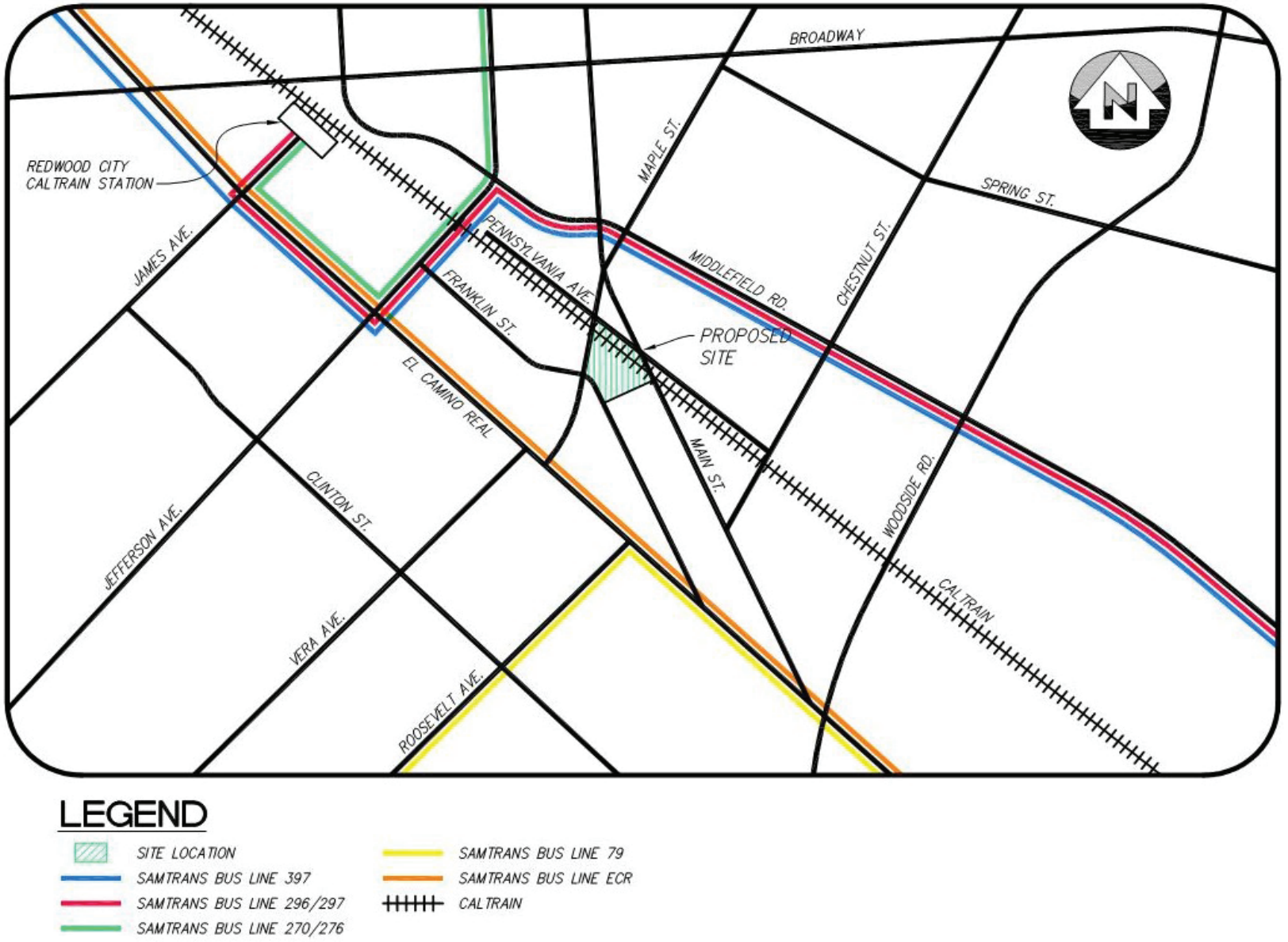
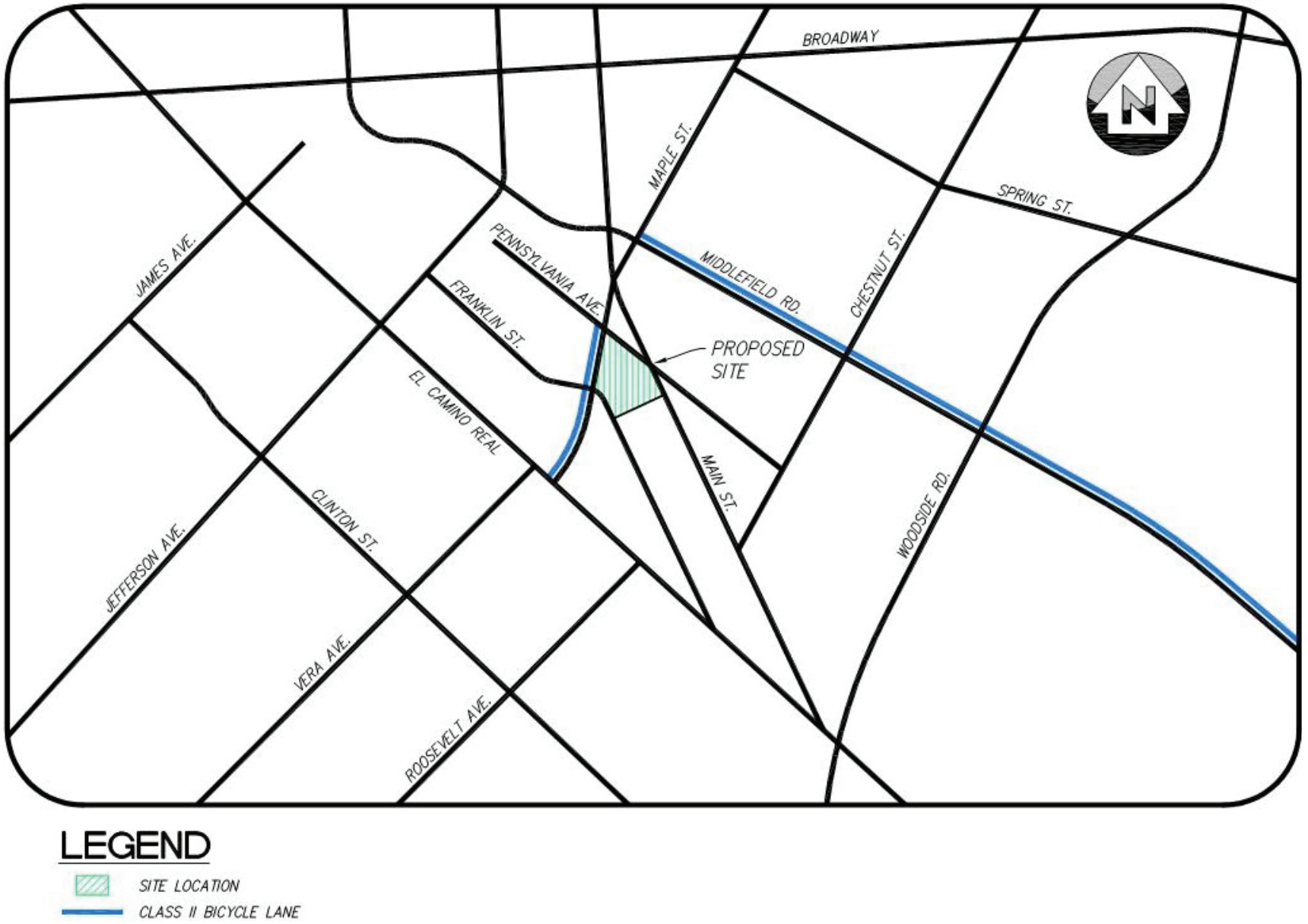

BROADWAY
REDWOOD CITY CALTRAIN STATION
MAPLE ST.
SPRING ST.
JAMES AVE.
PENNSYLVANIA AVE.
MIDDLEFIELD RD.
CHESTNUT ST.
FRANKLIN ST.
PROPOSED SITE
EL CAMINO REAL
MAIN ST.
WOODSIDE RD.
CLINTON ST.
JEFFERSON AVE.
CALTRAIN
VERA AVE.
ROOSEVELT AVE.
LEGEND
SITE LOCATION
SAMTRANS BUS LINE 397
SAMTRANS BUS LINE 296/297
SAMTRANS BUS LINE 270/276
SAMTRANS BUS LINE 79
SAMTRANS BUS LINE ECR
CALTRAIN

Figure 4


BROADWAY
MAPLE ST.
SPRING ST.
JAMES AVE.
PENNSYLVANIA AVE.
MIDDLEFIELD RD.
CHESTNUT ST.
FRANKLIN ST.
PROPOSED SITE
EL CAMINO REAL
MAIN ST.
WOODSIDE RD.
CLINTON ST.
JEFFERSON AVE.
VERA AVE.
ROOSEVELT AVE.
LEGEND
SITE LOCATION
CLASS II BICYCLE LANE

Section 3 – Potential TDM Design Measures and Programs

The San Mateo County Association of Governments (C/CAG) has developed a list of TDM design measures that are defined in the "Guidelines for Implementing the Land Use Component of the Congestion Management Program". Table 2 provides a summary of potential measures as defined in the TDM Guidelines. The TDM plan for 1180/1190 Main Street includes applicable measures from the above mentioned list, as well as other current state of the practice approaches. Section 4 of this TDM lists the specific measures that will be implemented at 1180/1190 Main Street.

Table 2 - C/CAG TDM Design Measures

C/CAG TDM Measures		
Transportation Demand Management Measure	**Number of Trips Credited**	**Rationale**
Secure bicycle storage	One peak hour trip will be credited for every 3 new bike lockers/racks installed and maintained. Lockers/racks must be installed within 100 feet of the building.	Experience has shown that bicycle commuters will average using this mode onethird of the time, especially during warmer summer months.
Showers and changing rooms.	Ten peak hour trips will be credited for each new combination shower and changing room installed. An additional 5 peak hour trips will be credited when installed in combination with at least 5 bike lockers	10 to 1 ratio based on cost to build and the likelihood that bicycle utilization will increase.
Operation of a dedicated shuttle service during the peak period to a rail station or an urban residential area. Alternatively the development could buy into a shuttle consortium.	One peak hour trip will be credited for each peak-hour round trip seat on the shuttle. Increases to two trips if a Guaranteed Ride Home Program is also in place. Five additional trips will be credited if the shuttle stops at a child-care facility enroute to/from the worksite.	Yields a one-to-one ratio (one seat in a shuttle equals one auto trip reduced); utilization increases when a guaranteed ride home program is also made available.
Charging employees for parking.	Two peak hour trips will be credited for each parking spot charged out at $20 per month for one year. Money shall be used for TDM measures such as shuttles or subsidized transit tickets.	Yields a two-to-one ratio

C/CAG TDM Measures		
Subsidizing transit tickets for employees.	One peak hour trip will be credited for each transit pass that is subsidized at least $20 per month for one year. One additional trip will be credited if the subsidy is increased to $75 for parents using transit to take a child to childcare enroute to work.	Yields a one-to-one ratio (one transit pass equals one auto trip reduced).
Subsidizing pedestrians/bicyclists who commute to work.	One peak hour trip will be credited for each employee that is subsidized at least $20 per month for one year.	Yields a one-to-one ratio (One pedestrian/bicyclist equals one auto trip reduced.
Creation of preferential parking for carpoolers.	Two peak hour trips will be credited for each parking spot reserved.	Yields a two-to-one ratio (one reserved parking spot equals a minimum of two auto trips reduced).
Creation of preferential parking for vanpoolers.	Seven peak hour trips will be credited for each parking spot reserved.	Yields a seven-to-one ratio (one reserved parking spot equals a minimum of seven auto trips reduced).
Implementation of a vanpool program.	Seven peak hour trips will be credited for each vanpool arranged by a specific program operated at the site of the development.Increases to ten trips if a Guaranteed Ride Home Program is also in place.	The average van capacity is seven
Operation of a commute assistance center, offering on site, one stop shopping for transit and commute alternatives information, preferably staffed with a live person to assist building tenants with trip planning.	One peak hour trip will be credited for each feature added to the information center; and an additional one peak hour trip will be credited for each hour the center is staffed with a live person,up to 20 trips per each 200 tenants. Possible features may include: Transit information, brochure rack, Computer kiosk connected to Internet, Telephone (with commute and transit information numbers), Desk and chairs (for personalized trip planning), On-site transit ticket sales, Implementation of flexible work hour schedules that allow transit riders to be 15-30 minutes late or early (due to problems with transit or vanpool), Quarterly educational programs to support commute alternatives.	This is based on staff's best estimate. Short of there being major disincentives to driving, having an on-site TDM program offering commute assistance is fundamental to an effective TDM program.

C/CAG TDM Measures		
Survey Employees to examine use and best practices.	Three peak hour trips will be credited for a survey developed to be administered twice yearly	This is based on staff's best estimate with the goal of finding best practices to achieve the mode shift goal.
Implementation of a parking cash out program.	One peak hour trip will be credited for each parking spot where the employee is offered a cash payment in return for not using parking at the employment site.	Yields a one-to-one ratio (one cashed out parking spot equals one auto trip reduced.
Implementation of ramp metering.	Three hundred peak hour trips will be credited if the local jurisdiction in cooperation with CalTrans, installs and turns on ramp metering lights during the peak hours at the highway entrance ramp closest to the development.	This is a very difficult and costly measure to implement and the reward must be significant.
Installation of high bandwidth connections in employees' homes to the Internet to facilitate home telecommuting	One peak hour trip will be credited for every three connections installed. This measure is not available as credit for a residential development.	Yields a one-to-three ratio.
Installation of video conferencing centers that are available for use by the tenants of the facility.	Five peak hour trips will be credited for a center installed at the facility.	This is based on staff's best estimate.
Implementation of a compressed workweek program.	One peak hour trip will be credited for every 5 employees that are offered the opportunity to work four compressed days per week.	The workweek will be compressed into 4 days; therefore the individual will not be commuting on the 5th day.
Flextime: Implementation of an alternate hours workweek program.	One peak hour trip will be credited for each employee that is offered the opportunity to work staggered work hours. Those hours can be a set shift set by the employer or can be individually determined by the employee.	This is based on staff's best estimate.
Provision of assistance to employees so they can live close to work.	If an employer develops and offers a program to help employees find acceptable residences within five miles of the employment site, a credit of one trip will be given for each slot in the program.	This assumes that a five-mile trip will generally not involve travel on the freeways.

C/CAG TDM Measures		
Implementation of a program that gives preference to hiring local residents at the new development site.	One peak hour trip will be credited for each employment opportunity reserved for employees recruited and hired from within five miles of the employment site.	This assumes that a five-mile trip will generally not involve travel on the freeways.
Provision of on-site amenities/accommodations that encourage people to stay on site during the workday, making it easier for workers to leave their automobiles at home.	Five peak hour trips will be credited for each feature added to the job site. Possible features may include: banking grocery shopping clothes cleaning exercise facilities child care center	This is based on staff's best estimate.
Provide use of motor vehicles to employees who use alternate commute methods so they can have access to vehicles during breaks for personal use.	Five peak hour trips will be credited for each vehicle provided.	This is based on staff's best estimate.
Provide use of bicycles to employees who use alternate commute methods so they can have access to bicycles during breaks for personal use.	One peak hour trip will be credited for every four bicycles provided.	This is based on staff's best estimate.
Provision of child care services as a part of the development	One trip will be credited for every two child care slots at the job site.This amount increases to one trip for each slot if the child care service accepts multiple age groups (infants=0-2yrs, preschool=3&4 yrs, school-age=5 to 13 yrs).	This is based on staff's best estimate.
Developer/property owner may join an employer group to expand available child care within 5 miles of the job site or may provide this service independently	One trip will be credited for each new child care center slot created either directly by an employer group, by the developer/property owner, or by an outside provider if an agreement has been developed with the developer/property owner that makes the child care accessible to the workers at the development.	This is based on staff's best estimate.

C/CAG TDM Measures		
Join the Alliance's guaranteed ride home program.	Two peak hour trips will be credited for every 2 slots purchased in the program.	Experience shows that when a Guaranteed Ride Home Program is added to a TDM program, average ridership increases by about 50%.
Combine any ten of these elements and receive an additional credit for five peak hour trips.	Five peak hour trips will be credited.	Experience has shown that offering multiple and complementary TDM components can magnify the impact of the overall program.
Work with the Alliance to develop/ implement a Transportation Action Plan.	Ten peak hour trips will be credited.	This is based on staff's best estimate.
The developer can provide a cash legacy after the development is complete and designate an entity to implement any (or more than one) of the previous measures before day one of occupancy.	Peak hour trip reduction credits will accrue as if the developer was directly implementing the items.	Credits accrue depending on what the funds are used for.
Encourage infill development.	Two percent of all peak hour trips will be credited for each infill development.	Generally acceptable TDM practices (based on research of TDM practices around the nation and reported on the Internet).
Encourage shared parking.	Five peak hour trips will be credited for an agreement with an existing development to share existing parking.	Generally acceptable TDM practices (based on research of TDM practices around the nation and reported on the Internet).
Participate in/create/sponsor a Transportation Management Association.	Five peak hour trips will be credited.	Generally acceptable TDM practices (based on research of TDM practices around the nation and reported on the Internet).
Coordinate Transportation Demand Management programs with existing developments/employers.	Five peak hour trips will be credited.	This is based on staff's best estimate.
For employers with multiple job sites, institute a proximate commuting program that allows employees at one location to transfer/trade with employees in another location that is closer to their home.	One peak hour trip will be credited for each opportunity created.	Yields a one-to-one ratio.

C/CAG TDM Measures		
Pay for parking at park and ride lots or transit stations.	One peak hour trip will be credited for each spot purchased.	Yields a one-to-one ratio.

Section 4 – Designated TDM Measures and Programs

C/CAG TDM Measures

The following table 3 includes measures that are either incorporated into the project site design by the developer or will be implemented by the tenant(s), and required by the leasing agreement, following occupancy of the new building.

Table 3

TDM Measure	Trip Credit	Party Responsible for Implementation
Secure bicycle storage	The project will provide 72 long term bicycle parking units and 26 short term bicycle parking units. This results in a reduction of 33 peak hour trips	Developer
Showers and Changing room	The project will provide 2 shower/changing room facilities. This results in a reduction of 30 peak hour trips when installed in conjunction with 5 or more in-unit bike storage spaces per shower/changing room facility.	Developer
Subsidizing transit tickets for employees.	The project will provide transit subsidies of $20/month to a minimum of 87 employees. This results in a reduction of 87 peak hour trips.	Tenant
Creation of preferential parking for carpoolers.	The project will provide 16 preferential carpool parking stalls. This results in a reduction of 32 peak hour trips	Developer
Provision of on-site amenities/accommodations that encourage people to stay on site	The project will provide an onsite cafe. This results in a reduction of 5 peak hour trips.	Developer
Infill Development	The project is considered infill development. This results in a reduction of 4 peak hour trips	NA

The number of trip reductions resulting from the implemented measures above totals to 191 peak hour trips.

Additional TDM Measures

In addition to the measures listed in table 3 from the C/CAG design guide, the following measures will also be implemented to help reduce SOV trips.

Loading Area

The site design includes a designated loading area. This will facilitate the efficient pick up and drop off of passengers. This encourages multiple vehicle occupancy and thus has the potential to reduce overall single occupancy vehicle trips.

Bike Share

The project is open to partnering with a local bike share service if such an opportunity arises in the future.

Onsite TDM Information Location

The project will have a designated location onsite where TDM information will be available to the employees/tenants. This will increase TDM awareness and will improve the overall effectiveness of this TDM.

Parking Occupancy Monitoring and Public Access

The project will make a reasonable effort to provide parking occupancy monitoring systems where practical. This may reduce congestion around the parking entrance by alerting drivers when the parking lot is already at capacity. The project will work with the city to identify solutions to maintain effective public access to the parking facility.

Section 5 – Evaluation

The purpose of this TDM plan is to reduce the overall vehicle trips and decrease the traffic impact resulting from the proposed development.

Annual TDM Report and Survey

An annual TDM survey, prepared by the City of Redwood city, shall be distributed to the employees/tenants by the owner/ property manager. A response rate of 51% must be achieved by the

survey in order to be considered compliant. After completing the survey an annual report shall be prepared and submitted to the city of Redwood City. The report shall include results of the survey, driveway counts, parking utilization rates, and discussion of the utilization of the TDM measures and awareness of the TDM programs. This report must be submitted on an annual basis to the City of Redwood City.

Modifications to the TDM Program

The TDM plan should be considered a living document with the primary goal of reducing SOV trips. As techniques and programs change and/or advance, the TDM plan should be revised accordingly.

Participation in Transportation Management Association

The project/tenant will make a reasonable effort to participate in a Transportation Management Association if one is formed for project's region in the future.

Section 6 – Summary

This TDM plan has been produced for the use at 1180/1190 Main Street. Multiple design and program measures were presented to facilitate the use of alternate modes of transportation, including transit, carpooling, bicycling, and walking.

This TDM plan is anticipated to achieve a reduction of 191 peak hour trips resulting in 0 net new AM peak hour trips and -1 net new PM peak hour trips; however, actual trip volumes shall be monitored and TDM measures may be adjusted as a result.