Draft Initial Study and Notice of Intent to Adopt a Mitigated Negative Declaration for the La Serna Townhomes Single-Family Attached Condominium Project in the City of Whittier, County of Los Angeles, California

Lead Agency:
City of Whittier
13230 Penn Street
Whittier, CA 90602-1772

March 2, 2022

- This document is designed for double-sided printing -

Table of Contents

1 Introduction 1
1.1 – Purpose of CEQA 1
1.2 – Public Comments 2
1.3 – Availability of Materials 3
2 Project Description 4
2.1 – Project Title 4
2.2 – Lead Agency Name and Address 4
2.3 – Contact Person and Phone Number 4
2.4 – Project Location 4
2.5 – Project Sponsor's Name and Address 4
2.6 – General Plan Land Use Designation 6
2.7 – Zoning 6
2.8 – Project Description 6
2.9 – Surrounding Land Uses and Setting 10
2.10 – Required Approvals 11
2.11 – Other Public Agencies Whose Approval is Required 11
2.12 – Tribal Consultation 11
3 Determination 12
3.1 – Environmental Factors Potentially Affected 12
3.2 – Determination 12
4 Evaluation of Environmental Impacts 14
4.1 – Aesthetics 14
4.2 – Agriculture and Forest Resources 16
4.3 – Air Quality 18
4.4 – Biological Resources 25
4.5 – Cultural Resources 27
4.6 – Energy 29
4.7 – Geology and Soils 32
4.8 – Greenhouse Gas Emissions 37
4.9 – Hazards and Hazardous Materials 40
4.10 – Hydrology and Water Quality 44
4.11 – Land Use and Planning 49
4.12 – Mineral Resources 51
4.13 – Noise 52
4.14 – Population and Housing 57
4.15 – Public Services 58
4.16 – Recreation 61
4.17 – Transportation 62
4.18 – Tribal Cultural Resources 68
4.19 – Utilities and Service Systems 73
4.20 – Wildfire 77
4.21 – Mandatory Findings of Significance 78
5 References 81
5.1 – List of Preparers 81
5.2 – Persons and Organizations Consulted 81

6 Mitigation Measures..... 85

List of Figures

Figure 1	Regional Context	5
Figure 2	Vicinity Map	5

List of Tables

Table 2.9-1	Surrounding Land Uses	11
Table 4.3-1	Construction Emissions	20
Table 4.3-2	Operational Emissions	22
Table 4.6-1	Estimated Project Operational Energy Use	32
Table 4.8-1	Project Greenhouse Gas Emissions	39
Table 4.17-1	Trip Generation Comparison	66

Appendices

Appendix A Project Plans: Tentative Tract Map No. 83435 [TTM 21-0002], Conditional Use Permit No. 21-0007, and Development Review Permit No. DRP21-0055 – Tentative Tract Map, Grading Plan, Utility Plan, Fire Access & Hydrant Plan, Site Plan, Open Space Plan, Floor Plans, Elevations, Landscape Plan, Wall/Fencing Plan and Lighting Plan

Appendix B Air Quality Impact Analysis

Appendix C Preliminary Geotechnical Investigation

Appendix D Greenhouse Gas Analysis

Appendix E E-1: Phase I Environmental Site Assessment Report
E-2: Limited Phase II ESA Report
E-3: Hazardous Material Survey Inspection Report

Appendix F Preliminary Hydrology Study

Appendix G Preliminary Low Impact Development (LID) Plan

Appendix H Noise Impact Analysis

Appendix I I-1: Vehicle Miles Traveled (VMT) Screening and Trip Generation Assessment
I-2: Multi-Way Stop Warrant Analysis

Appendix J Sanitary Sewer Analysis

Appendix K Will Serve Letters

1 Introduction

The City of Whittier (Lead Agency) received a Tentative Tract Map, a Conditional Use Permit application and a Development Review Permit application from La Serna Partners, LP (property owner) for the development of a new 42-unit, three-story attached single-family condominium project. The approval of the applications constitute a *project* that is subject to review under the California Environmental Quality Act (CEQA) 1970 (Public Resources Code, Section 21000 et seq.), and the State CEQA Guidelines (California Code of Regulations, Section 15000 et. seq.).

This Initial Study has been prepared to assess the short-term, long-term, and cumulative environmental impacts that could result from the proposed attached residential project.

This report has been prepared to comply with Section 15063 of the State CEQA Guidelines, which sets forth the required contents of an Initial Study. These include:

- A description of the project, including the location of the project (See Section 2);
- Identification of the environmental setting (See Section 2.9);
- Identification of environmental effects by use of a checklist, matrix, or other methods, provided that entries on the checklist or other form are briefly explained to indicate that there is some evidence to support the entries (See Section 4);
- Discussion of ways to mitigate significant effects identified, if any (See Section 4);
- Examination of whether the project is compatible with existing zoning, plans, and other applicable land use controls (See Section 4.11); and
- The name(s) of the person(s) who prepared or participated in the preparation of the Initial Study (See Section 5).

1.1 – Purpose of CEQA

The body of state law known as *CEQA* was originally enacted in 1970 and has been amended a number of times since then. The legislative intent of these regulations is established in Section 21000 of the California Public Resources Code, as follows:

The Legislature finds and declares as follows:

a) The maintenance of a quality environment for the people of this state now and in the future is a matter of statewide concern.
b) It is necessary to provide a high-quality environment that at all times is healthful and pleasing to the senses and intellect of man.
c) There is a need to understand the relationship between the maintenance of high-quality ecological systems and the general welfare of the people of the state, including their enjoyment of the natural resources of the state.
d) The capacity of the environment is limited, and it is the intent of the Legislature that the government of the State takes immediate steps to identify any critical thresholds for the health and safety of the people of the state and take all coordinated actions necessary to prevent such thresholds being reached.
e) Every citizen has a responsibility to contribute to the preservation and enhancement of the environment.
f) The interrelationship of policies and practices in the management of natural resources and waste disposal requires systematic and concerted efforts by public and private interests to enhance environmental quality and to control environmental pollution.
g) It is the intent of the Legislature that all agencies of the state government which regulate activities of private individuals, corporations, and public agencies which are found to affect the

quality of the environment, shall regulate such activities so that major consideration is given to preventing environmental damage, while providing a decent home and satisfying living environment for every Californian.

The Legislature further finds and declares that it is the policy of the State to:

a) Develop and maintain a high-quality environment now and in the future, and take all action necessary to protect, rehabilitate, and enhance the environmental quality of the state.
b) Take all action necessary to provide the people of this state with clean air and water, enjoyment of aesthetic, natural, scenic, and historic environmental qualities, and freedom from excessive noise.
c) Prevent the elimination of fish or wildlife species due to man's activities, insure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities and examples of the major periods of California history.
d) Ensure that the long-term protection of the environment, consistent with the provision of a decent home and suitable living environment for every Californian, shall be the guiding criterion in public decisions.
e) Create and maintain conditions under which man and nature can exist in productive harmony to fulfill the social and economic requirements of present and future generations.
f) Require governmental agencies at all levels to develop standards and procedures necessary to protect environmental quality.
g) Require governmental agencies at all levels to consider qualitative factors as well as economic and technical factors and long-term benefits and costs, in addition to short-term benefits and costs and to consider alternatives to proposed actions affecting the environment.

A concise statement of legislative policy, with respect to public agency consideration of projects for some form of approval, is found in Section 21002 of the Public Resources Code, quoted below:

> The Legislature finds and declares that it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required by this division are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects. The Legislature further finds and declares that in the event specific economic, social, or other conditions make infeasible such project alternatives or such mitigation measures, individual projects may be approved in spite of one or more significant effects thereof.

1.2 – Public Comments

Comments from all agencies and individuals are invited regarding the information contained in this Initial Study. Such comments should explain any perceived deficiencies in the assessment of impacts, identify the information that is purportedly lacking in the Initial Study or indicate where the information may be found. All comments on the Initial Study are to be submitted to:

Alan Hernandez, Assistant Planner
City of Whittier, Community Development Department
13230 Penn Street, Whittier, CA 90602-1772
O: 562-567-9320 F: 562-567-2872
hernandeza@cityofwhittier.org

Following a 30-day period of circulation and review of the Initial Study, all comments will be considered by the City of Whittier prior to adoption.

1.3 – Availability of Materials

All materials related to the preparation of this Initial Study are available for public review. To request an appointment to review these materials, please contact:

Alan Hernandez, Assistant Planner
City of Whittier, Community Development Department
13230 Penn Street, Whittier, CA 90602-1772
O: 562-567-9320 F: 562-567-2872
hernandeza@cityofwhittier.org

2 Project Description

2.1 – Project Title

La Serna Townhomes Single-Family Attached Condominium Project

2.2 – Lead Agency Name and Address

City of Whittier, 13230 Penn Street, Whittier, CA 90602-1772

2.3 – Contact Person and Phone Number

Alan Hernandez, Assistant Planner 562-567-9320

2.4 – Project Location

Regionally, the project site is located in the City of Whittier, Los Angeles County, California. The City of Whittier (City) is located within the southeastern portion of Los Angeles County, approximately 20 miles southeast of Downtown Los Angeles; refer to Figure 1, Regional Context. The City is bordered by the unincorporated community of Hacienda Heights and the cities of La Habra Heights and Industry to the north/northeast. The City of Pico Rivera lies to the west, La Habra to the southeast and the Cities of Santa Fe Springs, La Mirada, Norwalk, and Orange County to the south. Regional access to the City is provided via Interstate 605, which is located near the City's western boundary and Interstate 5. The project site is approximately 6-miles south of the Rosecrans Avenue/I-5 interchange.

The project encompasses two parcels located at 9829 La Serna Drive (Assessor's Identification Number [AIN]: 8224-017-022 and 023) in the City of Whittier in Los Angeles County, California. The parcels are on the west side of La Serna Drive, south of Janine Drive and approximately 200 feet north of Whittier Boulevard (State Route 72) (see Figure 2, Vicinity Map). The parcels have property frontage on La Serna Drive and Janine Drive. The latitude and longitude is 33° 56' 55.65" North and 118° 00' 09.49" West.

2.5 – Project Sponsor's Name and Address

Owner/Applicant:
La Serna Partners, LP
4100 Newport Place, Suite 790
Newport Beach, CA 92660

Figure 1 Regional Context

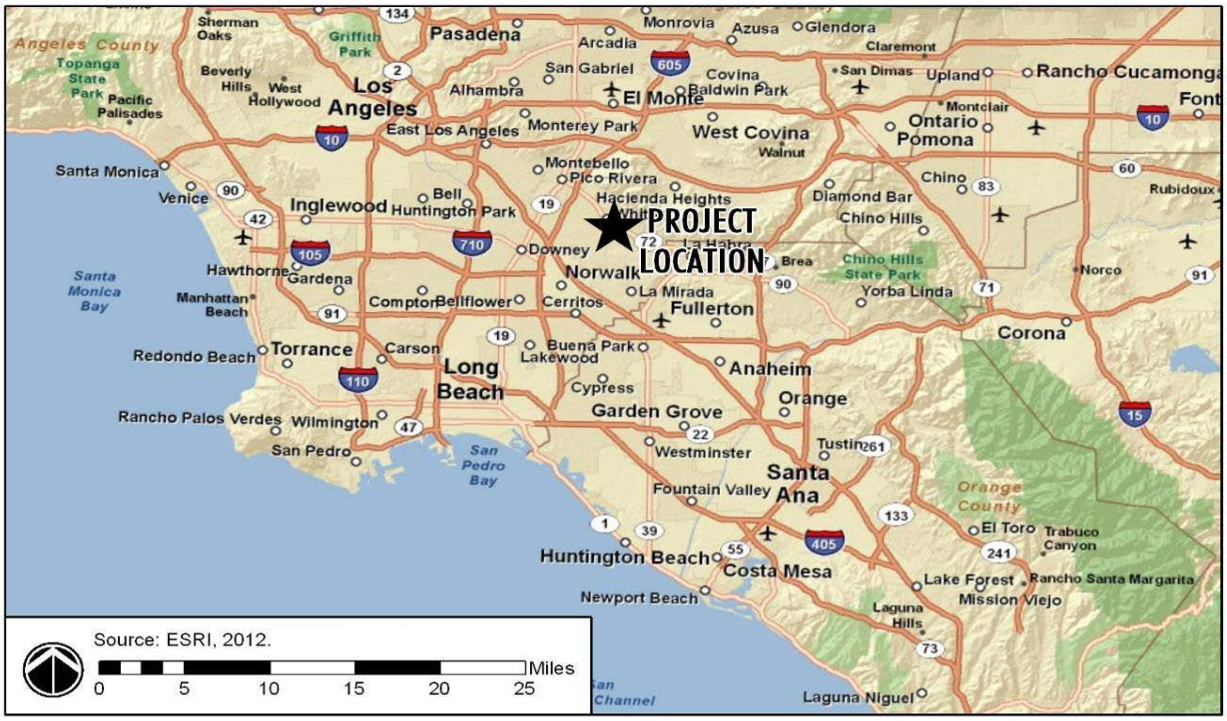
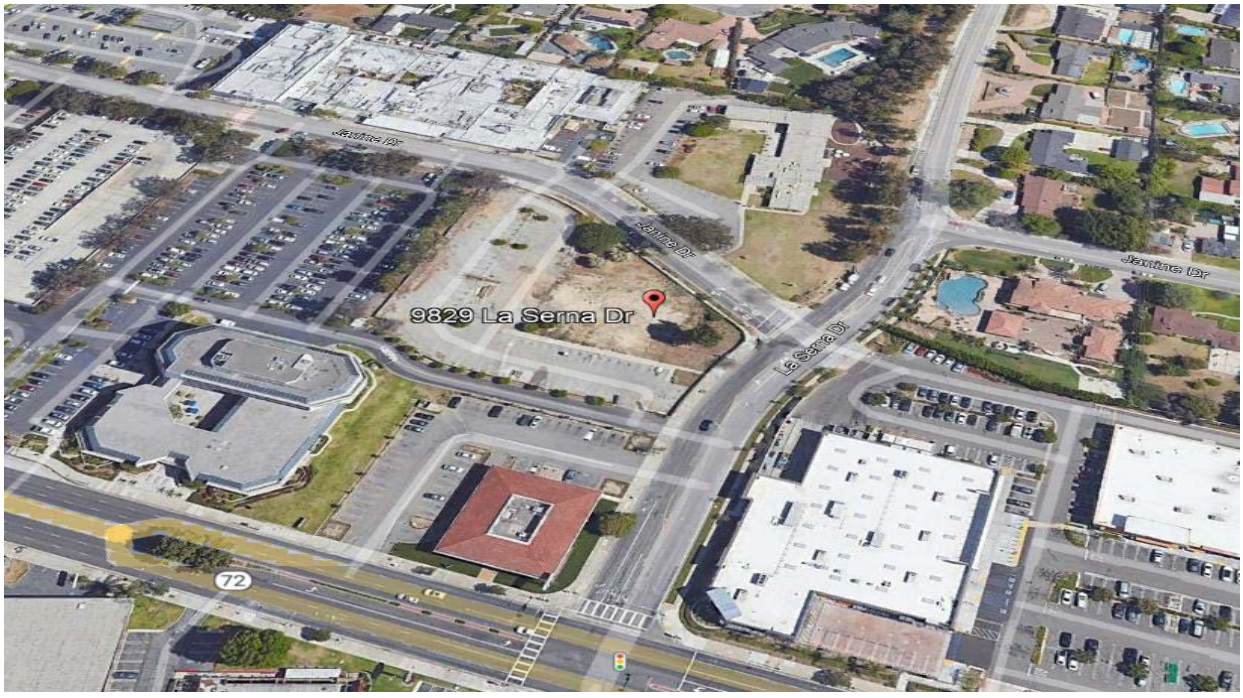


Figure 2 Vicinity Map



Google Earth, Map 2022

2.6 – General Plan Land Use Designation

The 2040 Envision Whittier General Plan Land Use Map designates the 1.84-acre site as Mixed Use 1 with a density of 20-30 du/ac, a population density of up to 90 pp/ac, an intensity of 1.00 Floor Area Ratio and structures at a maximum of 40 feet. The proposed project density is 22.8 du/acre.

2.7 – Zoning

The project site is zoned Whittier Boulevard Specific Plan (WBSP), Shopping Clusters with the II sub-area.

2.8 – Project Description

Tentative Tract Map No. 21-0002 (TTM 83435) proposes a 1.84-acre single lot map for residential condominium purposes.

Conditional Use Permit No. CUP21-0007, a permit to allow for development standard deviations under the Development Hardship provisions (Section 4.7) of the Whittier Boulevard Specific Plan. The deviations requested will permit ground level residential uses located within 300 feet of Whittier Boulevard and a reduced distance between buildings within the Shopping Cluster District II area.

Development Review Permit No. DRP21-0055 to construct and operate a new 42-unit, three-story, attached condominium residential development.

BACKGROUND

Based on historical research conducted by Smith-Emery Geoservices, from before 1928 to early 1960s, the site was used for agricultural purposes. In 1963, the southeastern portion of the site was a baseball field. The site was vacant land in the 1970s. In 1978, a restaurant and bakery was constructed and operated through 2019 as the Marie Callender's Restaurant. In May 2020, the property owner applied through the City of Whittier for a demolition permit. The permit (DE20-0753) was to demolish the 9,200 square foot single-story commercial structure. The permit was finalized on July 22, 2020. The site is currently occupied with the vacant restaurant pad and the surrounding parking lot.

PROJECT CHARACTERISTICS

The project is proposing a one-lot Tentative Tract Map for condominium purposes on the 1.84-acres to allow for the residential development. The property owner will construct 42 single-family attached residential units and infrastructure improvements.

Site Preparation & Grading

The remaining asphalt parking lot will be removed as part of the site preparation process. The site requires grading. The anticipated cut is approximately 2,474 cubic yards and the approximate fill material is 474 cubic yards requiring the import of 2,000 cubic yards of cut material to support the proposed development. A haul route has not been specified at this time.

Site Access

The former Marie Callender's use had a driveway on Janine Drive that aligned with the Whittier Hospital Medical Center Emergency Room access and a shared driveway on La Serna Drive. The proposed project will continue to utilize the same shared driveway on La Serna Drive, however, the access on Janine Drive has been modified to align with the adjacent Shepherd of the Hills Lutheran Church. The project will utilize the existing painted median along Janine Drive and turning vehicle are not anticipated to block through traffic along Janine Drive. Access to the project site will be from two non-gated 28-foot driveways on La Serna Drive and Janine Drive. The 42 residences will be served by a private driveway system, accessed from La Serna Drive and Janine Drive.

42-Unit Attached Single-Family Condominiums

The applicant, La Serna Partners, LP, proposes a total of 42 new attached three-story condominium units which are designed as individual single-family residences. The project applicant has designed the project to incorporate a Spanish architectural style.

The project includes a combination of 8 two-bedroom units and 34 three-bedroom units in eight different plan types in six separate buildings. Each unit will have a two-car garage. The built product will consist of 57,998 net square feet. The average net square footage of the units is 1,381 square feet with an average private open space of 107.5 square feet. The units range from 1,101 to 1,814 net square footage.

The Mixed Use 1 development standards require that no building or structure shall have a height in excess of forty feet. The Whittier Boulevard Specific Plan, Shopping Clusters II development standards specify a minimum building height pf 24 feet with a maximum of 4 floors and 55 feet. The project elevations show a height of 39 feet and three stories which is compliant with the Mixed Use 1 standards and the WBSP standards.

All homes will be constructed with solar photovoltaic systems standard and will incorporate the latest energy efficiency technology as required by the California Energy Commission.

Open Space

The proposed project includes both common and private open space. A total of 12,675 square feet of common open space will be provided in a central recreation area, a dog park in the northwestern corner of the site, residential entry paseo and a south yard area. The central recreation area will include a shade structure with two round picnic tables, two benches and a barbeque. The private open space in balconies/patios ranges from 101 to 1008 square feet with an average of 82.81 per unit.

Landscaping

In Appendix A, Project Plans - Conceptual Landscape Plan, it illustrates the trees, shrubs, succulents, grasses, turf, and vines that will be installed throughout the site. The applicant is proposing to landscape approximately 16,942 square feet (0.39-acre) of the project site along the La Serna Drive frontage, the Janine Drive frontage and the interior common areas. There will be 62 new trees planted with this development.

Parking

As required, each of the 42 units is designed with a garage, for a total of 84 garage spaces. In addition, 19 uncovered spaces are provided.

Walls and Fences

The applicant proposes to construct a new six-foot high block wall with a retaining wall along the project's western property line and a 3-foot high tubular steel fence on top of 3-foot splitface block wall along the southern property line. The dog park will be fenced with a 6-foot high tubular steel fence. Units along Janine Drive will feature a 3-foot high patio wall with gates. Building E will feature a 42-inch high tubular steel fence on a low concrete masonry unit wall to separate the units from the common open space.

New Infrastructure

Storm Drain – The previous developed site consists of a vacant commercial building pad with a parking lot area. The majority of parking lot area is covered with impervious paving. The pre-development drainage of the project site is generally surface sheet flow southeasterly towards the private alley on the southern boundary via an onsite v-gutter and eventually downstream to La Serna Drive. All drainage appears to surface flow with no sign of any storm drain onsite to the downstream storm drainage system. The project proposes the construction of 6 buildings with 42 attached condominium with private garages, private drive aisles, sidewalks, and common landscaped areas. The project site will be accessible with an entrance/ exit along Janine Drive and the existing private alley. The private alley on the southerly site is proposed for access to proposed development and existing adjacent properties. The private alley was analyzed as an offsite area due to the inseparable confluence flow from upstream adjacent properties, which peak flowrate drainage was determined to unaffected by replacement in-kind and analysis validated within this Hydrology report. Onsite drainage is divided into two (2) drainage management areas (DMAs) that are graded to ultimately route runoff towards La Serna Drive to preserve pre-development condition drainage conditions. Grated and curb inlets are place at the street low points to collect and direct runoffs from each DMA to a detention system, which will feed a WetlandMOD biofiltration system to conform with water quality treatment standards. Treated stormwater from both DMA will enter a pump station that outlets towards a proposed parkway drain on La Serna Drive. In cases of high storm event, westerly portion of the site is graded to outlet overflow at the entrance of the site at the private alley which flows downstream as pre-development conditions. The runoff generated from the easterly portion of the site is captured at the catch basin installed with a pipe system that is size to outlet the 100-year storm event to the proposed parkway drain. During a higher storm event, runoff will top over the curb and sheet flow towards La Serna Drive as the low point of the proposed site to preserve pre-development conditions.

Sanitary Sewer – Sewer collection will be accomplished by way of private sewer laterals and mains. According to the City of Whittier Sewer Atlas, there is one 8" sewer line that flows through Janine Drive and La Serna Drive along the project frontage. This existing sewer main flows easterly along Janine Drive approximately 6' south of Janine Drive's centerline and turns south flowing southerly along La Serna Drive. The main is approximately 36' west of the La Serna's centerline underneath the existing sidewalk and flows towards Whittier Blvd. The proposed project site is designed to contribute sewer flow to the 8" VCP sewer line in La Serna Drive.

Based on sewer monitoring data collected, the sewer systems located in La Serna Drive indicated good flow, along with hydraulics and relatively low depths. The proposed residential development

project onsite system flows will increase the overall downstream system of the local main by approximately 7.7% at peak flow and the volume of flow does not exceed 50% of the capacity of the pipes (d/D<0.50). Based on the analysis above, we conclude that effluent volumes produced by the proposed development should not significantly impact or exceed the existing sewer capacity in the public system, and that the existing sewer system along La Serna Drive has adequate capacity for the proposed development.

For downstream lines, the existing level of flow of the 8" sewer main in Scott Avenue already exceeds LA County standard capacity (d/D=0.6525) at its' peak. Although the average flow level of the study was 3.544 in (which meets county standards), it displays that the existing daily peak flow level exceeds the 4" flow level capacity (d/D=0.50) on most days of the sewer flow study. The existing peak flow measured was at 5.22 inches, which is 1.22 inches above standard. The proposed residential development project onsite system flows will increase the overall downstream system of the local main by approximately 3.3% at peak flow. The proposed project site only increases the flow slightly and can be considered negligible.

Domestic Water – Domestic water will be provided to the project by Suburban Water Systems through a connection to the existing 8" main in Janine Drive and La Serna Drive and distributed through a private water system to individual meters for each house, and to a common irrigation meter. Fire sprinkler flow will be supplied by individual house meters. Additional water utility infrastructure will be installed at the developer's expense to service this subdivision.

Streets, Circulation and Parking – The project will take access from Janine Drive and La Serna Drive. Circulation will be achieved using two access points and an internal private driveway system. The project meets LA County Fire access standards.

Dry Utilities – The project will be served with a new underground electric distribution system which connects to the existing power systems along Janine Drive and La Serna Drive. A private street light system will be constructed within the subdivision.

Solid Waste Collection

Trash storage will be in the garage of each residential unit, and containers (green waste/organics, landfill, and recyclables) will be picked up by Republic Services (City franchisee) weekly. Residential customers for Building C, D and F will be required to roll-out their solid waste cart, recycling cart, and green waste cart to the driveway aisle adjacent to Buildings A and B for collection service.

DEVELOPMENT HARDSHIPS

The applicant has requested relief from development standard deviations under the Development Hardship provisions (Section 4.7) of the Whittier Boulevard Specific Plan (WBSP). The deviations requested will permit ground level residential uses located within 300 feet of Whittier Boulevard and a reduced distance between buildings within the Shopping Cluster District II area.

Section 4.7 Development Hardships provides a process for a property owner to develop or redevelop a site when the development standards and/or design guidelines in this Specific Plan substantially limit or fully prevent a site's development thereby causing a severe hardship to the property owner for which a zoning variance either does not apply or does not provide the necessary relief. A Conditional Use Permit may be granted to enable reasonable development, provided that the applicant presents clear and convincing evidence that strict adherence to all applicable development standards and/or design guidelines will substantially limit or fully prevent

viable development or redevelopment of the site and the approval authority can make the additional required findings.

WBSP Section 4.3 Shopping Clusters, *4.3.1 Additional Development Standards, b. Site Development,* 2. Minimum Space Between Buildings states:

a. Minimum space between buildings on a single property featuring commercial development within the first 300 feet of Whittier Boulevard, and featuring residential development beyond the 300-foot line:

    1) Buildings with predominantly commercial uses must be separated from residential development by a minimum of 30 feet.
    2) Residential buildings facing each other must be separated by a minimum of 50 feet.
    3) Residential buildings must be separated from adjacent residential buildings to the side and rear by a minimum of 30 feet.
    4) Residential development must also adhere to all applicable standards and guidelines for residential development contained within the Neighborhood Spine Plan Areas section.

The applicant is proposing to construct residential structures approximately 253.5 feet from Whittier Boulevard, residential buildings facing each other at 30 feet, and adjacent residential buildings (A and B) at 11 feet, 1 inch and Buildings C and D at 15 feet, 4-inches.

PROJECT PHASING AND CONSTRUCTION

The proposed project will be constructed in the following phases: 1) demolition (5 days); 2) site preparation (2 days); 3) grading (10 days); 4) building construction (220 days); 5) paving (10 days; and 6) architectural coatings (10 days). The project is anticipated to start construction in June 2022 and be completed in April 2023.

2.9 – Surrounding Land Uses and Setting

The City of Whittier is located in the eastern portion of Los Angeles County, 20 miles east of downtown Los Angeles. The City is on the southwestern slopes of the Puente Hills just east if the San Gabriel River and the San Gabriel River Freeway (State Route 605). The land features a sloping terrain on the north and east where the Puente Hills are located and becomes flat on the southern and western sections. Neighboring cities and communities include Pico Rivera and Los Nietos on the west, Santa Fe Springs and La Mirada on the south, La Habra and La Habra Heights on the east, and the unincorporated communities of Hacienda Heights and Rowland Heights on the north.

The 1.84-net acre project site includes two parcels at 9829 La Serna Drive (Assessor's Identification Number [AIN]: 8224-017-022 and 023) with direct access to Janine Drive and La Serna Drive, which border the site's northern and eastern boundary.

The project site is currently vacant with a former commercial restaurant pad and an asphalt parking lot.

Table 2.9-1
Surrounding Land Uses

Direction	General Plan Designation	Zoning District	Existing Land Use
Project Site	Mixed Use I	Shopping Cluster II, Whittier Boulevard Specific Plan	Vacant - Former Restaurant Pad and Asphalt Parking Lot
North	Mixed Use I and Office	Shopping Cluster II, Whittier Boulevard Specific Plan	Shepherd of the Hills Lutheran Church and Whittier Hospital Medical Center
South	General Commercial	Shopping Cluster II, Whittier Boulevard Specific Plan	Credit Union of Southern California
East	General Commercial	Shopping Cluster II, Whittier Boulevard Specific Plan	Amazon Fresh, Ulta and Home Goods - Commercial Center
West	General Commercial	Shopping Cluster II, Whittier Boulevard Specific Plan	ATI College and Associated Parking Lot

2.10 – Required Approvals

The City of Whittier (lead agency under CEQA) will use this IS/MND in making decisions with regard to the approval of the 42-Unit Attached Residential Condominium Development, subsequent construction and development of the project. The City of Whittier is the only land use authority for this project requiring the following approvals:

- Tentative Tract Map No. 21-0002 (TTM 83435)
- Conditional Use Permit No. CUP21-0007, and
- Development Review Permit No. DRP21-0055

2.11 – Other Public Agencies Whose Approval is Required

The implementation of the proposed improvements would require the issuance of permits from various public agencies. The permits and approvals from lead, responsible, and trustee agencies that are necessary include:

- Los Angeles County Fire Department approval of proposed site improvements.
- California Regional Water Quality Control Board for water quality permits.

2.12 – Tribal Consultation

Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

Yes. See Section 4.18 Tribal Cultural Resources for expanded discussion.

3 Determination

3.1 – Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a 'Potentially Significant Impact' as indicated by the checklist on the following pages.

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

3.2 – Determination

☐	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☑	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☐	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
☐	I find that the proposed project MAY have a 'potentially significant impact' or 'potentially significant unless mitigated' impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Name: Alan Hernandez, Assistant Planner Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses 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 will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and
   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

4 Evaluation of Environmental Impacts

4.1 – Aesthetics

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
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) Conflict with applicable zoning and other regulations governing scenic quality?			☑	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			☑	

Sources

Information used to prepare the Aesthetics section is from the following sources: aerial photographs of the project area, the *City of Whittier General Plan, 2021*, the California Department of Transportation, California Scenic Highway Mapping System accessed February 1, 2022 and the City of Whittier *Municipal Code, Title 18 Zoning*.

Environmental Setting

The proposed project is located within an urbanized area, and the project site contains a former restaurant pad and an asphalt parking lot. Scenic resources within the City and the City's Sphere of Influence include the Puente Hills to the north of the City, and scenic roadway corridors such as Colima Road, Turnbull Canyon Road, Beverly Boulevard, and Skyline Drive. Puente Hills provide a visual framework for the City and a break in urban development. The Puente Hills provide a valuable and unique visual amenity and are visible from almost any part of the City.

Discussion

a) **No Impact.** Scenic vistas can be impacted by development in two ways. First, a structure may be constructed that blocks the view of a vista. Second, the vista itself may be altered (i.e., development on a scenic hillside). The proposed project is located within an urbanized area visually dominated by residential, commercial and institutional land uses.

The proposed project is located at the southeast corner of La Serna Drive and Janine Drive within a fully urbanized area visually dominated by single-family residential and commercial land uses together with institutional uses and surface street features. This site is not considered to be

within or to comprise a portion of a scenic vista. Demolition of the existing parking lot and construction of the new 42 single-family attached residences would have no effect on a scenic vista. The proposed development is generally compatible in type and scale with the existing and planned surrounding development.

Due to the existing standards in place as identified in the Whittier Municipal Code, the relatively low scale of the proposed project, and the distance of the project from view sheds, no impacts on scenic vistas would occur. Therefore, no further analysis of this environmental issue is necessary.

b) **No Impact.** The project is not adjacent to a designated state scenic highway or eligible state scenic highway as identified on the California Scenic Highway Mapping System. Thus, the proposed project would not damage the integrity of existing visual resources or historic buildings located along a State Scenic Highway. No impact on scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway, would result with the demolition of the existing parking lot and construction of the new 42 single-family attached residences. No further analysis is required.

c) **Less Than Significant Impact.** Development of a proposed project could result in a significant impact if it resulted in substantial degradation of the existing visual character or quality of the site and its surroundings. Degradation of visual character or quality is defined by substantial changes to the existing site appearance through construction of structures such that they are poorly designed or conflict with the site's existing surroundings.

Construction of the proposed project would result in short-term impacts to the existing visual character and quality of the area. Construction activities would require the use of equipment and storage of materials within the project site. However, construction activities are temporary and would not result in any permanent visual impact. The landscaping and trees in the existing surface parking lot west of La Serna Drive will be modified. The project would add new 62 trees within the residential development project.

Construction of the proposed buildings would alter the existing visual character of the site. Upon project completion, 42 new residences will be constructed. The immediate surroundings of the project site are a combination of residential, commercial, and institutional uses. Surrounding buildings are generally one to two stories in height. The parcels will be enclosed with walls and fencing on the southern and western property lines. With specified design features included, the project will have less than significant impacts on the visual character of the site and the surroundings.

d) **Less Than Significant Impact.** Excessive or inappropriately directed lighting can adversely impact nighttime views by reducing the ability to see the night sky and stars. Glare can be caused from unshielded or misdirected lighting sources. Reflective surfaces (i.e., polished metal) can also cause glare. Impacts associated with glare range from simple nuisance to potentially dangerous situations (i.e., if glare is directed into the eyes of motorists).

There are lighting sources adjacent to this site, including freestanding street lights, light fixtures on buildings, pole-mounted lights, and vehicle headlights. The proposed project includes exterior parking lot and security lighting and building interior lighting. However, only outdoor lighting could have any effect on neighboring land uses. Light spillover and glare will be prevented by standard development review, which requires conformance to the City's development standards regarding light placement, luminosity, and light shield. Adherence to the City's standard lighting control procedures would reduce any impact associated with new lighting to a less-than-significant level.

Mitigation Measures

No mitigation is necessary because Aesthetic impacts will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.2 – Agriculture and Forest Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the Project:				
a) 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?				☑
b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract?				☑
c) Conflict with existing zoning for, or cause rezoning of, forest land (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))?				☑
d) Result in the loss of forest land or conversion of forest land to non-forest use?				☑
e) 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 forest land to non-forest use?				☑

Sources

Information used to prepare this section is from the following sources: California Department of Conservation, *Farmland Mapping and Monitoring Program of the California Resources Agency*; and California Department of Forestry and Fire Protection and the USDA Forest Service, California Land Cover Mapping and Monitoring Program (LCMMP), Vegetation GIS files for Pacific Southwest Region.

Environmental Setting

The proposed project is located in a suburban area surrounded by residential, commercial, and institutional uses. According to the California Department of Conservation, *Farmland Mapping and Monitoring Program* Map, the City is predominately designated as urban and built up land. There are no current Williamson Act Contract lands as shown on the 2012 Williamson Act Lands map for Whittier.

Discussion

a) **No Impact.** The proposed project will be located in a fully developed urbanized area. The map of Important Farmland in California (2010) prepared by the Department of Conservation does not identify the project as being Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. No Williamson Act contracts are active for the project. Therefore, because the site has not been designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, there is no impact from the project on these types of farmland.

b) **No Impact.** Currently, the project is designated as Mixed Use 1 under the General Plan. There are no agricultural zones within the City of Whittier, which is a fully urbanized community. The project would have no effect upon agricultural resources within the City of Whittier or any other neighboring city or unincorporated county area.

c) **No Impact.** Public Resources Code Section 12220(g) identifies forest land as *land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.* The project site and surrounding properties are not currently being managed or used for forest land as identified in Public Resources Code Section 12220(g). The USDA Forest Service vegetation maps for the project identify it as *urban* type, indicating that it is not capable of growing industrial wood tree species. Therefore, implementation of this project will have no impact to any timberland zoning.

d) **No Impact.** The project area was formerly developed; thus, there will be no loss of forest land or conversion of forest land to non-forest use as a result of this project. No impact will occur.

e) **No Impact.** The project area was previously developed within an urban environment. The project would not encroach onto agricultural land and would not encourage the conversion of existing farmland to non-agricultural uses. None of the surrounding sites contain existing forest uses. Development of this project will not change the existing environment in a manner that will result in the conversion of forest land to a non-forest use. No impact will occur.

Mitigation Measures

No mitigation measures are necessary because Agricultural and Forestry impacts will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.3 – Air Quality

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?			☑	
b) 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?			☑	
c) Expose sensitive receptors to substantial pollutant concentrations?			☑	
d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?			☑	

Sources

Information used to prepare this section is from the following sources: *City of Whittier General Plan*, 2021, California Emissions Estimator Model®, Version 2020.4.0, California Air Pollution Control Officers Association, May 2021 and Urban Crossroads, Air Quality Impact Analysis City of Whittier, dated February 11, 2022.

Environmental Setting

Local jurisdictions, such as the City of Whittier, have the authority and responsibility to reduce air pollution through its police power and decision-making authority. Specifically, the City is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. The City is also responsible for the implementation of transportation control measures as outlined in the 2016 AQMP. Examples of such measures include bus turnouts, energy-efficient streetlights, and synchronized traffic signals. In accordance with CEQA requirements and the CEQA review process, the City assesses the air quality impacts of new development projects, requires mitigation of potentially significant air quality impacts by conditioning discretionary permits, monitoring and enforcing implementation of such mitigation. In accordance with the CEQA requirements, the City does not, however, have the expertise to develop plans, programs, procedures, and methodologies to ensure that air quality within the City and region will meet federal and state standards. Instead, the City relies on the expertise of the SCAQMD and utilizes the SCAQMD CEQA Handbook and CalEEMod as the guidance documents for the environmental review of plans and development proposals within its jurisdiction.

Discussion

a) **Less Than Significant Impact.** The California Environmental Quality Act (CEQA) requires a discussion of any inconsistencies between a proposed project and applicable General Plans and Regional Plans (CEQA Guidelines Section 15125). The regional plan that applies to the proposed project includes the SCAQMD Air Quality Management Plan (AQMP). Therefore, this section discusses any potential inconsistencies of the proposed project with the AQMP.

The purpose of this discussion is to set forth the issues regarding consistency with the assumptions and objectives of the AQMP and discuss whether the proposed project would interfere with the region's ability to comply with Federal and State air quality standards. If the decision-makers determine that the proposed project is inconsistent, the lead agency may consider project modifications or inclusion of mitigation to eliminate the inconsistency.

The SCAQMD CEQA Handbook states that "New or amended General Plan Elements (including land use zoning and density amendments), Specific Plans, and significant projects must be analyzed for consistency with the AQMP." Strict consistency with all aspects of the plan is usually not required. A proposed project should be considered to be consistent with the AQMP if it furthers one or more policies and does not obstruct other policies.

The SCAQMD CEQA Handbook identifies two key indicators of consistency:

(1) Whether the project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.
(2) Whether the project will exceed the assumptions in the AQMP in 2016 or increments based on the year of project buildout and phase.

Criterion 1 - Increase in the Frequency or Severity of Violations

The results of the short-term construction emission levels and long-term operational emission levels show that the project would not result in significant impacts based on the SCAQMD regional and local thresholds of significance. Therefore, the proposed project would not contribute to the exceedance of an air pollutant concentration standard and is found to be consistent with the AQMP for the first criterion.

Criterion 2 - Exceed Assumptions in the AQMP

Consistency with the AQMP assumptions is determined by performing an analysis of the proposed project with the assumptions in the AQMP. The emphasis of this criterion is to ensure that the analyses conducted for the proposed project are based on the same forecasts as the AQMP. The 2016-2040 Regional Transportation/Sustainable Communities Strategy, prepared by the Southern California Association of Governments (SCAG), 2016, includes chapters on: the challenges in a changing region, creating a plan for our future and the road to greater mobility and sustainable growth. These chapters currently respond directly to federal and state requirements placed on SCAG. Local governments are required to use these as the basis of their plans for purposes of consistency with applicable regional plans under CEQA.

The project is consistent with the underlying General Plan designation of Mixed Use 1. The proposed project is expected to result in increased operational emissions from mobile sources and energy sources, compared to the previously approved use. However, as shown in the regional and localized emissions analysis, the project is below the SCAQMD thresholds of significant for cumulative impacts. The impact is considered less than significant.

b) **Less Than Significant Impact.** A project may have a significant impact if project related emissions would exceed federal, state, or regional standards or thresholds, or if project-related emissions would substantially contribute to existing or project air quality violations. The proposed project is located within the South Coast Air Basin, where efforts to attain state and federal air quality standards are governed by the South Coast Air Quality Management District (SCAQMD). Both the State of California (State) and the Federal government have established health-based ambient air quality standards (AAQS) for seven air pollutants (known as 'criteria pollutants'). These pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), inhalable particulate matter with a diameter of 10 microns or less (PM_{10}), fine particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$), and lead (Pb). The State has also established AAQS for additional pollutants. The AAQS are designed to protect the health and welfare of the populace within a reasonable margin of safety. Where the state and federal standards differ, California AAQS are more stringent than the national AAQS.

Short Term Air Quality Impacts - Construction

Regional Emissions - Construction

Regional air quality emissions include both on-site and off-site emissions associated with construction of the project. Regional daily emissions of criteria pollutants are compared to the SCAQMD regional thresholds of significance. As shown in Table 4.3-1, regional daily emissions of criteria pollutants are expected to be below the allowable thresholds of significance. CalEEMod daily emissions outputs are provided in Appendix B.

The project must follow all standard SCAQMD rules and requirements with regards to fugitive dust control. Compliance with the dust control is considered a standard requirement and included as part of the project's design features, not mitigation.

Table 4.3-1
Construction Emissions

Year	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
2022	2.05	20.53	16.59	0.03	4.39	2.42
2023	31.03	22.79	29.39	0.05	2.06	1.26
Maximum Daily Summer Emissions	**31.03**	**22.79**	**29.39**	**0.05**	**4.39**	**2.42**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**
Winter						
2022	2.06	20.54	16.41	0.03	4.39	2.42
2023	31.05	22.83	29.15	0.05	2.06	1.26
Maximum Daily Winter Emissions	**31.05**	**22.83**	**29.15**	**0.05**	**4.39**	**2.42**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod, Appendix B.

Table 4.3-1 shows that, the project's daily construction emissions will be below the applicable SCAQMD regional air quality standards and thresholds of significance. As a result, the project would not contribute substantially to an existing or projected air quality violation. Furthermore, by complying with the SCAQMD standards, the project would not contribute to 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). The project's short-term construction impact on regional air resources is less than significant with mitigation.

Fugitive Dust - Construction

The project is required to comply with regional rules that assist in reducing short-term air pollutant emissions associated with suspended particulate matter, also known as fugitive dust. Fugitive dust emissions are commonly associated with land clearing activities, cut and-fill grading operations, and exposure of soils to the air and wind. SCAQMD Rule 403 requires that fugitive dust is controlled with best-available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, SCAQMD Rules 402 and 403 require implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off site. Applicable suppression techniques are as follows:

1. All active construction areas shall be watered two (2) times daily.
2. Speed on unpaved roads shall be reduced to less than 15 mph.
3. Any visible dirt deposition on any public roadway shall be swept or washed at the site access points within 30 minutes.
4. Any on-site stockpiles of debris, dirt or other dusty material shall be covered or watered twice daily.
5. All operations on any unpaved surface shall be suspended if winds exceed 15 mph.
6. Access points shall be washed or swept daily.
7. Construction sites shall be sandbagged for erosion control.
8. Apply nontoxic chemical soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).
9. Cover all trucks hauling dirt, sand, soil, or other loose materials, and maintain at least 2 feet of freeboard space in accordance with the requirements of California Vehicle Code (CVC) section 23114.
10. Pave or gravel construction access roads at least 100 feet onto the site from the main road and use gravel aprons at truck exits.
11. Replace the ground cover of disturbed areas as quickly possible.
12. A fugitive dust control plan should be prepared and submitted to SCAQMD prior to the start of construction.

Localized construction emissions indicate daily construction emissions, with standard control measures, would be below the applicable thresholds established by the SCAQMD. The proposed project's short-term construction activities would result in cause less than significant Fugitive Dust impacts.

Long Term Air Quality Impacts - Operation

Regional Emissions - Operation

Long-term operational air pollutant impacts from the project are shown in Table 4.3-2. The project is not expected to exceed any of the allowable daily emissions thresholds for criteria pollutants at the regional level. CalEEMod daily emissions outputs are provided in Appendix B.

Table 4.3-2
Operational Emissions

Source	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
Area Source	1.11	0.67	3.75	0.00	0.07	0.07
Energy Source	0.02	0.14	0.06	0.00	0.01	0.01
Mobile Source Passenger Cars	0.00	0.00	0.00	0.00	0.00	0.00
Maximum Daily Summer Emissions	**1.12**	**0.81**	**3.80**	**0.01**	**0.08**	**0.08**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**
Winter						
Area Source	1.11	0.67	3.75	0.00	0.07	0.07
Energy Source	0.02	0.14	0.06	0.00	0.01	0.01
Mobile Source Passenger Cars	0.00	0.00	0.00	0.00	0.00	0.00
Maximum Daily Winter Emissions	**1.12**	**0.81**	**3.80**	**0.01**	**0.08**	**0.08**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod, Appendix B.

The project's daily operational emissions will be below the applicable SCAQMD regional air quality standards and thresholds of significance, and the project would not contribute substantially to an existing or projected air quality violation. Furthermore, by complying with the SCAQMD standards, the project would not contribute to a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors). The project related long-term air quality impacts are less than significant.

CO Hot Spot Emissions

A CO hot spot is a localized concentration of carbon monoxide (CO) that is above the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm. At the time of the publishing of the 1993 CEQA Air Quality Handbook, the SCAB was designated nonattainment, and projects were required to perform hot spot analyses to ensure they did not exacerbate an existing problem. Since this time, the SCAB has achieved attainment status and the potential for hot spots caused by vehicular traffic congestion has been greatly reduced. In fact, the SCAQMD Air Quality Management Plan (AQMP) found that peak CO concentrations were primarily the result of unusual meteorological and topographical conditions, not traffic congestion. Additionally, the 2003 SCAQMD AQMP found that, at four of the busiest intersections in SCAB, there were no CO hot spots concentrations. Furthermore, in the 2003 SCAQMD AQMP found that, at four of the busiest intersections in Los Angeles, there were no CO hot spots concentrations. Therefore, it is reasonable to conclude that the project would not significantly increase traffic congestion in the vicinity of the site that would lead to the formation of CO Hot Spots. The project impact to CO Hot Spots is less than significant.

c) **Less Than Significant Impact.** The potential impact of project-generated air pollutant emissions at sensitive receptors has been considered under the LST analysis contained in Appendix B. Sensitive receptors can include uses such as long-term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, childcare centers, and athletic facilities can also be considered as sensitive receptors. Results of the LST analysis indicate that with compliance with applicable Rules, the project will not exceed the SCAQMD localized significance thresholds during construction. Therefore, sensitive receptors would not be exposed to substantial criteria pollutant concentrations during project construction, and this is considered a less than significant impact. Results of the LST analysis indicate that the project will not exceed the SCAQMD localized significance thresholds during operational activity. Further project traffic would not create or result in a CO "hotspot." Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations as the result of project operations. The project must comply with SCAQMD rules requiring construction best practices to lessen airborne dust, erosion, exhaust, and VOC's.

Diesel Particulate Matter - Construction

The greatest potential for toxic air contaminant emissions from the project would be related to diesel particulate matter (DPM) emissions associated with heavy diesel equipment used during construction. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of "individual cancer risk". "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of toxic air contaminants over a 30-year lifetime will contract cancer, based on the use of standard risk-assessment methodology.

As shown in Tables 4.3-1 and 4.3-2, construction-based particulate matter (PM) emissions (including diesel exhaust emissions) do not exceed regional or local thresholds. Given the short-term construction schedule, the proposed project's construction activity is not expected to be a long-term (i.e., 30 years) substantial source of toxic air contaminant emissions and corresponding individual cancer risk. In September 2000, the CARB adopted the Diesel Risk Reduction Plan, which recommends several control measures to reduce the risks associated with diesel particulate matter (DPM). The key elements of the Plan are to clean up existing engines through engine retrofit emission control devices, to adopt stringent standards for new diesel engines, to lower the sulfur content of diesel fuel, and implement advanced technology emission control devices on diesel engines. The project is located adjacent to residential homes, therefore, in order to ensure the level of DPM exposure is reduced as much as possible; the project shall implement the best available pollution control strategies to minimize potential health risks. The following DPM control measures include:

- Utilize low emission "clean diesel" equipment with new or modified engines (Tier 4 or better) that include diesel oxidation catalysts, diesel particulate filters or Moyer Program retrofits that meet CARB best available control technology.
- Establish staging areas for the construction equipment that are as distant as possible from adjacent sensitive receptors.
- Establish an electricity supply to the construction site and use electric powered equipment instead of diesel-powered equipment or generators, where feasible.
- Use haul trucks with on-road engines instead of off-road engines for on-site hauling.
- Provide temporary dust barriers or construct perimeter walls during the first phase construction.

With pollution control strategies, the project impact is less than significant.

Toxic Air Contaminants - Operations

The project proposes commercial and residential land uses, which are not known emitters of substantial TAC concentrations. The project itself does not include any significant source of TACs that would potentially affect sensitive receptors. Land uses in the vicinity of the project include commercial and residential land uses. These land uses are not typically associated with the emission of TACs. Additionally, as stated in the *Air Quality and Land Use Handbook: A Community Health Perspective* the concern for residential land uses is generally limited to siting new development within 500 feet of a freeway or urban road with 100,000 daily vehicles or constructing a new freeway or urban road with 100,000 daily vehicles within 500 feet of existing residences. The project site is near State Route 72 (Whittier Blvd) which has a volume of less than 50,000 daily vehicles thus exposure of persons on the Project site would be less than significant.

d) **Less Than Significant Impact.** According to the CEQA Air Quality Handbook, land uses associated with odor complaints include agricultural operations, wastewater treatment plants, landfills, and certain industrial operations (such as manufacturing uses that produce chemicals, paper, etc.). Odors are typically associated with industrial projects involving the use of chemicals, solvents, petroleum products, and other strong-smelling elements used in manufacturing processes, as well as sewage treatment facilities and landfills.

Odors - Construction

Heavy-duty equipment in the project area during construction will emit odors; however, the construction activity would cease to occur after individual construction is completed. The project is required to comply with Rule 402 during construction, which states that a person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. No other sources of objectionable odors have been identified for the proposed project. Therefore, the project impact from odor emissions is less than significant.

Odors - Operation

The proposed project does not contain land uses that would typically be associated with significant odor emissions. The project will be required to comply with standard building code requirements related to exhaust ventilation, as well as comply with SCAQMD Rule 402. Rule 402 requires that a person may not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. Project related odors are not expected to meet the criteria of being a nuisance. The project's operation would result in less than significant odor impacts.

Conditions of Approval

The following recommended project requirements are considered standard building code requirements and best practices that will be included in the project design.

The contractor shall adhere to applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 miles per hour (mph) per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the project are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- All access points to the Project site shall have track out devices installed.
- The contractor shall ensure that traffic speeds on unpaved roads and Project site areas are limited to 15 mph or less.

No wood burning devices shall be installed and any dwelling units consistent with SCAQMD Rule 445.

Only "Low-Volatile Organic Compounds (VOC)" paints consistent with SCAQMD Rule 1113 shall be used.

Mitigation Measures

No mitigation is necessary because Air Quality impacts will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.4 – Biological Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special status 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 and Wildlife or U.S. Fish and Wildlife Service?				☑

c) Have a substantial adverse effect on state or federally protected wetlands (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?				☑

Sources

Information used to prepare this section is from the following sources: California Natural Diversity Database; United States Fish and Wildlife Service, National Wetlands Inventory, Wetlands Mapper; US Fish & Wildlife Services, Environmental Conservation Online System; California Department of Fish and Wildlife, California Regional Conservation Plans Map; Los Angeles County Department of Regional Planning. *2035 General Plan*. October 6, 2015. Chapter 9: Conservation and Natural Resources Element, Figure 9.3: Significant Ecological Areas and Coastal Resource Areas Policy Map, and City of Whittier *General Plan Update*, 2021.

Environmental Setting

The proposed project is located within an urbanized area, and the majority of the project area was previously developed.

Discussion

a) **No Impact.** Wildlife habitats within the City are generally limited to parks, nature preserves, and water body areas. The project site was previously developed with a restaurant and parking lot. Limited formal landscaping currently exists on-site and will be enhanced with the new construction. The non-native vegetation is not habitat of any species identified as a candidate, sensitive, or special status species. The project site is not identified as critical habitat for Threatened and Endangered Species. Considering the highly disturbed nature of the project site surrounding areas, the probability of existence of designated species under the federal Endangered Species Act or California Special Concern Species is low. The proposed project would, therefore, not have a substantial adverse effect on any species identified as a candidate, sensitive, or special-status species in local or regional plans or by the California Department of Fish and Game (CDFG) or U.S. Fish and Wildlife Service (USFWS). Considering the lack of habitat on the property, no impacts to wildlife species of concern will occur.

b) **No Impact.** Land uses subject to this proposed project would occur in established urbanized areas and would not remove or impact any riparian habitat or other sensitive natural communities. No further environmental analysis is required.

c) **No Impact.** According to the federal National Wetlands Inventory, the project site does not contain riverine wetlands. The proposed project would not disturb any offsite wetlands. There are no on-site water features indicative of potential wetlands rather there is limited landscaping within parking areas. No impacts would occur.

d) **No Impact.** Project implementation would occur in established urbanized areas and would not alter or adversely impact any native resident or migratory fish or wildlife species, corridors or nursery sites. No further environmental analysis is required.

e) **No Impact.** The City has a tree removal policy that states that if more than five trees are to be removed, a tree removal permit application must be submitted to and approved by the City. The proposed project would install new landscaping within the front and side setbacks and various other locations on the site. The project will add 62 trees as part of the residential development project. The project would not affect any other natural biological resources; therefore the project will not result in any conflicts with local or other policies or standards to protect such resources. Impacts would be less than significant.

f) **No Impact.** The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan because the City of Whittier does not have an adopted Habitat Conservation Plan according to the US Fish & Wildlife Services, Environmental Conservation Online System (ECOS) mapping or any Natural Community Conservation Plan areas apply to the project site according to the California Department of Fish and Wildlife, California Regional Conservation Plans Map. Therefore, implementation of the proposed project would have no adverse impact. No impact would occur.

Mitigation Measures

No mitigation measures are necessary because Biological Resource impacts will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.5 – Cultural Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?			☑	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?			☑	
c) Disturb any human remains, including those interred outside of formal cemeteries?			☑	

Sources

Information used to prepare this section is from the following sources: City of Whittier *General Plan Update*, 2021.

Environmental Setting

The proposed project is located within an urbanized area, and the majority of the project area was previously developed.

Discussion

a) **Less Than Significant Impact.** The City of Whittier is an urbanized community and nearly all properties within the City (except for areas such as protected park lands) have been previously disturbed and/or developed. The proposed project would not promote, encourage or enable activities that could remove, degrade or in any way adversely impact local historic resources. Historic Resources within the City are regulated and protected pursuant to the City's Historic Resource Element of the General Plan.

The subject site contains a former restaurant pad and a parking lot. The surrounding area remains characterized by a mix of modest single-family, commercial, and institutional development. The subject property does not meet one or more eligibility criteria and does not possess integrity; therefore, it is not a historical resource pursuant to Section 15064.5(a) of the CEQA Guidelines. No further environmental analysis is required.

b) **Less Than Significant Impact.** The property was previously developed a restaurant and associated larking lot in a fully urbanized area. No prehistoric archaeological resources were identified within the immediate project location during prior construction. Due to the low archeological sensitivity of the project site, further environmental analysis is not required.

c) **Less Than Significant Impact.** It is unlikely that human remains could be uncovered during grading operations. Nonetheless, should suspected human remains be encountered, the contractor shall be required to notify the County Coroner in accordance with Section 7050.5 of the California Health and Safety Code, who must then determine whether the remains are of forensic interest. If the Coroner, with the aid of a supervising archaeologist, determines that the remains are or appear to be of a Native American, he/she would be required to contact the Native American Heritage Commission for further investigations and proper recovery of such remains, if necessary. Through this existing regulatory procedure, impacts to human remains would be avoided. Impact would be less than significant with application of existing regulations.

Conditions of Approval

In accordance with standard City procedures, a halt-work condition would be in place in the unlikely event that archaeological or paleontological resources are discovered during construction. The contractor would be required to halt work in the immediate area of the find and to retain a professional archaeologist or paleontologist, as applicable, to examine the materials to determine whether they are a "unique archaeological resource" as defined in Section 21083.2(g) of the State CEQA Statutes. If this determination is positive, the scientifically consequential information must be fully recovered by the archaeologist or paleontologist, as applicable, consistent with standard City protocol.

Mitigation Measures

No mitigation measures are necessary because Cultural Resource impacts will be less than significant.

Level of Significance After Mitigation

Cultural Resource impacts will be less than significant with standard conditions satisfied.

4.6 – Energy

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			☑	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			☑	

Sources

Information used to prepare this section is from the following sources: *City of Whittier General Plan Update*, 2021 and California Emissions Estimator Model®, Version 2020.4.0, California Air Pollution Control Officers Association, May 2021.

Environmental Setting

Energy resources include electricity, natural gas and other fuels. The production of electricity requires the consumption or conversion of energy resources, including water, wind, oil, gas, coal, solar, geothermal, and nuclear resources, into energy. Energy production and energy use both

result in the depletion of nonrenewable resources (e.g., oil, natural gas, coal, etc.) and emission of pollutants. Energy usage is typically quantified using the British Thermal Unit (BTU). The BTU is the amount of energy that is required to raise the temperature of one pound of water by one degree Fahrenheit. As points of reference, the approximate amount of energy contained in a gallon of gasoline, 100 cubic feet (one therm) of natural gas, and a kilowatt hour of electricity are 123,000 BTUs, 100,000 BTUs, and 3,400 BTUs, respectively.

Existing Electricity Consumption

Southern California Edison is the service provider for electric. The electricity generated is distributed through a network of transmission and distribution lines commonly called a power grid. Conveyance of electricity through transmission lines is typically responsive to market demands. The delivery of electricity involves a number of system components, including substations and transformers that lower transmission line power (voltage) to a level appropriate for on-site distribution and use. According to the California Energy Commission (CEC), total system electric generation for California in 2017 was 292,039 gigawatt-hours (GWh). California's non-CO2 emitting electric generation categories (nuclear, large hydroelectric, and renewable generation) accounted for more than 56 percent of total in-state generation for 2017. California's in-state electric generation was 206,336 GWh and electricity imports were 85,703 GWh.

Existing Natural Gas Consumption

Southern California Gas Company (SoCalGas) is responsible for providing natural gas supply to the City and is regulated by the California Public Utilities Commission and other state agencies. Natural gas is a combustible mixture of simple hydrocarbon compounds (primarily methane) that is used as a fuel source. Natural gas consumed in California is obtained from naturally occurring reservoirs and delivered through high-pressure transmission pipelines. The natural gas transportation system is a nationwide network. Natural gas is used in electricity generation, space heating, cooking, water heating, industrial processes, and as a transportation fuel. Natural gas is measured in terms of cubic feet. According to the CEC, nearly 45 percent of the natural gas burned in California was used for electricity generation, with the remainder consumed in the residential (21 percent), industrial (25 percent), and commercial (9 percent) sectors. In 2012, total natural gas demand in California for industrial, residential, commercial, and electric power generation was 2,313 billion cubic feet.

Existing Transportation Energy

According to the California Energy Commission, transportation accounts for nearly 37 percent of California's total energy consumption. Based on available fuel consumption data from the United States Energy Information Administration (USEIA), in 2015, California consumed a total of 342,523 thousand barrels of gasoline for transportation, which is equivalent to a total annual consumption of approximately 14.4 billion gallons by the transportation sector. California consumed a total of 80,487 thousand barrels of diesel fuel for transportation, which is equivalent to a total annual consumption of approximately 3.4 billion gallons by the transportation sector. Transportation fuels, primarily gasoline and diesel, would be provided by local or regional suppliers, vendors, and patrons. According to the California Air Resources Board on-road vehicle emissions factor (EMFAC2014) model, the average fuel economy for the fleet-wide mix of vehicles operating in the South Coast Air Basin region is approximately 20.17 miles per gallon for gasoline fueled vehicles and approximately 7.81 miles per gallon for diesel-fueled vehicles. Gasoline-fueled vehicles account for approximately 96 percent of the total vehicles and diesel-fueled vehicles account for approximately 3.6 percent of the total vehicles. Electric vehicles account for approximately 0.3 percent of the total vehicles.

Discussion

a) **Less Than Significant Impact.** According to the CEQA Guidelines § 15126.2(d), "uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement that provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified." Therefore, the purpose of this analysis is to identify any significant irreversible environmental effects of project implementation that cannot be avoided.

Both construction and operation of the project would lead to the consumption of limited, slowly renewable, and non-renewable resources, committing such resources to uses that future generations would be unable to reverse. The new development would require the commitment of resources that include (1) building materials, (2) fuel and operational materials/resources and (3) the transportation of goods and people to and from the project.

During project construction, energy would be consumed in the form of electricity associated with the conveyance of water used for dust control and, on a limited basis, powering lights, electronic equipment, or other construction activities necessitating electrical power. Construction activities for residential units typically do not involve the consumption of natural gas. Project construction would also consume energy in the form of petroleum-based fuels associated with the use of off-road construction vehicles and equipment on the project site, construction worker travel to and from the project site, and delivery and haul truck trips hauling solid waste from and delivering building materials to the project site. During project operation, energy would be consumed for multiple purposes, including heating, air conditioning, appliances, and use of electronics.

During project operations, energy would also be required for water transport, solid waste disposal, and vehicle trips. Estimated project operation total energy usage, which was estimated by CalEEMod as part of the greenhouse gas emissions analysis, is shown in Table 4.6-1**.** While a variety of factors govern the relationship between VMT and fuel energy, in general, an increase in VMT results from an increase in motor vehicle energy use. Note that the table does not include energy use by existing buildings and activities; to obtain a conservative estimate of energy use impact; existing use was assumed to be zero.

The new buildings will be designed and built in compliance with the California Green Building Standards (CAL Green) Code (California Code of Regulations, Title 24, Part 11), which includes mandatory measures for residential and nonresidential site development, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality (CBSC, 2017, p.2).

In the interest of energy efficiency, the residential buildings are being designed to have solar panels and battery storage, in addition to high-efficiency HVAC systems. This will assist in increasing reliance on renewable energy resources and decreasing reliance on natural gas and oil. Therefore, the energy usage of the new residential buildings will be substantially lower than it would be in absence of the Green Code. Additionally, the project would comply with all applicable regulations and codes which require achievement of various levels of energy efficiency in building construction, design and operation.

The commitment of resources required for the construction and operation of the project would limit the availability of such resources for future generations or for other uses during the life of the project. However, the use of such resources would be reduced when compared to what they

would be in the absence of complying with the CAL Green Code. Therefore, energy consumption would not result in a substantial increase in energy production for energy providers and the energy demand associated with the project would be less than significant.

Table 4.6-1
Estimated Project Operational Energy Use

Energy Type	Units	Value
Onroad Motor Vehicle Travel	Vehicle miles traveled per year	0
Natural Gas Use	kBTU per year	548,797
Electricity Use	Kilowatt-hours per year	176,793

Source: CalEEMod runs, contained in Appendix B.

b) **Less Than Significant Impact.** As mentioned above, the proposed project would be in compliance with the California Green Building Standards (CAL Green) Code (California Code of Regulations, Title 24, Part 11), which includes mandatory measures for residential site development, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality (CBSC, 2019, p.2). Additionally, the City of Whittier does not have local energy plans. Given the area's warm climate, the most important alternative and renewable energy resource in Whittier is solar energy. This energy source has considerable potential and can be developed to substitute for oil, gas and other energy supplies. Solar energy's ability to substitute for fossil fuels can be an important tool in the battle against air pollution. The proposed project would install a solar photovoltaic (PV) system atop the buildings, which would further the City's goal of sustainability. Therefore, there would be no conflict, and there would be less than significant impacts.

Mitigation Measures

With the compliance with existing regulations, the project would not result in significant impacts associated with Energy.

Level of Significance After Mitigation

Not Applicable.

4.7 – Geology and Soils

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known 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 a geologic unit 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 (1994), creating substantial direct or indirect risks to life or property?			☑	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				☑
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			☑	

Sources

Information used to prepare this section is from the following sources: *City of Whittier General Plan Update*, 2021; UC Davis Soil Resource Laboratory, SoilWeb; ALBUS & Associates, Preliminary Geotechnical Investigation, Proposed Multi-Family Residential Development (La Serna Apartments) TTM No. 83435, 9829 La Serna Drive, Whittier, California, dated April 23, 2021; Smith-Emery Geoservices, Limited Phase II ESA Report, 9829 La Serna Drive, Whittier, CA 90605, dated March 9, 2020 ; and Smith-Emery Geoservices, Phase I Environmental Site Assessment Report, 9829 La Serna Drive, Whittier, CA 90605, dated February 13, 2020.

Environmental Setting

The City of Whittier is located along the southern section of the northwestern Puente Hills. West of the hills is a lowland plain that gently slopes to the southwest. The majority if the City is situated on the lowland surface.

Discussion

a.i) **Less Than Significant Impact.** The most significant fault system in the City is the Whittier-Elsinore fault zone. This fault zone runs parallel to the northwest City limits. The project site is located in the highly seismic Southern California region within the influence of several fault systems. However, the site does not lie within the boundaries of an Earthquake Fault Zone as defined by the State of California in the Alquist-Priolo Earthquake Fault Zoning Act.

Risks associated with surface rupture are low and there is no impact expected. However, because the project site is located in the seismically active Southern California, all habitable structures must be built to seismic standards established in the California Building Code (CBC). The CBC sets the standards in the State for the development of all buildings and sets requirements for structural design, plumbing and mechanical fixtures, fire and smoke protection, construction materials, interior finishes, and any other elements that make up construction of structures. The City's Building and Safety Department is responsible for implementing not only the CBC but any additional code requirements that the City may have. Adherence to all code requirements will ensure that impacts associated with seismic activity are less than significant and no additional mitigation is required.

Although the project site is located in seismically active Southern California, the site is not located within an Alquist-Priolo Earthquake Fault Zone. The Whittier area is crossed by the Whittier fault on its northern and eastern sections. Groundshaking and surface rupture hazards are associated with earthquakes along these faults. However, the project site is not located within the Whittier Fault Zone. Active faults are not known to exist within the project and a review of Special Publication 42 indicates the site is not within the California State designated earthquake fault zones (Bryant and Hart, 2007). Accordingly, the potential for fault surface rupture on the subject site is low.

a.ii) **Less Than Significant Impact.** The Whittier-Elsinore fault zone could create substantial ground shaking if a seismic event occurred along that fault. Similarly, a strong seismic event on any other fault system in Southern California has the potential to create considerable levels of ground shaking throughout the City. The project site is subject to strong seismic ground shaking, as are virtually all properties in Southern California. Ground shaking hazards caused by earthquakes along other active regional faults exist. The 2019 California Building Code requires use-modified spectral accelerations and velocities for most structural designs. Seismic design parameters using soil profile types identified in the 2019 California Building Code are presented in Section 7.3.

The proposed buildings are subject to the seismic design criteria of the California Building Code (CBC). The 2019 California Building Code (CBC; Title 14, California Code of Regulations, Part 2) contains seismic safety provisions with the aim of preventing building collapse during a design earthquake, so that occupants would be able to evacuate after the earthquake. A design earthquake is one with a two percent chance of exceedance in 50 years, or an average return period of 2,475 years. Adherence to these requirements will reduce the potential of the building from collapsing during an earthquake, thereby minimizing injury and loss of life. Although structures may be damaged during earthquakes, adherence to seismic design requirements will minimize damage to property within the structure because the structure is designed not to collapse. The CBC is intended to provide minimum requirements to prevent major structural failure and loss of life. Adherence to existing regulations will reduce the risk of loss, injury, and death; impacts due to strong ground shaking will be less than significant.

a.iii) **Less Than Significant Impact.** Liquefaction is a mode of ground failure that results from the generation of high pore water pressures during earthquake ground shaking, causing loss of shear strength. Liquefaction is typically a hazard where loose sandy soils exist below groundwater. The California Geological Survey (CGS) has designated certain areas within southern California as potential liquefaction hazard zones. These are areas considered at a risk of liquefaction-related ground failure during a seismic event, based upon mapped surficial deposits and the presence of a relatively shallow water table. The General Plan identifies that most of the City is in areas of either very low or low liquefaction potential. According to the geotechnical investigation the site is not underlain by relatively loose silty and/or sandy soils and groundwater was not encountered to the maximum depth of 51.5 feet , as a result the potential for liquefaction to occur beneath the site is considered very low. The site is not located within a State-designated zone of potentially liquefiable soils.

a.iv) **Less Than Significant Impact.** Structures built below or on slopes subject to failure or landslides may expose people and structures to harm. The majority of the City is relatively flat and characterized by slopes that are not high (less than 50 feet) or steep (generally sloping flatter than 1-1/2:1, horizontal to vertical). There are areas associated with the Puente Hills formation that have shown previous evidence of landslides. Due to a lack of slopes within or nearby the property, seismically induced landsliding is not anticipated to pose a danger to the site. Impacts would be expected to be less than significant and no further environmental analysis is required.

b) **Less Than Significant Impact.** Topsoil is used to cover surface areas for the establishment and maintenance of vegetation due to its high concentrations of organic matter and microorganisms. No native topsoil is likely to occur on site. During project construction, fill materials will be over-excavated to reveal underlying soils within the building footprint area. The project has the potential to expose surficial soils to wind and water erosion during construction activities.

Wind erosion will be minimized through soil stabilization measures required by South Coast Air Quality Management District (SCAQMD) Rule 403 (Fugitive Dust), such as daily watering. Construction of the project will be required to have a PM_{10} Dust Control Plan to identify best management practices for the control fugitive dust. The intent of SCAQMD Rule 403 is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions. Elements of the Dust Control Plan may appear as notes on the grading plan that must be approved by the City prior to any site disturbance.

Water erosion will be prevented through the City's standard erosion control practices required pursuant to the California Building Code and the National Pollution Discharge Elimination System (NPDES), such as silt fencing or sandbags. Construction of the project will be required to have a Stormwater Pollution Prevention Plan (SWPPP). The project's SWPPP would identify typical best management practices specific towards fugitive dust and containment of sediment discharge and transport from the site. Once construction is completed, a Water Quality Management Plan (WQMP) must be implemented during the life of the project that includes best management practices (BMPs) specific towards maintenance of vegetative landscaping, drainage culverts/channels and drainage inlets. Following project construction, the site would be covered completely by paving, structures, and landscaping. Compliance with regulatory requirements of the RWQCB and of SCAQMD would ensure that impacts with regard to soil erosion or loss of topsoil are less than significant and no mitigation is required.

The project has the potential to expose surficial soils to wind and water erosion during construction activities. Wind erosion will be minimized through soil stabilization measures

required by South Coast Air Quality Management District (SCAQMD) Rule 403 (Fugitive Dust), such as daily watering. Water erosion will be prevented through the City's standard erosion control practices required pursuant to the California Building Code and the National Pollution Discharge Elimination System (NPDES), such as silt fencing or sandbags. Following project construction, the site would be covered completely by paving, structures, and landscaping. Impacts related to soil erosion would be less than significant with implementation of existing regulations.

c) **Less Than Significant Impact.** Impacts related to liquefaction and landslides are discussed above in Section 4.7.a. Lateral spreading is the downslope movement of surface sediment due to liquefaction in a subsurface layer. The downslope movement is due to gravity and earthquake shaking combined. Such movement can occur on slope gradients of as little as one degree. Lateral spreading typically damages pipelines, utilities, bridges, and structures.

Lateral spreading of the ground surface during a seismic activity usually occurs along the weak shear zones within a liquefiable soil layer and has been observed to generally take place toward a free face (i.e. retaining wall, slope, or channel) and to lesser extent on ground surfaces with a very gentle slope. Due to the absence of any substantial change in grade, the potential for lateral spread occurring within the project area is considered to be low. The project will be constructed in compliance with all applicable building code requirements regarding soil stability.

d) **Less Than Significant Impact.** The CBC requires special design considerations for foundations of structures built on soils with expansion indices greater than 20. The proposed project will comply with applicable building codes that account for the possibility of expansive soils. ALBUS & ASSOCIATES determined that the near-surface soils are generally anticipated to possess a Low to High expansion potential. High expansion potential was observed in samples collected in B-4 at 4 feet within the older alluvial materials. Adverse effects from expansive materials can be mitigated through the use of adequately designed foundations and slab systems. Specific recommendations for foundations and slab systems are presented in Appendix C. Additional mitigation can also be achieved by lime treatment, removal and replacement, and the placement of compacted fills below slabs on grade at lower relative compactions and higher moistures to lessen their expansion potential. Additional testing for soil expansion will be required subsequent to rough grading and prior to construction of foundations and other concrete flatwork to confirm these conditions. The project will be constructed in compliance with all applicable building code requirements regarding soil expansion.

e) **No Impact.** The entire City is served by an existing sewer system and therefore, has no need for septic tanks or any other alternative wastewater disposal systems at this location. No further environmental analysis is required.

f) **Less Than Significant Impact.** No known paleontological sites are documented within the project area according to the Whittier General Plan. The potential for uncovering such significant resources at the project site during construction activities is considered remote given that no such resources have been discovered during prior development activity within the area, there are no unique geological resources on or near the project site, and the fact that the site has been significantly disturbed in the past. Excavation will be necessary for the residential development. In accordance with standard City procedures, a halt-work condition would be in place in the unlikely event that paleontological resources are discovered during construction. The contractor would be required to halt work in the immediate area of the find and to retain a professional paleontologist, as applicable, to examine the materials to determine whether they are a "unique archaeological resource" as defined in Section 21083.2(g) of the State CEQA Statutes. If this determination is positive, the scientifically consequential information must be fully recovered by

the paleontologist consistent with standard City protocol. As such, impacts on paleontological impacts would be less than significant.

Conditions of Approval

In accordance with standard City procedures, a halt-work condition would be in place in the unlikely event that archaeological or paleontological resources are discovered during construction. The contractor would be required to halt work in the immediate area of the find and to retain a professional archaeologist or paleontologist, as applicable, to examine the materials to determine whether they are a "unique archaeological resource" as defined in Section 21083.2(g) of the State CEQA Statutes. If this determination is positive, the scientifically consequential information must be fully recovered by the archaeologist or paleontologist, as applicable, consistent with standard City protocol.

Mitigation Measures

No mitigation measures are necessary because Geology and Soil impacts will be less than significant.

Level of Significance After Mitigation

Geology and Soils impacts will be less than significant with standard conditions satisfied.

4.8 – Greenhouse Gas Emissions

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

Sources

Information used to prepare this section is from the following source: City of Whittier *General Plan Update, 2021;* California Emissions Estimator Model®, Version 2020.4.0; California Air Pollution Control Officers Association, May 2021 and Urban Crossroads, Greenhouse Gas Analysis City of Whittier, dated February 11, 2022.

Environmental Setting

Constituent gases of the Earth's atmosphere, called atmospheric greenhouse gases (GHG), play a critical role in the Earth's radiation amount by trapping infrared radiation emitted from the Earth's surface, which otherwise would have escaped to space. Prominent greenhouse gases contributing to this process include carbon dioxide (CO2), methane (CH4), ozone, water vapor, nitrous oxide (N2O), and chlorofluorocarbons (CFCs). This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. Anthropogenic (caused or produced by humans) emissions of these greenhouse gases in excess of natural ambient concentrations are responsible for the enhancement of the Greenhouse Effect and have led to a trend of unnatural warming of the Earth's natural climate, known as global warming or climate change. Emissions of gases that induce global warming are attributable to human activities associated with industrial/manufacturing, agriculture, utilities, transportation, and residential land uses. Transportation is responsible for 41 percent of the State's greenhouse gas emissions, followed by electricity generation. Emissions of CO2 and nitrous oxide (NOx) are byproducts of fossil fuel combustion. Methane, a potent greenhouse gas, results from off-gassing associated with agricultural practices and landfills. Sinks of CO2, where CO2 is stored outside of the atmosphere, include uptake by vegetation and dissolution into the ocean.

The project is within the South Coast Air Basin, which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). A numerical threshold for determining the significance of greenhouse gas emissions in the South Coast Air Basin (Basin) has not officially been adopted by the SCAQMD. As an interim threshold based on guidance provided in the CAPCOA *CEQA and Climate Change* white paper, a non-zero threshold based on Approach 2 of the handbook will be used. Threshold 2.5 (Unit- Based Thresholds Based on Market Capture) establishes a numerical threshold based on capture of approximately 90 percent of emissions from future development. The latest threshold developed by SCAQMD using this method is 3,000 metric tons carbon dioxide equivalent (MTCO2E) per year for residential and commercial projects. This threshold is based on the review of 711 CEQA projects.

In response to the requirements of SB97, the State Resources Agency developed guidelines for the treatment of GHG emissions under CEQA. These new guidelines became state laws as part of Title 14 of the California Code of Regulations in March, 2010. The CEQA Appendix G Guidelines were modified to include GHG as a required analysis element. A project would have a potentially significant impact if it:

- Generates GHG emissions, directly or indirectly, that may have a significant impact on the environment, or,
- Conflicts with an applicable plan, policy or regulation adopted to reduce GHG emissions.

Section 15064.4 of the Code specifies how significance of GHG emissions is to be evaluated. The process is broken down into quantification of project-related GHG emissions, making a determination of significance, and specification of any appropriate mitigation if impacts are found to be potentially significant. At each of these steps, the new GHG guidelines afford the lead agency with substantial flexibility.

Emissions identification may be quantitative, qualitative or based on performance standards. CEQA guidelines allow the lead agency to "select the model or methodology it considers most appropriate." The most common practice for transportation/combustion GHG emissions quantification is to use a computer model such as CalEEMod, as was used in the ensuing analysis.

The significance of those emissions then must be evaluated; the selection of a threshold of significance must take into consideration what level of GHG emissions would be cumulatively

considerable. The guidelines are clear that they do not support a zero net emissions threshold. If the lead agency does not have sufficient expertise in evaluating GHG impacts, it may rely on thresholds adopted by an agency with greater expertise.

On December 5, 2008 the SCAQMD Governing Board adopted an Interim quantitative GHG Significance Threshold for industrial projects where the SCAQMD is the lead agency (e.g., stationary source permit projects, rules, plans, etc.) of 10,000 Metric Tons (MT) CO_2 equivalent/year. In September 2010, the Working Group released revisions that recommended a threshold of 3,000 MT CO_2e for commercial or residential land use types. This 3,000 MT/year recommendation has been used as a guideline for this analysis.

Discussion

a) **Less Than Significant Impact.** Construction of the residential units and utilization would generate greenhouse gas (GHG) emissions from equipment emissions. Once occupied operational emissions including transportation, off-site electricity generation, on-site natural gas consumption, water conveyance, treatment and wastewater disposal and biogenic decay of organic solid waste will also generate GHG emissions.

Greenhouse gas emissions are estimated for on-site and off-site operational activity using CalEEMod. Greenhouse gas emissions from mobile sources, area sources and energy sources are shown in Table 4.8-1. CalEEMod annual GHG output calculations are provided in Appendix D. As shown in Table 4.8-1, the project GHG emissions are expected to be below the SCAQMD's Tier 3 approach, which limits GHG emissions to 3,000 $MTCO_2e$ for residential projects. The project related long-term GHG impacts are less than significant.

Table 4.8-1
Project Greenhouse Gas Emissions

Emission Source	Emissions (MT/yr)			
	CO_2	CH_4	N_2O	Total CO_2e
Annual construction-related emissions amortized over 30 years	11.33	0.00	0.00	11.44
Area Source	9.84	0.00	0.00	9.91
Energy Source	62.57	0.00	0.00	62.92
Mobile Source	0.00	0.00	0.00	0.00
Waste	3.92	0.23	0.00	9.72
Water Usage	9.83	0.07	0.00	12.16
Total CO_2e (All Sources)	**106.14**			
SCAQMD Threshold	**3,000**			
Significant?	**No**			

Source: CalEEMod, Appendix D

-- = Emission factor only provided in MT CO2e

b) **Less Than Significant Impact.** Whittier has adopted the 2019 edition of the California Building Code (Title 24), including the California Green Building Standards Code. The project would be subject to the California Green Building Standards Code, which requires new buildings to reduce water consumption, employ building commissioning to increase building system efficiencies for large buildings, divert construction waste from landfills, and install low pollutant-emitting finish materials. The project does not include any feature (i.e. substantially alter energy

demands) that would interfere with implementation of these State and City codes and plans. The City of Whittier does not have any additional plans, policies, standards, or regulations related to climate change and GHG emissions. Also, no other government-adopted plans or regulatory programs in effect at this time have established a specific performance standard to reduce GHG emissions from a single building project.

Pursuant to 15604.4 of the *CEQA Guidelines*, a lead agency may rely on qualitative analysis or performance-based standards to determine the significance of impacts from GHG emissions. As such, the project's consistency with SB 32 (2017 Scoping Plan), is discussed in Appendix D. Consistency with AB 32 and the 2008 Scoping Plan is not necessary, since the target year for AB 32 and the 2008 Scoping Plan was 2020, and the Project's buildout year for modeling is 2023. As such the 2017 Scoping Plan is the most relevant statewide plan. Project consistency with SB 32 is evaluated in the discussion contained in Appendix D. The project would not conflict with any of the 2017 Scoping Plan elements as any regulations adopted would apply directly or indirectly to the project. Further, recent studies show that the State's existing and proposed regulatory framework will allow the State to reduce its GHG emissions level to 40% below 1990 levels by 2030. The Project does not directly conflict with any applicable plans or policies adopted for the purpose of reducing GHG emissions. Additionally, the project would not exceed the City of Whittier threshold of 3,000 MT CO2e. Therefore, Project-related emissions would be less than significant relative to GHG reduction plans.

Mitigation Measures

No mitigation measures are necessary because impacts to Greenhouse Gas Emissions will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.9 – Hazards and Hazardous Materials

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
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 reasonable foreseeable upset and accident condition 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 or excessive noise for people residing or working in the project area?				☑
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			☑	
g) Expose people or structures, directly or indirectly to a significant risk of loss, injury or death involving wildland fires, including where wildlands?				☑

Sources

Information used to prepare this section is from the following sources: *City of Whittier General Plan Update, 2021*; California Department of Toxic Substances Control, EnviroStor; California State Water Resources Control Board, GeoTracker; California State Water Resources Control Board, Sites Identified with Waste Constituents Above Hazardous Waste Levels Outside the Waste Management Unit; California Department of Forestry and Fire Protection, Incorporated Fire Hazard Severity Zone: City of Whittier, Very High Fire Hazard Severity Zones in LRA (Local Responsibility Area), September 2011; California Department of Transportation, Division of Aeronautics website, California Public Use Airport list; Smith-Emery Geoservices, Limited Phase II ESA Report, 9829 La Serna Drive, Whittier, CA 90605, dated March 9, 2020; Smith-Emery Geoservices, Phase I Environmental Site Assessment Report, 9829 La Serna Drive, Whittier, CA 90605, dated February 13, 2020; and Focus Environmental Consulting, Hazardous Material Survey Inspection Report, Restaurant Building, 9829 La Serna Drive, Whittier, CA, dated February 25, 2020.

Environmental Setting

Hazardous Waste Site

The City of Whittier has properties listed on the State of California Hazardous Waste and Substances Site List pursuant to Government Code Section 65962.5 California Department of Toxic Substances Control Envirostar database.

Local Schools

The City is served by the following school districts: Whittier Union High School District, Whittier City School District, Fullerton Joint Union High School District, Whittier Elementary School District, the East Whittier Elementary School District, the Los Nietos School District and the Lowell Joint School District. The closest schools to the project include: Murphy Ranch Elementary School at 16021 Janine Drive, Whittier approximately 0.87 miles to the east; Granada Middle School located at 15337 Lemon Drive, Whittier approximately 1.74 miles to the southeast; and La Serna High School located at 15301 Youngwood Drive, Whittier approximately 0.48 north of the project site.

Public Airports/Private Airstrips

There are no private or public airports located within the City limits of Whittier. Fullerton Municipal Airport is located approximately 7 miles southeast of the City.

Discussion

a) **Less Than Significant Impact.** The proposed project could result in a significant hazard to the public if the project includes the routine transport, use, or disposal of hazardous materials or places housing near a facility which routinely transports, uses, or disposes of hazardous materials. The proposed project is located within a primarily residential, commercial and institutional area within the city, and is not located in an industrial area. The routine use, transport, or disposal of hazardous materials is primarily associated with industrial uses that require such materials for manufacturing operations or produce hazardous wastes as by-products of production applications. The proposed project does not propose or facilitate any activity involving significant use, routine transport, or disposal of hazardous substances as part of the residential use.

During site preparation and construction, there would be a minor level of transport, use, and disposal of hazardous materials and wastes that are typical of construction projects. This would include fuels and lubricants for construction machinery, coating materials, etc., in addition to removal of hazardous materials associated with current uses. Routine construction control measures and best management practices for hazardous materials storage, application, waste disposal, and accident prevention and clean up, etc. would be sufficient to reduce potential impacts to a less than significant level.

With regard to project operation, widely used hazardous materials common at residential uses include paints and other solvents, cleaners, and pesticides. The remnants of these and other products are disposed of as household hazardous waste (HHW) that includes used dead batteries, electronic wastes, and other wastes that are prohibited or discouraged from being disposed of at local landfills. Regular operation and cleaning of the residential units would not result in significant impacts involving use, storage, transport or disposal of hazardous wastes and substances. Use of common household hazardous materials and their disposal does not present a substantial health risk to the community. Impacts associated with the routine transport, use of hazardous materials or wastes will be less than significant.

b) **Less Than Significant Impact.** All hazardous materials are required to be utilized and transported in accordance with their labeling pursuant to federal and state law. Routine construction practices include good housekeeping measures to prevent/contain/clean-up spills and contamination from fuels, solvents, concrete wastes and other waste materials.

The Phase I Environmental Site Assessment (ESA) determined that there were no records of any underground storage tanks (USTs) and/or any hazardous materials inventories on file for the subject site at any of the regulatory agencies researched. The adjacent site to the south at

15175 Whittier Boulevard was used as a gas station from at least 1961 to before 1980. Smith-Emery Geoservices (SEG) did not find any UST records at regulatory agencies for the gas station as it was during a pre regulatory oversight era. They noted the historical USTs were single walled steel construction and were known to develop holes within 10 years. In addition, gas station operations and UST maintenance were not regulated by agencies as they are presently. SEG identified a potential for subject site to be impacted in case of spills and/or leaks which in their opinion constitutes a Recognized Environmental Condition. SEG recommended further environmental investigation including subsurface soils and soil vapor investigation to determine if the subject site has been impacted.

Further based on the age of the former onsite structure, SEG recommended complete asbestos and lead based surveys prior to any significant renovations and/or demolition activities that would potentially disturb the existing building materials. In May 2020, the property owner applied through the City of Whittier for a demolition permit. The permit (DE20-0753) was to demolish the 9,200 square foot single-story commercial structure. As part of the demolition permit, Focus Environmental Consulting prepared a Hazardous Material Survey Inspection Report, Restaurant Building, 9829 La Serna Drive, Whittier, CA, dated February 25, 2020 to identify asbestos-containing materials (ACM), lead-based paint (LBP) and hazardous waste materials (HWM) prior to a planned demolition. Compliance with applicable standards was met and the permit was finalized on July 22, 2020.

SEG conducted subsurface soils investigations at two locations along southern boundary to 20 feet below ground surface (bgs) and subsurface soil vapor at two locations inside of the onsite building to attempt to determine if any potential leaks at the adjacent site to the south (historical gas station). Based upon the results of the soil and soil vapor data collected, there is evidence of fuel additives MEK, MIBK, and MTBE to be present in the soil vapors. However, the concentrations of these vapors are below the regulatory screening levels. The VOCs were not detected in any of the subsurface soil samples. Trace levels of petroleum hydrocarbons as diesel were found in all subsurface soils which were significantly below the regulatory action levels. CAM 17 Total Metals were found in soils samples to be present at concentrations below levels which require hazardous waste characterization. Based on results of their investigation, it is SEG's opinion that no further site investigation is warranted for the subject site at this time. Impacts would be less than significant with implementation of existing regulations .

c) **Less Than Significant Impact.** The closest schools to the project include: Murphy Ranch Elementary School at 16021 Janine Drive, Whittier approximately 0.87 miles to the east; Granada Middle School located at 15337 Lemon Drive, Whittier approximately 1.74 miles to the southeast; and La Serna High School located at 15301 Youngwood Drive, Whittier approximately 0.48 north of the project site. Operation of the proposed project—a 42-unit residential project—would not generate significant amounts of any hazardous emissions, and storage, handling, or production and disposal of acutely hazardous materials is not required or proposed for any aspect of this project. Impacts would be less than significant with implementation of existing regulations.

d) **Less than Significant Impact.** A review of known electronic database listings for possible hazardous waste generating establishments, as well as sites with known environmental concerns was conducted. Facilities were identified by county, state, or federal agencies that generate, store, or dispose of hazardous materials. The project is not located on the State of California Hazardous Waste and Substances Site List pursuant to Government Code Section 65962.5 as identified on the California Department of Toxic Substances Control Envirostar database. Impacts will be less than significant.

e) **No Impact.** There are no private or public airports located within 2 miles of the project area. The project would not alter air traffic patterns or encourage future developments that could conflict with established Federal Aviation Administration (FAA) flight protection zones. Therefore, the project would not result in safety hazards from proximity to airports for people living in the project area or excessive noise for people residing or working in the project area. No impact will occur.

f) **Less Than Significant Impact.** The proposed development is an infill project. The project would increase the population of the area by approximately 109 persons. Given the increase in built square footage on the site, the proposed project may increase employment in the area. Per State Fire and Building Codes, sufficient space will have to be provided around the building for emergency personnel and equipment access and emergency evacuation. All project elements, including landscaping, would be sited with sufficient clearance from existing and proposed structures so as not to interfere with emergency access to and evacuation from the units. The project would comply with the California Fire Code (Title 24, California Code of Regulations, Section 9). The site plan includes access points from Janine Drive and La Serna Drive for the residential development.

The project driveways would allow emergency access and evacuation from the site, and would be constructed to California Fire Code specifications. Over the long term, the project would not impair implementation of or physically interfere with an adopted emergency response plan or evacuation plan because no permanent public street or lane closures are proposed. Construction work in the street associated with the development would be limited to lateral utility connections, construction of driveways on Janine Drive and La Serna Drive, installation of street trees, and extensions of the storm drain and water systems; all of which would be limited to nominal potential traffic diversion. Project impacts would be less than significant.

g) **No Impact.** The project site is located within an urbanized area of the City of Whittier and is not located within a fire hazard zone, as identified on the latest Fire Hazard Severity Zone (FHSZ) maps prepared by the California Department of Forestry and Fire Protection (CALFIRE). There are no wildland conditions in the urbanized area that the project site is located. No impact would occur.

Mitigation Measures

No mitigation measures are necessary because impacts to Hazards and Hazardous Materials will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.10 – Hydrology and Water Quality

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			☑	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			☑	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on- or off-site**;**			☑	
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite**;**			☑	
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or			☑	
iv) impede or redirect flood flows?			☑	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			☑	
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			☑	

Sources

Information used to prepare this section is from the following sources: City of Whittier *General Plan Update, 2021*; Whittier Municipal Code; Flood Insurance Rate Maps (FIRM); C&V Consulting, Inc., Civil Plans, dated February 2022; C&V Consulting, Inc., Preliminary Hydrology Study, 9289 La Serna Drive, Whittier, California, dated April 2021 and C&V Consulting, Inc., Preliminary Low Impact Development (LID) Plan, TTM No. 83435, APN 8224-017-022 & 023, 9289 La Serna Drive, Whittier, California, dated April 2021.

Environmental Setting

The developed portions of Whittier are served by an extensive municipal storm drain network that is maintained by the City and designed to collect all urban runoff. These drain eventually to the Los Angeles River. While existing flood control structures have provided significant

protection from uncontrolled flooding, inadequacies in the local drainage system have caused occasional localized flooding.

Federal and State Oversight

The federal Clean Water Act (CWA) is the principal federal law that provides for the protection of water quality. The primary objectives of the CWA are to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters," and to make all surface waters "fishable" and "swimmable." The U.S. Environmental Protection Agency (EPA) is the designated federal agency responsible for implementing the CWA and it has further delegated authority to the State Water Resources Control Board (SWRCB) and associated Regional Water Quality Control Boards (RWQCB) for compliance with the CWA. Relevant programs identified in the CWA include the National Pollution Discharge Elimination System (NDPES) program which regulates discharge of pollutants from known sources (point sources), as well as non-point sources, into waters of the United States through the issuance of permits. As part of the NPDES program, a Storm Water Pollution Prevention Plan (SWPPP) must be prepared for construction activities affecting greater than one acre because the discharge of stormwater during construction is considered a non-point source of water pollution.

Stormwater Pollution Prevention Plans

According the Storm Water Program run by the State Water Resources Control Board (SWRCB), the property owners shall also prepare a SWPPP in accordance with state requirements. All construction projects which could potentially have an adverse impact on the City's municipal separate storm sewer system or waters of the State shall install and/or implement appropriate construction and post-construction BMPs, as listed in their SWPPP.

Discussion

a) **Less Than Significant Impact.** A project normally would have an impact on surface water quality if discharges associated with the project would create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code (CWC), or that cause regulatory standards to be violated as defined in the applicable National Pollutant Discharge Elimination System (NPDES) stormwater permit or Water Quality Control Plan for the receiving water body. For the purpose of this specific issue, a significant impact could occur if the project would discharge water that does not meet the quality standards of the agencies which regulate surface water quality and water discharge into stormwater drainage systems. Significant impacts could also occur if the project does not comply with all applicable regulations with regard to surface water quality as governed by the State Water Resources Control Board (SWRCB). These regulations include preparation of a Storm Water Quality Management Plan (SWQMP) to reduce potential post-construction water quality impacts.

Discharges into stormwater drains or channels from construction sites of one acre or larger are regulated by the General Permit for Storm Water Discharges Associated with Construction Activity issued by the State Water Quality Control Board. The General Permit was issued pursuant to National Pollutant Discharge Elimination System (NPDES) regulations of the Environmental Protection Agency (EPA), as authorized by the Clean Water Act. Compliance with the General Permit involves developing and implementing a Storm Water Pollution Prevention Plan (SWPPP) specifying best management practices (BMPs) that the project would use to minimize pollution of stormwater. The SWPPP BMPs would follow the guidelines set forth by the State Water Resources Control Board (SWRCB).

The project applicant will be required to comply with NPDES permit requirements through the preparation and implementation of a SWPPP for construction activities. The City's Public Works Director will review the application for compliance with applicable regulations and to ensure that no water quality standards or discharge requirements are violated. In addition, the Public Works Department has conditioned the following:

- Prior to any site grading, a Standard Urban Stormwater Management Plan (SUSMP), utilizing Best Management Practices to control or reduce the discharge of pollutants to the maximum extent practical, shall be prepared and approved by the City's Public Works Department.

With regard to long-term stormwater management, the project applicant/developer is required to comply with Whittier Municipal Code Chapter 8.36, stormwater and runoff pollution control requirements. In addition, the applicant/developer will be required to prepare a water quality management plan (WQMP) to implement measures as outlined by the Los Angeles RWQCB, which typically include, but are not limited to: 1) guidance, operation and maintenance for all source control, site design, and treatment control BMPs; and 2) operation and maintenance activities, which include maximizing canopy interception and water conservation, landscape planning, roof runoff controls, efficient irrigation, storm drain system signage, trash storage areas and litter control, employee training/education program, protect slopes and channels, common area catch basin inspection, energy dissipaters, pervious concrete/alternative materials, and storm filter filtration systems. Standard conditions of the WQMP will also include providing a thorough description of operation and maintenance activities, and providing a schedule of the frequency of operation and maintenance for each BMP. The inclusion of the aforementioned standard conditions, which reflect the Los Angeles RWQCB's WQMP and BMP requirements, sufficiently address stormwater runoff and would reduce impacts to water quality standards or waste discharge requirements to a less-than-significant level with implementation of the standard regulatory requirements.

b) **Less Than Significant Impact.** If the project removed an existing groundwater recharge area or substantially reduced runoff that results in groundwater recharge, a potentially significant impact could occur. Project-related grading would not reach groundwater depths and no disturbance of groundwater is anticipated. The proposed building footprint areas and paved parking areas would increase impervious surface coverage on the site. The total amount of infiltration on site would be increased over existing conditions. Since the site was previously developed and was not managed for groundwater supplies, this change in infiltration for the residential development would not have a significant effect on groundwater supplies or recharge.

The project would be required to comply with Chapter 13.42 (Water Conservation in Landscaping) and 13.43 (Water Efficient Landscaping) of the City of Whittier Municipal Code, which would lessen the project's demand for water resources. Also, CBC Title 24 water efficiency measures require a demonstrated 20 percent reduction in the use of potable water. The project's landscaping plans include drought tolerant landscaping materials. Compliance with Title 24 and the City's Water Conservation in Landscaping and Water Efficient Landscaping Ordinances will reduce the proposed project's impacts to groundwater supplies to a level of less than significant. Water supply is further discussed in Checklist Response 4.19.

c.i) **Less Than Significant Impact.** Potentially significant impacts to the existing drainage pattern of the site or area could occur if development of the project results in substantial on- or off-site erosion or siltation. There are no streams cross the project site; thus, the project would not alter any stream course. The project will collect and convey run-off from upstream areas and convey these flows through the site, to the storm drainage system. A site drainage plan is required by the City of Whittier and would be reviewed by the City Engineer. The final grading

and drainage plan shall be approved by the City Engineer during plan check review. Erosion and siltation reduction measures would be implemented during construction consistent with an approved SWPPP, which will demonstrate compliance with the City's NPDES permit. At the completion of construction, the project would consist of impervious surfaces and landscaped areas, and would therefore not be prone to substantial erosion. Impacts will be less than significant.

c.ii) **Less Than Significant Impact.** The project will not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite as determined by the City's Public Works Department. Impacts will be less than significant.

c.iii) **Less Than Significant Impact.** The City's existing storm water drainage system is adequate to accommodate runoff from any future land uses subject to the provisions of this project. The prior use on the site was commercial. The previous developed site consisted of a commercial building with a parking lot area. Majority of parking lot area is covered with impervious paving. A private alley within the project boundary is utilized for shared access to the adjacent properties to the west. The existing site elevations ranging between approximately 278.0 feet and 266.0 feet above mean sea level. Generally, the existing site drainage surface flows overland in the southeasterly direction towards the private alley and flows into the rights-of-way of La Serna Drive. Within the public rights-of-way, drainage continues downstream southerly via existing street gutter on La Serna Drive. All flow ultimately outlets toward the existing San Gabriel River which drains to the Pacific Ocean at San Pedro Bay.

The project proposes the construction of 6 buildings with 42 attached condominium with private garages, private drive aisles, sidewalks, and common landscaped areas. The project site will be accessible with an entrance/ exit along Janine Drive and the existing private alley. The private alley on the southerly site is proposed for access to proposed development and existing adjacent properties. The private alley was analyzed as an offsite area due to the inseparable confluence flow from upstream adjacent properties, which peak flowrate drainage was determined to unaffected by replacement in-kind and analysis validated within this Hydrology report. Onsite drainage is divided into two (2) drainage management areas (DMAs) that are graded to ultimately route runoff towards La Serna Drive to preserve pre-development condition drainage conditions. Grated and curb inlets are place at the street low points to collect and direct runoffs from each DMA to a detention system, which will feed a WetlandMOD biofiltration system to conform with water quality treatment standards. Treated stormwater from both DMA will enter a pump station that outlets towards a proposed parkway drain on La Serna Drive. In cases of high storm event, westerly portion of the site is graded to outlet overflow at the entrance of the site at the private alley which flows downstream as pre-development conditions. The runoff generated from the easterly portion of the site is captured at the catch basin installed with a pipe system that is size to outlet the 100-year storm event to the proposed parkway drain. During a higher storm event, runoff will top over the curb and sheet flow towards La Serna Drive as the low point of the proposed site to preserve pre-development conditions. There is no new infrastructure proposed as part of this project that would be transferred to public agencies. The project would not adversely affect provisions for retention and infiltration of stormwater consistent with the City's Low Impact Development (LID) policies.

c.iv) **Less Than Significant Impact.** The Federal Emergency Management Agency (FEMA) produces maps (Flood Insurance Rate Map) that identify areas that are located in flood zones. The proposed project is not located within a 100-year floodplain, as mapped by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps. The project site is identified as Zone X, defined by FEMA as areas outside the 0.2 percent annual chance floodplain on Panel 06037C01835F, effective September 26, 2008. Therefore, the project will not impede or redirect flood flows. Impacts will be less than significant.

d) **Less Than Significant Impact.** According to General Plan, most of Whittier is not within a zone influenced by the inundation of seiche, tsunami, or mudflow. The proposed project would not result in any increased risk of inundation to any properties.

e) **Less Than Significant Impact.** The residential development project will not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. All structures to be constructed will be required to meet and comply with all applicable city and State building codes to reduce impacts to water quality to less-than-significant level.

Mitigation Measures

No mitigation measures are necessary because Hydrology impacts will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.11 – Land Use and Planning

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?				☑
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?			☑	

Sources

Information used to prepare this section is from the following sources: City of Whittier *General Plan Update*, 2021.

Environmental Setting

The City of Whittier is located in the eastern portion of Los Angeles County, 15 miles east of downtown Los Angeles. The City is on the southwestern slopes of the Puente Hills just east if the San Gabriel River and the San Gabriel River Freeway (State Route 605). The land features a sloping terrain on the north and east where the Puente Hills are located and becomes flat on the southern and western sections. The subject parcels are generally flat.

Discussion

a) **No Impact.** The proposed project is surrounded by residential, commercial, and institutional uses. The proposed residential project is compatible with the surrounding land uses along LA Serna Drive and Janine Drive and will not divide an established community. The project does not propose construction of any new roadway, flood control channel, or other structure that would physically divide any portion of the community. Therefore, no impact will occur.

b) **Less than Significant Impact.** The 2040 Envision Whittier General Plan Land Use Map designates the 1.84-acre site as Mixed Use 1 with a density of 20-30 du/ac, a population density of up to 90 pp/ac, an intensity of 1.00 Floor Area Ratio (FAR) and structures at a maximum of 40 feet. The category allows for residential, commercial goods and services, and entertainment/recreation businesses that are compatible with residential use, public and private schools and religious institutions. Stand-alone residential are allowed. The proposed development plan of 42 attached single-family homes is at a density of 22.8 du/acre, a FAR of 1.04 and will accommodate 109 new residents for the single-family attached units.

The zoning classification is SP Specific Plan (Whittier Boulevard Specific Plan, Shopping Clusters II) on the 1.84-acre subject site located at 9329 La Serna Drive. Attached single-family residential development is a Conditional Use in the Shopping Cluster District. WBSP Section *4.0.5 Standards for Specific Land Uses, a. Residential Development,* 1. Shopping Clusters states "Residential use on the ground floor is permitted provided that it is located a minimum of 300 hundred feet away from the nearest edge of the Whittier Boulevard right-of-way. Residential development must conform to all other applicable development standards and design guidelines established for residential development within the Neighborhood Spine Plan Areas. And in no case shall fewer than 20 units be developed in conjunction with any new residential development."

The applicant has requested relief from development standard deviations under the Development Hardship provisions (Section 4.7) of the Whittier Boulevard Specific Plan (WBSP). The deviations requested will permit ground level residential uses located within 300 feet of Whittier Boulevard and a reduced distance between buildings within the Shopping Cluster District II area.

Section 4.7 Development Hardships provides a process for a property owner to develop or redevelop a site when the development standards and/or design guidelines in this Specific Plan substantially limit or fully prevent a site's development thereby causing a severe hardship to the property owner for which a zoning variance either does not apply or does not provide the necessary relief. A Conditional Use Permit may be granted to enable reasonable development, provided that the applicant presents clear and convincing evidence that strict adherence to all applicable development standards and/or design guidelines will substantially limit or fully prevent viable development or redevelopment of the site and the approval authority can make the additional required findings.

WBSP Section 4.3 Shopping Clusters, *4.3.1 Additional Development Standards, b. Site Development,* 2. Minimum Space Between Buildings states:

b. Minimum space between buildings on a single property featuring commercial development within the first 300 feet of Whittier Boulevard, and featuring residential development beyond the 300-foot line:
   1) Buildings with predominantly commercial uses must be separated from residential development by a minimum of 30 feet.
   2) Residential buildings facing each other must be separated by a minimum of 50 feet.
   3) Residential buildings must be separated from adjacent residential buildings to the side and rear by a minimum of 30 feet.

4) Residential development must also adhere to all applicable standards and guidelines for residential development contained within the Neighborhood Spine Plan Areas section.

The applicant is proposing to construct residential structures approximately 253.5 feet from Whittier Boulevard, residential buildings facing each other at 30 feet, and adjacent residential buildings (A and B) at 11 feet, 1 inch and Buildings C and D at 15 feet, 4-inches.

With the approval of the development hardships, the project will not conflict with the intent or implementation of the General Plan or Zoning. Impacts will be less than significant.

Mitigation Measures

No mitigation measures are necessary because impacts to Land Use and Planning will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.12 – Mineral Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource 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?				☑

Sources

Information used to prepare this section is from the *City of Whittier General Plan Update*, 2021.

Environmental Setting

Tertiary sedimentary formations on the Puente Hills contain conglomerate and sandstone deposits which may be used for aggregate. Thus, the hills have a potential for these resources, although insufficient data is available to determine if the deposits in the Puente Hills are significant and can be economically mined. No significant aggregate resources have been identified by the State Department of Mines and Geology in the Whittier area.

Discussion

a-b) **No Impact.** The project is located within a fully urbanized City of Whittier. The project does not propose any alteration of local mineral resource land uses and there are no mineral resource activities that would be altered or displaced by project implementation. No further discussion is required.

Mitigation Measures

No mitigation measures are necessary because Mineral impacts will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.13 – Noise

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			☑	
b) Generation of excessive groundborne vibration or groundborne noise levels?			☑	
c) For a project located within the vicinity or a private airstrip or 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?				☑

Sources

Information used to prepare this section is from the following sources: City of Whittier *General Plan Update*, 2021; City of Whittier Municipal Code, and Urban Crossroads, Noise Impact Analysis City of Whittier, dated February 11, 2022.

Environmental Setting

Noise Terminology

The unit of measurement used to describe a noise level is the decibel (dB). The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, the "A-weighted" noise scale, which weights the frequencies to which humans are sensitive, is used for measurements. Noise levels using A- weighted measurements are written dB(A) or dBA. Decibels are measured on a logarithmic scale, which means a doubling of the energy of a noise source, such as a doubled traffic volume, would increase the noise levels by 3 dBA; halving of the energy would result in a 3 dBA decrease.

Average noise levels over a period of minutes or hours are usually expressed as dBA Leq, or the equivalent noise level for that period of time. For example, Leq(3) would represent a 3-hour average. When no period is specified, an one-hour average is assumed.

It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA; that a change of 5 dBA is readily perceptible, and that an increase (decrease) of 10 dBA sounds twice (half) as loud. This definition is recommended by Caltrans publication, *Transportation's Traffic Noise Analysis Protocol for New Highway and Reconstruction Projects*.

Vibration

Groundborne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of groundborne vibrations typically only cause a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although groundborne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Groundborne noise is an effect of groundborne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

Noise Standards

State Regulations

State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation. Title 24 of the California Code of Regulations, also known as the California Building Standards Code, establishes building standards applicable to all occupancies throughout the state. The code provides acoustical regulations for both exterior-to-interior sound insulation, as well as sound and impact isolation between adjacent spaces of various occupied units. Title 24 regulations state that interior noise levels generated by exterior noise sources shall not exceed 45 dBA Ldn/CNEL, with windows closed, in any habitable room for general residential uses.

City of Whittier General Plan

The Whittier Noise Guidelines for land use planning reflects the City's interpretation of noise guidelines promulgated by the California Office of Noise Control. The guidelines provide the City with an integral tool to gauge the compatibility of land uses relative to existing and future noise levels.

Vibration Standards

The City of Whittier does not have a published vibration impact criterion. The California Department of Transportation (Caltrans) has published one of the seminal works for the analysis of groundborne noise and vibration relating to transportation- and construction-induced vibrations and although the project is not subject to the regulations, it serves as a useful tool to evaluate vibration impacts. A vibration impact would generally be considered significant if it involves any construction-related or operations-related impacts in excess of 0.2 +inches per second (in/sec) PPV.

Discussion

a) **Less Than Significant Impact.** Infill development involves construction in close proximity to existing residents and businesses. Existing residential dwelling units located northeast of the project site may be affected by short-term noise impacts associated the transport of workers, the movement of construction materials to and from the project site, ground clearing, excavation, grading, and building activities. Construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work.

The closest sensitive receptor to the east is approximately 155 feet from the project site. Ambient noise levels at the nearest residence east of the project site are expected to range between 62.0 dBA Leq in the daytime and 55.6 dBA Leq during nighttime hours. Construction activities could result in increases of up to 18 dBA Leq at the nearest sensitive receptor to the east during daytime hours.

Per Section 8.32.040 and 8.32.080, erection or demolition of buildings, grading and excavation of land including the use of blasting, the startup and use of heavy equipment such as dump trucks and graders and the use of jack hammers are exempt from the City noise ordinance standards as long as they are conducted on weekdays between the hours of 7:00 AM and 6:00 PM and on Saturdays between the hours of 8:00 AM and 5:00 PM. Impacts would be less than significant with adherence to these allowed hours of construction.

The project is expected to generate approximately 228 average daily trips per day with an AM peak hour trip generation of 15 trips and a PM peak hour trip generation of 18 trips. Both Janine and La Serna Drives are classified as Collectors. The project's contribution to existing traffic volumes would not substantially increase ambient noise levels. No mitigation is required.

The onsite traffic noise level analysis indicates that the building facades will experience exterior noise levels ranging from 53.7 to 66.1 dBA CNEL. Buildings A through E represent residential units exposed to Whittier Boulevard, La Serna Drive and Janine Drive. See Appendix H for the onsite noise modeling. The future exterior noise levels at the proposed buildings facades are shown to range from 53.7 to 66.1 dBA CNEL. This noise analysis shows that the future noise levels will not exceed the City of Whittier 60 dBA CNEL exterior noise level standards for residential land uses at Buildings A, B, E, or F. However, the exterior noise levels would exceed 60 dBA CNEL at the facades of Buildings C and D. Therefore, an interior noise analysis has been prepared to provide the necessary assessment for compliance with the City of Whittier Noise and Land Use Compatibility Guidelines. Exterior noise levels at the facades of Buildings C and D will exceed the City of Whittier noise level *normally compatible* level for residential land uses but will not exceed the *conditionally compatible* standard. Therefore, based the OPR General Plan Guidelines definition of *conditionally compatible*, *new construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.*

The future noise levels were calculated at the first-, second-, and third-floor building façades to ensure that the interior noise levels comply with the State and City of Whittier 45 dBA CNEL interior noise standards. The interior noise level is the difference between the predicted exterior noise level at the building façade and the noise reduction of the structure. Typical building construction will provide a Noise Reduction (NR) of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with "windows closed." However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise. Therefore, to meet the State and City of Whittier 45 dBA CNEL interior noise standards for residential land use the project is committed to and shall provide the following or equivalent noise abatement measures on Buildings A through F:

- Windows & Glass Doors: Windows and glass doors will be well-fitted, well-weatherstripped assemblies and shall have minimum sound transmission class (STC) ratings of 27.
- Exterior Doors: All exterior doors will be well-fitted, well-weather stripped, and have minimum STC ratings of 27. Well-sealed perimeter gaps around the doors are essential to achieve the optimal STC rating.
- Walls: At any penetrations of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar to form an airtight seal. All exterior wall assemblies shall have a minimum STC rating of 46.
- Roof: Roof sheathing of wood construction shall be per manufacturer's specification or caulked plywood of at least one-half inch thick. Insulation with at least a rating of R-19 shall be used in the attic space.
- Ceilings: Ceilings shall be per manufacturer's specification or constructed of well-sealed gypsum board of at least one-half inch thick.
- Ventilation: Arrangements for any habitable room shall be such that any exterior door or window can be kept closed when the room is in use and still receive circulated air. A forced air circulation system (e.g., air conditioning) or active ventilation system (e.g., fresh air supply) shall be provided which satisfies the requirements of the Uniform Building Code.

The residential units require a windows-closed condition and a means of mechanical ventilation (e.g., air conditioning) to comply with the State and City 45 CNEL interior noise standard. The future mitigated noise levels at the first-floor building façade are expected to range from 53.7 to 66.1 dBA CNEL. The first-floor interior noise level analysis shows that the State and City of Whittier 45 dBA CNEL with windows-closed interior noise standards can be satisfied using windows with a minimum STC rating of 27 for units facing Whittier Boulevard or adjacent to La Serna Drive and Janine Drive, based on the minimum interior noise reduction for standard construction. The future unmitigated noise levels at the second-floor building façade are expected to range from 53.7 to 65.4 dBA CNEL. The second-floor interior noise level analysis shows that the State and City of Whittier 45 dBA CNEL with windows closed interior noise standards can be satisfied using standard windows with a minimum STC rating of 27 for units facing Whittier Boulevard or adjacent to La Serna Drive and Janine Drive. The future unmitigated noise levels at the third-floor building façade are expected to range from 54.6 to 65.8 dBA CNEL. The third-floor interior noise level analysis shows that the State and City of Whittier 45 dBA CNEL with windows closed interior noise standards can be satisfied using standard windows with a minimum STC rating of 27 for units facing Whittier Boulevard or adjacent to La Serna Drive and Janine Drive.

Activities associated with the residential use would not result in noise levels that would be readily noticeable over existing ambient noise levels. This impact would not be significant. No mitigation is required.

b) **Less Than Significant Impact.** This impact discussion analyzes the potential for the proposed project to cause an exposure of persons to or generation of excessive groundborne

vibration or groundborne noise levels. Vibration levels in the project area may be influenced by construction. The nearest residential structure to the project site is located approximately 5 feet from the project site. The threshold at which there may be a risk of architectural damage to normal houses with plastered walls and ceilings is 0.20 PPV in/second. Primary sources of vibration during construction would be vibratory rollers or bulldozers. A vibratory roller could produce 0.21 PPV at 25 feet and a large bulldozer could produce up to 0.089 PPV at 25 feet. The expected typical construction equipment vibration levels at the nearest receiver locations. At distances ranging from 16 feet to 613 from typical project construction activities (at the project site boundary), construction vibration levels are estimated to range from 0.001 to 0.174 in/sec PPV at the nearest receiver locations. The project construction is not expected to generate vibration levels exceeding the City of Whittier maximum acceptable vibration standard of 0.01 in/sec PPV. Further, impacts at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period, but will occur rather only during the times that heavy construction equipment is operating proximate to the project site perimeter.

Annoyance associated secondary effects, such as the rattling of a china cabinet, can also occur, even when vibration levels are well below perception. Any effect (primary perceptible vibration, secondary effects, or a combination of the two) can lead to annoyance. The degree to which a person is annoyed depends on the activity in which they are participating at the time of the disturbance. For example, someone sleeping or reading will be more sensitive than someone who is running on a treadmill. Reoccurring primary and secondary vibration effects often lead people to believe that the vibration is damaging their home, although vibration levels are well below minimum thresholds for damage potential. There is a potential for nearby residents to be annoyed by groundborne vibration. Annoyance related impacts would be short-term and would only occur during site grading and paving activities. Construction at the project site will be restricted to daytime hours consistent with City requirements thereby eliminating potential vibration impact during the sensitive nighttime hours. On this basis the potential for the project to result in exposure of persons to, or generation of, excessive ground-borne vibration is determined to be less than significant.

c) **No Impact.** No airport land use plans apply to the area, and the proposed project is not located within two miles of an airport. The project falls outside any airport's noise contours for excessive noise. Therefore, residents or workers would not be exposed to excessive airport noise levels and there would be no impact. No further environmental analysis is necessary.

Conditions of Approval

The following design features, while not generally considered mitigation under CEQA, are provided to help ensure the project meets the City/State standards for interior noise exposure within a residential dwelling. Design features included standard rules and requirements and best practices that are provided for consideration as part of the conditions of approval for the project.

To meet the State and City of Whittier 45 dBA CNEL interior noise standards for residential land use the project is committed to and shall provide the following or equivalent noise abatement measures on Buildings A through F:

- Windows & Glass Doors: Windows and glass doors will be well-fitted, well-weatherstripped assemblies and shall have minimum sound transmission class (STC) ratings of 27.
- Exterior Doors: All exterior doors will be well-fitted, well-weather stripped, and have minimum STC ratings of 27. Well-sealed perimeter gaps around the doors are essential to achieve the optimal STC rating.

- Walls: At any penetrations of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar to form an airtight seal. All exterior wall assemblies shall have a minimum STC rating of 46.
- Roof: Roof sheathing of wood construction shall be per manufacturer's specification or caulked plywood of at least one-half inch thick. Insulation with at least a rating of R-19 shall be used in the attic space.
- Ceilings: Ceilings shall be per manufacturer's specification or constructed of well-sealed gypsum board of at least one-half inch thick.
- Ventilation: Arrangements for any habitable room shall be such that any exterior door or window can be kept closed when the room is in use and still receive circulated air. A forced air circulation system (e.g., air conditioning) or active ventilation system (e.g., fresh air supply) shall be provided which satisfies the requirements of the Uniform Building Code.

Mitigation Measures

No mitigation measures are necessary because Noise impacts will be less than significant with the addition of project design features and standard conditions.

Level of Significance After Mitigation

Not Applicable.

4.14 – Population and Housing

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Induce substantial unplanned 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 people or housing, necessitating the construction of replacement housing elsewhere?				☑

Sources

Information used to prepare this section is from the following sources: State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011-2021 with 2010 Census Benchmark*. Sacramento, California, May 2021; and *City of Whittier General Plan Housing Element Update* 2021-2029.

Environmental Setting

Estimated population of Whittier for 2021 is 86,196 and has an estimated 2.59 persons per household.

Discussion

a) **Less Than Significant Impact.** The proposed project would induce direct population growth with construction of 42 residential units. The project constitutes infill development on a portion of land previously developed with a commercial structure and a surface parking. The proposed project would construct 42 new attached single-family residential units. The estimated population increase generated from the proposed project would be 109 residents. As of January 1, 2021, the City of Whittier had an estimated population of 86,196 residents (DOF, 2021). Implementation of the project is consistent with the overall intent of the City of Whittier to provide adequate housing opportunities to meet its fair share of projected housing needs. Additionally, the estimated increase in population resulting from the project has been anticipated by the City and the region. Therefore, impacts from substantial population growth would be less than significant.

The increased population and housing resulting from the project would not necessarily cause direct adverse physical environmental effects; however, indirect physical environmental effects such as project-related traffic or air quality impacts could occur. These indirect physical environmental effects associated with the project are analyzed in Section 4.3 Air Quality and Section 4.17 Transportation of this IS/MND. The project may require extension of some existing utilities from the project site into the right-of-way of the adjacent street (for the connection of utilities such as water or sewer lines). However, the project constitutes infill development and does not propose infrastructure improvements (such as new roads or other infrastructure) not already established in and near the project site. Therefore, no indirect impacts associated with the extension of roads and other infrastructure would occur.

b) **No Impact.** The project site was previously developed with a commercial building with a surface parking lot. No housing units exists onsite and no one currently resides on the project site. Therefore, the project would not displace any housing or people and the project would not necessitate the construction of replacement housing. No impact would occur.

Mitigation Measures

No mitigation measures are necessary because impacts to Population and Housing will be less than significant.

Level of Significance After Mitigation

Not Applicable

4.15 – Public Services

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new of 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?			☑	

Sources

Information used to prepare this section is from the following sources: City of Whittier *General Plan Update*, 2021, City of Whittier, California Annual Budget Fiscal Year 2021-2022 dated September 27, 2021 and Great!Schools website.

Environmental Setting

Fire Protection

The Los Angeles County Fire Department (LACoFD) provides fire protection and emergency medical response services in the City of Whittier. LACoFD also provides prevention services (e.g., inspections, permits, and drills) within its jurisdiction. LACoFD has mutual aid agreements with other jurisdictions and practices unified command in response to potential emergencies. Property tax and special tax revenues generated fund the LACoFD.

Police Protection

The Whittier Police Department (WPD), headquartered at 13200 Penn Street, provides police protection to the City, including the project site. The WPD serves the cities of Whittier and Santa Fe Springs, an area encompassing 21.4 miles. The members of the WPD who serve the citizens of Santa Fe Springs are stationed out of the Police Service Center, which is located in the City of Santa Fe Springs. The Whittier Police Department is a general law enforcement agency responsible for the delivery of a full range of law enforcement services. Personnel include 121 sworn officers and 51 civilian employees for a total of 172 full-time positions. Included within the 172 positions are 39 positions (34 sworn and 5 fulltime civilians) assigned to provide contract law enforcement services to the City of Santa Fe Springs. The Police Department also has many part-time employees, Cadets, Reserve Officers, an Explorer Post, and many active volunteers. The Department is organizationally structured and comprised of four (4) Divisions: Patrol, Investigations, Support Services, and Administration. The current WPD police headquarters was opened in November 2010 and was built to accommodate necessary growth and expansion. The WPD could increase its resources and still be contained in the present facility, if necessary.

Schools

The City is served by the following school districts: Whittier Union High School District, Whittier City School District, Fullerton Joint Union High School District, Whittier Elementary School District, the East Whittier Elementary School District, the Los Nietos School District and the Lowell Joint School District. The closest schools to the project include: Murphy Ranch Elementary School at 16021 Janine Drive, Whittier approximately 0.87 miles to the east; Granada Middle School located at 15337 Lemon Drive, Whittier approximately 1.74 miles to the southeast; and La Serna High School located at 15301 Youngwood Drive, Whittier approximately 0.48 north of the project site.

Pursuant to the Leroy F. Green School Facilities Act (AB 2926), future project proponents will be required to pay developer fees prior to the issuance of building permits, at the then current rate. This fee will help support provision of school services for the community as a whole.

Parks

See Section 4.15, Recreation for discussion on parks.

Discussion

a) **Less Than Significant Impact.** The Los Angeles County Fire Department (LACoFD) provides fire protection and emergency medical response services in the City of Whittier. LACoFD also provides prevention services (e.g., inspections, permits, and drills) within its jurisdiction. LACoFD has mutual aid agreements with other jurisdictions and practices unified command in response to potential emergencies. The project site is served by Fire Station 59, which is located approximately 0.2-mile to the southeast of the project site. Fire Station 59, located at 10021 Scott Ave, Whittier, CA 90603, is staffed an engine company provides Emergency Medical Services (EMS), fire and rescue services and safe haven services for unincorporated Los Angeles County and for contract cities. Based on the distance to the project site, Engine 28 is estimated to have an emergency response time of less than five minutes. The proposed project development proposal has been reviewed by LACoFD to ensure that public safety is considered and addressed, including appropriate access and fire-flow water rates. The project would replace a commercial use, and as such could result in an increase in calls for fire protection and emergency medical services. Whether a specific project results in a need for new or expanded fire protection facilities depends partly on the level of demand for fire protection the project generates, and partly on the distance from the project site to the nearest existing fire station.

The project is a proposed infill site. The project is within close proximity to a fire station. Therefore, the project would not have a significant impact on fire response times and would not otherwise create a substantially greater need for fire protection services than already exists. No new or expanded fire protection facilities would be required as a result of this project. Furthermore, the proposed residential site does not propose to use substantially hazardous materials or engage in hazardous activities that will require new or modified fire protection equipment to meet potential emergency demand. According to LACoFD, no significant impacts to fire response time or paramedic response time would occur as a result of this project. Impacts related to expansion of fire protection services will be less than significant.

b) **Less Than Significant Impact.** The Whittier Police Department does not anticipate any significant increase in the average call response time of five to eight minutes resulting from proposed buildout of the project. The proposed residential project will not result in any unique or more extensive crime problems that cannot be handled with the existing level of police

resources. No new or expanded police facilities would need to be constructed as a result of this project. Impacts related to expansion of police protection services will be less than significant.

c) **Less Than Significant Impact.** As a new residential land use, it would have a population increase of approximately 109 persons and would generate a potential direct demand for school facilities. Pursuant to the Leroy F. Green School Facilities Act (AB 2926), the project proponent will be required to pay developer fees to the East Whittier Elementary School District, prior to the issuance of building permits, at the then current rate charged to single-family residential development projects. This fee will help support provision of school services for the community as a whole. According to AB 2926, payment of developer fees constitutes adequate mitigation for any project-related impacts to school facilities. Impacts to the school facilities will be less than significant.

d) Less Than Significant Impact. Demand for park and recreational facilities are generally the direct result of residential development. The project will be providing private and common open space. No substantial demand for park and recreation facilities will result. Impacts will be less than significant.

e) Less Than Significant Impact. No other impacts have been identified that would require the provision of new or physically-altered governmental facilities. The development projects will continue to be subject to sewer, transportation, and storm water impact fees.

Mitigation Measures

No mitigation measures are necessary because impacts to Public Services will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.16 – Recreation

	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?			☑	

Sources

Information used to prepare this section is from the following sources: City of Whittier *General Plan Update*, 2021.

Environmental Setting

Recreational opportunities are identified in the Environmental Resources Management Element of the General Plan where the parks and recreational facilities within the City are detailed.

Discussion

a) **Less Than Significant Impact.** The project involves the construction of 42 residential units. The residential project also proposes common and private open space. The closest public park to the site is Parnell Park to the southeast. The addition of 109 persons to the city is expected to marginally increase the use of existing neighborhood and regional parks, but this increased use would be partially offset by the proposed open space on the project site. Landscape plans for the project are contained in Appendix A. The provision of open space onsite would reduce impacts to existing recreational facilities. Additionally, the project applicant would pay any applicable park or recreational impact fees required by the city. Therefore, the project would have a less than significant impact on parks or other recreational facilities.

b) **Less Than Significant Impact.** The project does not include separate recreational facilities for residents. The project would not require the construction or expansion of recreational facilities outside the limits of the project site. There would be no significant adverse physical effect on the environment, and less than significant impacts would occur with project implementation.

Mitigation Measures

No mitigation measures are necessary because Recreation impacts will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.17 – Transportation

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Conflict with an applicable program plan, ordinance or policy establishing measures of effectiveness for the performance of addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?			☑	

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?			☑	
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			☑	
d) Result in inadequate emergency access?			☑	

Sources

Information used to prepare this section is from the following sources: *City of Whittier General Plan Update*, 2021; Quantifying Greenhouse Gas Mitigation Measures Report, California Air Pollution Control Officers Association (CAPCOA), August 2010; California Emissions Estimator Model®, Version 2020.4.0, California Air Pollution Control Officers Association, May 2021; Technical Advisory on Evaluating Transportation Impacts in CEQA, State of California, Governor's Office of Planning and Research, December, 2018; South Coast Air Quality Management District (SCAQMD) Draft Guidance Document - Interim CEQA Greenhouse Gas (GHG) Significance Threshold, October 2008; Urban Crossroads, La Serna Townhomes Multi-Way Stop Warrant Analysis, dated January 31, 2022; Urban Crossroads, La Serna Townhomes Vehicle Miles Traveled (VMT) Screening and Trip Generation Assessment, dated March 2, 2022; and WHA Architects Planners Designers, Planning Commission Submittal of Civil, Architecture and Landscape Plans, dated February 15, 2022.

Environmental Setting

The City of Whittier is located in the eastern portion of Los Angeles County, 20 miles east of downtown Los Angeles. The City is on the southwestern slopes of the Puente Hills just east if the San Gabriel River and the San Gabriel River Freeway (State Route 605). The land features a sloping terrain on the north and east where the Puente Hills are located and becomes flat on the southern and western sections. The project is located approximately 200 feet away from State Route 72 (SR-72, also known as Whittier Boulevard). The project takes access from Janine and La Serna Drives via two driveways.

Discussion

a) **Less than Significant Impact.** The project involves new construction of 42 attached residential units. It is not intended to conflict with a program plan, ordinance or policy addressing the circulation system. The residential project is providing the required number of parking spaces (103 spaces) to meet City code. It is not anticipated that parking from the proposed project will impact the on-street parking capacity given the orientation of the residential project on Janine and La Serna Drives. The traffic assessment found that current traffic conditions near the project are functioning at acceptable service levels. All other intersections remain unchanged in terms of level of service with the proposed project.

The new infill project will be utilizing Transportation Demand Management (TDM) Strategies as a part of their development. These TDM strategies include:

Increase Density: Range of Effectiveness: 0.8 – 30.0% vehicle miles traveled (VMT) reduction and therefore a 0.8 – 30.0% reduction in GHG emissions.

Project: The current application includes the development of 42 new single-family attached homes and will increase density by 22.8 dwelling units per acre over existing conditions.

Increase Location Efficiency: Range of Effectiveness: 10-65% vehicle miles traveled (VMT) reduction and therefore 10-65% reduction in GHG emissions Project: The site is located approximately 200 feet away from State Route 72 (SR-72, also known as Whittier Boulevard). Park facilities are within a four minute walk from the project. Transit services the immediate area with bus stops along Whittier Boulevard. There is a Class III bicycle route adjacent to the site along Janine Drive. The residential units are proposed to have attached garages with sufficient space to allow for bicycle parking. The site is classified as within a suburban center.

Increase Destination Accessibility: Range of Effectiveness: 6.7 – 20% vehicle miles traveled (VMT) reduction and therefore 6.7-20% reduction in GHG emissions.

Project: The project is located 0.2-mile to the northwest of the Whittwood Town Center providing future residents with opportunities for shopping, eating and access to public uses such as Police Department Substation and library.

Provide Pedestrian Network Improvements: Range of Effectiveness: 0 - 2% vehicle miles traveled (VMT) reduction and therefore 0 - 2% reduction in GHG emissions.

Project: The development will provide a pedestrian access network that internally links the residential dwelling units to existing external streets and pedestrian facilities contiguous with the project site. The residential development has been designed to limit slopes to facilitate pedestrian circulation within the project and is generally flat.

Implement Subsidized or Discounted Transit Program: Range of Effectiveness: 0.3 – 20.0% commute vehicle miles traveled (VMT) reduction and therefore a 0.3 – 20.0% reduction in commute trip GHG emissions.

Project: The project will participate in the Discount Bus Passes for City of Whittier Residents Program. This program allows Whittier residents to receive a 20% discount when purchasing cash value for the Transit Access Pass (TAP) card. Passengers who provide proof of current City of Whittier residency are eligible to receive discounts when loading the fares on TAP Card. As part of the purchase process of the individual residential units, new owners will be provided with information regarding transit opportunities near the site and within the City of Whittier including the resident discount program.

Telecommuting and Alternative Work Schedules: Range of Effectiveness: 0.07 – 5.50% commute vehicle miles traveled (VMT) reduction and therefore 0.07 – 5.50% reduction in commute trip GHG emissions.

Project: The residential development will be pre-wiring the units for whole home Wi-Fi and including low voltage RG6 cable and CAT5 voice/data wiring to encourage work-at-home/telecommuting functions.

The project's inclusion of TDM strategies and design features will help further reduce single occupancy vehicle trips and decrease vehicle miles traveled. No further environmental analysis is required.

b) **Less than Significant Impact.** Trip generation is a measure or forecast of the number of trips that begin or end at a particular site, and is a function of the extent and types of land use

proposed as part of a project. Vehicular traffic generation characteristics for projects are estimated based on established rates. These rates identify the probable traffic generation of various land uses based on studies of developments in comparable settings. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile 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. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be considered to have a less than significant transportation impact.

Effective July 1, 2020, the longstanding metric of roadway level of service (LOS), which is typically measured in terms of auto delay or volume-to-capacity, is no longer be considered a significant impact under the California Environmental Quality Act (CEQA). Pursuant to the 2020 CEQA Guidelines, Section 15064.3, *"Generally, vehicle miles traveled is the most appropriate measure of transportation impacts. Other relevant considerations may include the effects of the project on transit and non-motorized travel."*

For land use projects, the CEQA Guidelines provide the following criteria for analyzing Transportation Impacts and VMT:

- Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact.
- Generally, projects within one-half mile 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.
- Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

Traffic generation is expressed in vehicle trip ends (TE's), defined as one-way vehicular movements, either entering or exiting the generating land use. Generation factors and equations used in the traffic forecasting procedure are found in the City of Whittier Vehicle Miles Traveled (VMT) Transportation Study Guidelines and the ITE's 11th Edition *Trip Generation Handbook* for the existing land uses on the site. Table 4.17-1 shows the trip generation comparison and the resulting net change in trips between the previous use and the proposed project. It presents the forecast peak hour and daily traffic volumes on a "typical" weekday for the proposed project. Hence, the forecast peak hour conditions are considered conservative and worst-case. The trips generated by the proposed project were estimated using City of Whittier Vehicle Miles Traveled (VMT) Transportation Study Guidelines for the proposed Condominiums/Townhomes. Credits were applied were estimated using ITE Land Use code 932 – High Turnover (Sit-down) Restaurant. In comparison, the proposed Project (assuming the single family attached land use category) would result in 290 fewer two-way trips per day and a net reduction of 72 AM peak hour trips and a net reduction of 36 PM peak hour trips. Although the single family attached product type generates slightly more traffic, the net effect is still an overall reduction in comparison to the existing use.

Table 4.17-1
Trip Generation Comparison

Land Use	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Previous Use: Restaurant Total Trips	51	41	92	41	19	60	592
Proposed Project: Proposed Project Total Trips	6	14	20	14	10	24	302
Net Change Total Trips	**-45**	**-27**	**-72**	**-27**	**-9**	**-36**	**-290**

Source: Urban Crossroads, 2022.

The City Guidelines provides details on appropriate screening criteria and thresholds that can be used to identify when a proposed land use project is anticipated to result in a less than significant impact without conducting a more detailed analysis. Screening thresholds are broken into the following three types:

- TPA Screening
- Low VMT Area Screening
- Project Type

A land use project need only to meet one of the above screening thresholds to result in a less than significant VMT impact.

Consistent with guidance identified City Guidelines, projects that are located within a ½ mile of the Eastside Transit Corridor Phase 2 Project, or a ½ mile of where two or more 15-minute (during commute hours) bus routes intersect or within a ½ mile of a corridor served by 15-minute (during commute hours) bus service. In addition, the project should have the following characteristics:

- A Floor Area Ratio (FAR) of 0.75 or greater
- Is consistent with the applicable SCAG Sustainable Community Strategy (SCS) (as determined by the City)
- Does not provide more parking than required by the City
- Does not replace affordable housing units

The project site is located within a TPA based on bus service. Once a project is found to be located within a TPA, additional sub criteria as noted above should also be reviewed. The project as designed is anticipated to have a FAR of 0.80 of actual living and a FAR of 1.04 of living plus garage, which both exceed the FAR criteria of 0.75 or greater. The project is consistent with the adopted RTP/SCS and is not replacing affordable residential units with market rate residential units. Finally, the proposed parking supplied by the project would not exceed the City's required parking threshold of 103 spaces. Therefore, TPA screening criteria is met.

As noted in the City Guidelines, a residential or office project that is located in a Traffic Analysis Zone (TAZ) that is already 15% below the City and Sphere of Influence (SOI) Baseline VMT will tend to exhibit similarly low VMT. The City Guidelines does not provide specific information for TAZs located within the City of Whittier. An appropriate determination of low VMT area cannot be made. Low VMT Area screening criteria is not met.

The City Guidelines identify that local serving retail less than 50,000 square feet or other local serving essential services (e.g., local parks, day care centers, public schools, medical/dental office buildings, etc.) are presumed to have a less than significant impact absent substantial evidence to the contrary. The City Guidelines also indicate that projects generating fewer than 110 daily vehicle trips may be presumed to have a less than significant impact. Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, 2021. (3) The proposed Project is anticipated to generate daily vehicle trips exceeding the 110 daily vehicle threshold. Project Type screening criteria is not met.

As shown in Table 4.17-1, the reduction of 290 trips from the prior use will decrease vehicle miles traveled in the project area compared to existing conditions. As such, the proposed project may be screened out as it is assumed to cause a less-than-significant transportation impact and the project complies with State CEQA Guidelines Section 15064.3, subdivision (b).

c) **Less Than Significant Impact.** A significant impact would occur if the proposed project substantially increased an existing hazardous geometric design feature or introduced incompatible uses to the existing traffic pattern. The project shall ensure adequate sight distance is provided at each project access location intersecting a public roadway per the California Department of Transportation (Caltrans) standards. In order to ensure adequate sight distance is maintained, the following recommendations are provided:

- A limited use area shall be maintained where a clear line of sight can be established.
- The limited use area shall be used for the purpose of prohibiting or clearing obstructions to maintain adequate sight distance at intersections.
- Limited use area to be kept clear of all obstructions over 30 inches high, including vegetation.
- No trees, walls, or any obstructions shall be allowed in the limited use area.
- The toe of the slope shall not encroach into the limited use area.

By complying with the sight distance recommendations, the project would not substantially increase hazards due to sight distance. The design of the development under the provisions of the Municipal Code would comply with all applicable City regulations. The project would not create or encourage any hazardous transportation-related design features or incompatible uses. No further environmental analysis is required.

d) **Less Than Significant Impact.** A significant impact would occur if the design of the proposed project would not satisfy emergency access requirements of the Los Angeles County Fire Department or in any other way threaten the ability of emergency vehicles to access and serve the project area or adjacent uses.

Construction

Project construction could temporarily close sidewalks and street lane(s) along Janine and La Serna Drives, which could temporarily impact emergency access. However, implementation of a Transportation Map Plan would ensure that traffic circulation during construction would be less than significant.

Operation

The project would comply with applicable City regulations, such as the requirement to comply with the City's fire code to provide adequate emergency access, as well as the California Building Standards Code. Prior to the issuance of building permits, the City of Whittier would review

project site plans, including location of all buildings, fences, access driveways and other features that may affect emergency access. The site design includes access and fire lanes that would accommodate emergency ingress and egress by fire trucks, police units, and ambulance/paramedic vehicles. All onsite access and sight-distance requirements would be in accordance with all applicable design requirements. The City's review process and compliance with applicable regulations and standards would ensure that adequate emergency access would be provided. Therefore, the project would not result in inadequate emergency access and there would be less than significant impacts.

Mitigation Measures

No mitigation measures are necessary because Transportation impacts will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.18 – Tribal Cultural Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 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:				
a) 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?			☑	
b) 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.		☑		

Sources

Information used to prepare this section is from the following sources: Notice of Project Applications to Native American Tribes dated September 1, 2021 and *City of Whittier General Plan Update*, 2021.

Environmental Setting

Senate Bill 18

Senate Bill 18 California Government Code §65352.3 (adopted pursuant to the requirements of SB 18) requires local governments to contact, refer plans to, and consult with tribal organizations prior to making a decision to adopt or amend a general or specific plan, or to designate open space that includes Native American Cultural Places. The tribal organizations eligible to consult have traditional lands in a local government's jurisdiction, and are identified, upon request, by the Native American Heritage Commission (NAHC). As noted in the California Office of Planning and Research's Tribal Consultation Guidelines (2005), "the intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places."

Assembly Bill 52

Assembly Bill 52 (AB 52) requires meaningful consultation with California Native American Tribes on potential impacts on TCRs, as defined in Public Resources Code § 21074. TCRs are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either eligible or listed in the California Register of Historical Resources or local register of historical resources (CNRA, 2007).

As part of the AB 52 process, Native American tribes must submit a written request to the lead agency to be notified of projects within their traditionally and culturally affiliated area. The lead agency must provide written, formal notification to those tribes within 14 days of deciding to undertake a project. The tribe must respond to the lead agency within 30 days of receiving this notification if they want to engage in consultation on the project, and the lead agency must begin the consultation process within 30 days of receiving the tribe's request. Consultation concludes when either (1) the parties agree to mitigation measures to avoid a significant effect on a tribal cultural resource, or (2) a party, acting in good faith and after reasonable effort, concludes mutual agreement cannot be reached.

Discussion

a) **Less Than Significant Impact.** Project implementation would not result in any specific construction activities involving extensive excavation, and therefore would not be anticipated to significantly affect or destroy any Native American tribal cultural resources. No tribal cultural resources are 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 § 5020.1(k). Therefore, there will be no impacts as a result of the project. While the probability of encountering a significant tribal cultural resource or human remains is low, any occurrence or discovery is subject to existing protections under California law. No further environmental analysis is required.

b) **Less Than Significant Impact with Mitigation Incorporated.** The City of Whittier (the lead agency) initiated AB 52 outreach to local tribes for the La Serna Townhomes Project. The City prepared letters to the two tribes on their list for AB 52 contact, informing them of the project. The letters were sent on September 1, 2021. The letters were sent via certified mail to:

Andrew Salas, Chairman, Gabrieleño Band of Mission Indians – Kizh Nation (Gabrieleño – Kizh Nation) and Joseph Ontiveros, Cultural Resource Director, Soboba Band of Luiseño Indians. The letters conveyed that the recipient had 30 days from the receipt of the letter to request AB 52 consultation regarding the project.

Chairman Salas requested a consultation on the project. An AB 52 consultation meeting was held between the Gabrieleño – Kizh Nation and Luis G. Escobedo, Planning Services Manager with the City of Whittier on September 8, 2021. The City agreed to mitigation measure language for tribal cultural resources provided by the Gabrieleño – Kizh Nation. This mitigation language has been adapted as TCR-1 through TCR-3 below. Consultation was concluded with the incorporation of the measures as conditions upon development on November 8, 2021. To date, there have been no responses from the remaining tribe. The response period having been passed, the City has determined that the AB 52 consultation process has concluded.

As previously discussed**,** the project would be built on disturbed land, within a developed suburban setting. No human remains have been previously identified or recorded onsite. The project proposes grading activities for the implementation of infrastructure that includes water, sewer, and utility lines. Grading activities associated with development of the project would involve new subsurface disturbance and could result in the unanticipated discovery of unknown human remains, including those interred outside of formal cemeteries. In the unlikely event of an unexpected discovery, implementation of mitigation measures TCR-2 and TCR-3 dealing with associated funerary objects, and dealing with human remains would ensure that impacts related to the accidental discovery of human remains would be less than significant.

Mitigation Measures

TCR-1: Retain a Native American Monitor Prior to Commencement of Ground-Disturbing Activities

a. The project applicant/lead agency shall retain a Native American monitor from (or approved by) the Gabrieleño Band of Mission Indians – Kizh Nation (the "Kizh" or the "Tribe") - the direct lineal descendants of the project location. The monitor shall be retained prior to the commencement of any "ground-disturbing activity" for the subject project, at all project locations (i.e., both on-site and any off-site locations that are included in the project description/definition and/or required in connection with the project, such as public improvement work). "Ground-disturbing activity" includes, but is not limited to, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching.
b. A copy of the executed monitoring agreement shall be provided to the lead agency prior to the earlier of the commencement of any ground-disturbing activity for the project, or the issuance of any permit necessary to commence a ground-disturbing activity.
c. The project applicant/developer shall provide the Tribe with a minimum of 30 days advance written notice of the commencement of any project ground-disturbing activity so that the Tribe has sufficient time to secure and schedule a monitor for the project.
d. The project applicant/developer shall hold at least one (1) pre-construction sensitivity/educational meeting *prior to the commencement of any ground-disturbing activities*, where at a senior member of the Tribe will inform and educate the project's construction and managerial crew and staff members (including any project subcontractors and consultants) about the TCR mitigation measures and compliance obligations, as well as places of significance located on the project site (if any), the appearance of potential TCRs, and other informational and operational guidance to aid in the project's compliance with the TCR mitigation measures.
e. The monitor will complete daily monitoring logs that will provide descriptions of the

relevant ground- disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, cultural-related materials, and any other facts, conditions, materials, or discoveries of significance to the Tribe. Monitor logs will identify and describe any discovered TCRs, including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., (collectively, tribal cultural resources, or "TCR"), as well as any discovered Native American (ancestral) human remains and burial goods. Copies of monitor logs will be provided to the project applicant/lead agency upon written request.

f. Native American monitoring for the project shall conclude upon the latter of the following: (1) written confirmation from a designated project point of contact to the Tribe that all ground-disturbing activities and all phases that may involve ground-disturbing activities on the project site and at any off-site project location are complete; or (2) written notice by the Tribe to the project applicant/lead agency that no future, planned construction activity and/or development/construction phase (known by the Tribe at that time) at the project site and at any off-site project location possesses the potential to impact TCRs.

TCR-2: Discovery of TCRs, Human Remains, and/or Grave Goods

a. Upon the discovery of a TCR, all construction activities in the immediate vicinity of the discovery (i.e., not less than the surrounding 50 feet) shall cease. The Tribe shall be immediately informed of the discovery, and a Kizh monitor and/or Kizh archaeologist will promptly report to the location of the discovery to evaluate the TCR and advise the project manager regarding the matter, protocol, and any mitigating requirements. No project construction activities shall resume in the surrounding 50 feet of the discovered TCR unless and until the Tribe has completed its assessment/evaluation/recovery of the discovered TCR and surveyed the surrounding area.
b. The Tribe will recover and retain all discovered TCRs in the form and/or manner the Tribe deems appropriate in its sole discretion, and for any purpose the Tribe deems appropriate, including but not limited to, educational, cultural and/or historic purposes.
c. If Native American human remains and/or grave goods are discovered or recognized on the project site or at any off-site project location, then all construction activities shall immediately cease. Native American "human remains" are defined to include "an inhumation or cremation, and in any state of decomposition or skeletal completeness." (Pub. Res. Code § 5097.98 (d)(1).) Funerary objects, referred to as "associated grave goods," shall be treated in the same manner and with the same dignity and respect as human remains. (Pub. Res. Code § 5097.98 (a), d)(1) and (2).)
d. Any discoveries of human skeletal material or human remains shall be immediately reported to the County Coroner (Health & Safety Code § 7050.5(c); 14 Cal. Code Regs. § 15064.5(e)(1)(B)), and all ground-disturbing project ground-disturbing activities on site and in any other area where the presence of human remains and/or grave goods are suspected to be present, shall immediately halt and remain halted until the coroner has determined the nature of the remains. (14 Cal. Code Regs. § 15064.5(e).) If the coroner recognizes the human remains to be those of a Native American or has reason to believe they are Native American, he or she shall contact, within 24 hours, the Native American Heritage Commission, and Public Resources Code Section 5097.98 shall be followed.
e. Thereafter, construction activities may resume in other parts of the project site at a minimum of 200 feet away from discovered human remains and/or grave goods, if the Tribe determines in its sole discretion that resuming construction activities at that distance is acceptable and provides the project manager express consent of that determination (along with any other mitigation measures the Tribal monitor and/or archaeologist deems necessary). (14 Cal. Code Regs. § 15064.5(f).)

f. Preservation in place (i.e., avoidance) is the preferred manner of treatment for discovered human remains and/or grave goods.
g. Any historic archaeological material that is not Native American in origin (non-TCRs) shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes.

TCR-3: Procedures for Burials, Funerary Remains, and Grave Goods:

a. Any discovery of human remains and/or grave goods discovered and/or recovered shall be kept confidential to prevent further disturbance.
b. As the Most Likely Descendant ("MLD"), the Koo-nas-gna Burial Policy shall be implemented for all discovered Native American human remains and/or grave goods. Tribal Traditions include, but are not limited to, the preparation of the soil for burial, the burial of funerary objects and/or the deceased, and the ceremonial burning of human remains.
c. If the discovery of human remains includes four (4) or more burials, the discovery location shall be treated as a cemetery and a separate treatment plan shall be created.
d. The prepared soil and cremation soils are to be treated in the same manner as bone fragments that remain intact. Associated "grave goods" (aka, burial goods or funerary objects) are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later, as well as other items made exclusively for burial purposes or to contain human remains. Cremations will either be removed in bulk or by means necessary to ensure complete recovery of all sacred materials.
e. In the case where discovered human remains cannot be fully recovered (and documented) on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to divert the project while keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed.
f. In the event preservation in place is not possible despite good faith efforts by the project applicant/developer and/or landowner, before ground-disturbing activities may resume on the project site, the landowner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects. The site of reburial/repatriation shall be agreed upon by the Tribe and the landowner, and shall be protected in perpetuity.
g. Each occurrence of human remains and associated grave goods will be stored using opaque cloth bags. All human remains, grave goods, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items will be retained and shall be reburied within six months of recovery.
h. The Tribe will work closely with the project's qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be prepared and shall include (at a minimum) detailed descriptive notes and sketches. All data recovery data recovery-related forms of documentation shall be approved in advance by the Tribe. If any data recovery is performed, once complete, a final report shall be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive and/or destructive diagnostics on human remains.

Level of Significance After Mitigation

Tribal Cultural Resource impacts will be less than significant with standard conditions and mitigation satisfied.

4.19 – Utilities and Service Systems

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a) Require or result in the relocation or construction of new or expanded water, or wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			☑	
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			☑	
c) Result in a determination by the wastewater treatment provider which 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?			☑	
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			☑	
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			☑	

Sources

Information used to prepare this section is from the following sources: CalRecycle Website; and Whittier General Plan Update, 2021; C&V Consulting, Inc., Sanitary Sewer Analysis, TTM No. 83435, PC 4078 & DWG 18-P-57, City of Whittier Sewer Atlas Map page H12, dated January 2022; City of Whittier, Sewer Will Serve Letter dated August 4, 2021; Los Angeles County Sanitation Districts, Will Serve Letter dated February 17, 2022; Republic Services, Will Serve

Letter dated September 16, 2021; and Suburban Water Systems, Water Will Serve Letter dated February 23, 2021.

Environmental Setting

The City of Whittier is located in the eastern portion of Los Angeles County, 20 miles east of downtown Los Angeles. The City is on the southwestern slopes of the Puente Hills just east if the San Gabriel River and the San Gabriel River Freeway (State Route 605). The land features a sloping terrain on the north and east where the Puente Hills are located and becomes flat on the southern and western sections.

Discussion

a) thru e) **Less Than Significant Impact.** The proposed project would require offsite improvements including sewer, domestic water, fire water, irrigation, and dry utilities connections to existing utility infrastructure in Janine and La Serna Drives.

Wastewater Treatment – The project proposes offsite sewer improvements to connect the sewer lines from the project site to the existing sewer network under streets located adjacent to the site. As detailed in the City's General Plan EIR, the City of Whittier provides wastewater collection service to the majority of parcels within the City limits. The proposed project is located within the jurisdictional boundary of Los Angeles County Sanitation Districts No. 18. The wastewater flow originating from the proposed project will discharge to a local sewer line, which is not maintained by the Districts, for conveyance to the Districts' Scott Avenue Trunk Sewer, located in Scott Avenue at Whittier Boulevard. The Districts' 8-inch diameter trunk sewer has a capacity of 0.8 million gallons per day (mgd) and conveyed a peak flow of 0.3 mgd when last measured in 2012. The Districts are empowered by the California Health and Safety Code to charge a fee to connect facilities (directly or indirectly) to the Districts' Sewerage System or to increase the strength or quantity of wastewater discharged from connected facilities. This connection fee is used by the Districts for its capital facilities. Payment of a connection fee may be required before this project is permitted to discharge to the Districts' Sewerage System. In order for the Districts to conform to the requirements of the Federal Clean Air Act (CAA), the capacities of the Districts' wastewater treatment facilities are based on the regional growth forecast adopted by the Southern California Association of Governments (SCAG). Specific policies included in the development of the SCAG regional growth forecast are incorporated into clean air plans, which are prepared by the South Coast and Antelope Valley Air Quality Management Districts in order to improve air quality in the South Coast and Mojave Desert Air Basins as mandated by the CAA. All expansions of Districts' facilities must be sized and service phased in a manner that will be consistent with the SCAG regional growth forecast for the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The available capacity of the Districts' treatment facilities will, therefore, be limited to levels associated with the approved growth identified by SCAG. As such, this letter does not constitute a guarantee of wastewater service, but is to advise the developer that the Districts intend to provide this service up to the levels that are legally permitted and to inform the developer of the currently existing capacity and any proposed expansion of the Districts' facilities. Impacts would be less than significant.

Project Wastewater Generation – The project is estimated to generate 195 gallons per day (gpd) of wastewater per residential townhome unit, or a total of 8,190 gpd. The wastewater generated by the proposed project will be treated at the Joint Water Pollution Control Plant located in the City of Carson, which has a capacity of 400 mgd and currently processes an average flow of 249.8 mgd, or the Los Coyotes Water Reclamation Plant located in the City of Cerritos, which has a capacity of 37.5 mgd and currently processes an average flow of 23.1 mgd.

Sufficient wastewater treatment capacity is available in the region, and project development would not require construction of new or expanded wastewater treatment facilities. Impacts would be less than significant.

Sanitary Sewer – Information on sanitary sewers serving the project site is based on the Sanitary Sewer Analysis completed by C&V Consulting, Inc. in January 2022; a copy of this report is included as Appendix J. The subject project site proposes to construct 42 attached residential units. Each unit will have its own dedicated sewer lateral joining to the on-site private main within the private drive aisles. According to the City of Whittier Sewer Atlas, there is one 8" sewer line that flows through Janine Drive and La Serna Drive along the project frontage. This existing sewer main flows easterly along Janine Drive approximately 6' south of Janine Drive's centerline and turns south flowing southerly along La Serna Drive. The main is approximately 36' west of the La Serna's centerline underneath the existing sidewalk and flows towards Whittier Blvd. The proposed project site is designed to contribute sewer flow to the 8" VCP sewer line in La Serna Drive.

Based on sewer monitoring data collected, the sewer systems located in La Serna Drive indicated good flow, along with hydraulics and relatively low depths. The proposed residential development project onsite system flows will increase the overall downstream system of the local main by approximately 7.7% at peak flow and the volume of flow does not exceed 50% of the capacity of the pipes (d/D<0.50). Based on the analysis above, we conclude that effluent volumes produced by the proposed development should not significantly impact or exceed the existing sewer capacity in the public system, and that the existing sewer system along La Serna Drive has adequate capacity for the proposed development.

For downstream lines, the existing level of flow of the 8" sewer main in Scott Avenue already exceeds LA County standard capacity (d/D=0.6525) at its' peak. Although the average flow level of the study was 3.544 in (which meets county standards), it displays that the existing daily peak flow level exceeds the 4" flow level capacity (d/D=0.50) on most days of the sewer flow study. The existing peak flow measured was at 5.22 inches, which is 1.22 inches above standard. The proposed residential development project onsite system flows will increase the overall downstream system of the local main by approximately 3.3% at peak flow. The proposed project site only increases the flow slightly and can be considered negligible. Impacts would be less than significant.

Domestic Water – Domestic water will be provided to the project by Suburban Water Systems through a connection to the existing 8" main in Janine Drive and La Serna Drive and distributed through a private water system to individual meters for each house, and to a common irrigation meter. Fire sprinkler flow will be supplied by individual house meters. Additional water utility infrastructure will be installed at the developer's expense to service this subdivision. The project would have a less than significant impact regarding domestic water supplies.

Fire Water - The project proposes new fire water lines to the project site via installation of fire water laterals from the street to the project site. Suburban Water Systems will supply fire water to the project and capacity has been determined to be adequate. The project would result in a nominal increase in water demand compared to existing conditions and therefore, the project would have a less than significant impact regarding fire water supplies.

Stormwater - The previous developed site consists of a vacant commercial building pad with a parking lot area. The majority of parking lot area is covered with impervious paving. The pre-development drainage of the project site is generally surface sheet flow southeasterly towards the private alley on the southern boundary via an onsite v-gutter and eventually downstream to La Serna Drive. All drainage appears to surface flow with no sign of any storm drain onsite to the

downstream storm drainage system. The project proposes the construction of 6 buildings with 42 attached condominium with private garages, private drive aisles, sidewalks, and common landscaped areas. The project site will be accessible with an entrance/ exit along Janine Drive and the existing private alley. The private alley on the southerly site is proposed for access to proposed development and existing adjacent properties. The private alley was analyzed as an offsite area due to the inseparable confluence flow from upstream adjacent properties, which peak flowrate drainage was determined to unaffected by replacement in-kind and analysis validated within this Hydrology report. Onsite drainage is divided into two (2) drainage management areas (DMAs) that are graded to ultimately route runoff towards La Serna Drive to preserve pre-development condition drainage conditions. Grated and curb inlets are place at the street low points to collect and direct runoffs from each DMA to a detention system, which will feed a WetlandMOD biofiltration system to conform with water quality treatment standards. Treated stormwater from both DMA will enter a pump station that outlets towards a proposed parkway drain on La Serna Drive. In cases of high storm event, westerly portion of the site is graded to outlet overflow at the entrance of the site at the private alley which flows downstream as pre-development conditions. The runoff generated from the easterly portion of the site is captured at the catch basin installed with a pipe system that is size to outlet the 100-year storm event to the proposed parkway drain. During a higher storm event, runoff will top over the curb and sheet flow towards La Serna Drive as the low point of the proposed site to preserve pre-development conditions. In addition, the proposed project is greater than one acre and is therefore required to obtain a National Pollutant Discharge Elimination System permit and consequently develop and implement a Storm Water Pollution Prevention Plan (SWPPP). Therefore, impacts regarding stormwater would be less than significant.

Electric Power: Electric power for the City of Whittier is provided by Southern California Edison (SCE). The proposed project is located in a developed area, and infrastructure for providing electric power to the area is well established. SCE typically utilizes existing utility corridors to reduce environmental impacts, and has energy-efficiency programs to reduce energy usage and maintain reliable service throughout the year. The project would be constructed in accordance with all applicable Title 24 regulations, and would not necessitate the construction or relocation of electric power facilities. The project is located along Janine and La Serna Drives. A less than significant impact would occur.

Natural Gas: The Southern California Gas Company (SoCalGas) is the primary distributor of retail and wholesale natural gas across Southern California, including the City of Whittier. SoCalGas provides services to residential, commercial, and industrial consumers, and also provides gas for electric generation customers. SoCalGas expects total gas demand to decline 0.74 percent annually from 2018 to 2035 as a result of energy-efficiency standards and programs, renewable electricity goals, modest economic growth in its service region, and advanced metering infrastructure. Moreover, SoCalGas plans on implementing aggressive energy-efficiency programs that will result in natural gas savings across all sectors that will ensure longevity of its natural gas supplies and adequate generation rates. Therefore, anticipated natural gas supply is adequate to meet demand in the SoCalGas region, and the proposed project is not expected to impact this determination. Thus, no natural gas facilities would have to be constructed or relocated as a result of the proposed project, and a less than significant impact would occur.

Telecommunications Facilities: Cable services, including internet, phone, and television, are provided in the City of Whittier by Charter Communications and Frontier Communications. The proposed project would not interfere with operation of their facilities and a less than significant impact would occur.

Solid Waste Collection

Trash storage will be in the garage of each residential unit, and containers (green waste/organics, landfill, and recyclables) will be picked up by Republic Services (City franchisee) weekly. Residential customers for Building C, D and F will be required to roll-out their solid waste cart, recycling cart, and green waste cart to the driveway aisle adjacent to Buildings A and B for collection service. The proposed project would not interfere with servicing abilities with the condition noted and a less than significant impact would occur.

Mitigation Measures

No mitigation measures are necessary because impacts to Utilities will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.20 – Wildfire

	Potentially Significant Impact	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?			☑	
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from wildfire or the uncontrolled spread of wildfire?			☑	
b) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may result temporary or ongoing impacts to the environment?			☑	
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?			☑	

Sources

Information used to prepare this section is from the following sources: *City of Whittier General Plan Update*, 2021 *and* California Department of Forestry and Fire Protection, Incorporated Fire Hazard Severity Zone: City of Whittier, Very High Fire Hazard Severity Zones in LRA (Local Responsibility Area).

Environmental Setting

The La Serna Townhomes project site is located within an urbanized area of the City of Whittier and is not located within a fire hazard zone, as identified on the latest Fire Hazard Severity Zone (FHSZ) maps prepared by the California Department of Forestry and Fire Protection (CALFIRE).

Discussion

a) thru d) **Less Than Significant Impact.** The project site is located within an urbanized area of the City of Whittier and is not located within a fire hazard zone, as identified on the latest Fire Hazard Severity Zone (FHSZ) maps prepared by the California Department of Forestry and Fire Protection (CALFIRE). There are no wildland conditions in the urbanized area that the project area is located. The project would not be expected to impair emergency plans, exacerbate wildfire risks or expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire. The project would not require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may result temporary or ongoing impacts to the environment. The project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. The project area is relatively flat and characterized with slopes that are not high (less than 10 percent) or steep. Therefore this impact would be less than significant and no mitigation is required.

Mitigation Measures

No mitigation measures are necessary because impacts to Wildfires will be less than significant.

Level of Significance After Mitigation

Not Applicable.

4.21 – Mandatory Findings of Significance

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
MANDATORY FINDINGS OF SIGNIFICANCE				

a) Does the project have the potential to 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, substantially 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) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			☑	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		☑		

Sources

Information used to prepare this section is from Sections 4.1 through 4.20 above.

Discussion

a) **Less Than Significant Impact with Mitigation Incorporated.** The project is located within an urbanized area, which provides low habitat value for special-status plant and wildlife species. Additionally, as detailed in City of Whittier General Plan EIR, the City is almost completely urbanized and landscaped with mostly non-native species. The proposed project would not substantially impact any scenic vistas, scenic resources, or the visual character of the area, as discussed in Section 4.1, and would not result in excessive light or glare. The environmental analysis provided in Section 4.3 concludes that impacts related to emissions of criteria pollutants and other air quality impacts will be less than significant. The project would not significantly impact any sensitive plants, plant communities, fish, wildlife or habitat for any sensitive species, as discussed in Section 4.4. As detailed in Section 4.5, Cultural Resources concludes no significant impact on archeological resources. Sections 4.8 and 4.10 conclude that impacts related to climate change and hydrology and water quality will be less than significant. Based on the preceding analysis of potential impacts in the responses to items 4.1 thru 4.20, no evidence is presented that this project would degrade the quality of the environment with the mitigation measures incorporated.

b) **Less Than Significant.** Cumulative impacts can result from the interactions of environmental changes resulting from one proposed project with changes resulting from other past, present, and future projects that affect the same resources, utilities and infrastructure systems, public services, transportation network elements, air basin, watershed, or other physical conditions. Such impacts could be short-term and temporary, usually consisting of overlapping construction impacts, as well as long term, due to the permanent land use changes involved in the project. The proposed residential development will generally result in less than significant

environmental impacts, as discussed herein. There are no short-term impacts related to pollutant emissions and therefore, will not exceed maximum thresholds.

The proposed project would not significantly cumulatively affect the environment. Continued efforts towards water conservation, as required by State law, would reduce water demands; the project would result in a less than significant cumulative impact on water supply and other resources. As indicated in Section 4.17 herein, the proposed project would not result in any significant traffic impacts to transportation. Long-term cumulative effects will have no significant impact on air quality. The project development would not contribute to any cumulative growth effects beyond what is anticipated for the City's future in the General Plan.

c) **Less Than Significant Impact.** Paleontological resources would be less than significant. Additionally as described in Section 4.8, Hazards and Hazardous Materials, impacts during project construction and operations would be less than significant.

Regarding Noise, as detailed in Section 4.13, the proposed project would result in less than significant impacts to sensitive receivers from noise and vibration. Noise levels associated with operation of the project are expected to be comparable to those of nearby residential and commercial areas. In addition, noise from activities associated with the new development would be similar to that occurring now. Therefore, noise from onsite sources would be less than significant.

Regarding emergency services such a police and fire, the project is anticipated to generate approximately 109 residents, which would have a minimal impact on demand for fire services. Additionally, the project applicant would pay any applicable fire/development fees, per the City's fee schedule. Thus, the project's impacts on fire protection services would be less than significant.

During the construction phase, the project could temporarily impact street traffic adjacent to the project site during the construction phase due to roadway improvements and potential extension of construction activities into the right-of-way. Project construction could reduce the number of lanes or temporarily close a portion of adjacent roads. Traffic impacts are anticipated during the construction phase of the project and would only impact the adjacent streets/intersections. As detailed in Section 4.16, Transportation, the project would have less than significant traffic impacts both during project construction and operation, and no mitigation is warranted.

Based on the analysis of the proposed project's impacts in the responses to items 4.1 thru 4.20, after the implementation of mitigation measures, potential adverse environmental effects were found to be less than significant on human beings, either directly or indirectly. Therefore, less than significant impacts would occur. For this reason, the City has concluded that this project can be implemented without causing significant adverse environmental effects and determined that the Mitigated Negative Declaration is the appropriate type of CEQA documentation.

5 References

5.1 – List of Preparers

City of Whittier (Lead Agency)

City of Whittier
13230 Penn Street
Whittier, CA 90602-1772

Alan Hernandez, Assistant Planner

5.2 – Persons and Organizations Consulted

ALBUS & Associates, 2021. Preliminary Geotechnical Investigation, Proposed Multi-Family Residential Development (La Serna Apartments) TTM No. 83435, 9829 La Serna Drive, Whittier, California. Dated April 23, 2021.

California Building Standards Commission, 2019. California Building Standards Code (Code of Regulations, Title 24): 2019 Triennial Edition (effective January 1, 2020). Available at http://www.bsc.ca.gov/Codes.aspx. Accessed on February 1, 2022.

California Department of Conservation, California Geological Survey (CGS), 2020 Data Viewer. Accessed online at: https://maps.conservation.ca.gov/cgs/DataViewer/. Accessed on February 1, 2022.

California Department of Conservation, California Geological Survey, 2022. Earthquake Zones of Required Investigation. Accessed online at https://maps.conservation.ca.gov/cgs/EQZApp/. Accessed on February 1, 2022.

California Department of Conservation, 2018. Farmland Mapping and Monitoring Program of the California Resources Agency. Accessed online at https://www.conservation.ca.gov/dlrp/fmmp. Accessed February 1, 2022.

California Department of Conservation, 1995. SMARA Generalized Mineral Land Classification Map for Los Angeles County Accessed online at: https://maps.conservation.ca.gov/cgs/informationwarehouse/mlc/. Accessed on February 1, 2022.

California Department of Finance, 2021. E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011-2021 with 2010 Census Benchmark. May 2021. Available online at https://www.dof.ca.gov/Forecasting/Demographics/Estimates/e-5/. Accessed February 1, 2022.

California Department of Fish and Wildlife, 2022. California Natural Community Conservation Plans. Available online at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=68626&inline. Accessed February 1, 2022.

California Department of Fish and Wildlife, 2020. California Natural Diversity Database (CNDDB). Available at https://map.dfg.ca.gov/rarefind/view/RareFind.aspx. Accessed on February 1, 2022.

California Department of Forestry and Fire Protection, 2011. Incorporated Fire Hazard Severity Zone: City of Whittier, Very High Fire Hazard Severity Zones in LRA (Local Responsibility Area). Accessed online at http://www.fire.ca.gov/fire_prevention/fhsz_maps/FHSZ/losangeles/Whittier.pdf. Accessed February 1, 2022.

California Department of Toxic Substances Control, 2022. EnviroStor. Available online at https://www.envirostor.dtsc.ca.gov/public/. Accessed February 1, 2022.

California Department of Transportation, 2022. California Scenic Highway Mapping System. Available online at https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa. Accessed February 1, 2022.

California Department of Transportation, Division of Aeronautics, 2019. California Public Use Airports and Federal Airfields. Available online at https://dot.ca.gov/-/media/dot-media/programs/aeronautics/documents/publicuseairports-militaryairfieldsmap-a11y.pdf. Accessed February 1, 2022.

California Environmental Protection Agency, 2022. Cortese List. Accessed online at https://calepa.ca.gov/sitecleanup/corteselist/. Accessed on February 1, 2022.

California Gas and Electric Utilities, 2020. 2020 California Gas Report. Accessed online at https://www.socalgas.com/sites/default/files/2020-10/2020_California_Gas_Report_Joint_Utility_Biennial_Comprehensive_Filing.pdf. Accessed on February 1, 2022.

California State Water Resources Control Board, 2022. GeoTracker. Accessed online at https://geotracker.waterboards.ca.gov/. Accessed February 1, 2022.

California State Water Resources Control Board, 2022. Sites Identified with Waste Constituents Above Hazardous Waste Levels Outside the Waste Management Unit. Available online at https://www.calepa.ca.gov/SiteCleanup/CorteseList/CurrentList.pdf. Accessed February 1, 2022.

CalRecycle, 2019. Estimated Solid Waste Generation Rates. Accessed online at https://www2.calrecycle.ca.gov/WasteCharacterization/General/Rates. Accessed on February 1, 2022.

CAPCOA, 2010. Quantifying Greenhouse Gas Mitigation Measures. California Air Pollution Control Officers Association (CAPCOA). August 2010.

CAPCOA, 2021. California Emissions Estimator Model®, Version 2020.4.0. California Air Pollution Control Officers Association. May 2021.

City of Whittier, 2021. City of Whittier, California Annual Budget Fiscal Year 2021-2022. Dated September 27, 2021.

City of Whittier, 2021. Envision Whittier General Plan. Accessed online at https://www.envisionwhittier.org/documents. Approved by City Council on October 12, 2021.

City of Whittier, 2021. City of Whittier General Plan Update and Housing Element Update Draft Environmental Impact Report. Accessed online at https://www.envisionwhittier.org/documents. Approved by City Council on October 12, 2021.

City of Whittier, 2021. City of Whittier HCD Draft 2021-2029 Housing Element. Accessed online at https://www.envisionwhittier.org/documents. Approved by City Council on October 12, 2021.

City of Whittier, 2022. City of Whittier Municipal Code, Title 18 Zoning. Accessed online on https://library.municode.com/ca/whittier/codes/code_of_ordinances. Accessed on February 1, 2022.

City of Whittier, 2021. Sewer Will Serve Letter dated August 4, 2021.

C&V Consulting, Inc., 2022. Civil Plans. Dated February 2022.

C&V Consulting, Inc., 2021. Preliminary Hydrology Study, 9289 La Serna Drive, Whittier, California. Dated April 2021.

C&V Consulting, Inc., 2021. Preliminary Low Impact Development (LID) Plan, TTM No. 83435, APN 8224-017-022 & 023, 9289 La Serna Drive, Whittier, California. Dated April 2021.

C&V Consulting, Inc., 2022. Sanitary Sewer Analysis, TTM No. 83435, PC 4078 & DWG 18-P-57, City of Whittier Sewer Atlas Map page H12. Dated January 2022.

Federal Emergency Management Agency, 2022. FEMA Flood Map Service Center: Search By Address Map Number 06037C1835F. Available at https://msc.fema.gov/portal/search#searchresultsanchor. Effective September 26, 2008. Accessed February 1, 2022.

Focus Environmental Consulting, 2020. Hazardous Material Survey Inspection Report, Restaurant Building, 9829 La Serna Drive, Whittier, CA. Dated February 25, 2020.

Great!Schools, 2022. School District Boundary Viewer. Accessed online at https://www.greatschools.org/school-district-boundaries-map/. Accessed February 1, 2022.

Herman Design Group, 2021. Landscape Plans. Dated September 20, 2021.

Los Angeles County Sanitation Districts, 2022. Will Serve Letter dated February 17, 2022.

OPR, 2018. Technical Advisory on Evaluating Transportation Impacts in CEQA. State of California, Governor's Office of Planning and Research. December, 2018.

Smith-Emery Geoservices, 2020. Limited Phase II ESA Report, 9829 La Serna Drive, Whittier, CA 90605. Dated March 9, 2020.

Smith-Emery Geoservices, 2020. Phase I Environmental Site Assessment Report, 9829 La Serna Drive, Whittier, CA 90605. Dated February 13, 2020.

Republic Services, 2021. Will Serve Letter dated September 16, 2021.

South Coast Air Quality Management District, 1993. CEQA Handbook.

South Coast Air Quality Management District, 2008. Draft Guidance Document - Interim CEQA Greenhouse Gas (GHG) Significance Threshold. October 2008.

South Coast Air Quality Management District, 2020. Rule 1403 Compliance Advisory. Accessed online at http://www.aqmd.gov/home/rules-compliance/compliance/asbestos-demolition-removal. Accessed on February 1, 2022.

Suburban Water Systems, 2021. Water Will Serve Letter dated February 23, 2021.

University of California Davis Soil Resource Laboratory, 2022. SoilWeb. Accessed online at http://casoilresource.lawr.ucdavis.edu/gmap/. Accessed February 1, 2022.

United States Environmental Protection Agency, 2022. EPA Waters GeoViewer. Available at https://www.epa.gov/waterdata/waters-geoviewer. Accessed on February 1, 2022.

United States Environmental Protection Agency, 2022. Household Hazardous Waste. Accessed online at https://www.epa.gov/hw/household-hazardous-waste-hhw. Accessed on February 1, 2022.

United States Fish & Wildlife Service, 2022. Environmental Conservation Online System. Accessed online at https://ecos.fws.gov/ecp/. Accessed February 1, 2022.

United State Fish & Wildlife Service, 2022. Environmental Conservation Online System (ECOS). Critical Habitat Mapper. Available at https://ecos.fws.gov/ecp/report/table/critical-habitat.html. Accessed on February 1, 2022.

United State Fish & Wildlife Service, 2022. Habitat Conservation Plans: Summary Report. Accessed online at https://ecos.fws.gov/ecp/report/conservation-plans-type-region. Accessed February 1, 2022.

United States Fish and Wildlife Service, National Wetlands Inventory, 2022. Wetlands Mapper. Assessed online at https://www.fws.gov/wetlands/data/mapper.html. Accessed February 1, 2022.

Urban Crossroads, 2022. Air Quality Impact Analysis City of Whittier. Dated February 11, 2022.

Urban Crossroads, 2022. Greenhouse Gas Analysis City of Whittier. Dated February 11, 2022.

Urban Crossroads, 2022. La Serna Townhomes Multi-Way Stop Warrant Analysis. Dated January 31, 2022.

Urban Crossroads, 2022. La Serna Townhomes Vehicle Miles Traveled (VMT) Screening and Trip Generation Assessment. Dated March 2, 2022.

Urban Crossroads, 2022. Noise Impact Analysis City of Whittier. Dated February 11, 2022.

WHA Architects Planners Designers, 2022. Planning Commission Submittal of Civil, Architecture and Landscape Plans. Dated February 15, 2022.

Whittier City School District, 2021. District School Fees. Accessed online at https://4.files.edl.io/9d81/01/27/21/171934-2b2bcd34-bbbd-486d-b68e-b729476ca698.pdf. Accessed February 1, 2022.

Tribal Cultural Resources

TCR-1: Retain a Native American Monitor Prior to Commencement of Ground-Disturbing Activities

a. The project applicant/lead agency shall retain a Native American monitor from (or approved by) the Gabrieleño Band of Mission Indians – Kizh Nation (the "Kizh" or the "Tribe") - the direct lineal descendants of the project location. The monitor shall be retained prior to the commencement of any "ground-disturbing activity" for the subject project, at all project locations (i.e., both on-site and any off-site locations that are included in the project description/definition and/or required in connection with the project, such as public improvement work). "Ground-disturbing activity" includes, but is not limited to, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching.
b. A copy of the executed monitoring agreement shall be provided to the lead agency prior to the earlier of the commencement of any ground-disturbing activity for the project, or the issuance of any permit necessary to commence a ground-disturbing activity.
c. The project applicant/developer shall provide the Tribe with a minimum of 30 days advance written notice of the commencement of any project ground-disturbing activity so that the Tribe has sufficient time to secure and schedule a monitor for the project.
d. The project applicant/developer shall hold at least one (1) pre-construction sensitivity/educational meeting *prior to the commencement of any ground-disturbing activities*, where at a senior member of the Tribe will inform and educate the project's construction and managerial crew and staff members (including any project subcontractors and consultants) about the TCR mitigation measures and compliance obligations, as well as places of significance located on the project site (if any), the appearance of potential TCRs, and other informational and operational guidance to aid in the project's compliance with the TCR mitigation measures.
e. The monitor will complete daily monitoring logs that will provide descriptions of the relevant ground- disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, cultural-related materials, and any other facts, conditions, materials, or discoveries of significance to the Tribe. Monitor logs will identify and describe any discovered TCRs, including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., (collectively, tribal cultural resources, or "TCR"), as well as any discovered Native American (ancestral) human remains and burial goods. Copies of monitor logs will be provided to the project applicant/lead agency upon written request.
f. Native American monitoring for the project shall conclude upon the latter of the following: (1) written confirmation from a designated project point of contact to the Tribe that all ground-disturbing activities and all phases that may involve ground-disturbing activities on the project site and at any off-site project location are complete; or (2) written notice by the Tribe to the project applicant/lead agency that no future, planned construction activity and/or development/construction phase (known by the Tribe at that time) at the project site and at any off-site project location possesses the potential to impact TCRs.

TCR-2: Discovery of TCRs, Human Remains, and/or Grave Goods

a. Upon the discovery of a TCR, all construction activities in the immediate vicinity of the discovery (i.e., not less than the surrounding 50 feet) shall cease. The Tribe shall be immediately informed of the discovery, and a Kizh monitor and/or Kizh archaeologist will promptly report to the location of the discovery to evaluate the TCR and advise the project manager regarding the matter, protocol, and any mitigating requirements. No project construction activities shall resume in the surrounding 50 feet of the discovered TCR unless and until the Tribe has completed its assessment/evaluation/recovery of the discovered TCR and surveyed the surrounding area.
b. The Tribe will recover and retain all discovered TCRs in the form and/or manner the Tribe deems appropriate in its sole discretion, and for any purpose the Tribe deems appropriate, including but not limited to, educational, cultural and/or historic purposes.
c. If Native American human remains and/or grave goods are discovered or recognized on the project site or at any off-site project location, then all construction activities shall immediately cease. Native American "human remains" are defined to include "an inhumation or cremation, and in any state of decomposition or skeletal completeness." (Pub. Res. Code § 5097.98 (d)(1).) Funerary objects, referred to as "associated grave goods," shall be treated in the same manner and with the same dignity and respect as human remains. (Pub. Res. Code § 5097.98 (a), d)(1) and (2).)
d. Any discoveries of human skeletal material or human remains shall be immediately reported to the County Coroner (Health & Safety Code § 7050.5(c); 14 Cal. Code Regs. § 15064.5(e)(1)(B)), and all ground-disturbing project ground-disturbing activities on site and in any other area where the presence of human remains and/or grave goods are suspected to be present, shall immediately halt and remain halted until the coroner has determined the nature of the remains. (14 Cal. Code Regs. § 15064.5(e).) If the coroner recognizes the human remains to be those of a Native American or has reason to believe they are Native American, he or she shall contact, within 24 hours, the Native American Heritage Commission, and Public Resources Code Section 5097.98 shall be followed.
e. Thereafter, construction activities may resume in other parts of the project site at a minimum of 200 feet away from discovered human remains and/or grave goods, if the Tribe determines in its sole discretion that resuming construction activities at that distance is acceptable and provides the project manager express consent of that determination (along with any other mitigation measures the Tribal monitor and/or archaeologist deems necessary). (14 Cal. Code Regs. § 15064.5(f).)
f. Preservation in place (i.e., avoidance) is the preferred manner of treatment for discovered human remains and/or grave goods.
g. Any historic archaeological material that is not Native American in origin (non-TCRs) shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes.

TCR-3: Procedures for Burials, Funerary Remains, and Grave Goods:

a. Any discovery of human remains and/or grave goods discovered and/or recovered shall be kept confidential to prevent further disturbance.
b. As the Most Likely Descendant ("MLD"), the Koo-nas-gna Burial Policy shall be

implemented for all discovered Native American human remains and/or grave goods. Tribal Traditions include, but are not limited to, the preparation of the soil for burial, the burial of funerary objects and/or the deceased, and the ceremonial burning of human remains.

c. If the discovery of human remains includes four (4) or more burials, the discovery location shall be treated as a cemetery and a separate treatment plan shall be created.

d. The prepared soil and cremation soils are to be treated in the same manner as bone fragments that remain intact. Associated "grave goods" (aka, burial goods or funerary objects) are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later, as well as other items made exclusively for burial purposes or to contain human remains. Cremations will either be removed in bulk or by means necessary to ensure complete recovery of all sacred materials.

e. In the case where discovered human remains cannot be fully recovered (and documented) on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to divert the project while keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed.

f. In the event preservation in place is not possible despite good faith efforts by the project applicant/developer and/or landowner, before ground-disturbing activities may resume on the project site, the landowner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects. The site of reburial/repatriation shall be agreed upon by the Tribe and the landowner, and shall be protected in perpetuity.

g. Each occurrence of human remains and associated grave goods will be stored using opaque cloth bags. All human remains, grave goods, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items will be retained and shall be reburied within six months of recovery.

h. The Tribe will work closely with the project's qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be prepared and shall include (at a minimum) detailed descriptive notes and sketches. All data recovery data recovery-related forms of documentation shall be approved in advance by the Tribe. If any data recovery is performed, once complete, a final report shall be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive and/or destructive diagnostics on human remains.

Appendix A Project Plans: Tentative Tract Map No. 83435 [TTM 21-0002], Conditional Use Permit No. 21-0007, and Development Review Permit No. DRP21-0055 – Tentative Tract Map, Grading Plan, Utility Plan, Fire Access & Hydrant Plan, Site Plan, Open Space Plan, Floor Plans, Elevations, Landscape Plan, Wall/Fencing Plan and Lighting Plan

BUILDING D

BUILDING C

PLANNING COMMISION SUBMITTAL

OUR TEAM

MISSION PACIFIC INVESTORS
Contact: Mark Rael
4100 Newport Place, Suite 790, Newport Beach, CA 92660
951.453-4147 | www.missionpacific.com

ARCHITECT:
WHA. Architects . Planners . Designers
Contact: Ron Nestor
680 Newport Center Drive, Suite 300, Newport Beach, CA 92660
949.250-0607 | www.WHAinc.com

CIVIL:
C&V Consulting, Inc.
Contact: Ryan Bittner
9830 Irvine, CA 92618
949.445-1833 | www.cvc-inc.net

LANDSCAPE:
Herman Design Group
Contact: Jose Estrada
6864 Indiana Avenue, Suite 104E, Riverside CA 92506-4285
951.782-9335 | www.hdg-inc.com

CS COVER SHEET

CIVIL

C-1 TENTATIVE TRACT MAP
C-2 PRELIMINARY GRADING PLAN
C-3 PRELIMINARY ULTILITY PLAN
C-4 FIRE ACCESS & HYDRANT LOCATION PLAN

ARCHITECTURE

SP.1 CONCEPTUAL SITE PLAN
SP.2 CONCEPTUAL OPEN SPACE PLAN
JANINE DRIVEWAY BLOW-UP
SP.3 CONCEPTUAL SITE SECTIONS
A.1 BUILDING A CONCEPTUAL FLOOR PLANS
A.2 BUILDING B CONCEPTUAL FLOOR PLANS
A.3 BUILDING C CONCEPTUAL FLOOR PLANS
A.4 BUILDING D CONCEPTUAL FLOOR PLANS
A.5 BUILDING E CONCEPTUAL FLOOR PLANS
A.6 BUILDING E CONCEPTUAL FLOOR PLANS
A.7 BUILDING F CONCEPTUAL FLOOR PLANS
A.8 BUILDING A | CONCEPTUAL ELEVATIONS
A.9 BUILDING B | CONCEPTUAL ELEVATIONS
A.10 BUILDING C & D | CONCEPTUAL ELEVATIONS
A.11 BUILDING C | CONCEPTUAL ELEVATIONS
A.12 BUILDING D | CONCEPTUAL ELEVATIONS
A.13 BUILDING E | CONCEPTUAL ELEVATIONS
A.14 BUILDING F | CONCEPTUAL ELEVATIONS
A.15 TYPICAL BUILDING SECTION
A.16 EXTERIOR DOOR & WINDOW SCHEDULE
CM EXTERIOR COLOR & MATERIALS DESIGN

LANDSCAPE

LP-1 CONCEPTUAL MASTER LANDSCAPE PLAN
LP-2 CONCEPTUAL WALL/FENCE PLAN
LP-3 SITE SECTIONS
LP-4 SITE AMENITIES SOCIAL AREA
LP-5 SITE AMENITIES DOG PARK
LP-6 CONCEPTUAL MASTER PLANT PALETTE
E1.0 CONCEPTUAL SITE LIGHTING PLAN
E1.1 SITE PHOTOMETRIC PLAN
E1.2 SITE LIGHTING DETAILS

ARCHITECTS . PLANNERS . DESIGNERS
WHA.
ORANGE COUNTY . LOS ANGELES . BAY AREA

LA SERNA TOWNHOMES
WHITTIER, CA
CONCEPTUAL DESIGN
02-14-22 | 2020013

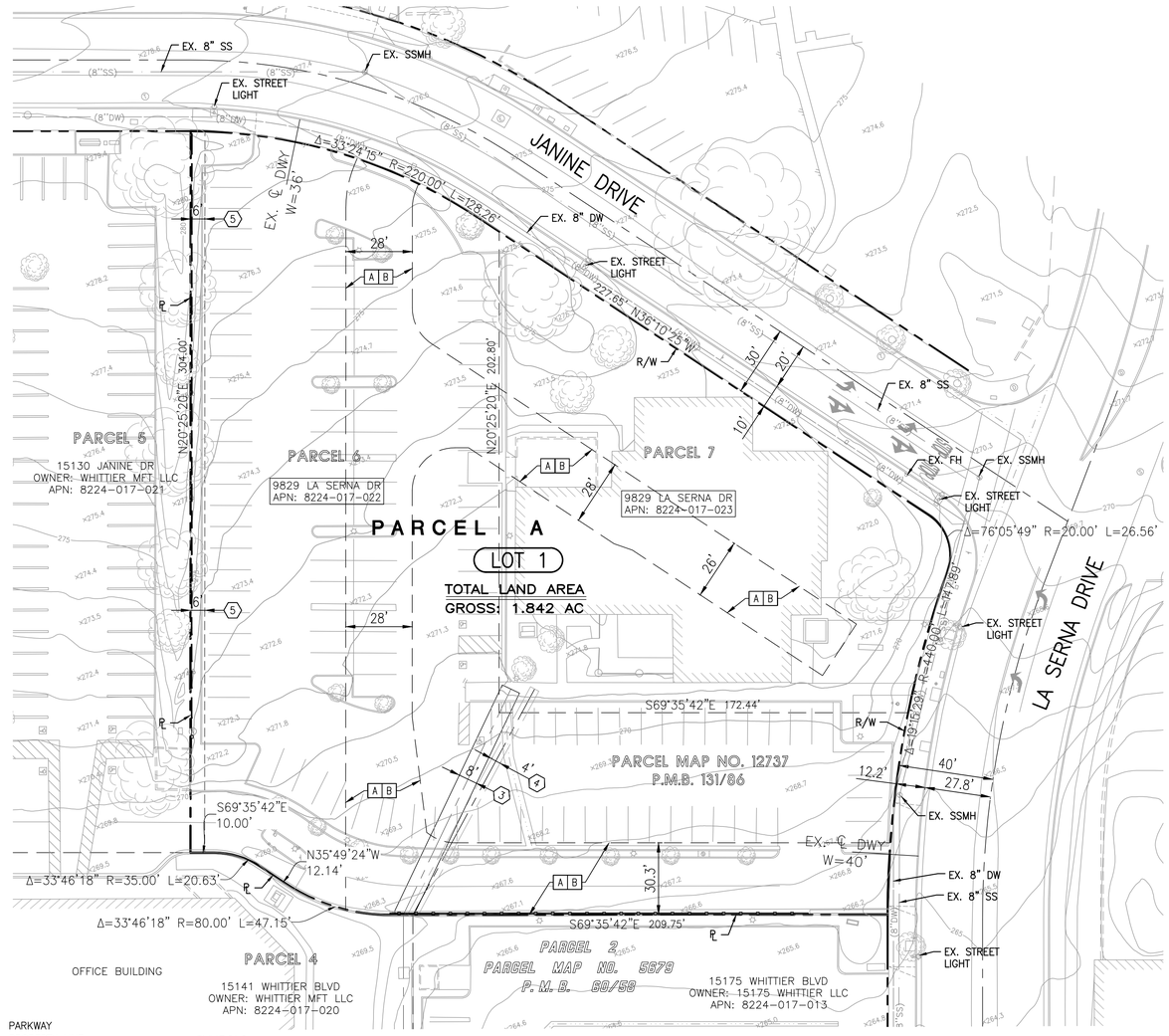
© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

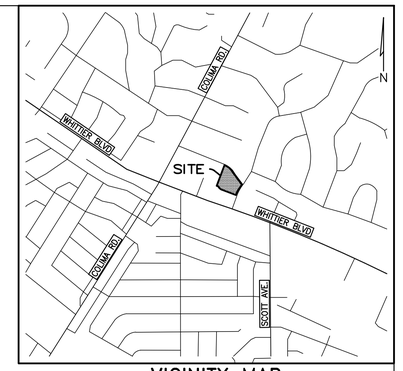
MISSION PACIFIC INVESTORS

TENTATIVE TRACT NO. 83435

FOR CONDOMINIUM PURPOSES

CITY OF WHITTIER, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA





VICINITY MAP
NOT TO SCALE

LEGAL DESCRIPTION:

PARCEL A:
PARCELS 6 AND 7, IN THE CITY OF WHITTIER, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON PARCEL MAP NO. 12737, AS PER MAP FILED IN BOOK 131, PAGE 86 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL B:
NON-EXCLUSIVE EASEMENTS FOR THE PARKING OF MOTOR VEHICLES, PEDESTRIAN TRAVEL, INGRESS AND EGRESS OVER PARCELS 1 THROUGH 5 OF PARCEL MAP NO. 12737, AS PER MAP FILED IN BOOK 131, PAGE 86 OF PARCEL MAPS AS DESCRIBED IN THAT CERTAIN PARKING FACILITY OPERATION AND EASEMENT AGREEMENT RECORDED MARCH 20, 1981 AS INSTRUMENT NO. 81-283290, AS AMENDED BY THAT CERTAIN FIRST AMENDMENT TO PARKING FACILITY OPERATION AND EASEMENT AGREEMENT RECORDED FEBRUARY 3, 1997 AS INSTRUMENT NO 97-177028, BOTH OF OFFICIAL RECORDS OF SAID COUNTY.

OWNER/SUBDIVIDER:

LA SERNA PARTNERS, LP
4100 Newport Place, Suite 790
Newport Beach, CA 92660
Office: (949) 333-6752

ENGINEER INFORMATION:

C&V Consulting, Inc.
9830 Irvine Center Drive
Irvine, California 92618
Office: (949) 916-3800

SITE ADDRESS:

9829 LA SERNA DRIVE
WHITTIER, CA

ASSESSOR'S PARCEL NUMBERS:

PARCEL 1 APN: 8224-017-022
PARCEL 2 APN: 8224-017-023

BENCHMARK STATEMENT:

LOS ANGELES COUNTY BENCHMARK NO. 10250
ELEV: 266.653 (NAVD88)
DESCRIBED AS: L&BR IN S CB 300MM(1FT) E/O BCR @ SE COR WHITTIER BLVD & COLE RD. (TABLE A-5)

PROJECT SUMMARY:

TOTAL UNITS: 42 UNITS

• (8)	PLAN 1:	+/- 1,355 S.F.
• (8)	PLAN 2:	+/- 1,497 S.F.
• (14)	PLAN 3:	+/- 1,419 S.F.
• (7)	PLAN 4:	+/- 1,604 S.F.
• (3)	PLAN 4X:	+/- 1,859 S.F.
• (1)	PLAN 4Y:	+/- 1,991 S.F.
• (1)	PLAN 4Z:	+/- 1,859 S.F.

FLOOD ZONE:

THE SUBJECT PROPERTY FALLS WITHIN "ZONE X – AREA OF MINIMAL FLOOD HAZARD" PER FEMA MAP NO. 06037C1835F, A PRINTED PANEL, EFFECTIVE SEPTEMBER 26, 2008 (TABLE A-3).

AVERAGE SLOPE:

S=100I/A
I=CONTOUR INTERVAL=1 FT
L=SUMMATION OF LENGTH OF CONTOURS=3,641 FT
A=SITE AREA=80,237 SF
S=100(1)(3,641)/80,237=4.5% AVERAGE SLOPE

UTILITY PURVEYORS:

SEWER
LOS ANGELES COUNTY SANITATION DISTRICT
(562) 699-7411

WATER
SOUTHWEST WATER COMPANY
(562) 944-8219

STORM DRAIN
LOS ANGELES FLOOD CONTROL DISTRICT
333 W OCEAN BLVD

ELECTRICITY
SOUTHERN CALIFORNIA EDISON CO.
(800) 655-4555

GAS
SOUTHERN CALIFORNIA GAS CO.
(877) 238-0092

CABLE
CHARTER COMMUNICATIONS
(888) 438-2427

FRONTIER COMMUNICATIONS
(866) 248-8956

LEGEND:

AP	ANGLE POINT	PKWY	PARKWAY
ASPH	ASPHALT PAVEMENT	℄	PROPERTY LINE
BC	BUILDING CORNER	PP	POWER POLE
BEG	BEGIN	RET	RETAINING
BO	BLOW-OFF VALVE	SS	SANITARY SEWER
BLDG	BUILDING	SSMH	SANITARY SEWER MANHOLE
BW	BLOCK WALL	TE	TRASH ENCLOSURE
CB	CATCH BASIN	TF	TRANSFORMER
CF	CURB FACE	WF	WOOD FENCE
CLF	CHAIN LINK FENCE	WL	WALL
CMF	CORRUGATED METAL FENCE	WM	WATER METER
CONC	CONCRETE PAVEMENT	V	VALVE
DI	DRAIN INLET	VF	VINYL FENCE
DED	DEDICATION	IN P/L	INSIDE PROPERTY LINE
DW	DOMESTIC WATER	OUT P/L	OUTSIDE PROPERTY LINE
EP	EDGE OF PAVEMENT	N/F	NORTH FACE
ECF	EDGE OF CURB FACE	S/F	SOUTH FACE
FH	FIRE HYDRANT	E/F	EAST FACE
GM	GAS METER	W/F	WEST FACE
Hr	HEIGHT OF RETAINING		
LS	LANDSCAPING		

SYMBOLS:

BO	BLOW-OFF VALVE
DI	DRAIN INLET
FH	FIRE HYDRANT
	LIGHT STANDARD
	STORM DRAIN MANHOLE
	SANITARY SEWER MANHOLE
	SIGN POST
GM	GAS METER
WM	WATER METER
V	UTILITY VALVE
	UTILITY/POWER POLE
	BLOCK/RETAINING SCREEN WALL
	BLOCK/RETAINING LOW WALL
	PLANTER/DECORATIVE WALL
	OVERHEAD WIRE
	EDGE OF ASPHALT PAVEMENT
	WOOD/WROUGHT IRON FENCE
	CHAIN LINK FENCE
	DIRECTION OF FLOW
93	MINOR CONTOUR (1' INTERVAL)
100	MAJOR CONTOUR (5' INTERVAL)
×91.5	SPOT ELEVATION
	ADA PATH OF TRAVEL

SCALE: 1" = 30'
0 15 30 60

EXISTING EASEMENTS NOTES:

TITLE INFORMATION:
THE FOLLOWING TITLE INFORMATION WAS DERIVED FROM AN AMENDED PRELIMINARY REPORT ISSUED BY FIDELITY NATIONAL TITLE INSURANCE COMPANY, ORDER NO.: 989-30038582-A-SG4 DATED OCTOBER 21, 2019 AT 7:30 A.M., AMENDED: NOVEMBER 14, 2019, AMENDMENT NO. A

(#) DENOTES PLOTTED ITEM.

2 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT:
PURPOSE: PIPELINES
RECORDING DATE:SEPTEMBER 4, 1928
RECORDING NO: 1231, BOOK 7255, PAGE 126 OF OFFICIAL RECORDS
AND RECORDING DATE: APRIL 29 1939
AND RECORDING NO: 738, BOOK 16616, PAGE 30 OF OFFICIAL RECORDS
(EASEMENT LOCATION IS INDETERMINATE FROM RECORD INFORMATION)

3 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: SOUTHERN CALIFORNIA EDISON COMPANY
PURPOSE: PUBLIC UTILITIES
RECORDING DATE:NOVEMBER 1, 1977
RECORDING NO: 77-1211191 OF OFFICIAL RECORDS

4 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: GENERAL TELEPHONE COMPANY OF CALIFORNIA
PURPOSE: PUBLIC UTILITIES
RECORDING DATE:MARCH 8, 1978
RECORDING NO: 78-249510 OF OFFICIAL RECORDS

5 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: GTE CALIFORNIA, INCORPORATED, A CORPORATION
PURPOSE: PUBLIC UTILITIES
RECORDING DATE: MAY 8, 1989
RECORDING NO: 89-733992 OF OFFICIAL RECORDS

PROPOSED EASEMENT NOTES:

[A] INDICATES AN EASEMENT FOR INGRESS AND EGRESS FOR EMERGENCY AND PUBLIC SERVICE VEHICLES

[B] INDICATES AN EASEMENT FOR PUBLIC UTILITIES (PUE)

LAND USE SUMMARY:

GROSS AREA: 1.842 AC±
TOTAL PROPOSED LOTS: 1
TOTAL PROPOSED DWELLING UNITS: 42 TOWNHOMES

EARTHWORK SUMMARY:

RAW CUT:	2,474 CY
RAW FILL:	474 CY
TOTAL CUT:	2,000 CY

SHEET INDEX

SHEET NO.	
SHEET 1	TENTATIVE TRACT MAP
SHEET 2	PRELIMINARY GRADING PLAN
SHEET 3	PRELIMINARY UTILITY PLAN
SHEET 4	FIRE ACCESS & HYDRANT LOCATION PLAN

CITY OF WHITTIER
PUBLIC WORKS DEPARTMENT
13230 PENN STREET
WHITTIER, CA 90602-1716
TEL. (562) 567-9500

NO.	DATE	BY	DESCRIPTION	APPROVED

REVISIONS

CONSULTANT INFORMATION :
C&V CONSULTING, INC.
9830 IRVINE CENTER DR.
IRVINE, CA., 92618
949-916-3800
CONSULTING, INC. CIVIL ENGINEERING LAND PLANNING & SURVEYING

REVIEWED BY : DATE : _____

CONSULTANTS

PREPARED BY :
REGISTERED PROFESSIONAL ENGINEER RYAN J. BITTNER No. 68167 CIVIL STATE OF CALIFORNIA
10/27/2021
DATE

ENGINEER

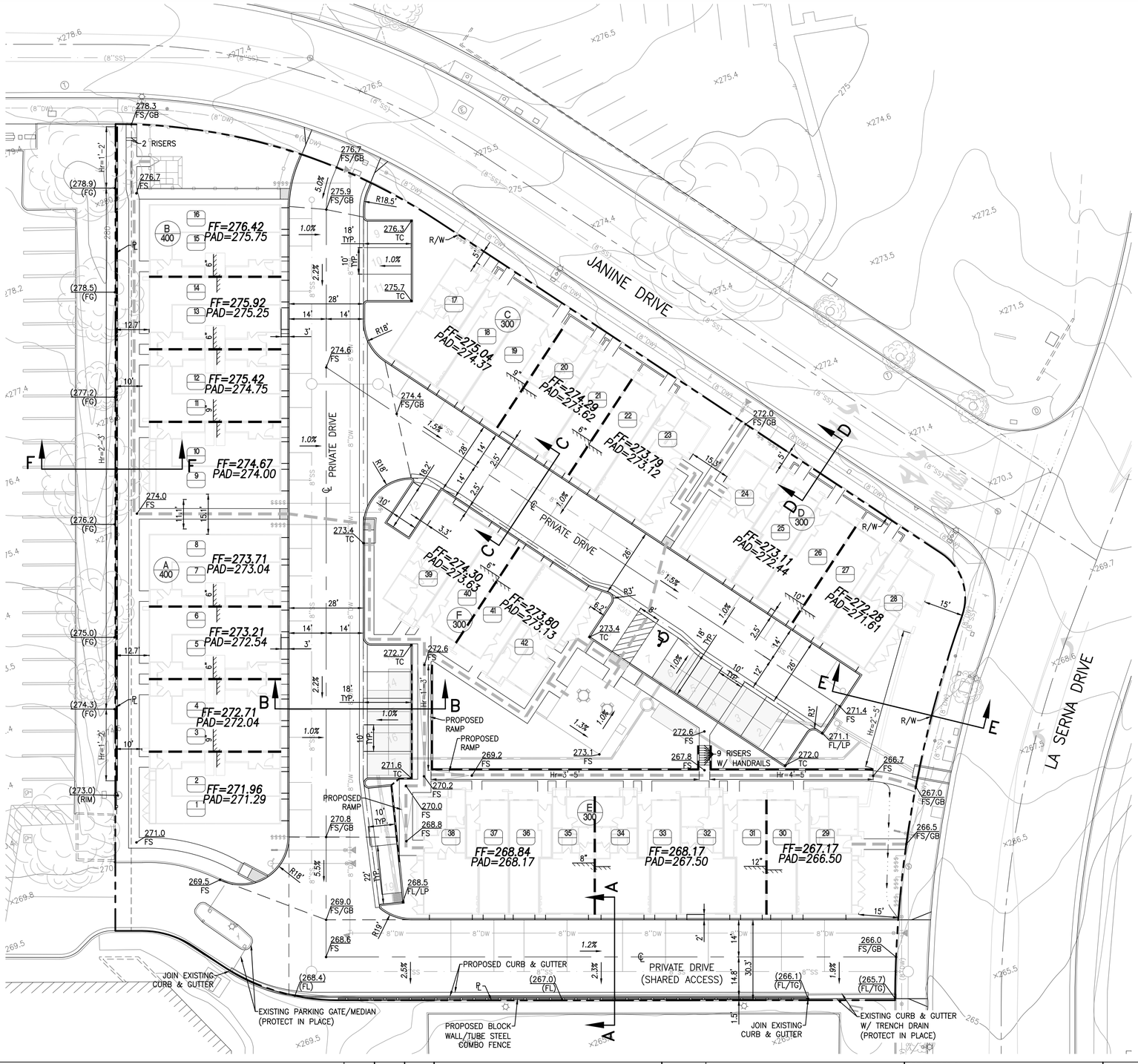
REFERENCE:
WF- S-
P- SD-
PROJECT FILE:
APPROVED BY:
KYLE CASON
INTERIM DIRECTOR
DATE

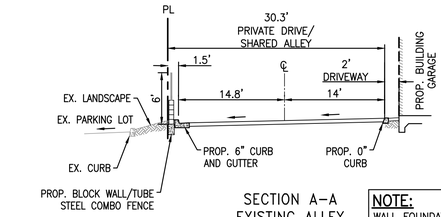
ENGINEERING DIVISION

TENTATIVE TRACT MAP
TENTATIVE TRACT NO. 83435
9829 LA SERNA DRIVE.
WHITTIER, CALIFORNIA

DESIGNED BY : MM
DRAWN BY : DA
CHECKED BY : RB
CONSULTANT JOB/SHEET NO.
DWG. NO.
SHT 1 OF 4 SHTS

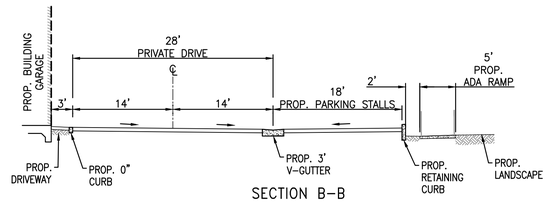
DATE PLOTTED: October-27-2021
P:\MM\ISS-001\dwg\Sheets\TTM\TTM-01-TITLE.dwg



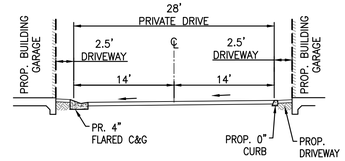


SECTION A–A
EXISTING ALLEY
NOT TO SCALE

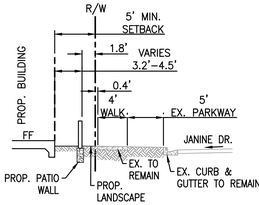
NOTE:
WALL FOUNDATIONS SHALL BE DESIGNED TO CITY OF WHITTIER STANDARDS



SECTION B–B
PROPOSED DRIVE
NOT TO SCALE

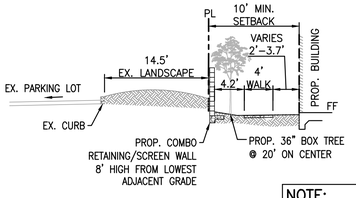


SECTION C–C
PROPOSED DRIVE
NOT TO SCALE



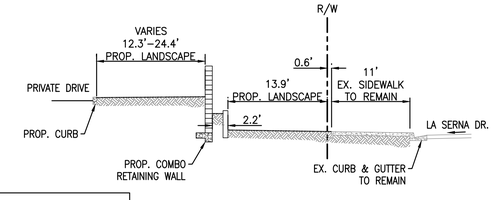
SECTION D–D
NORTHERN PROPERTY LINE
NOT TO SCALE

NOTE:
WALL FOUNDATIONS SHALL BE DESIGNED TO CITY OF WHITTIER STANDARDS



SECTION F–F
WESTERN PROPERTY LINE
NOT TO SCALE

NOTE:
WALL FOUNDATIONS SHALL BE DESIGNED TO CITY OF WHITTIER STANDARDS



SECTION E–E
EASTERN PROPERTY LINE
NOT TO SCALE

NOTE:
WALL FOUNDATIONS SHALL BE DESIGNED TO CITY OF WHITTIER STANDARDS

1" = 20'
0 10 20 40

CITY OF WHITTIER

PUBLIC WORKS DEPARTMENT

13230 PENN STREET
WHITTIER, CA 90602-1716
TEL. (562) 567-9500

NO.	DATE	BY	DESCRIPTION	APPROVED

REVISIONS

CONSULTANT INFORMATION :

C&V CONSULTING, INC.
9830 IRVINE CENTER DR.
IRVINE, CA., 92618
949-916-3800

C&V CONSULTING, INC.
CIVIL ENGINEERING
LAND PLANNING & SURVEYING

REVIEWED BY : DATE : _____

CONSULTANTS

PREPARED BY :

REGISTERED PROFESSIONAL ENGINEER
RYAN J. BITTNER
No. 68167
CIVIL
STATE OF CALIFORNIA

10/27/2021
DATE

ENGINEER

REFERENCE:
WF- S-
P- SD-

PROJECT FILE:

APPROVED BY:

KYLE CASON
INTERIM DIRECTOR

DATE

ENGINEERING DIVISION

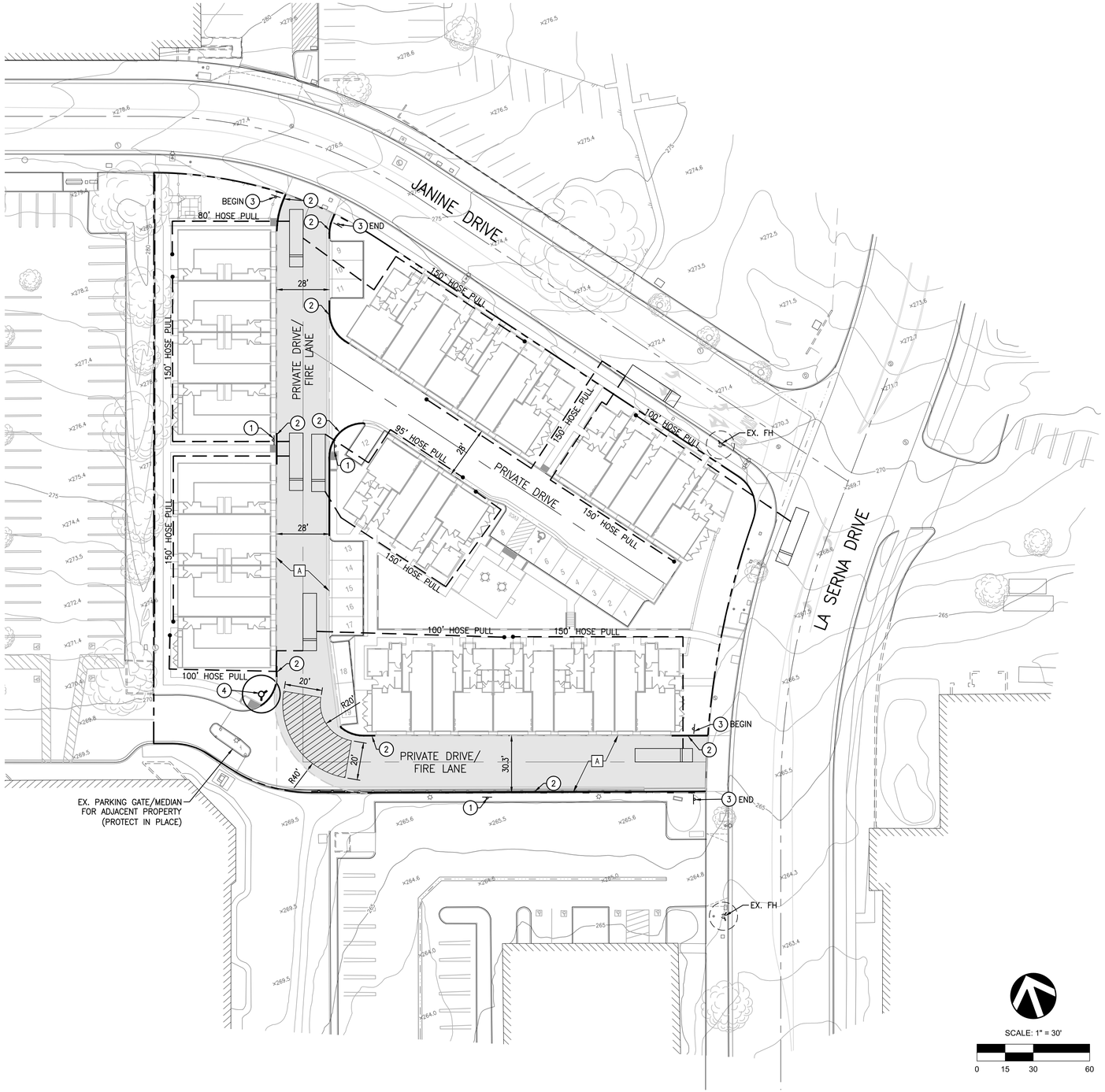
PRELIMINARY GRADING PLAN
TENTATIVE TRACT NO. 83435
9829 LA SERNA DRIVE.
WHITTIER, CALIFORNIA

DESIGNED BY : MM
DRAWN BY : DA
CHECKED BY : RB
CONSULTANT JOB/SHEET NO.
DWG. NO.
SHT 2 OF 4 SHTS

DATE PLOTTED: October-27-2021

P:\MM\SS-001\dwg\Sheets\TTM\TTM-02-GRD.dwg

EX. SSMH
PROTECT IN PLACE EX. 8" SWWC DW
PROP. SWWC 8" DW POC
PROP. DW METER MANIFOLD
PROP. SS CLEANOUT
PROP. 8" PVC SS S=0.005
PROP. 8" DW
PROP. SS MH
PROP. 4" FIRE SERVICE LATERAL & BACKFLOW
PROP. FH
EX. GTE MANHOLE (PROTECT IN PLACE)
JANINE DRIVE
EX. 8" SS
PROP. DW METER MANIFOLD
PROTECT IN PLACE EX. 8" SWWC DW
SUNSET LANE
EX. 8" SS
EX. FH
EX. SSMH
PROP. DW METER MANIFOLD
PROP. 4" FIRE SERVICE LATERAL & BACKFLOW
PROP. DW METER MANIFOLD
PROP. 8" PVC SS S=0.005
PROP. 48'X16'X8' DETENTION VAULT
PROP. 7' CURB INLET CATCH BASIN
PROP. SS CLEANOUT
PROP. 8" SD
WETLANDMOD FEED PUMP STATION
PROP. 40'X16'X6' DETENTION VAULT
PROP. 8" SD
PROP. 6'X16' WETLANDMOD BIOFILTRATION SYSTEM
WETLANDMOD DISCHARGE PUMP STATION
PROP. PRESSURIZED PUMP DISCHARGE PIPE
PROTECT IN PLACE EX. 8" SS
PROTECT IN PLACE EX. 8" SWWC DW
LA SERNA DRIVE
PROP. PARKWAY DRAIN (OUTLET)
PROP. 18" OVERFLOW PIPE
EX. SS MH PROTECT IN PLACE
(266.46) RIM
(258.53) INV(IN)
(258.49) INV(OUT)
PROP. DW METER MANIFOLD
PROP. SWWC 8" DW POC
PROP. SS MH
265.8 RIM
257.3 INV(IN)–N
257.4 INV(IN)–E
257.2 INV(OUT)–S
PROTECT IN PLACE EX. 8" SWWC DW
PROTECT IN PLACE EX. 8" SS
PROP. 12" SD
PROP. 3'X3' INLET/OVERFLOW
PRIVATE DRIVE
PROP. 8" DW
PROP. 8" PVC SS S=0.005
PROP. SS MH
PRIVATE DRIVE
PROP. 8" DW
PROP. 8" PVC SS S=0.005
PROP. SS MH
PROP. DW METER MANIFOLD
PROP. 4" FIRE SERVICE LATERAL & BACKFLOW
PROP. FH
PROP. DW METER MANIFOLD
PROP. DW METER MANIFOLD
PROP. DW METER MANIFOLD
PROP. 4" FIRE SERVICE LATERAL & BACKFLOW
PROP. DW METER MANIFOLD
PROP. DW METER MANIFOLD
PROP. DW METER MANIFOLD



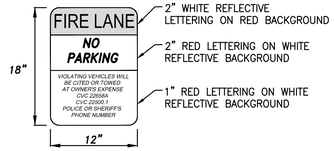
SCALE: 1" = 30'

0 15 30 60

LEGEND

- EXISTING STREET LIGHT
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- PROPOSED FIRE TRUCK ACCESS
- HOSE PULL
- PROPERTY LINE
- RED CURB STRIPING

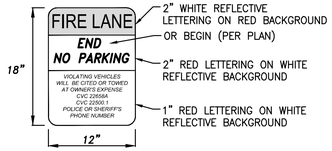
FH	FIRE HYDRANT
PR.	PROPOSED
EX	EXISTING
PL	PROPERTY LINE
R/W	RIGHT OF WAY
TYP.	TYPICAL



ALL SIGN AND LETTERING DIMENSIONS ARE MINIMUMS.

SIGNS SHALL BE SECURELY MOUNTED FACING THE DIRECTION OF TRAVEL AND CLEARLY VISIBLE TO ONCOMING TRAFFIC ENTERING THE DESIGNATED AREA. SIGNS SHALL BE MADE OF DURABLE MATERIAL.

1 **NO PARKING SIGN**
NOT TO SCALE



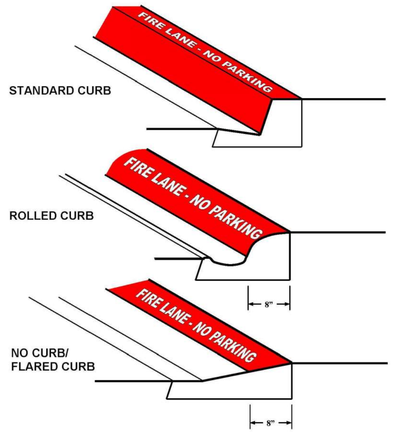
ALL SIGN AND LETTERING DIMENSIONS ARE MINIMUMS.

SIGNS SHALL BE SECURELY MOUNTED FACING THE DIRECTION OF TRAVEL AND CLEARLY VISIBLE TO ONCOMING TRAFFIC ENTERING THE DESIGNATED AREA. SIGNS SHALL BE MADE OF DURABLE MATERIAL.

3 **BEGIN & END NO PARKING SIGN OR BEGIN (PER PLAN)**
NOT TO SCALE

ATTACHMENT 9

Fire Lane Identification – Red Curbs



1. Fire lane entrance sign(s) shall also be provided per Attachment 10 or 11.
2. Curbs shall be painted OSHA safety red.
3. "FIRE LANE – NO PARKING" shall be painted on top of curb in 3" white lettering at a spacing of 30' on center or portion thereof.

1. CURBS SHALL BE PAINTED RED
2. "FIRE LANE – NO PARKING" SHALL BE PAINTED ON TOP OF CURB IN 3" WHITE LETTERING AT A SPACING OF 30' ON CENTER OR PORTION THEREOF.

2 **RED CURB PAVEMENT MARKING**
NOT TO SCALE

CONSTRUCTION NOTES:

1. INSTALL "FIRE LANE" SIGN PER DETAIL 1 HEREON.
2. FIRE LANE IDENTIFICATION–RED CURBS PER DETAIL 2 HEREON.
3. INSTALL "FIRE LANE" SIGN BEGIN OR END PER DETAIL 3 HEREON.
4. PROPOSED FIRE HYDRANT LOCATION

PROJECT GENERAL NOTES:

1. ALL FIRE ACCESS LANES MEET LACoFD MINIMUM REQUIREMENTS 18' & 46' RADII.

2. THIS PROJECT DOES NOT HAVE ANY FUEL MODIFICATION OR WILD LAND EXPOSURES AND IS NOT IN A VERY HIGH FIRE HAZARD ZONE.

3. THIS PROJECT IS DESIGNED IN CONFORMANCE WITH THE CBC, 2013 EDITION.

4. ALL FIRE ACCESS ROADS SHALL BE ALL WEATHER, MEET THE CRITERIA OF AN ALL WEATHER DRIVING SURFACE AND COMPLY WITH LACoFD GUIDELINE FOR FIRE APPARATUS ROADS.

5. LARGEST BUILDING SQ. FOOTAGE = 15,625 SQ. FT.

6. BUILDINGS ARE DESIGNATED TYPE–VA.

7. BUILDING OCCUPANCIES ARE R–2 FOR ATTACHED MULTI–FAMILY UNITS.

8 THE BUILDING HEIGHTS ARE APPROXIMATELY 36'–4" MAX.

9. ALL R–2 BUILDINGS WILL BE SPRINKLERED PER NFPA–13.

10. BUILDING ADDRESS NUMBER SHALL BE PROVIDED AND MAINTAINED SO AS TO BE PLAINLY VISIBLE AND LEGIBLE FROM THE STREET FRONTING THE PROPERTY. THE NUMBERS SHALL BE A MINIMUM 4 INCHES HIGH, 1 INCH WIDE WITH A 1/2 INCH STROKE. FOR BUILDINGS SET BACK MORE THAN 150 FEET FROM THE STREET, THE NUMBERS SHALL BE A MINIMUM 5 INCHES HIGH, 2 INCHES WIDE WITH A 1/2 INCH STROKE. FIRE CODE 908.4.4.

11. A KEY BOX SHALL BE PROVIDED AT THE MAIN ENTRANCE, IN ACCORDANCE WITH FIRE CODE 902.4, AND AS SET FORTH IN FIRE DEPARTMENT REGULATION 5.

12. THE REQUIRED FIRE FLOW FOR PUBLIC FIRE HYDRANTS AT THIS LOCATION IS 4,000 GALLONS PER MINUTE, AT 20 PSI RESIDUAL PRESSURE, FOR A DURATION OF 4 HOURS OVER AND ABOVE MAXIMUM DAILY DOMESTIC DEMAND. FIRE CODE 507.3 AND APPENDIX B105.1.

THE REQUIRED FIRE FLOW FOR ON–SITE PRIVATE FIRE HYDRANTS AT THIS LOCATION IS 1,250 GPM AT 20 PSI RESIDUAL PRESSURE FOR 2 HOURS. ONE (1) ON–SITE FIRE HYDRANTS FLOWING MAY BE USED TO ACHIEVED THE REQUIRED FLOW.

1. ALL FIRE HYDRANTS SHALL MEASURE 6"X4"X2–1/2", BRASS OR BRONZE, CONFORMING TO AMERICAN WATER WORKS ASSOCIATION STANDARD C503, OR APPROVED EQUAL; AND SHALL BE INSTALLED IN COMPLIANCE WITH FIRE DEPARTMENT REGULATION 8. FIRE CODE 903.2.1

2. ALL ON–SITE FIRE HYDRANTS SHALL BE INSTALLED, TESTED AND APPROVED PRIOR TO BUILDING OCCUPANCY. FIRE CODE 1001.4

3. THE INSPECTION, HYDROSTATIC TEST AND FLUSHING OF THE UNDERGROUND FIRE PROTECTION PIPING SHALL BE WITNESSED BY AN AUTHORIZED FIRE DEPARTMENT REPRESENTATIVE AND NO UNDERGROUND PIPING OR THRUST BLOCKS SHALL BE COVERED WITH EARTH OR HIDDEN FROM VIEW UNTIL THE FIRE DEPARTMENT REPRESENTATIVE HAS BEEN NOTIFIED AND GIVEN NOT LESS THAN 48 HOURS IN WHICH TO INSPECT SUCH INSTALLATIONS. FIRE CODE 1001.4

PROPOSED EASEMENTS

A INDICATES AN EASEMENT FOR INGRESS AND EGRESS FOR EMERGENCY AND PUBLIC SERVICE VEHICLES

CITY OF WHITTIER

PUBLIC WORKS DEPARTMENT

13230 PENN STREET
WHITTIER, CA 90602-1716
TEL. (562) 567-9500

NO.	DATE	BY	DESCRIPTION	APPROVED

REVISIONS

CONSULTANT INFORMATION :
C&V CONSULTING, INC.
9830 IRVINE CENTER DR.
IRVINE, CA., 92618
949-916-3800

C&V CONSULTING, INC. CIVIL ENGINEERING LAND PLANNING & SURVEYING

REVIEWED BY : DATE : _____

CONSULTANTS

PREPARED BY :

REGISTERED PROFESSIONAL ENGINEER RYAN J. BITTNER No. 68167 CIVIL STATE OF CALIFORNIA

10/27/2021
DATE

ENGINEER

REFERENCE:
WF- S-
P- SD-

PROJECT FILE:

APPROVED BY:

KYLE CASON
INTERIM DIRECTOR
DATE

ENGINEERING DIVISION

PRELIMINARY FIRE ACCESS
TENTATIVE TRACT NO. 83435
9829 LA SERNA DRIVE.
WHITTIER, CALIFORNIA

DESIGNED BY : MM
DRAWN BY : DA
CHECKED BY : RB
CONSULTANT JOB/SHEET NO.
DWG. NO.
SHT 4 OF 4 SHTS

DATE PLOTTED: October-27-2021

P:\MM\SS-001\dwg\Sheets\TTM\TTM-04-FA.dwg

La Serna Townhomes 10/18/2021

Units	Back-to-Backs Plan 1A		Back-to-Backs Plan 1B		Bldgs A & B Plan 2		Standard Townhomes Bldgs C, D, E, & F Plan 3		Plan 4		Plan 4x (4-ADA)		Plan 4y		Plan 4z (1-ADA)		
	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Total
Lev 3	497	632	497	632	649	734	607	647	587	620	683	742	766	820	683	742	
Lev 2	536	627	536	627	579	667	645	680	589	629	658	711	683	738	658	711	
Lev 1	249	279	68	81	82	97	83	92	336	355	341	406	365	433	341	406	
Total	1282	1538	1101	1340	1310	1498	1335	1419	1512	1604	1682	1859	1814	1991	1682	1859	
Count	4		4		8		14		6		4		1		1		42
Mix	9.5%		9.5%		19.0%		33.3%		14.3%		9.5%		2.4%		2.4%		
Ttl Area	5,128	6,152	4,404	5,360	10,480	11,984	18,690	19,866	9,072	9,624	6,728	7,436	1,814	1,991	1,682	1,859	

Ttl Net	57,998	Avg Net	1,381
Ttl Gross	64,272	Avg Gross	1,530

Parking	Back-to-Backs Plan 1A		Back-to-Backs Plan 1B		Plan 2		Standard Townhomes Plan 3		Plan 4		Plan 4x (4-ADA)		Plan 4y		Plan 4z (1-ADA)		
# Bdrm	2		2		3		3		3		3		3		3		Total
Count	4		4		8		14		6		4		1		1		42
REQUIRED	Rate	Reqd	Rate	Reqd	Rate	Reqd	Rate	Reqd	Rate	Reqd	Rate	Reqd	Rate	Reqd	Rate	Reqd	
Rate	2.00	8.00	2.00	8.00	2.25	18.00	2.25	31.50	2.25	13.50	2.25	9.00	2.25	2.25	2.25	2.25	93
Guest	0.25	1.00	0.25	1.00	0.25	2.00	0.25	3.50	0.25	1.50	0.25	1.00	0.25	0.25	0.25	0.25	11
Ttl Reqd																	103
PROVIDED																	
Garage	2	8	2	8	2	16	2	28	2	12	2	8	2	2	2	2	84
On-Site	Open 17	HC 1			EVCS 1												19
TOTAL	17	1			1												103

Open Space	Back-to-Backs Plan 1		Standard Townhomes Plan 3		Plan 4		Plan 4x (4-ADA)		Plan 4y		Plan 4z (1-ADA)		
Private													
Count	8	8	14		6		4		1		1		
Balcony Area	71	72	72		103		120		108		120		
Total Area	568	576	1008		618		480		108		120		3478
											Average		82.81

Janine Dr. Patios	Bldg D			Bldg C				
Bldgs C & D	134	134	134	134	101	134	134	Janine Patios Total 1039

Total Private	4517	
Avg Private	107.548	

Common		
REQUIRED	150 SF/Unit	6,300 Reqd
PROVIDED		
Central Rec		6,562
Dog Park		1,714
Res Entry Paseo		3,082
South yard		1,317
Total		12,675 Prov'd

PROJECT SUMMARY

Address: 9829 La Serna Drive
Whittier, CA 90605
APN: 8224-017-023; 8224-017-022
Total Site Area: 1.842 Ac 80,250 SF
Total Units: 42
Stories: 3
Parking: 84 Garage spaces
19 Surface spaces
Total 103 spaces
Open space: See Table Above
Common
Balconies & Private
Courtyard on Janine Drive Private
Front Yard Open Space
Lot Coverage: 39.2%

ZONING SUMMARY

Existing Zoning: Specific Plan-Whittier Blvd. Shopping Clusters
Proposed Zoning: Specific Plan-Whittier Blvd. Shopping Clusters
Max. Density: 40 du/ac
Proposed Density: 22.8 du/ac

Building Setbacks:
Front Yard: 0'-0"
Street Side Yard: 5' min.; 10' max.
Rear 10'-0" min.
Interior Side Yard 5' min.
Max. Building Height: 55'-0" and 4 stories
FAR 1.5 Max 0.80 For Living Area
1.04 For Living + Garage

BUILDING INFORMATION

Occupancy Type: R2
Construction Type: VA
Fire Sprinkler: NFPA 13
Building Height: 36'-4" Max at highest ridge
2019 Cal Green (California Green Building Code)

VICINITY MAP

SP.1

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

CONCEPTUAL DESIGN
0 10 20 40
02-14-22 | 2020013 | WHA.

CONCEPTUAL SITE PLAN
LA SERNA TOWNHOMES
WHITTIER, CA

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

La Serna Townhomes 10/18/2021

Units	Back-to-Backs				Bldgs A & B		Standard Townhomes				Bldgs C, D, E, & F						
	Plan 1A		Plan 1B		Plan 2		Plan 3		Plan 4		Plan 4x (4-ADA)		Plan 4y		Plan 4z (1-ADA)		
	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross					Total
Lev 3	497	632	497	632	649	734	607	647	587	620	683	742	766	820	683	742	
Lev 2	536	627	536	627	579	667	645	680	589	629	658	711	683	738	658	711	
Lev 1	249	279	68	81	82	97	83	92	336	355	341	406	365	433	341	406	
Total	1282	1538	1101	1340	1310	1498	1335	1419	1512	1604	1682	1859	1814	1991	1682	1859	
Count	4		4		8		14		6		4		1		1		42
Mix	9.5%		9.5%		19.0%		33.3%		14.3%		9.5%		2.4%		2.4%		
Ttl Area	5,128	6,152	4,404	5,360	10,480	11,984	18,690	19,866	9,072	9,624	6,728	7,436	1,814	1,991	1,682	1,859	

Ttl Net	57,998	Avg Net	1,381
Ttl Gross	64,272	Avg Gross	1,530

Parking	Back-to-Backs						Standard Townhomes										
	Plan 1A		Plan 1B		Plan 2		Plan 3		Plan 4		Plan 4x (4-ADA)		Plan 4y		Plan 4z (1-ADA)		
# Bdrm	2		2		3		3		3		3		3		3		Total
Count	4		4		8		14		6		4		1		1		42
REQUIRED	Rate	Reqd	Rate	Reqd	Rate	Reqd	Rate	Reqd	Rate	Reqd	Rate	Reqd	Rate	Reqd	Rate	Reqd	
Rate	2.00	8.00	2.00	8.00	2.25	18.00	2.25	31.50	2.25	13.50	2.25	9.00	2.25	2.25	2.25	2.25	93
Guest	0.25	1.00	0.25	1.00	0.25	2.00	0.25	3.50	0.25	1.50	0.25	1.00	0.25	0.25	0.25	0.25	11
Ttl Reqd																	103
PROVIDED																	
Garage	2	8	2	8	2	16	2	28	2	12	2	8	2	2	2	2	84
On-Site	Open 17	HC 1			EVCS 1												19
TOTAL	17	1			1												103

Open Space	Back-to-Backs		Standard Townhomes						
Private	Plan 1	Plan 2	Plan 3	Plan 4	Plan 4x (4-ADA)	Plan 4y	Plan 4z (1-ADA)		
Count	8	8	14	6	4	1	1		
Balcony Area	71	72	72	103	120	108	120		
Total Area	568	576	1008	618	480	108	120		3478
							Average		82.81

Janine Dr. Patios	Bldg D				Bldg C					
Bldgs C & D	134	134	134		134	101	134	134	Janine Patios Total	1039

Total Private	4517
Avg Private	107.548

Common		
REQUIRED	150 SF/Unit	6,300 Reqd
PROVIDED		
Central Rec		6,562
Dog Park		1,714
Res Entry Paseo		3,082
South yard		1,317
Total		12,675 Prov'd

PROJECT SUMMARY

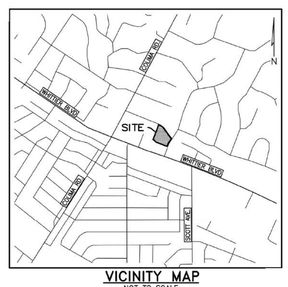
Address:	9829 La Serna Drive Whittier, CA 90605	
APN:	8224-017-023; 8224-017-022	
Total Site Area:	1.842 Ac	80,250 SF
Total Units:	42	
Stories:	3	
Parking:	84 Garage spaces 19 Surface spaces Total 103 spaces	
Open space:	See Table Above Common	
Balconies & Private Courtyard on Janine Drive Front Yard Open Space	Private	
Lot Coverage:	39.2%	

ZONING SUMMARY

Existing Zoning:	Specific Plan-Whittier Blvd. Shopping Clusters	
Proposed Zoning:	Specific Plan-Whittier Blvd. Shopping Clusters	
Max. Density:	40 du/ac	
Proposed Density:	22.8 du/ac	
Building Setbacks:	Front Yard:	15'-0"
	Street Side Yard:	5'-0"
	Rear	20'-0" Required 10'-12-8" Provided
	Interior Side Yard	5' min.
Max. Building Height:	40'-0' and 3 stories	
FAR	1.5 Max	0.80 For Living Area 1.04 For Living + Garage

BUILDING INFORMATION

Occupancy Type:	R2
Construction Type:	VA
Fire Sprinkler:	NFPA 13
Building Height:	36'-4" Max at highest ridge
2019 Cal Green (California Green Building Code)	



VICINITY MAP
NOT TO SCALE

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

CONCEPTUAL SITE PLAN OPEN SPACE

LA SERNA TOWNHOMES

WHITTIER, CA

CONCEPTUAL DESIGN | 10-18-21 | 2020013

0 10 20 40

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

SITE PLAN

ARCHITECTS . PLANNERS . DESIGNERS
WHA.
ORANGE COUNTY . LOS ANGELES . BAY AREA

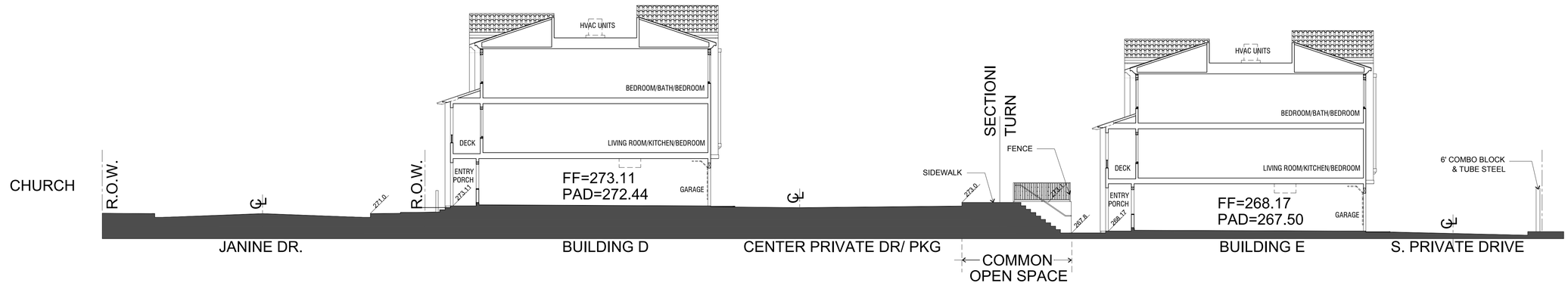
LA SERNA TOWNHOMES

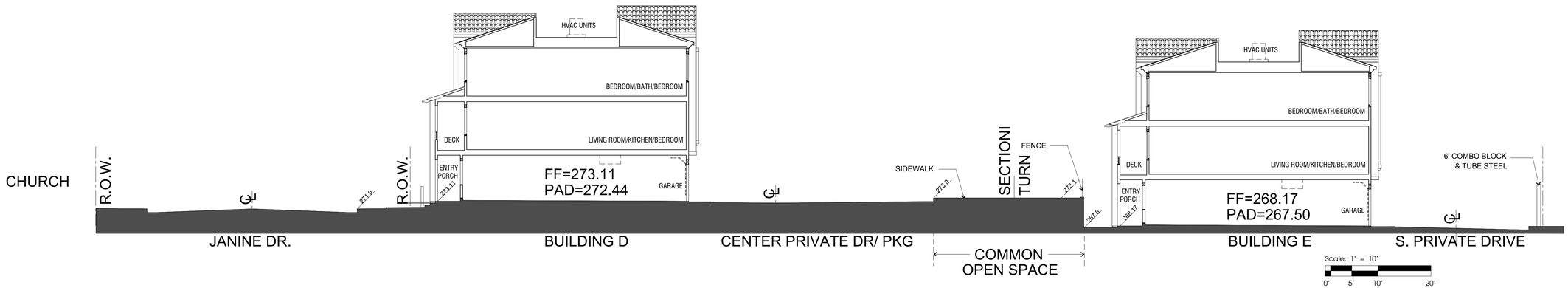
WHITTIER, CA

CONCEPTUAL DESIGN

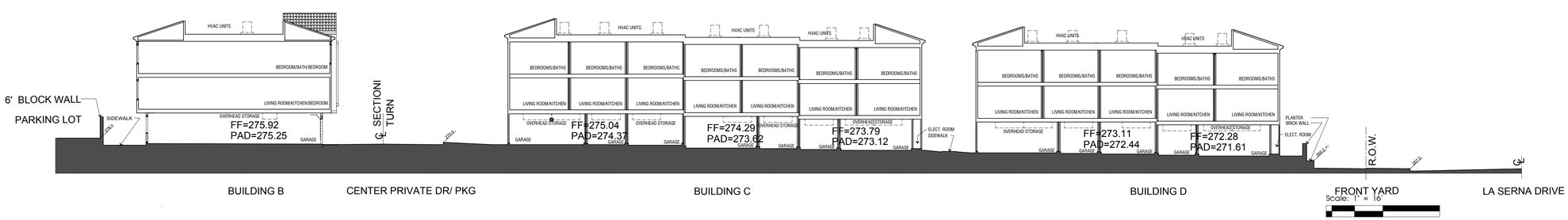
© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA. | 2020013 | 01-28-22

MISSION PACIFIC INVESTORS





NORTH-SOUTH SITE SECTION



WEST-EAST SITE SECTION

SITE SECTIONS

SP.3

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

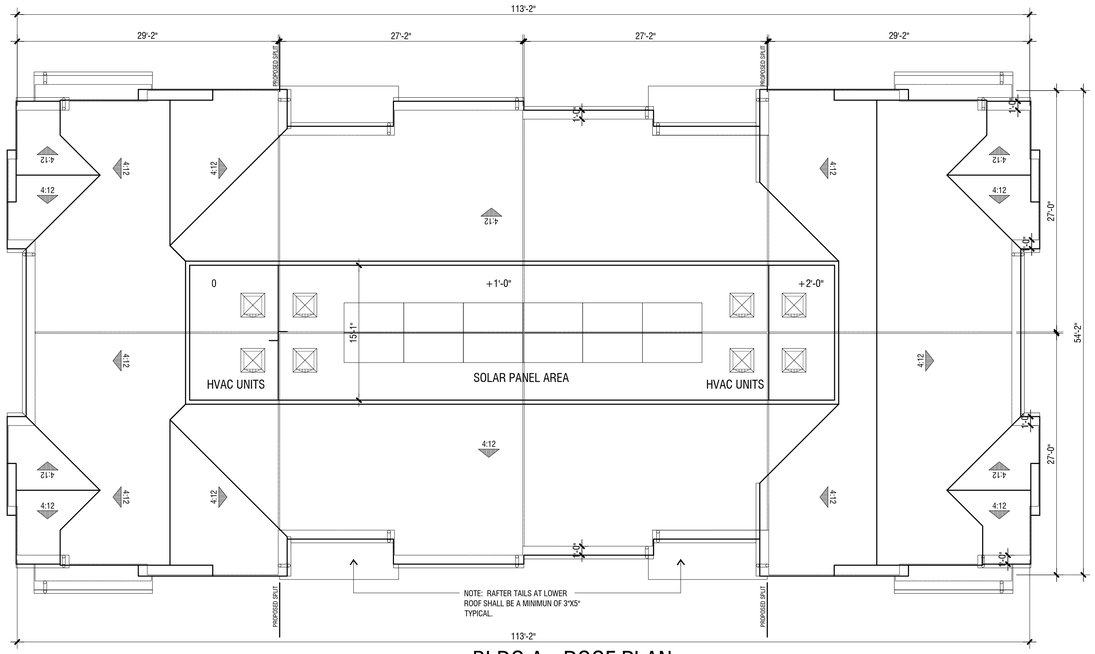
LA SERNA TOWNHOMES

WHITTIER, CA

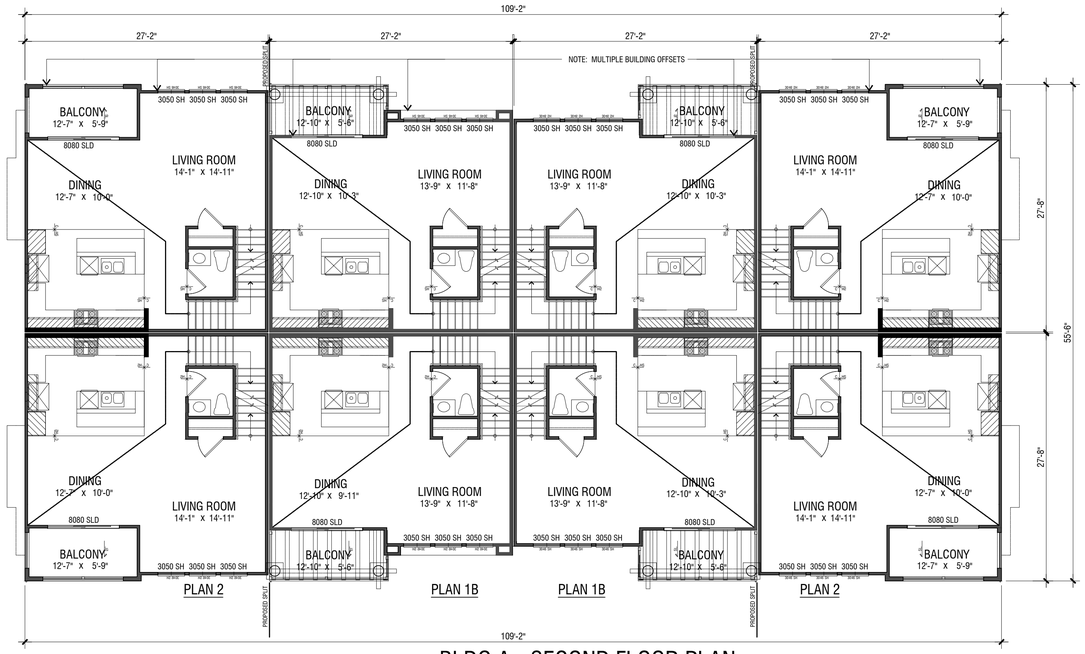
CONCEPTUAL DESIGN

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA. | 2020013 | 01-28-22

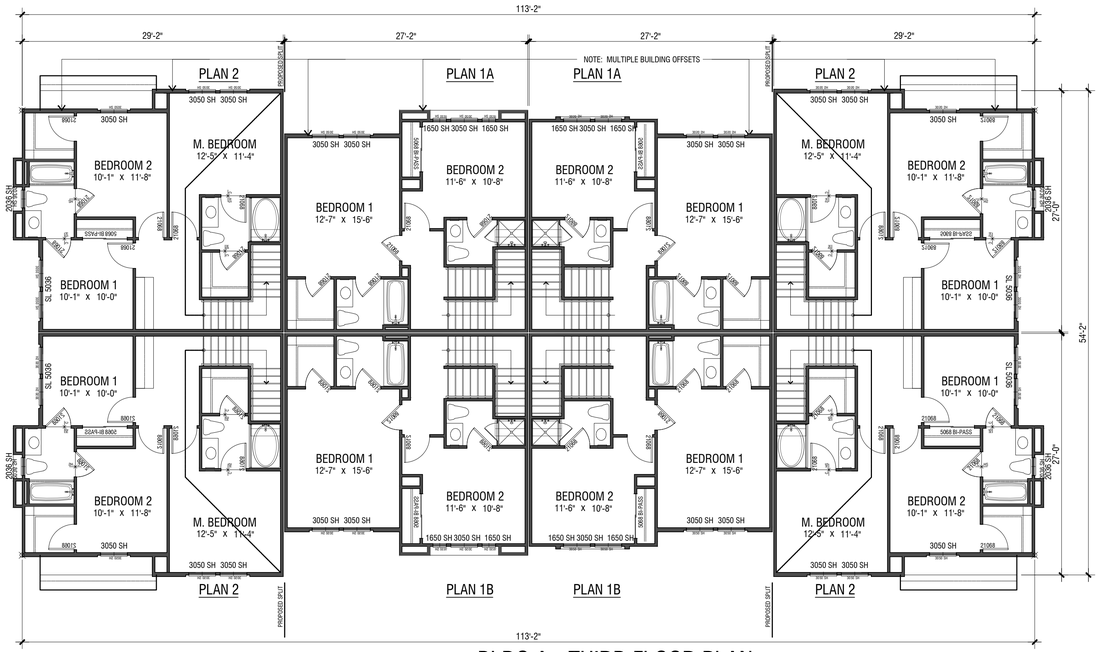
MISSION PACIFIC INVESTORS



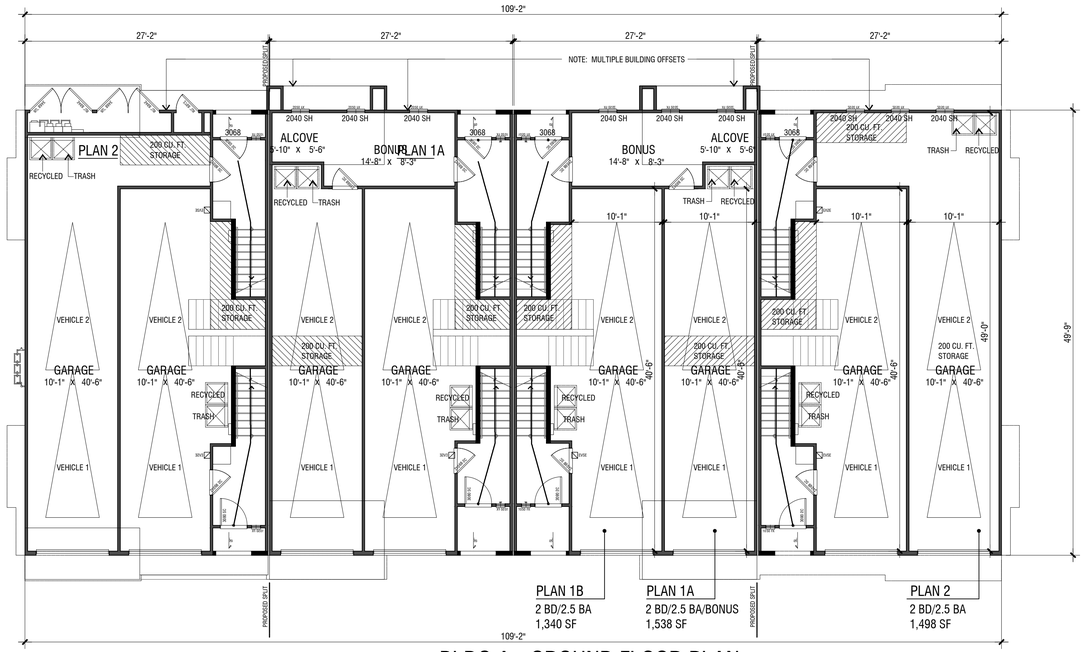
BLDG A - ROOF PLAN



BLDG A - SECOND FLOOR PLAN



BLDG A - THIRD FLOOR PLAN



BLDG A - GROUND FLOOR PLAN

NOTE: SQUARE FOOTAGE MAY VARY DEPENDINT ON METHOD OF CALCULATION.
FLOOR PLANS TO BE FURTHER REFINED TO REFLECT ELEVATIONS

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

0 2 4 8

BUILDING A | CONCEPTUAL FLOOR PLANS

LA SERNA TOWNHOMES

WHITTIER, CA

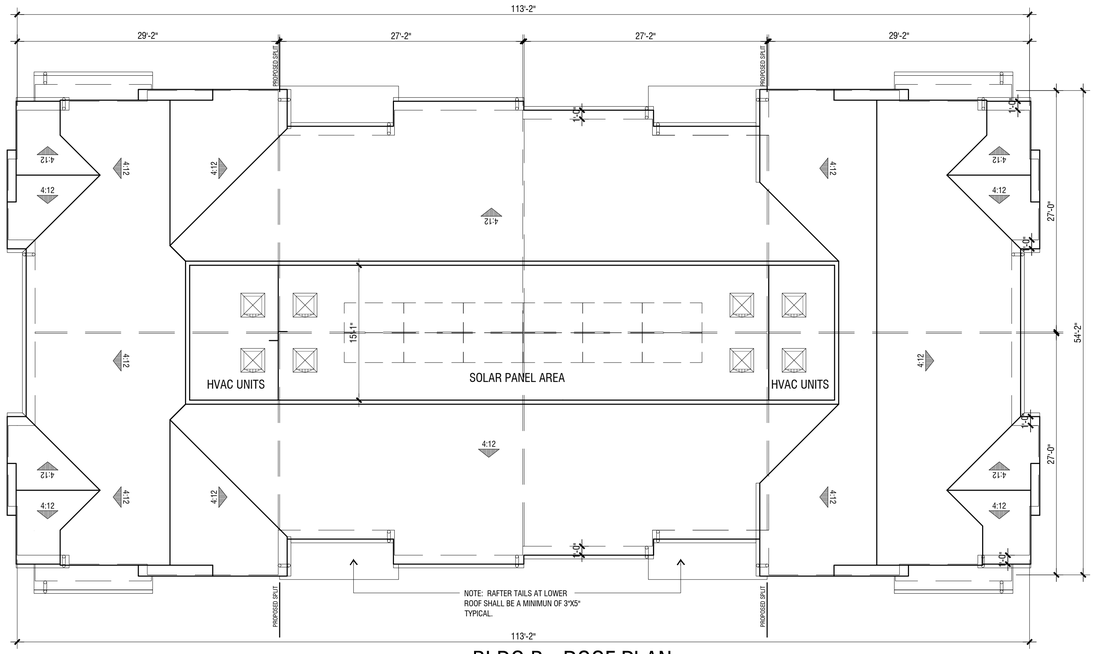
CONCEPTUAL DESIGN

10-26-21 | 2020013

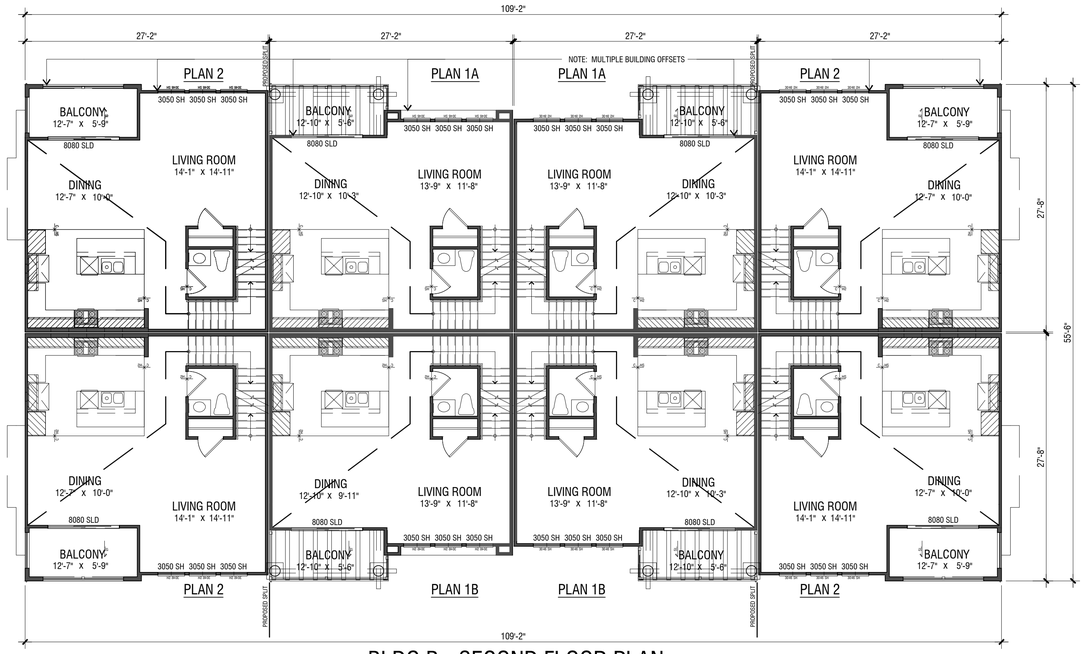
© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

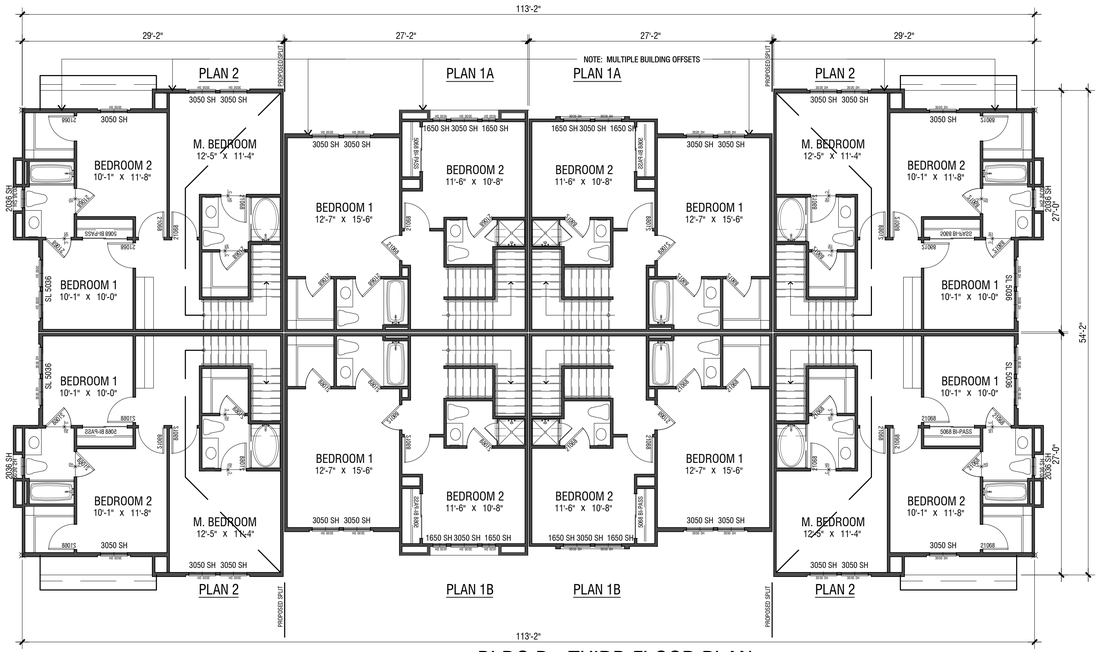
A.1



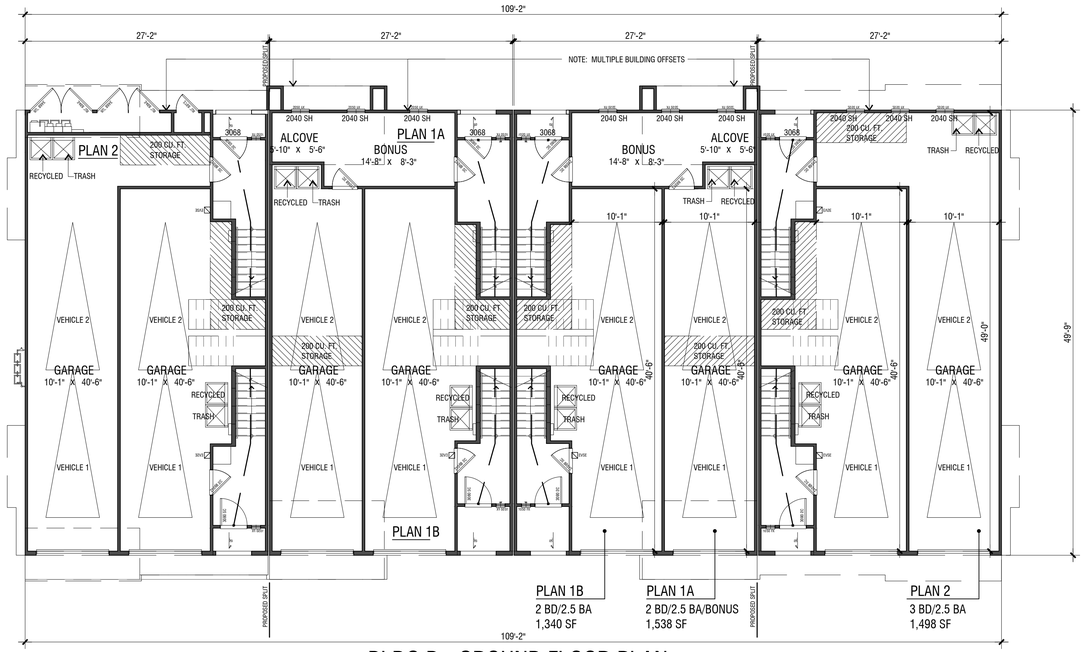
BLDG B - ROOF PLAN



BLDG B - SECOND FLOOR PLAN



BLDG B - THIRD FLOOR PLAN



BLDG B - GROUND FLOOR PLAN

NOTE: SQUARE FOOTAGE MAY VARY DEPENDINT ON METHOD OF CALCULATION.
FLOOR PLANS TO BE FURTHER REFINED TO REFLECT ELEVATIONS

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

BUILDING B | CONCEPTUAL FLOOR PLANS

LA SERNA TOWNHOMES

WHITTIER, CA

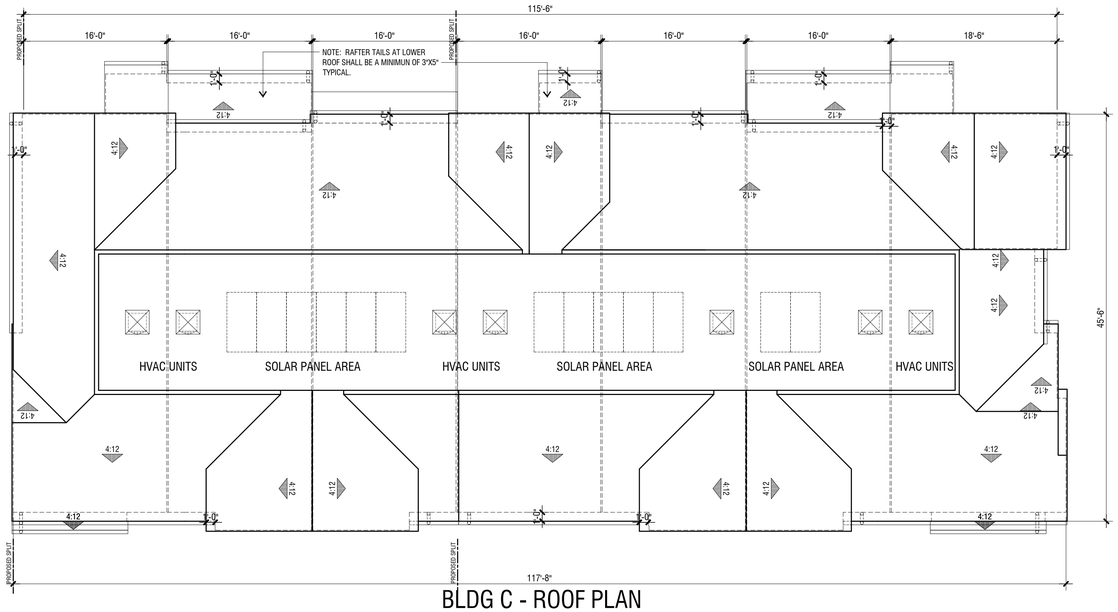
CONCEPTUAL DESIGN

0 2 4 8

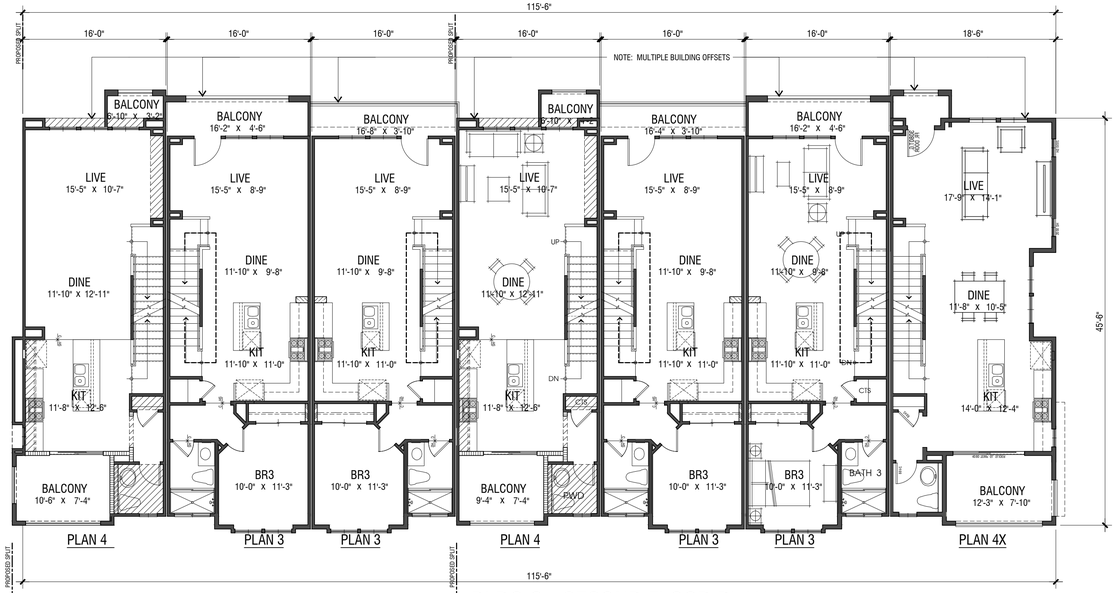
10-26-21 | 2020013

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

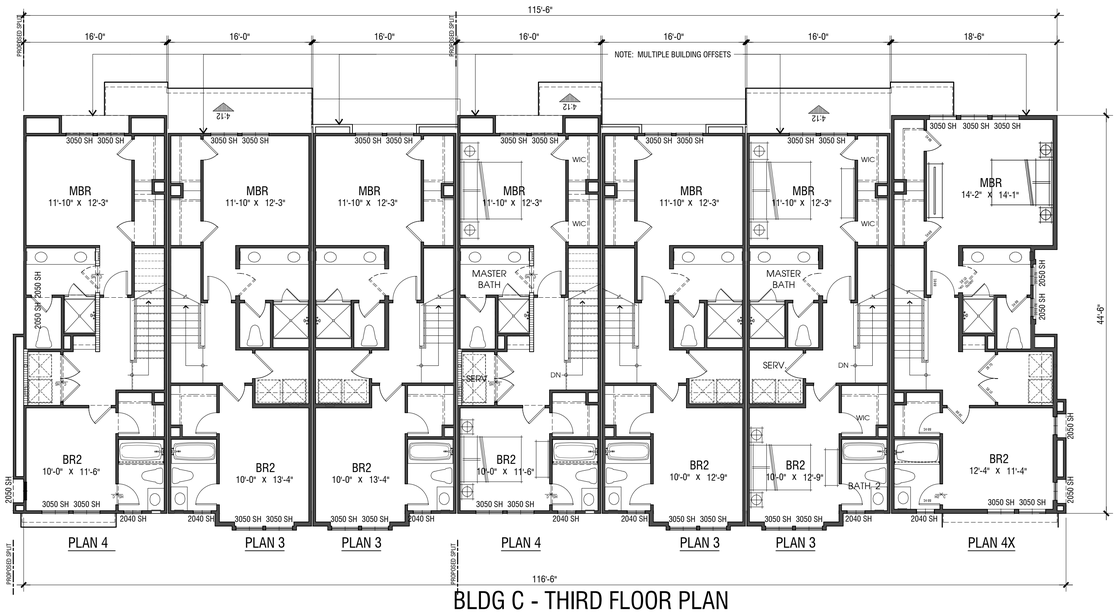
MISSION PACIFIC INVESTORS



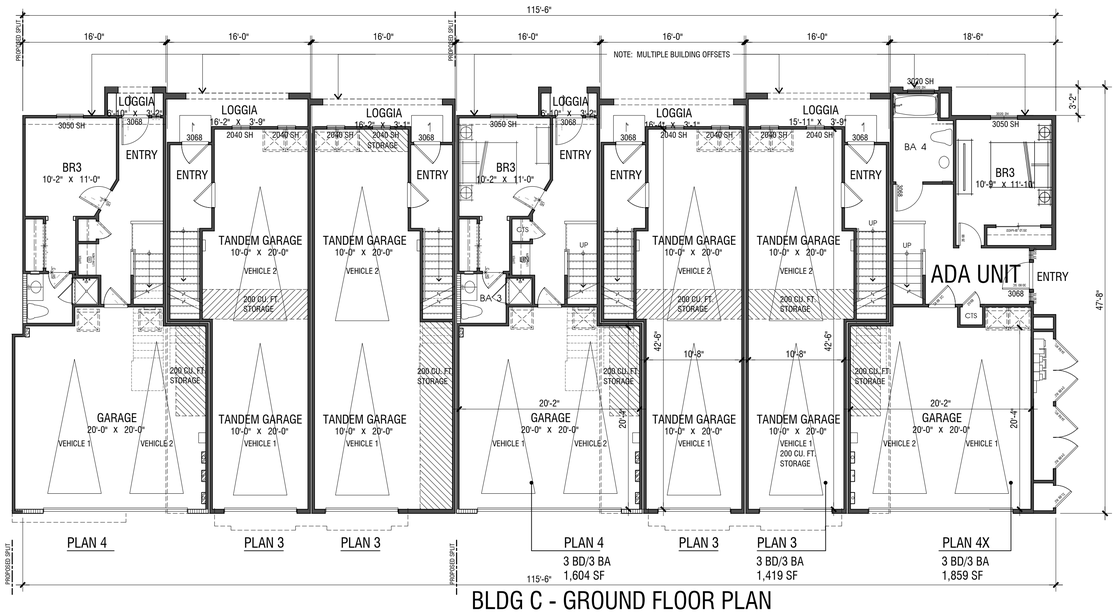
BLDG C - ROOF PLAN



BLDG C - SECOND FLOOR PLAN



BLDG C - THIRD FLOOR PLAN



BLDG C - GROUND FLOOR PLAN

NOTE: SQUARE FOOTAGE MAY VARY DEPENDINT ON METHOD OF CALCULATION.
FLOOR PLANS TO BE FURTHER REFINED TO REFLECT ELEVATIONS

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

BUILDING C | CONCEPTUAL FLOOR PLANS

LA SERNA TOWNHOMES

WHITTIER, CA

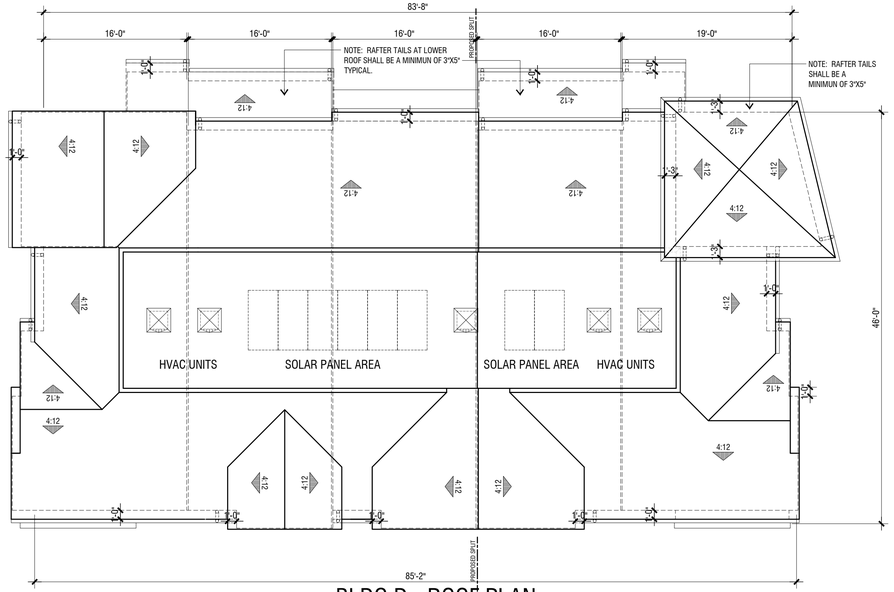
CONCEPTUAL DESIGN

0 2 4 8

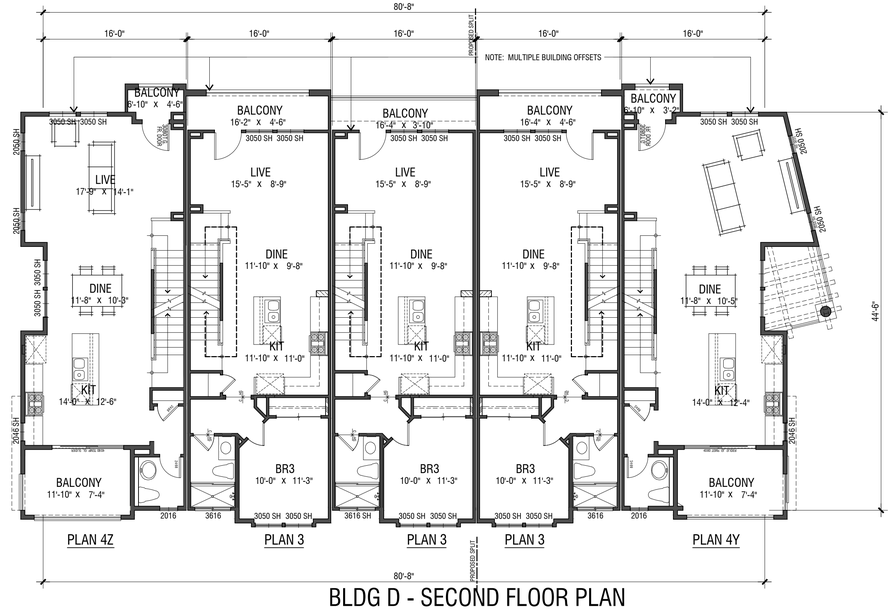
10-26-21 | 2020013

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

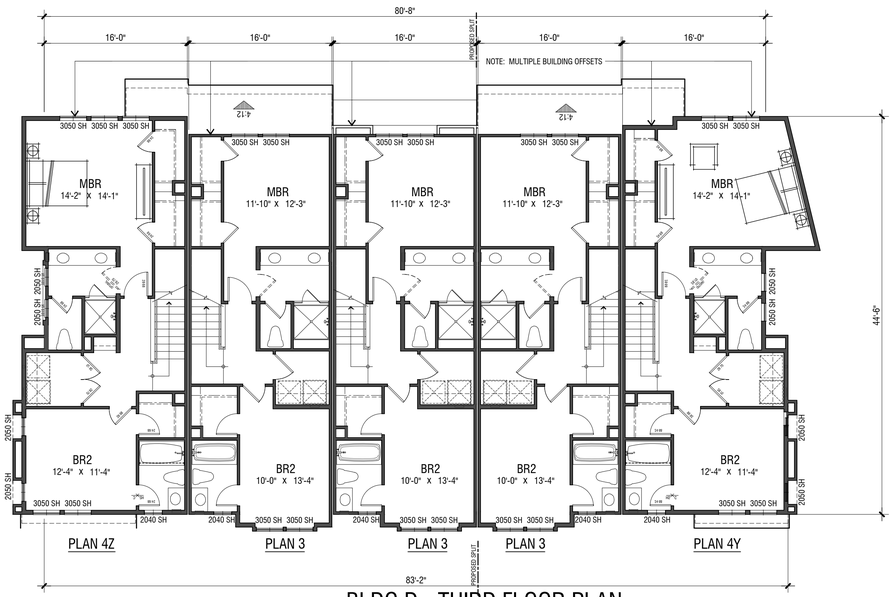
MISSION PACIFIC INVESTORS



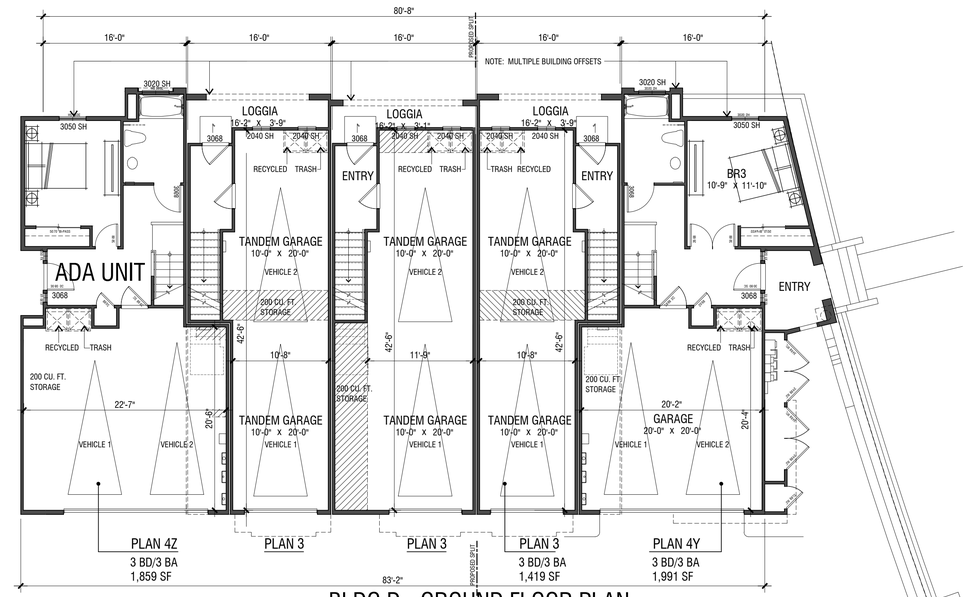
BLDG D - ROOF PLAN



BLDG D - SECOND FLOOR PLAN



BLDG D - THIRD FLOOR PLAN



BLDG D - GROUND FLOOR PLAN

NOTE: SQUARE FOOTAGE MAY VARY DEPENDINT ON METHOD OF CALCULATION.
FLOOR PLANS TO BE FURTHER REFINED TO REFLECT ELEVATIONS

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

BUILDING D | CONCEPTUAL FLOOR PLANS

LA SERNA TOWNHOMES

WHITTIER, CA

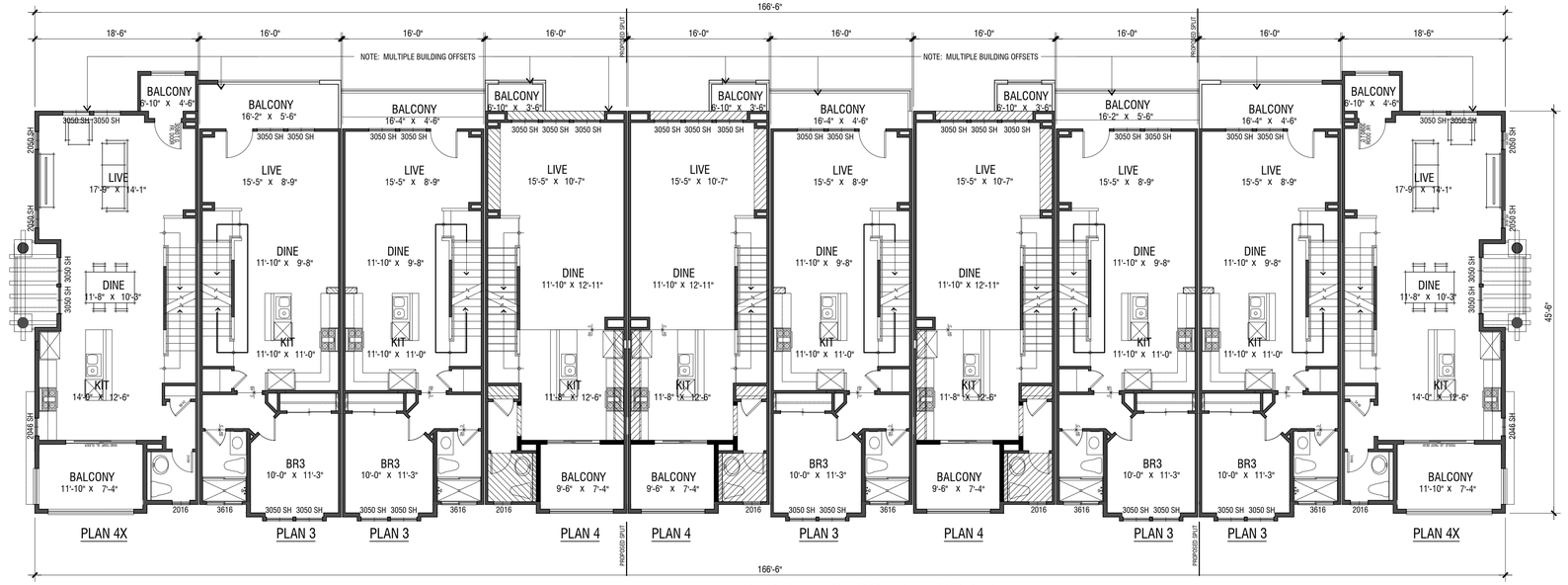
CONCEPTUAL DESIGN

0 2 4 8

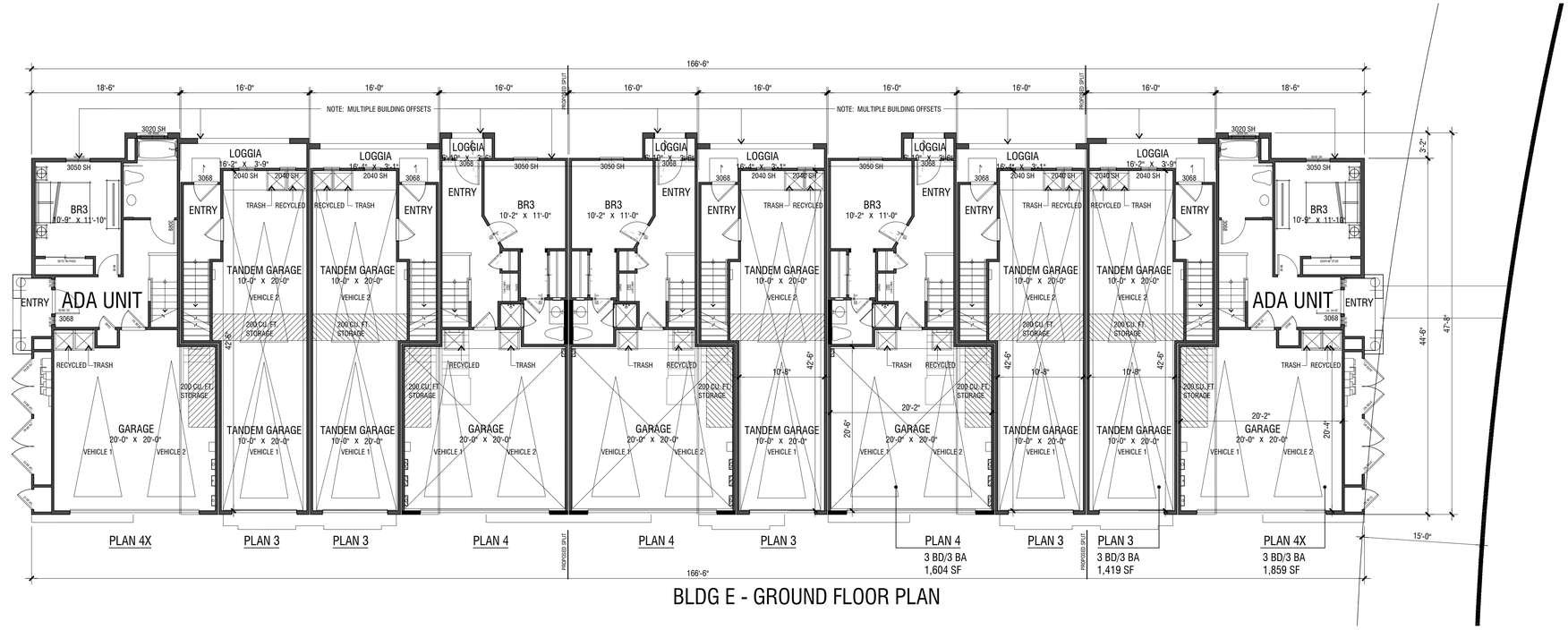
© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA. | 2020013 | 10-26-21

MISSION PACIFIC INVESTORS

A.4



BLDG E - SECOND FLOOR PLAN



BLDG E - GROUND FLOOR PLAN

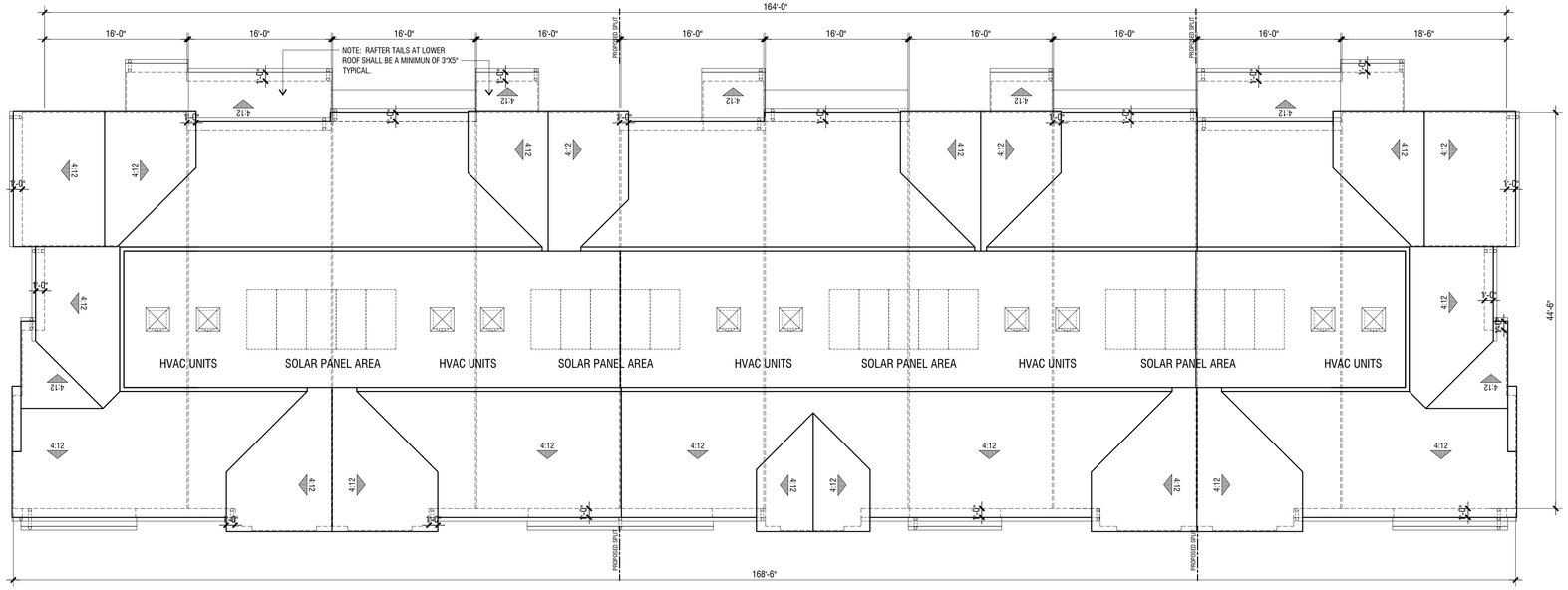
NOTE: SQUARE FOOTAGE MAY VARY DEPENDINT ON METHOD OF CALCULATION.
FLOOR PLANS TO BE FURTHER REFINED TO REFLECT ELEVATIONS

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

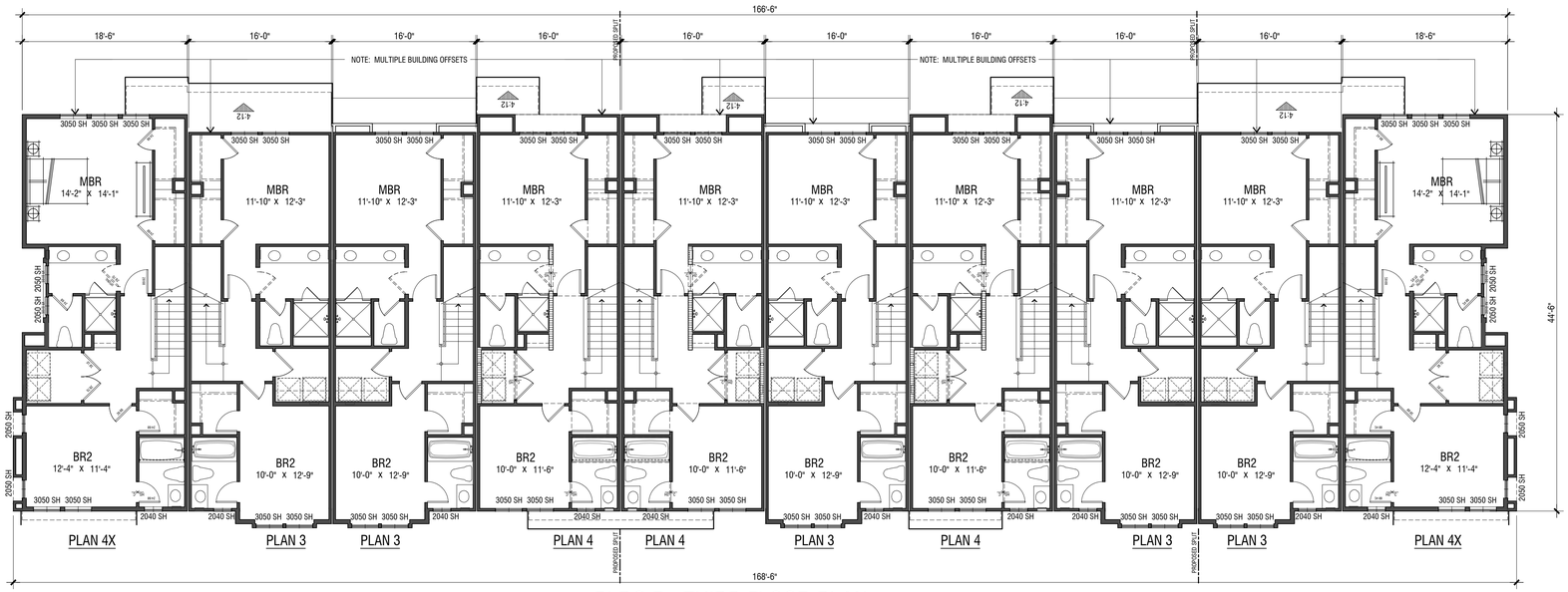
BUILDING E | CONCEPTUAL FLOOR PLANS
LA SERNA TOWNHOMES
WHITTIER, CA
CONCEPTUAL DESIGN
0 2 4 8
10-26-21 | 2020013 | 2020013 | 10-26-21

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS



BLDG E - ROOF PLAN



BLDG E - THIRD FLOOR PLAN

NOTE: SQUARE FOOTAGE MAY VARY DEPENDINT ON METHOD OF CALCULATION.
FLOOR PLANS TO BE FURTHER REFINED TO REFLECT ELEVATIONS

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

BUILDING E | CONCEPTUAL FLOOR PLANS

LA SERNA TOWNHOMES

WHITTIER, CA

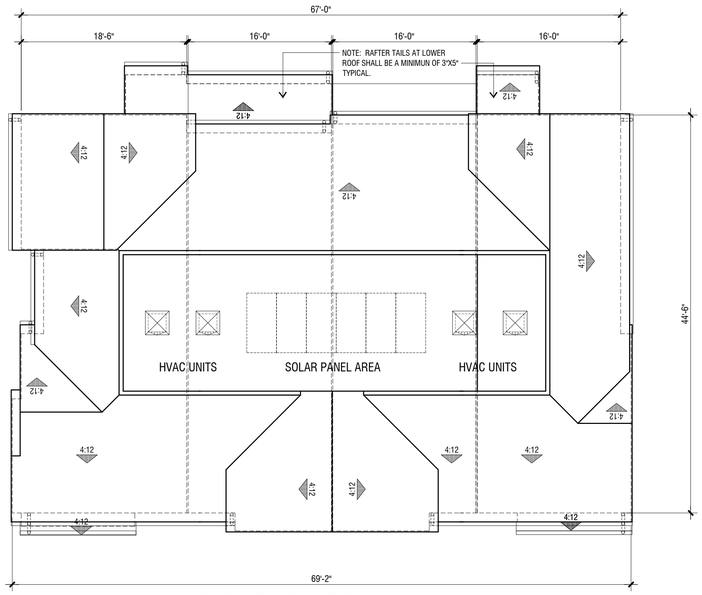
CONCEPTUAL DESIGN

0 2 4 8

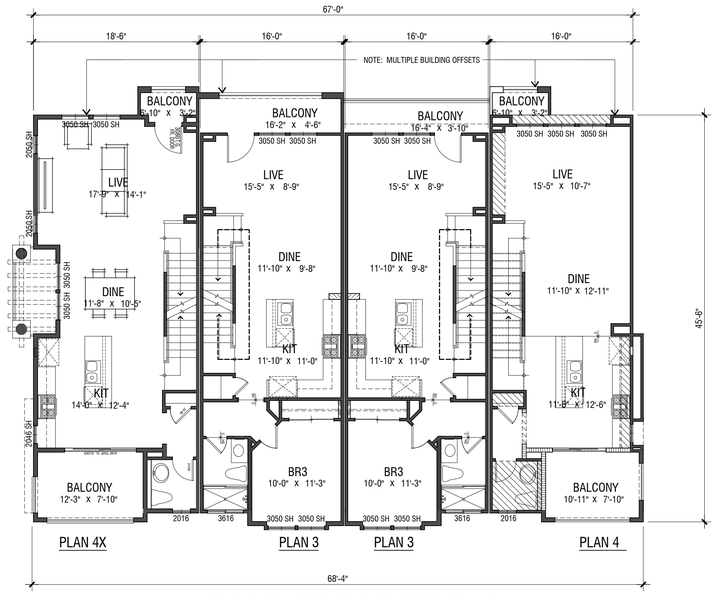
09-13-21 | 2020013

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

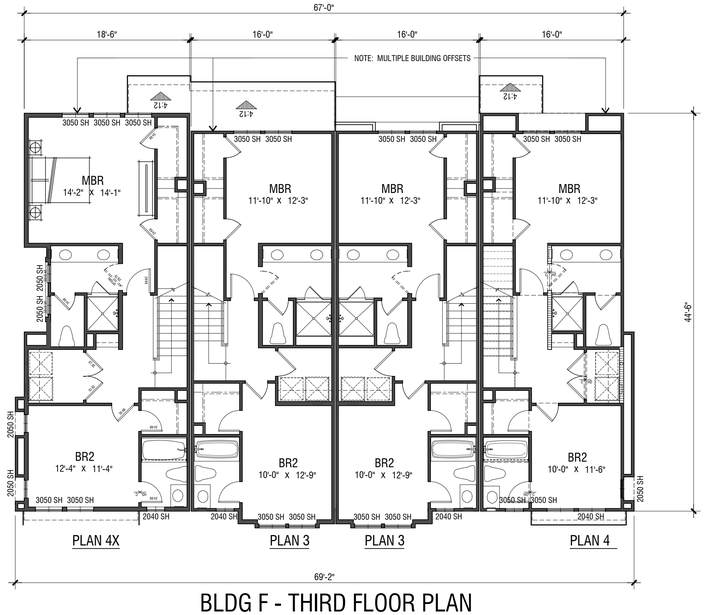
MISSION PACIFIC INVESTORS



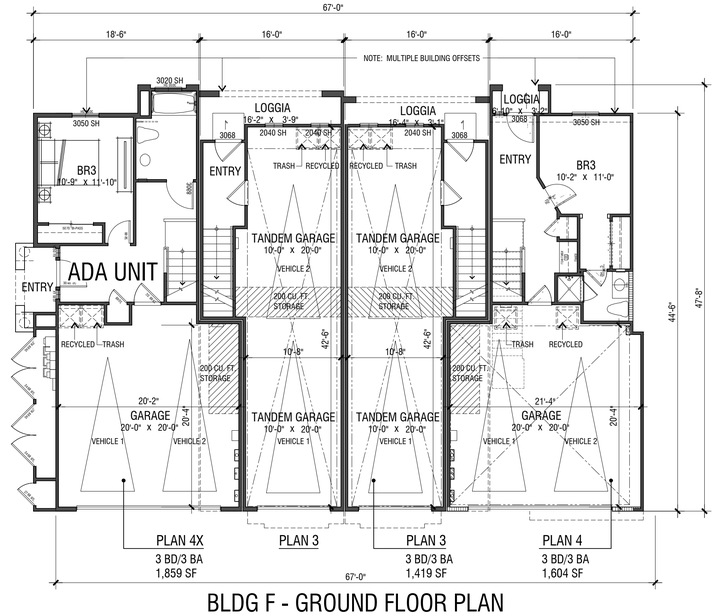
BLDG F - ROOF PLAN



BLDG F - SECOND FLOOR PLAN



BLDG F - THIRD FLOOR PLAN



BLDG F - GROUND FLOOR PLAN

NOTE: SQUARE FOOTAGE MAY VARY DEPENDINT ON METHOD OF CALCULATION.
FLOOR PLANS TO BE FURTHER REFINED TO REFLECT ELEVATIONS

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

BUILDING F | CONCEPTUAL FLOOR PLANS

LA SERNA TOWNHOMES

WHITTIER, CA

CONCEPTUAL DESIGN

0 2 4 8

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA. | 2020013 | 10-26-21

MISSION PACIFIC INVESTORS

BLDG A - RIGHT ELEVATION

BLDG A - REAR ELEVATION

BLDG A - LEFT ELEVATION

BLDG A - FRONT ELEVATION

MATERIAL LEGEND:

1. WOOD RAFTER TAILS (ALL RAFTER TAILS SHALL BE A MINIMUM OF 3" x 5")
2. DECORATIVE WROGHT IRON
3. SHUTTERS
4. ROOF S TILES
5. DECORATIVE PANELING
6. METAL RAILINGS
7. STUCCO OVER FOAM TRIM
8. VINYL WINDOWS
9. CORBELS
10. AWNINGS
11. DECORATIVE MEDALLION
12. THIN BRICK
13. DECORATIVE TILES
14. EXTERIOR WALL LIGHT SCONCES
15. STUCCO
16. WOOD TRELLIS (ALL EXPOSED BEAMS SHALL BE A MINIMUM OF 3" x 5")
17. UP/DOWN LIGHT (Kichler 9246BL or =)

NOTE: ARTIST'S CONCEPTION: COLORS, MATERIALS AND APPLICATION MAY VARY

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

BUILDING A | CONCEPTUAL ELEVATIONS
SPANISH

LA SERNA TOWNHOMES

WHITTIER, CA

CONCEPTUAL DESIGN

0 2 4 8

09-13-21 | 2020013

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

BLDG B - RIGHT ELEVATION

BLDG B - REAR ELEVATION

BLDG B - LEFT ELEVATION

BLDG B - FRONT ELEVATION

MATERIAL LEGEND:

1. WOOD RAFTER TAILS (ALL RAFTER TAILS SHALL BE A MINIMUM OF 3" x 5")
2. DECORATIVE WROGHT IRON
3. SHUTTERS
4. ROOF S TILES
5. DECORATIVE PANELING
6. METAL RAILINGS
7. STUCCO OVER FOAM TRIM
8. VINYL WINDOWS
9. CORBELS
10. AWNINGS
11. DECORATIVE MEDALLION
12. THIN BRICK
13. DECORATIVE TILES
14. EXTERIOR WALL LIGHT SCONCES
15. STUCCO
16. WOOD TRELLIS (ALL EXPOSED BEAMS SHALL BE A MINIMUM OF 3" x 5")
17. UP/DOWN LIGHT (Kichler 9246BL or =)

NOTE: ARTIST'S CONCEPTION: COLORS, MATERIALS AND APPLICATION MAY VARY

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

BUILDING B | CONCEPTUAL ELEVATIONS
SPANISH

LA SERNA TOWNHOMES

WHITTIER, CA

CONCEPTUAL DESIGN

0 2 4 8

09-13-21 | 2020013

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

BLDG D - LEFT SIDE ELEVATION

BLDG D - FRONT ELEVATION

BLDG C - FRONT ELEVATION

ARCHITECTS . PLANNERS . DESIGNERS
WHA.
ORANGE COUNTY . LOS ANGELES . BAY AREA

BUILDING C & D | CONCEPTUAL ELEVATIONS
SPANISH

LA SERNA TOWNHOMES

WHITTIER, CA

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

0 2 4 8

CONCEPTUAL DESIGN | 2020013 | 09-13-21

MISSION PACIFIC INVESTORS

BLDG C - RIGHT ELEVATION

BLDG C - REAR ELEVATION

BLDG C - LEFT ELEVATION

BLDG C - FRONT ELEVATION

MATERIAL LEGEND:

1. WOOD RAFTER TAILS (ALL RAFTER TAILS SHALL BE A MINIMUM OF 3" x 5")
2. DECORATIVE WROGHT IRON
3. SHUTTERS
4. ROOF S TILES
5. DECORATIVE PANELING
6. METAL RAILINGS
7. STUCCO OVER FOAM TRIM
8. VINYL WINDOWS
9. CORBELS
10. AWNINGS
11. DECORATIVE MEDALLION
12. THIN BRICK
13. DECORATIVE TILES
14. EXTERIOR WALL LIGHT SCONCES
15. STUCCO
16. WOOD TRELLIS (ALL EXPOSED BEAMS SHALL BE A MINIMUM OF 3" x 5")
17. UP/DOWN LIGHT (Kichler 9246BL or =)

NOTE: ARTIST'S CONCEPTION: COLORS, MATERIALS AND APPLICATION MAY VARY

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

BUILDING C | CONCEPTUAL ELEVATIONS
SPANISH

LA SERNA TOWNHOMES

WHITTIER, CA

CONCEPTUAL DESIGN

0 2 4 8

09-13-21 | 2020013

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

BLDG D - RIGHT ELEVATION

BLDG D - REAR ELEVATION

WALL WASH - UP/DOWN LIGHTING @ TOWER

BLDG D - LEFT ELEVATION

BLDG D - FRONT ELEVATION

MATERIAL LEGEND:

1. WOOD RAFTER TAILS (ALL RAFTER TAILS SHALL BE A MINIMUM OF 3" x 5")
2. DECORATIVE WROGHT IRON
3. SHUTTERS
4. ROOF S TILES
5. DECORATIVE PANELING
6. METAL RAILINGS
7. STUCCO OVER FOAM TRIM
8. VINYL WINDOWS
9. CORBELS
10. AWNINGS
11. DECORATIVE MEDALLION
12. THIN BRICK
13. DECORATIVE TILES
14. EXTERIOR WALL LIGHT SCONCES
15. STUCCO
16. WOOD TRELLIS (ALL EXPOSED BEAMS SHALL BE A MINIMUM OF 3" x 5")
17. UP/DOWN LIGHT (Kichler 9246BL or =)

NOTE: ARTIST'S CONCEPTION: COLORS, MATERIALS AND APPLICATION MAY VARY

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

BUILDING D | CONCEPTUAL ELEVATIONS
SPANISH

LA SERNA TOWNHOMES

WHITTIER, CA

CONCEPTUAL DESIGN

0 2 4 8

09-13-21 | 2020013

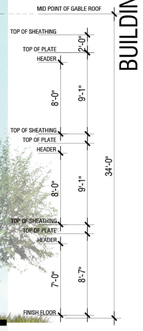
© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

BLDG E - RIGHT ELEVATION

BLDG E - REAR ELEVATION

BLDG E - LEFT ELEVATION



BLDG E - FRONT ELEVATION

MATERIAL LEGEND:

1. WOOD RAFTER TAILS (ALL RAFTER TAILS SHALL BE A MINIMUM OF 3" x 5")
2. DECORATIVE WROGHT IRON
3. SHUTTERS
4. ROOF S TILES
5. DECORATIVE PANELING
6. METAL RAILINGS
7. STUCCO OVER FOAM TRIM
8. VINYL WINDOWS
9. CORBELS
10. AWNINGS
11. DECORATIVE MEDALLION
12. THIN BRICK
13. DECORATIVE TILES
14. EXTERIOR WALL LIGHT SCONCES
15. STUCCO
16. WOOD TRELLIS (ALL EXPOSED BEAMS SHALL BE A MINIMUM OF 3" x 5")
17. UP/DOWN LIGHT (Kichler 9246BL or =)

NOTE: ARTIST'S CONCEPTION: COLORS, MATERIALS AND APPLICATION MAY VARY

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

BUILDING E | CONCEPTUAL ELEVATIONS
SPANISH

LA SERNA TOWNHOMES
WHITTIER, CA

CONCEPTUAL DESIGN
0 2 4 8
09-13-21 | 2020013

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

BLDG F - RIGHT ELEVATION

BLDG F - REAR ELEVATION

BLDG F - LEFT ELEVATION

BLDG F - FRONT ELEVATION

MATERIAL LEGEND:

1. WOOD RAFTER TAILS (ALL RAFTER TAILS SHALL BE A MINIMUM OF 3" x 5")
2. DECORATIVE WROGHT IRON
3. SHUTTERS
4. ROOF S TILES
5. DECORATIVE PANELING
6. METAL RAILINGS
7. STUCCO OVER FOAM TRIM
8. VINYL WINDOWS
9. CORBELS
10. AWNINGS
11. DECORATIVE MEDALLION
12. THIN BRICK
13. DECORATIVE TILES
14. EXTERIOR WALL LIGHT SCONCES
15. STUCCO
16. WOOD TRELLIS (ALL EXPOSED BEAMS SHALL BE A MINIMUM OF 3" x 5")
17. UP/DOWN LIGHT (Kichler 9246BL or =)

NOTE: ARTIST'S CONCEPTION: COLORS, MATERIALS AND APPLICATION MAY VARY

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

BUILDING F | CONCEPTUAL ELEVATIONS
SPANISH

LA SERNA TOWNHOMES

WHITTIER, CA

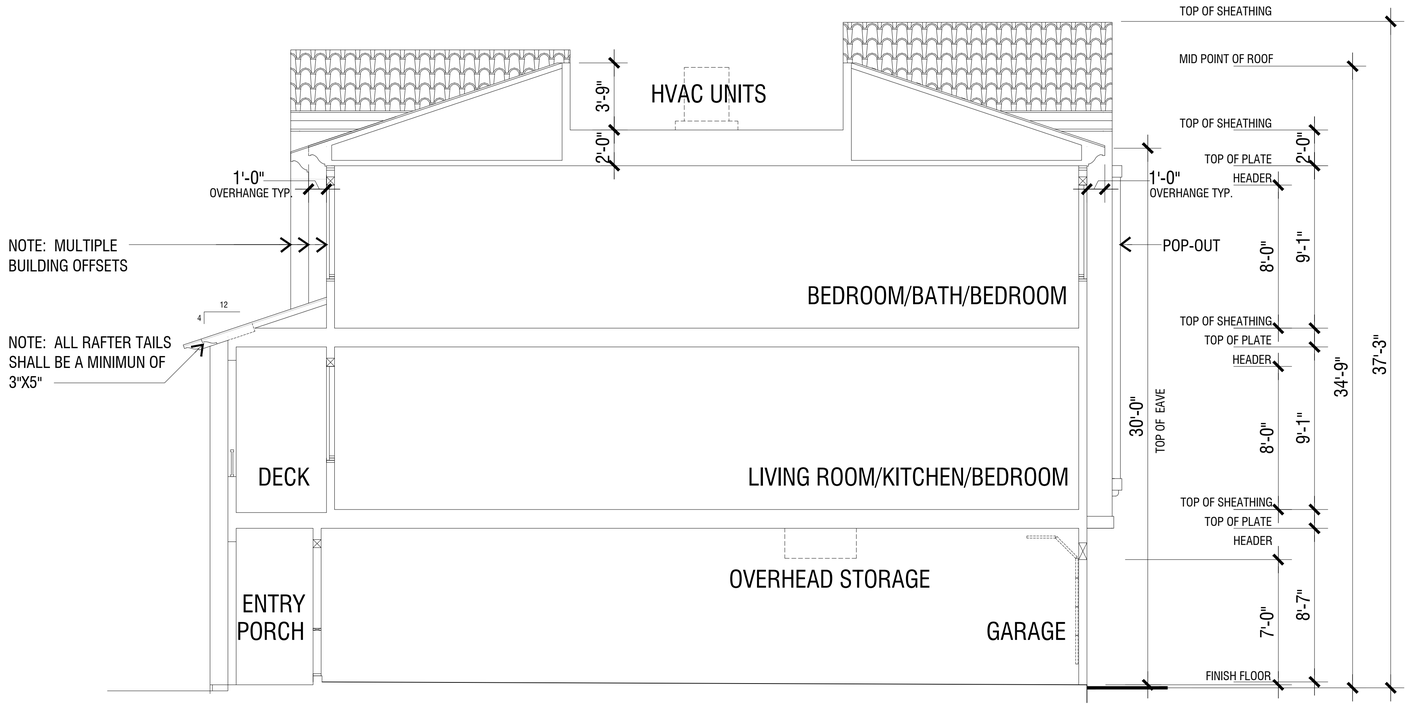
CONCEPTUAL DESIGN

0 2 4 8

09-13-21 | 2020013

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS



OVERHEAD STORAGE

TYPICAL BUILDING SECTION

LA SERNA TOWNHOMES

WHITTIER, CA

CONCEPTUAL DESIGN

10-21-21 | 2020013 | ©2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

0 2 4 8

0 1 2 4

A.15

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

MISSION PACIFIC INVESTORS

Exterior Color & Materials

SCHEME 1 OF 1 — ALL BUILDING ELEVATIONS

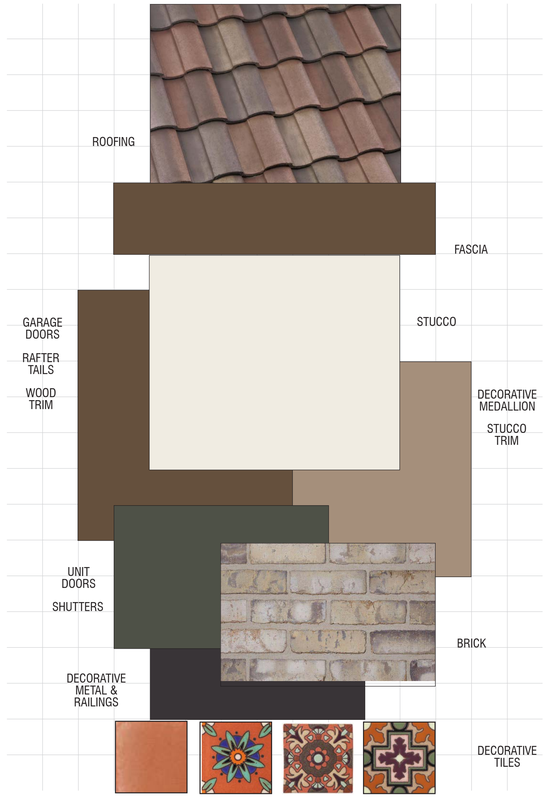
Material	Color	Manufacturer
Roofing: Concrete 'S' Tile	SMC 8402 Santa Cruz Blend Ref: .14 Emi: .89 A.SRI: 17 CRRC: 0918-0058	Eagle
Metal Bird Stop @ 'S' Tile *(factory finish)*	Terracotta	Eagle
Vinyl Windows *(factory finish)*	White	Milgard
Gutters & Downspouts *(factory finish)*	Weathered Bronze	Custom-Bilt Metals
Thin Brick *(standard raked joints)*	[1]Yukon Blend, Modular	[1]Belden
Mortar @ Brick	Khaki	Orco
Stucco *(16/20 sand finish)*	[1]1/4 A 653 (Similar to Sherwin Williams, SW 7551 Greek Villa)	Omega
Trim Color #1 *(applied to):* Barge Boards, Eaves, Fascia, Garage Doors, Metal Canopy, Rafter Tails, Wood Trim	SW 6104 Kaffee	Sherwin Williams
Trim Color #2 *(applied to):* Decorative Medallion, Stucco Trim	SW 9088 Utaupeia	Sherwin Williams
Accent Color *(applied to):* Unit Doors, Shutters	SW 6188 Shade Grown	Sherwin Williams
6"x 6" Ceramic Decorative Tiles	SD105-c, SD108-c, SD109-a	Arto Brick
6"x 6" Ceramic Field Tile	175-u	Arto Brick
Grout @ Ceramic Tile	[1]186 Khaki	[1]Custom Building Products
Decorative Metal & Metal Railings	SW 9175 Deep Forest Brown	Sherwin Williams
Garage Door Weatherstrip *(factory finish)*	Match Garage Door Color	TBD

NOTE: Notify WHA if any variation occurs between these schemes and the construction documents prior to purchase. Contact Donna Aldrich (949) 250-0607.

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. DBA WHA.

REVISIONS:

Number	Date	Description
1	12/15/21	Brick revised per city comments Stucco color number and grout color added.



LA SERNA TOWNHOMES
Whittier, California
MISSION PACIFIC INVESTORS
February 15, 2022 | 2020013

SCHEME 1
ALL BUILDING ELEVATIONS

For exact color refer to manufacturer actual samples.
© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. DBA WHA

EXTERIOR WALL LIGHT SCONCES

Entry Doors & Garage Doors

Manufacturer	Progress Lighting
Family	Verdae
Model	P560016
Finish	Antique Bronze with clear seeded glass
Height	21.75 inch

Manufacturer	Progress Lighting
Family	Verdae
Model	P50014
Finish	Antique Bronze with clear seeded glass
Height	13.25 inch

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

EXTERIOR COLOR & MATERIALS DESIGN
LA SERNA TOWNHOMES
WHITTIER, CA
CONCEPTUAL DESIGN
02-15-22 | 2020013
© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

CM
MISSION PACIFIC INVESTORS

WINDOW SCHEDULE BUILDINGS E			
QTY	WIDTH	HGT	COMMENTS
BUILDING: E			
84	36"	60"	SINGLE-HUNG
20	24"	48"	SINGLE-HUNG
6	24"	54"	SINGLE-HUNG
5	24"	18"	SLIDER
5	48"	18"	SLIDER
2	36"	24"	SINGLE-HUNG
4	12"	60"	FIXED
8	24"	60"	SINGLE-HUNG

DOOR SCHEDULE BUILDINGS E			
QTY	WIDTH	HGT	COMMENTS
BUILDING: E			
2	96"	96"	KITCHEN TO BALCONY
3	72"	96"	KITCHEN TO BALCONY
10	36"	80"	FRONT DOOR
4	80"	80"	EXTERIOR TO ELECTRICAL
2	30"	80"	EXTERIOR TO RISER
5	192"	84"	GARAGE DOOR
5	96"	84"	GARAGE DOOR
7	36"	80"	LIVING TO BALCONY

WINDOW SCHEDULE BUILDINGS A & B			
QTY	WIDTH	HGT	COMMENTS
BUILDING: A			
9	24"	60"	SINGLE-HUNG
4	18"	60"	SINGLE-HUNG
4	24"	36"	SINGLE-HUNG
58	36"	60"	SINGLE-HUNG
7	12"	60"	FIXED
BUILDING: B			
58	36"	60"	SINGLE-HUNG
9	24"	60"	SINGLE-HUNG
6	12"	60"	FIXED
4	24"	36"	SINGLE-HUNG
4	18"	60"	SINGLE-HUNG

DOOR SCHEDULE BUILDINGS A & B			
QTY	WIDTH	HGT	COMMENTS
BUILDING: A			
8	36"	96"	FRONT DOOR
2	80"	80"	EXTERIOR TO ELECTRICAL
8	96"	84"	GARAGE DOOR
1	30"	80"	EXTERIOR TO RISER
8	96"	96"	DINING TO BALCONY
BUILDING: B			
2	80"	80"	EXTERIOR TO ELECTRICAL
1	30"	80"	EXTERIOR TO RISER
8	96"	84"	GARAGE DOOR
8	36"	96"	FRONT DOOR
8	96"	96"	DINING TO BALCONY

WINDOW SCHEDULE BUILDINGS F			
QTY	WIDTH	HGT	COMMENTS
BUILDING: F			
34	36"	60"	SINGLE-HUNG
8	24"	48"	SINGLE-HUNG
4	24"	54"	SINGLE-HUNG
2	24"	18"	SLIDER
2	48"	18"	SLIDER
2	12"	60"	FIXED
1	36"	24"	SINGLE-HUNG
5	24"	60"	SINGLE-HUNG

DOOR SCHEDULE BUILDINGS F			
QTY	WIDTH	HGT	COMMENTS
BUILDING: F			
1	72"	96"	KITCHEN TO BALCONY
4	36"	80"	FRONT DOOR
2	80"	80"	EXTERIOR TO ELECTRICAL
1	30"	80"	EXTERIOR TO RISER
2	96"	84"	GARAGE DOOR
1	96"	96"	KITCHEN TO BALCONY
2	192"	84"	GARAGE DOOR
3	36"	80"	LIVING TO BALCONY

WINDOW SCHEDULE BUILDINGS C & D			
QTY	WIDTH	HGT	COMMENTS
BUILDING: C			
54	36"	60"	SINGLE-HUNG
2	12"	60"	FIXED
11	24"	48"	SINGLE-HUNG
9	24"	60"	SINGLE-HUNG
2	24"	54"	SINGLE-HUNG
3	48"	18"	SLIDER
3	24"	18"	SLIDER
BUILDING: D			
2	36"	24"	SINGLE-HUNG
43	36"	60"	SINGLE-HUNG
4	12"	60"	FIXED
2	24"	54"	SINGLE-HUNG
10	24"	60"	SINGLE-HUNG
2	24"	18"	SLIDER
3	48"	18"	SLIDER
11	24"	48"	SINGLE-HUNG

DOOR SCHEDULE BUILDINGS C & D			
QTY	WIDTH	HGT	COMMENTS
BUILDING: C			
7	36"	80"	FRONT DOOR
4	96"	84"	GARAGE DOOR
3	192"	84"	GARAGE DOOR
1	30"	80"	EXTERIOR TO RISER
2	80"	80"	EXTERIOR TO ELECTRICAL
2	72"	96"	KITCHEN TO BALCONY
1	96"	96"	KITCHEN TO BALCONY
5	36"	80"	LIVING TO BALCONY
BUILDING: D			
2	80"	80"	EXTERIOR TO ELECTRICAL
5	36"	80"	FRONT DOOR
3	96"	84"	GARAGE DOOR
2	192"	84"	GARAGE DOOR
1	30"	80"	EXTERIOR TO RISER
2	96"	96"	KITCHEN TO BALCONY
5	36"	80"	LIVING TO BALCONY

ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA

DOOR & WINDOW SCHEDULES

LA SERNA TOWNHOMES

WHITTIER, CA

CONCEPTUAL DESIGN

0 2 4 8

10-26-21 | 2020013

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

LEGEND

1. 20' x 20' SHADE STRUCTURE WITH TABLES
2. 36" HT. PATIO WALL
3. PATIO GATE
4. 4' WIDE MIN. CONCRETE SIDEWALK
5. PARKING LOT AREA
6. DOG PARK
7. MAILBOX
8. 8' HT SPLITFACE BLOCK WALL DECORATIVE CAP - TAN COLOR
9. ACCENT TREE
10. PARKING LOT TREE
11. ARCHITECTURAL PLANTER THEME WALL SEE ARCHITECTURAL DRAWINGS
12. ARCHITECTURAL THEME WALL SEE ARCHITECTURAL DRAWINGS
13. PRIVATE PATIO AREA
14. ALLEY TREE
15. LANDSCAPE PARKWAY
16. EXISTING VEHICULAR GATES AND MEDIAN TO REMAIN
17. OPEN SPACE TURF AREA
18. CANOPY TREE
19. 5' HT. TUBULAR STEEL FENCE AT DOG PARK
20. BBQ
21. BIO-FILTRATION SYSTEM
22. ACCENT PAVING WITH DIAMOND SAW CUTS DAVIS CONCRETE COLOR - SANTA FE BROWN
23. 8'-6" HT. SPLITFACE PILASTER 16"x 16" SQ. TAN COLOR WITH DECORATIVE CAP @ 40' O.C.
24. 3' HT. TUBULAR STEEL FENCE ON TOP OF 3' SPLITFACE TAN COLOR BLOCK WALL
25. 6'-6" HT. SPLITFACE PILASTER 12"x 12" SQ. TAN COLOR WITH DECORATIVE CAP @ 40' O.C.
26. 3' HT. SHRUB SCREEN HEDGE

LANDSCAPE PLANTER AREA:

LA SERNA DRIVE FRONTAGE: 2,875 S.F.

JANINE DRIVE FRONTAGE: 3,243 S.F.

COMMON AREAS: 10,824 S.F.

GRAND TOTAL: 16,942 S.F.

CONCEPTUAL MASTER LANDSCAPE PLAN

0' 20' 40' 60'

SCALE: 1"=20'

HERMANN DESIGN GROUP
LANDSCAPE ARCHITECTURE
PLANNING
PROJECT MANAGEMENT

LA SERNA TOWNHOMES

WHITTIER, CA

CONCEPTUAL DESIGN | 9-20-21 | 20200013

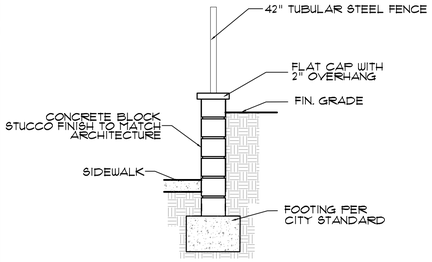
© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

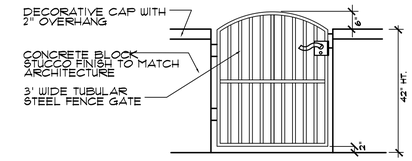
LP-1

LEGEND

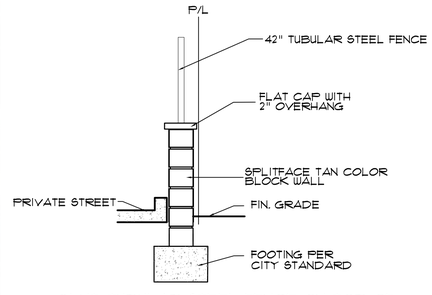
- 42" HT. TUBULAR STEEL FENCE ON LOW CMU WALL
- 36" HT. PATIO WALL WITH GATE
- 6' HT. TUBULAR STEEL FENCE
- 8' HT. BLOCK WALL COMBO RETAINING WALL
- 3' HT. TUBULAR STEEL FENCE ON TOP OF 3' SPLITFACE TAN COLOR BLOCK WALL



TUBULAR STEEL FENCE ON LOW CMU WALL (D)



PATIO WALL WITH GATE (E)



3' HT. TUBULAR STEEL FENCE ON TOP OF 3' SPLITFACE TAN COLOR BLOCK WALL (F)

PILASTER WITH DECORATIVE CAP WITH 2" OVERHANG

CONCEPTUAL WALL/FENCE PLAN

0' 20' 40' 60'

SCALE: 1"=20'

HERMANN DESIGN GROUP
LANDSCAPE ARCHITECTURE
PLANNING
PROJECT MANAGEMENT

LA SERNA TOWNHOMES

WHITTIER, CA

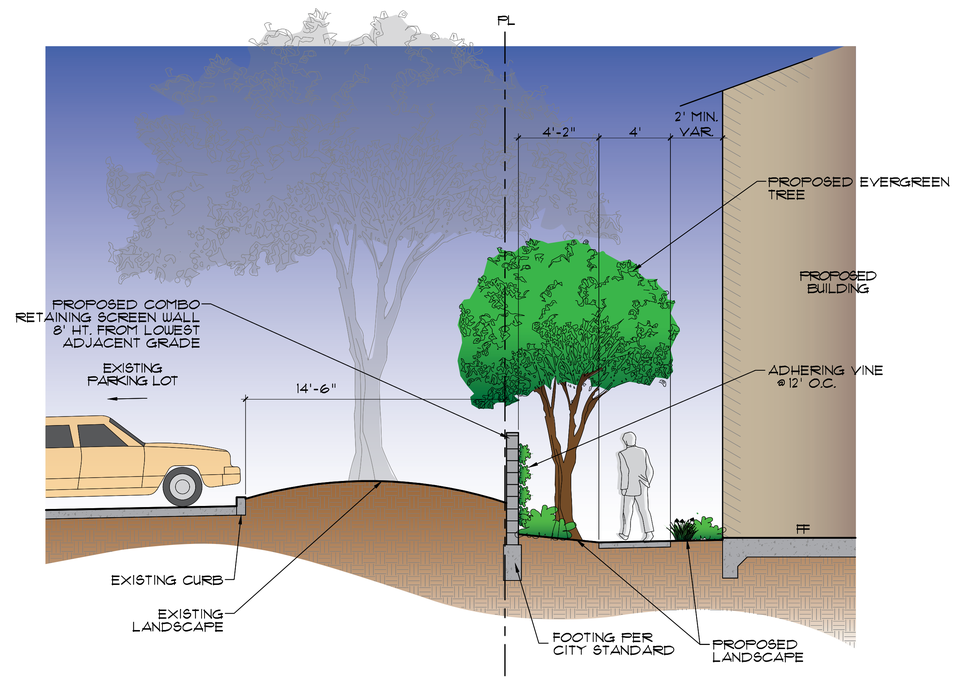
CONCEPTUAL DESIGN

9-20-21 | 2020013 |

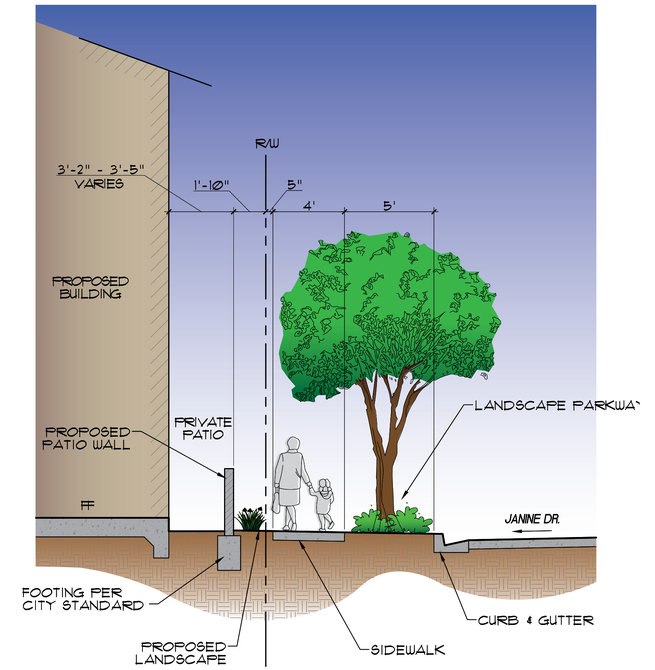
© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

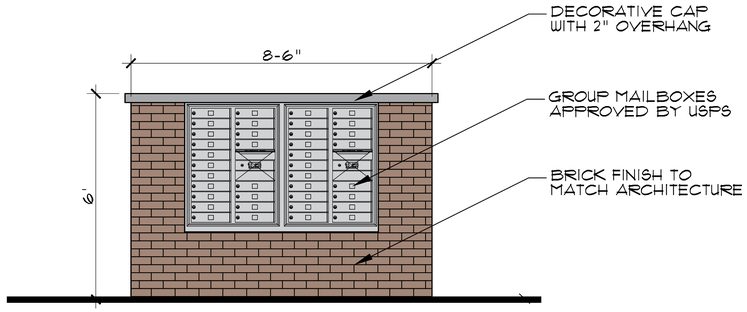
LP-2



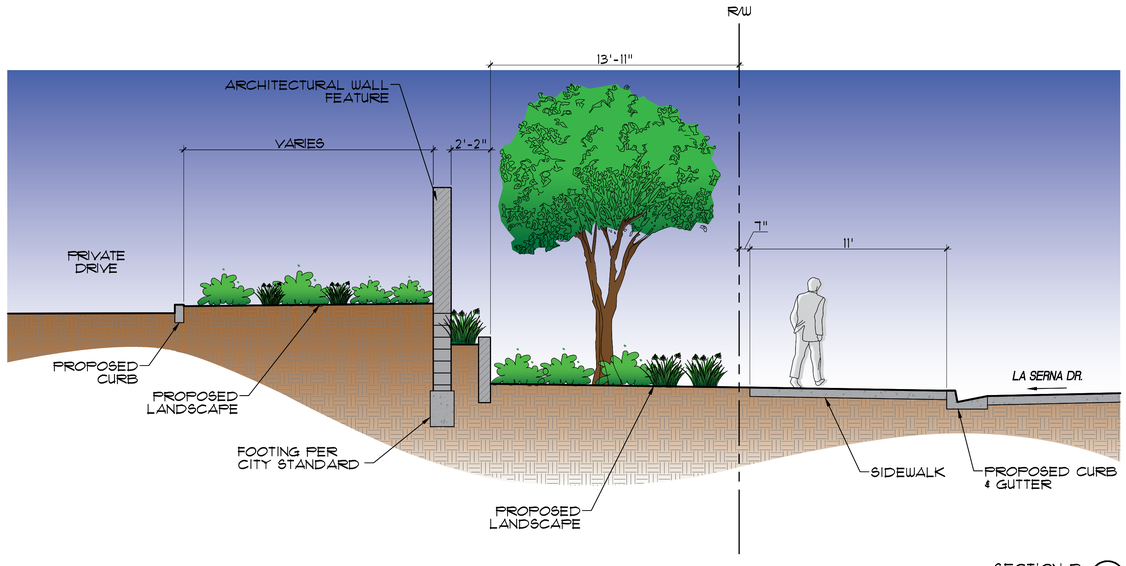
SECTION C (C)
SCALE: 1/4"=1'-0"



SECTION A (A)
SCALE: 1/4"=1'-0"



COMMUNITY MAILBOX (D)
SCALE: 1/4"=1'-0"



SECTION B (B)
SCALE: 1/4"=1'-0"

SITE SECTIONS

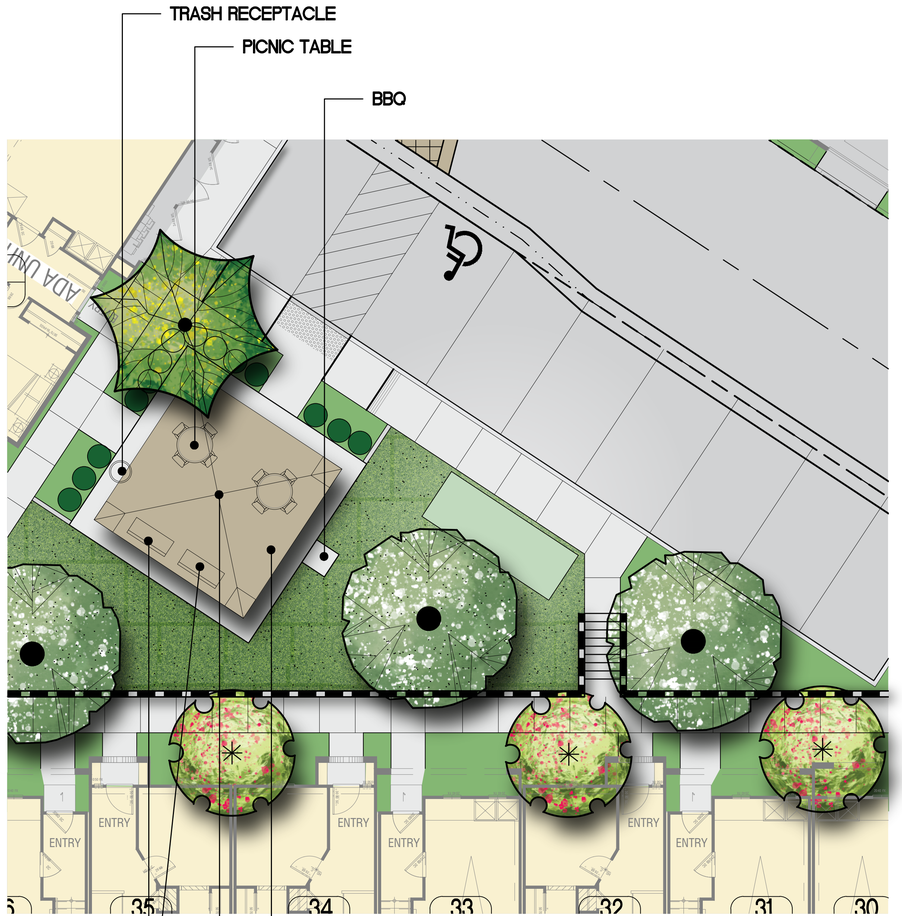
LP-3

HERMANN DESIGN GROUP
LANDSCAPE ARCHITECTURE
PLANNING
PROJECT MANAGEMENT

LA SERNA TOWNHOMES
WHITTIER, CA
CONCEPTUAL DESIGN
9-20-21 | 2020013 |

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS



Model NS-20 B6S Stainless Steel Grill

SPECIFICATIONS:

- **Model NS-20** has a 300 sq. in. grate that adjusts to 4 levels between 3-1/2" and 8-3/4" above the firebed in a 15" x 20" x 10" high firebox.
- Firebox bottom is constructed of 3/16" 304 grade stainless steel with firebox sides and back of 1/8" 304 grade stainless steel with integral ash flange die-formed into front edge to retain ashes and provide reinforcement. Allowance for drainage is provided. All exposed corners are rounded to 1-1/2" radius and all edge connections are entirely welded. Panel reinforcing flares are die-formed into the front edges of both side panels.
- The grate is constructed from 5/8" dia. A-36 steel bars for support handles and 1/2" dia. A-36 steel bars spaced 1-1/8" on centers to provide the grate surface and is permanently attached to firebox.
- Grate is provided with two substantially constructed spring coil grips suitable for public use made from 1/8" x 1/2" steel flat bar (not wire springs).
- **Standard:** Grate is finished in high temperature, heat resistant, nontoxic black enamel.

BBQ by R.J. THOMAS MFG. Company

SITE AMENITIES SOCIAL AREA

ANOVA. Products Journal Company Resources Contact Login

MODERN
EXPOSITION

Table Color: Textured Charcoal
Save Image

Exposition Table with 6 Contour Seats

Item Nº: LEX1660

Dimensions: 36"H x 94"Dia.

Weight: 402 lbs

DESCRIPTION

ANOVA. Products Journal Company Resources Contact Login

CLASSIC
RENDEZVOUS

Seat Color: Black
Save Image

Rendezvous 6' Contour Bench

Item Nº: L1360

Dimensions: 33"H x 28"W x 76"L

Weight: 183 lbs

DESCRIPTION

ANOVA. Products Journal Company Resources Contact Login

CLASSIC
RENDEZVOUS

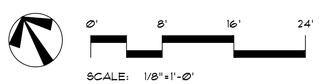
Receptacle Color: Black
Save Image

Rendezvous 40 Gallon Trash Receptacle, Contour Top

Item Nº: L1383CT

Dimensions: 34"H x 28"Dia.

Weight: 92 lbs



HERMANN DESIGN GROUP
LANDSCAPE ARCHITECTURE
PLANNING
PROJECT MANAGEMENT

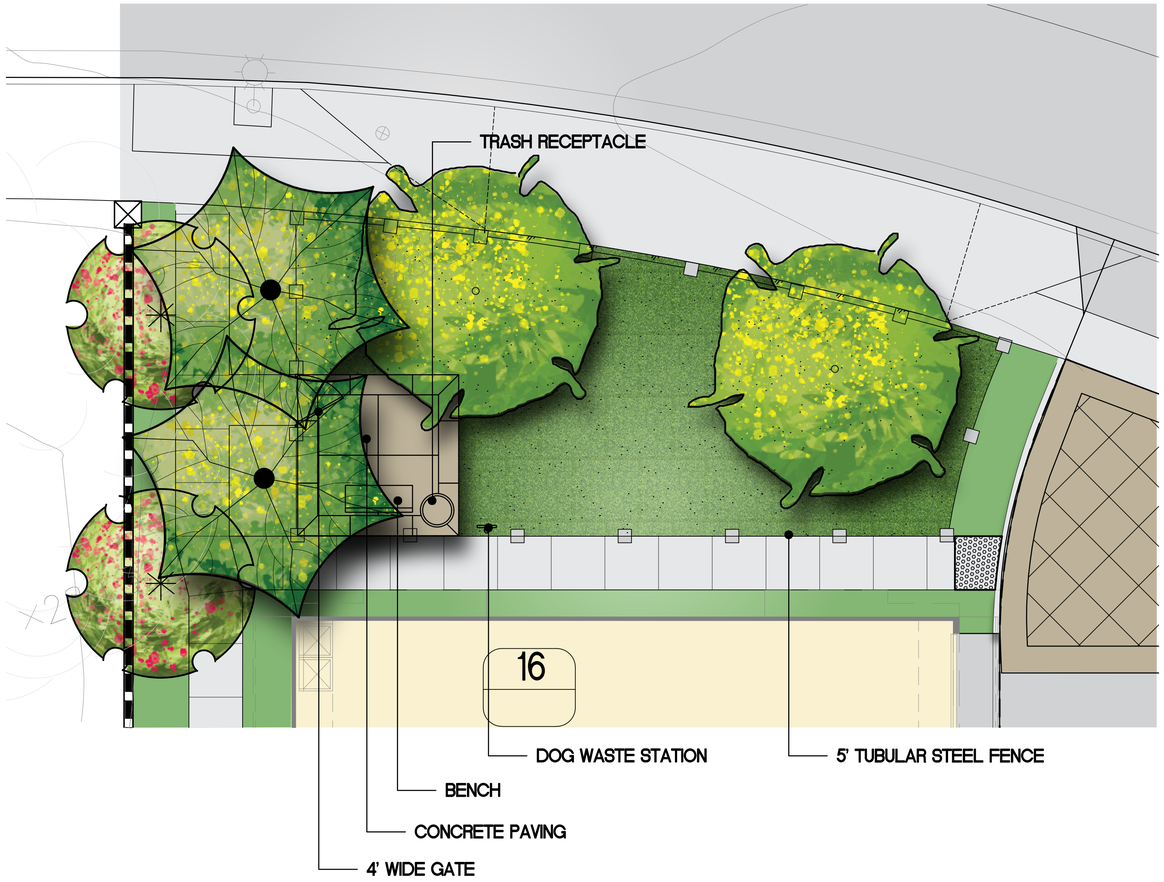
LA SERNA TOWNHOMES
WHITTIER, CA

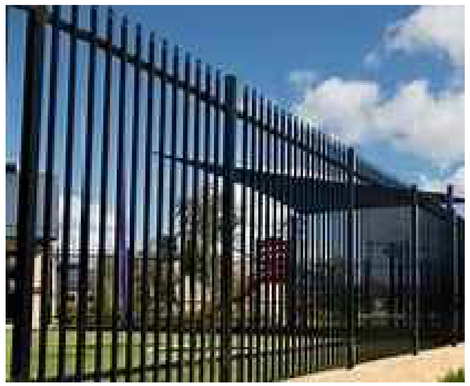
CONCEPTUAL DESIGN
9-20-21 | 2020013 |

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

LP-4





SITE AMENITIES DOG PARK

ANOVA Products Journal Company Resources Contact Login

TRADITIONAL DOG PARK EQUIPMENT

Save Image

Specs + Resources | No Colors Options

DogiPark® Bone Park Bench

Item N°: 7711

Dimensions: 33"H x 24"W x 72"L

Weight: 116 lbs

DESCRIPTION

Transform your space to a fun-filled dog park for pets and their people.

ANOVA Products Journal Company Resources Contact Login

TRADITIONAL DOG PARK EQUIPMENT

Pet Station Color: Green
Save Image

Dog Waste Station with Round Perforated Can and ONEpul Bag System

Item N°: D022-B

Dimensions: 73"H x 13"W x 15"D

Weight: 42 lbs

ANOVA Products Journal Company Resources Contact Login

TRADITIONAL ULTRA

Lid Color: Black
Receptacle Color: Pine
Save Image

Ultra 32 Gallon Perforated Steel Receptacle, Contour Top

Item N°: D1021M

Dimensions: 30"H x 24"Dia.

Weight: 78 lbs

0' 8' 16' 24'

SCALE: 1/8"=1'-0"

LP-5

HERMANN DESIGN GROUP
LANDSCAPE ARCHITECTURE
PLANNING
PROJECT MANAGEMENT

LA SERNA TOWNHOMES
WHITTIER, CA

CONCEPTUAL DESIGN
9-20-21 | 2020013

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

PLANT LIST

SYMBOL	BOTANICAL NAME / COMMON NAME	SIZE / NOTES	WATER USE
TREES & PALMS			
	CHILOPSIS LINEARIS "DESERT WILLOW"	36" BOX -	0.2 LOW
	CUPRESSUS SEMPERVIRENS "ITALIAN CYPRESS"	15 GAL -	0.2 LOW
	MAGNOLIA G. 'ST. MARY'S' "MAGNOLIA"	24" BOX -	0.2 LOW
	OLEA EUROPEA 'SWAN HILL' "SWAN HILL OLIVE"	36" BOX -	0.2 LOW
	PODOCARPUS GRACILIOR "FERN PODOCARPUS"	24" BOX -	0.5 MOD
	PLATANUS RACEMOSA "CALIFORNIA SYCAMORE"	24" BOX -	0.5 MOD
	TRISTANIA CONFERTA "BRISBANE BOX"	24" BOX -	0.5 MOD
DESERT ACCENTS			
	AGAVE DESMETTIANA 'VARIEGATA' "VARIEGATED SMOOTH AGAVE"	15 GAL -	0.2 LOW
	ALOE VERA "ALOE VERA"	5 GAL -	0.2 LOW
	HESPERALOE PARVIFLORA "RED YUCCA"	1 GAL -	0.2 LOW
SHRUBS			
	AGAPANTHUS 'PETER PAN' "DWARF LILY OF THE NILE"	1 GAL -	0.5 MOD
	AGAPANTHUS 'QUEEN ANNE' "LILY OF THE NILE"	1 GAL -	0.5 MOD
	BOUGAINVILLEA 'OO LA LA' "BOUGAINVILLEA "	5 GAL -	0.2 LOW
	CALLIANDRA HAEMATOCEPHALA "PINK POWDER PUFF"	5 GAL -	0.5 MOD
	CARISSA M. 'BOXWOOD BEAUTY' "BOXWOOD BEAUTY NATAL PLUM"	5 GAL -	0.2 LOW
	DIETES BICOLOR "FORTNIGHT LILY"	5 GAL -	0.2 LOW
	EUONYMUS JAPONICUS "EVERGREEN EUONYMUS"	15 GAL -	0.5 MOD
	LAVANDULA DENTATA "FRENCH LAVANDER"	5 GAL -	0.2 LOW
	LEUCOPHYLLUM F. 'GREEN CLOUD' "GREEN CLOUD TEXAS SAGE"	5 GAL -	0.2 LOW
	PRUNUS CAROLINIANA 'BRIGHT N TIGHT' "CHERRY LAUREL"	15 GAL -	0.5 MOD
	PODOCARPUS MACROPHYLLUS "YEW PINE"	15 GAL -	0.5 MOD
	RHAPHIOLEPIS I. 'CLARA' "CLARA INDIAN HAWTHORN"	5 GAL -	0.2 LOW
	RHAPHIOLEPIS I. 'MAJESTIC BEAUTY'	15 GAL -	0.5 MOD
	ROSA X 'RADRAZZ' "KNOCK OUT SHRUB ROSE"	5 GAL -	0.5 MOD
GROUNDCOVER & VINES			
	LANTANA MONTEVIDENSIS 'ALBA' "WHITE TRAILING LANTANA"	1 GAL -	0.5 MOD
	ROSMARINUS O. 'HUNTINGTON CARPET' "ROSEMARY HUNTIGNTON CARPET"	1 GAL -	0.2 LOW
	SENECIO MANDRALISCAE "BLUE CHALK STICKS"	1 GAL -	0.2 LOW
	PARTHENOCISSUS TRICUSPIDATA "BOSTON IVEY"	1 GAL STAKED 12' O.C.	0.2 LOW

NOTES:

1. PLANT SELECTION AND LANDSCAPE/IRRIGATION DESIGN SHOULD COMPLY WITH THE WATER EFFICIENT LANDSCAPE REQUIREMENTS AND ORDINANCES.
2. ALL LANDSCAPE SHOULD MEET THE MINIMUM CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED) GUIDELINES AS FOLLOWS:
   - ALL SHRUB OR GROUND COVER VEGETATION SHOULD BE NO HIGHER THAN 2' IN HEIGHT
   - TREE CANOPIES SHOULD BE NO LOWER THAN 6' IN HEIGHT
   - AVOID CREATING AREAS OF POTENTIAL CONCEALMENT BY USING "LACY" VEGETATION
   - AVOID USING VEGETATION THAT REQUIRES CONSTANT MAINTENANCE AND UPKEEP AS TO AVOID EXCESSIVE GROWTH POTENTIALLY COMPROMISING THE 2'x6' RULE

CONCEPTUAL MASTER PLANT PALETTE

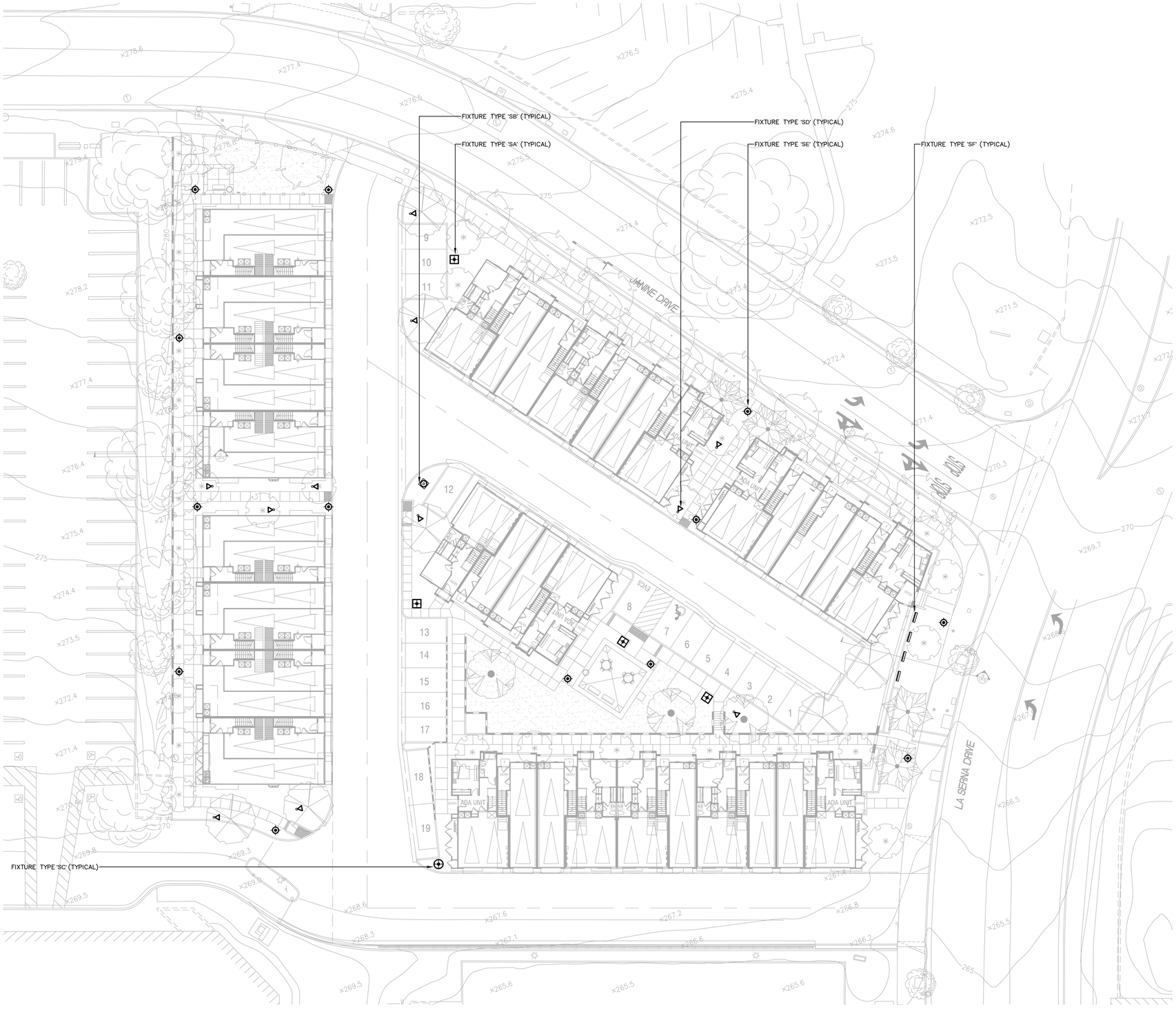
HERMANN DESIGN GROUP
LANDSCAPE ARCHITECTURE
PLANNING
PROJECT MANAGEMENT

LA SERNA TOWNHOMES
WHITTIER, CA

CONCEPTUAL DESIGN
9-20-21 | 2020013 |

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS



0' 20' 40' 60'
SCALE: 1"=20'

SITE LIGHTING PLAN

E1.0

rtm
engineering consultants
34300 Gateway Drive, Suite 120
Palm Desert, CA 92211
rtmassociates.com | 760.340.9005

HERMANN DESIGN GROUP
LANDSCAPE ARCHITECTURE
PLANNING
PROJECT MANAGEMENT

LA SERNA TOWNHOMES

WHITTIER, CA

CONCEPTUAL DESIGN

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA. | 2020013 | 08-13-21

MISSION PACIFIC INVESTORS

SCALE: 1"=20'

SITE PHOTOMETRIC PLAN

E1.1

rtm engineering consultants
34300 Gateway Drive, Suite 120
Palm Desert, CA 92211
rtmassociates.com | 760.340.9005

HERMANN DESIGN GROUP
LANDSCAPE ARCHITECTURE
PLANNING
PROJECT MANAGEMENT

LA SERNA TOWNHOMES

WHITTIER, CA

CONCEPTUAL DESIGN

0 10 20 40

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA. | 2020013 | 08-13-21

MISSION PACIFIC INVESTORS

architectural arealighting

PROS
ARCHITECTURAL AREA/SITE

DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

PROVIDENCE®

Providence Small

RELATED PRODUCTS

PROL2 PROV2

FEATURES

- Reliable, uniform, glare free illumination
- Types II, III, IV and V distributions
- 3000K, 4000K, 5000K CCT
- 0-10V dimming ready
- Integral surge suppression
- 15 standard powder coat finishes
- Upgrade Kits

3000K and Warmer CCTs only

SPECIFICATIONS

CONSTRUCTION
- All housing components aluminum 360 alloy, sealed with continuous silicone rubber gaskets
- All internal and external hardware is stainless steel
- Finish: fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) polyester powdercoat
- Optical bezel finish is match the luminaire housing

LED/OPTICS
- LEDs are mounted to a metal printed circuit board assembly (MCPCB) with a uniform conformal coating over the panel surface and electrical features
- Cartridge is easily disassembled to replace components. Optics are held in place without the use of adhesives
- Molded silicone gasket ensures a weather-proof seal around each individual LED
- Features revolutionary individual LED optical control based on high performance TIR optical designs
- House Side Shield is available on Standard and Clear Lens options except any Type 5 distribution. House Side Shield is not available for any distribution using a Diffused Lens

INSTALLATION
- Fixtures must be grounded in accordance with national, state and/or local electrical codes. Failure to do so may result in serious personal injury

ELECTRICAL
- Luminaires have integral surge protection, UL recognized and have a surge current rating of 10,000 Amps using the industry standard 8/20uSec wave and surge rating of 372J
- Drivers are UL recognized with an inrush current maximum of <20.0 Amps maximum at 230VAC
- 100%-1% dimming range. Fixture will be wired for low voltage 0-10V dimming control
- Driver and surge suppressor are mounted to a prewired tray with quick disconnects that may be removed from the gear compartment

CONTROLS (CONTINUED)
- Photocell adapter shall include an internal twist lock receptacle. Photocell by others.
- Egress adapter shall require an auxiliary 120 volt supply for operation of an integral MR16 lamp in the event of emergency. The lamp may be aimed and locked into position with an adjustment range of 15°-45°. Adapter shall have a socket that accepts miniature bi-pin MR16 lamps up to 50 watts, lamp by others

CERTIFICATIONS
- ETL listed under UL 1598 and CSA C22.2 No. 250.0-08 for wet locations
- This product qualifies as a "designated country construction material" per FAR 52.225-11 Buy American-Construction Materials under Trade Agreements effective 6/06/2020. See Buy American Solutions.

WARRANTY
- See HLI Standard Warranty for additional information

KEY DATA	
LUMEN RANGE	1,275–3,270
WATTAGE RANGE	25–42
EFFICACY RANGE (LPW)	46–78
INPUT CURRENT RANGE (mA)	255/400 mA
WEIGHT	9 lbs 4 kg
EPA	.46

© 2021 Architectural Area Lighting, a division of Hubbell Lighting, Inc. Specifications subject to change without notice.
17760 Rowland St, Rowland Heights, CA 91748 / Tel 626.968.5666 / Website www.aal.net

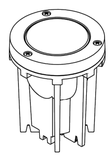
HUBBELL Lighting

LIGHTING FIXTURE TYPE 'SA','SB' AND 'SC'
MOUNT AT 15'-0" A.F.F.

HADCO by ⓒignify

Landscape
FlexScape
IL9 Inground bullet

Project:
Location:
Cat.No:
Type:
Lamps: Qty:
Notes:



Breaking new ground with optimal versatility, the Hadco FlexScape BL9 has zoomable optics (15° to 35°) & 60° by switching optic element. This adjustable luminaire also has the ability to switch light output in 4 steps.

Ordering guide Example: IL9DC-A

Series	Lamping	CCT	Finish
IL9	D	–	
IL9 Low Voltage 9W Inground Lighting	D LED	**W** Warm (3000K) **C** Cool (4000K)	**A** Black

Features

1. Housing/Construction: Black injection molded, glass filled polyester, molded-in fins for thermal performance as well as to discourage heaving and twisting after installation. Molded-in brass inserts for repeatable opening / closing. Lens ring secured with three (3) screws that clamp lens and gasket into place, flush for ADA compliance and repeatable sealing.
2. Electrical: 10W (on high setting) Input voltage range (VAC): 10-14. Pre-wired with a 3-ft. pigtail for easy hookup to the low voltage supply cable. Driver housed in injected molded case with electronics encapsulated. 12V class 2 driver with Integral switch for 4 preset light levels.
3. LED Board and Array: Single Luxeon M LED.
4. Controls: 12 Volt Class 2 driver with integral switch provides simple customer access to the adjustment between 4 present light levels.
5. Optical Systems: Low Iron-tempered clear glass, molded gasket slips onto lens without tools or RTV. Zoomable optic / injection molded acrylic (PMMA) clear, highly polished molded with select surfaces textured. Inter-changeable lens provides Narrow 15° to Medium 35° beam pattern depending on the position, Inter-changeable lens provides Wide 60° flood output. Limited Aiming: Heatsink doubles as an aiming apparatus, providing a range of 30º (15º from center both ways). Aiming can be adjusted after easy removal of three screws on lens ring.

Lamps

Integral LED module

Power Supply

Fixtures can be used with the HADCO Low Voltage Transformers series TC152,
TSS, TC. Power supplies are available in 150W / 300W / 600W and 900W. Ask your Philips representative for a full list of options.

Finish

Composite is textured, pressure formed, black molded-in-color.

IP68 Rating

Dust-tight and sealed against direct jets of water and against continuous immersion up to a depth of 1 meter (3.28 feet).

Labels

ETL Listed to U.S. safety standards for wet locations. cETL listed to Canadian safety standards for wet locations. Manufactured to ISO 9001:2008 Standards. 5-year limited warranty.

Watts Consumed / Needed to Drive	2.0 W	4.5 W	9.6 W	0.7 W
mA	230	600	1100	1500
1K 15°	111	235	419	554
1K 35°	129	273	485	642
3K 60°	115	245	436	571
4K 15°	118	262	465	587
4K 35°	137	303	539	681
4K 60°	122	272	484	606

LIGHTING FIXTURE TYPE 'SD'
IN-GRADE

KIM LIGHTING®

VRB1 LED Round Bollard
Single Function, Vandal-Resistant, Aluminum Shaft
revision 2/15/21 • kl_vrb1led_spec.pdf

Type:
Job:
Catalog number:

Approvals:

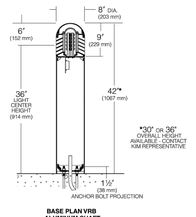
Date:
Page: 1 of 4

VRB1 / / / /
Fixture | Electrical Module | Luminaire Finish (includes top cap and shaft) | Option
See page 2

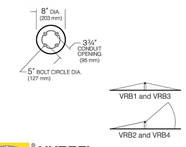
Specifications

VRB-LED Models
10 - 20 Diodes

VRB1- Single Function Luminaire (Aluminum Shaft)
Maximum weight: 30 lb



BASE PLAN VRB ALUMINUM SHAFT



Domed Top Cap: One-piece die-cast aluminum secured to louvers by concealed allen screws in keyhole slots. For relamping access, allen screws shall not require complete removal.

Louvers: Aluminum die-cast with vertical support ribs at 90° intervals. Horizontal louver blades shall have a 1.3/4" depth, a 65° upward pitch and provide light source cutoff above horizontal. Louver assembly shall be secured to shaft by four internal tie rods.

Lamp Enclosure: One-piece tempered molded glass with internal flutes and full gasketing at bottom edge.

Fixture Head: Allows flow-through ventilation around and above the lamp enclosure.

Shaft: One-piece extruded aluminum, .125" wall thickness with a heavy cast aluminum twist-lock anchor base concealed within the shaft. Concealed set screws shall lock shaft onto the cast anchor base.

Electronic Module: All electrical components are either UL or ETL recognized, mounted on a single plate and factory prewired with quick disconnect plugs. Driver is rated for -40°F starting and has a 0-10V dimming interface for multi-level illumination options.

Optical Module: Each LED equipped with a directional optic for maximum beam angle projecting through louver stack spacings. LED boards to be mounted to an anodized inter-locking heat sink extrusion. (Type I) two 5-LED boards for a total of 10-LED. (Type III) three 5-LED boards for a total of 15-LED. (Type V) four 5-LED boards for a total of 20-LED. Available in 580nm Amber, 3000K, 4200K and 5100K color temperatures.

Anchor Bolts: Four 3/8" x 10" + 2" zinc plated L-hooks, each with two nuts, washers and a rigid pressed board template.

Finish: Each luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) polyester powdercoat finish.

Listed to: UL 1598 Standard for Luminaires - UL 8750 Standard for Safety for Light Emitting Diode (LED) Equipment for use in Lighting Products and CSA C22.2#250.0 Luminaires. RoHS compliant. Meets Buy American provisions within ARRA.

Warranty: For full warranty see http://www.hubbelllighting.com/resources/warranty.

CAUTION: Fixtures must be grounded in accordance with national, state and/or local electrical codes. Failure to do so may result in serious personal injury.

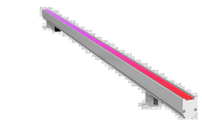
HUBBELL Lighting

KIM LIGHTING RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE

© 2021 KIM LIGHTING • 17760 ROWLAND STREET, CITY OF INDUSTRY, CA 91748 • TEL: 626/968-5666 • FAX: 626/369-2695

LIGHTING FIXTURE TYPE 'SE'
BOLLARD

LS9015 **Vestalux V1 Facade Outliner Gen2**



A high performance exterior grade architectural outliner featuring a flat glass diffuser. Designed for direct view, the luminaire has excellent light blending properties ensuring uniformity when it comes to color brightness and blending. Control, addressing and monitoring is via full DMX/RDM through the Lumascape **PowerSync**™ Data Injector. RDM addressing means that fixtures can be installed in any order and swepped in and out at will.

Performance

Static White & Color[1]	Lumen Output (lm)	Efficacy (lm/W)
2,700 K (80 CRI)	1,550	59
3,000 K (80 CRI)	1,660	63
3,500 K (80 CRI)	1,660	63
4,000 K (80 CRI)	1,940	74
5,000 K (80 CRI)	1,790	68
Red	570	28
Green	1,430	53
Royal Blue	–	–

[1] Static white lumen output values are based on 7 W/ft, 4 ft luminaire, 20° x 80° lens.

Dynamic Color[2]	Lumen Output (lm)	Efficacy (lm/W)
RGBA	1,130	43
RGBW with Royal Blue	1,070	40

[2] Dynamic Color lumen output values are based on 7 W/ft, 4 ft luminaire, 20° x 80° lens.

Tunable White[3]	Lumen Output (lm)	Efficacy (lm/W)
2,700 K – 6,500 K	1,670	64

[3] Tunable White lumen output values based on 7 W/ft, 4 ft luminaire, 20° x 80° lens.

powersync™ easyglow™ cooldrive™ microantileach™

lumascape.com LUMASCAPE

Products and specifications are subject to change without notice. LS9015EN3-210615

LIGHTING FIXTURE TYPE 'SF'
GRADE MOUNTED

Base Covers | TYPE

1. BASE | 2. COLOR

BC7

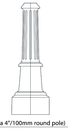
1. BASE

BC5-4 (Fits over a 4"/100mm round pole)
BC5-5 (Fits over a 5"/125mm round pole)
14"/350mm DIA x 24"/610mm high.
Two piece clamshell.

BC7-4 (Fits over a 4"/100mm round pole)
BC7-5 (Fits over a 5"/125mm round pole)
18"/460mm DIA x 30"/760mm high.
Two piece clamshell with a one piece upper collar.

ACBCR (Fits over a 4"/100mm round pole)
14"/356mm DIA x 18"/460mm high
One piece cover with a two piece upper collar.

BC6-4 (Fits over a 4"/100mm round pole)
BC6-5 (Fits over a 5"/125mm round pole)
17"/430mm DIA x 13"/330mm high
Two piece clamshell.
*AAL poles configured with BC6 shall have hand hole location at 18".


BC8-4 (Fits over a 4"/100mm round pole)
12"/305mm DIA x 36"/915mm high.
Two piece clamshell.

ACBCS (Fits over a 4"/100mm square pole)
14"/356mm square x 18"/457mm high.
One piece cover with a two piece upper collar.

2. COLOR

BLS	Black Gloss Smooth
BLT	Black Matte Textured
DBS	Dark Bronze Gloss Smooth
DBT	Dark Bronze Matte Textured
GTT	Graphite Matte Textured
LGS	Light Grey Gloss Smooth
LGT	Light Grey Matte Textured
PSS	Platinum Silver Smooth
VGT	Verde Green Textured
WHS	White Gloss Smooth
WHT	White Matte Textured

Color Option
CC* Custom Color
** Consult factory for custom color, marine and corrosive finish options*

SPECIFICATIONS

Two piece base covers are cast #356 aluminum that fit over standard 4"/100mm or 5"/125mm round poles. Covers are attached with stainless steel hardware. Consult your AAL catalog for complete details on round poles.

WARNINGS

Caution must be excercised in the selection of a design wind speed when the pole is to be installed in a special wind region (as indicated by the wind map) or in an area where wind speed is unpredictable.

AAL recommends consulting a local engineer when the pole is to be installed in an area that may be subject to extreme weather and exposure

Poles installed on structures such as buildings and bridges may be subjected to vibration, oscillations, and other fatigue effects which are not covered by the AAL warranty.

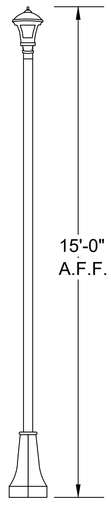
The use of banners or other appendages can severley affect the loading of a pole. No banner or other appendage should be attached to an AAL pole unless approved by AAL.

If the products are to be used on an existing foundation or on other structures, the customer assumes all responsibility for the structural integrity of the existing foundation, anchorage or structures and all the consequences arising therefrom.

JOB
TYPE
NOTES

architectural arealighting
ARCHITECTURAL AREA LIGHTING
17760 Rowland Street | City of Industry | CA 91748
P 626.968.5666 | F 626.369.2695 | www.aal.net
Copyright © 2016 November 9, 2020 7:00 PM

LIGHT POLE BASE COVER DETAIL



LIGHT POLE ELEVATION

LIGHTING FIXTURE CUTSHEETS

E1.2

rtm engineering consultants
34300 Gateway Drive, Suite 120
Palm Desert, CA 92211
rtmassociates.com | 760.340.9005

HERMANN DESIGN GROUP
LANDSCAPE ARCHITECTURE
PLANNING
PROJECT MANAGEMENT

LA SERNA TOWNHOMES
WHITTIER, CA
CONCEPTUAL DESIGN
0 10 20 40
08-13-21 | 2020013 | WHA.

© 2021 WILLIAM HEZMALHALCH ARCHITECTS, INC. dba WHA.

MISSION PACIFIC INVESTORS

Appendix B Air Quality Impact Analysis

LA SERNA TOWNHOMES

AIR QUALITY IMPACT ANALYSIS

CITY OF WHITTIER

PREPARED BY:

William Maddux
bmaddux@urbanxroads.com
(619) 778-1971

Ali Dadabhoy
adadabhoy@urbanxroads.com

FEBRUARY 11, 2022

TABLE OF CONTENTS

Table of Contents ..... **i**
Appendices ..... **ii**
List of Exhibits ..... **ii**
List of Tables ..... **ii**
List of Abbreviated Terms ..... **iii**
Executive Summary **1**
ES.1 Summary of Findings 1
ES.2 Standard Regulatory Requirements/Best Available Control Measures 1
ES.3 Operational-Source Mitigation Measures 2
1 Introduction **3**
1.1 Site Location 3
1.2 Project Description 3
2 Air Quality Setting **7**
2.1 South Coast Air Basin 7
2.2 Regional Climate 7
2.3 Wind Patterns and Project Location 8
2.4 Criteria Pollutants 9
2.5 Existing Air Quality 16
2.6 Regional Air Quality 19
2.7 Local Air Quality 19
2.8 Regulatory Background 20
3 Project Air Quality Impact **25**
3.1 Introduction 25
3.2 Standards of Significance 25
3.3 California Emissions Estimator Model™ Employed To Analyze Air Quality 26
3.4 Construction Emissions 26
3.5 Operational Emissions 29
3.6 Localized Emissions 31
3.7 CO "Hot Spot" Analysis 37
3.8 Air Quality Management Planning 38
3.9 Toxic Air Contaminants 41
3.10 Potential Impacts to Sensitive Receptors 42
3.11 Odors 42
3.12 Cumulative Impacts 43
4 References **45**
5 Certifications **49**

APPENDICES

Appendix 3.1: CalEEMod Emissions Model Outputs

LIST OF EXHIBITS

Exhibit 1-A: Location Map 4
Exhibit 1-B: Site Plan 5
Exhibit 3-A: Sensitive Receptor Locations 35

LIST OF TABLES

Table ES-1: Summary of CEQA Significance Findings 1
Table 2-1: Criteria Pollutants 9
Table 2-2: Ambient Air Quality Standards (1 of 2) 17
Table 2-2: Ambient Air Quality Standards (2 of 2) 18
Table 2-3: Attainment Status of Criteria Pollutants in the SCAB 19
Table 2-4: Project Area Air Quality Monitoring Summary 2018-2020 20
Table 3-1: Maximum Daily Regional Emissions Thresholds 25
Table 3-2: Construction Duration 27
Table 3-3: Construction Equipment Assumptions 28
Table 3-4: Overall Construction Emissions Summary 29
Table 3-5: Summary Operational Emissions 31
Table 3-6 : Maximum Daily Disturbed-Acreage 33
Table 3-7: Maximum Daily Localized Emissions Thresholds 36
Table 3-8: Localized Significance Summary of Construction 36
Table 3-9: CO Model Results 37
Table 3-10: Traffic Volumes 38

LIST OF ABBREVIATED TERMS

%	Percent
°F	degrees Fahrenheit
µg/m^3	Microgram per Cubic Meter
1992 CO Plan	1992 Federal Attainment Plan for Carbon Monoxide
AB 2595	California Clean Air Act
AQIA	air quality impact analysis
AQP	Air Quality Plans
BAAQMD	Bay Area Air Quality Management District
BACM	Best Available Control Measure
C_2H_3Cl	vinyl chloride
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalEPA	California EPA
CALGreen	California Green Building Standards Code
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CO	carbon monoxide
COHb	carboxyhemoglobin
EIR	Environmental Impact Report
EMFAC	EMissions FACtor model
EPA	Environmental Protection Agency
g/L	gram/liter
GHG	greenhouse gas
H_2S	hydrogen sulfide
LST	Localized Significance Thresholds
LST Methodology	Final Localized Significance Threshold Methodology
MM	Mitigation Measures
Mph	miles per hour
MWELO	Model Water Efficient Landscape Ordinance
NAAQS	National Ambient Air Quality Standards
NO	nitric oxide
NO_2	nitrogen dioxide

NO_X	nitrogen oxides
O_2	oxygen
O_2 deficiency	chronic hypoxemia
O_3	ozone
Pb	Lead
PM	Particulate Matter
PM_{10}	Particulate matter 10 microns or less
$PM_{2.5}$	Particulate matter 2.5 microns or less
ppm	parts per million
Project	State Street Village
RECLAIM	Regional Clean Air Incentives Market
ROG	reactive organic gases
RTP	Regional Transportation Plan
Rule 1113	SCAQMD Rule 1113 - Architectural Coatings
Rule 403	SCAQMD Rule 403 - Fugitive Dust
Rule 445	SCAQMD Rule 445 – Wood-Burning Devices
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_4	sulfates
SOX	sulfur oxides
SRA	Source Receptor Area
TAC	toxic air contaminant
Title I	Non-Attainment Provisions
Title II	Mobile Source Provisions
VOC	Volatile Organic Compounds
vph	vehicles per hour

EXECUTIVE SUMMARY

ES.1 SUMMARY OF FINDINGS

The results of this *La Serna Townhomes Air Quality Impact Analysis* are summarized below based on the significance criteria in Section 3 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1). Table ES-1 shows the findings of significance for each potential air quality impact under CEQA.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report	Significance Findings	
	Section	Unmitigated	Mitigated
Regional Construction Emissions	3.4	*Less Than Significant*	*n/a*
Regional Operational Emissions	3.5	*Less Than Significant*	*n/a*
Localized Construction Emissions	3.6	*Less Than Significant*	*n/a*
Localized Operation Emissions	3.6	*Less Than Significant*	*n/a*
CO "Hot Spot" Analysis	3.7	*Less Than Significant*	*n/a*
Air Quality Management Plan	3.8	*Less Than Significant*	*n/a*
Toxic Air Contaminants Analysis	3.9	*Less Than Significant*	*n/a*
Sensitive Receptors	3.10	*Less Than Significant*	*n/a*
Odors	3.11	*Less Than Significant*	*n/a*
Cumulative Impacts	3.12	*Less Than Significant*	*n/a*

ES.2 STANDARD REGULATORY REQUIREMENTS/BEST AVAILABLE CONTROL MEASURES

Measures listed below (or equivalent language) shall appear on all Project grading plans, construction specifications and bid documents, and the City of Whittier will ensure such language is incorporated prior to issuance of any development permits. South Coast Air Quality Management District (SCAQMD) Rules that are currently applicable during construction activity for this Project include but are not limited to Rule 403 (Fugitive Dust), Rule 445 (Wood-Burning Devices), and Rule 1113 (Architectural Coatings) (2) (3) (4). It should be noted that these Rules represent Best Available Control Measures (BACMs) and are not mitigation since they are regulatory requirements. As such, compliance with Rule 403, Rule 445, and Rule 1113 have been assumed in this analysis.

RULE 403

The contractor shall adhere to applicable measures contained in Table 1 of Rule 403 including, but not limited to (2):

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 miles per hour (mph) per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Project are watered at least three (3) times daily during dry weather. Watering, with complete

coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

- All access points to the Project site shall have track out devices installed.
- The contractor shall ensure that traffic speeds on unpaved roads and Project site areas are limited to 15 mph or less.

RULE 445

The following measures shall be incorporated into Project plans and specifications as implementation of SCAQMD Rule 445 (3):

- No wood burning devices shall be installed and any dwelling units consistent with SCAQMD Rule 445.

RULE 113

The following measures shall be incorporated into Project plans and specifications as implementation of SCAQMD Rule 1113 (4):

- Only "Low-Volatile Organic Compounds (VOC)" paints consistent with SCAQMD Rule 1113 shall be used.

ES.3 OPERATIONAL-SOURCE MITIGATION MEASURES

Project operational emissions would not exceed applicable SCAQMD regional thresholds of significance. Therefore, Project operational-source emissions would be considered less than significant on a project-specific and cumulative basis.

1 INTRODUCTION

This report presents the results of the air quality impact analysis (AQIA) prepared by Urban Crossroads, Inc., for the proposed La Serna Townhomes (Project). The purpose of this AQIA is to evaluate the potential air quality impacts associated with construction and operation of the proposed Project and identify measures, as necessary, to reduce emissions in comparison to thresholds established by the SCAQMD.

1.1 SITE LOCATION

The proposed La Serna Townhomes ("Project") is located on the southwest corner of La Serna Drive and Janine Drive in the City of Whittier. The Project's location in relation to the surrounding area is shown on Exhibit 1-A.

The Project site is generally surrounded by commercial, medical, and residential land uses, with the nearest residential land use is approximately 155 feet northeast of the Project site and the Whittier Hospital Medical Center is located northwest of the Project site. The Project site is designated "Mixed Use 1" on the City of Whittier General Plan Land Use Map (5).

1.2 PROJECT DESCRIPTION

Exhibit 1-B illustrates the preliminary Project site plan. The proposed Project consists of the development of a 42-unit townhome development within six 3-story buildings with units ranging from 2-3 bedrooms. There is one point of access proposed on La Serna Drive and one driveway proposed on Janine Drive. Based on the Project traffic report, after considering the trips generated by the former restaurant land use, the proposed Project is anticipated to generate zero net trips per day (6).

EXHIBIT 1-A: LOCATION MAP

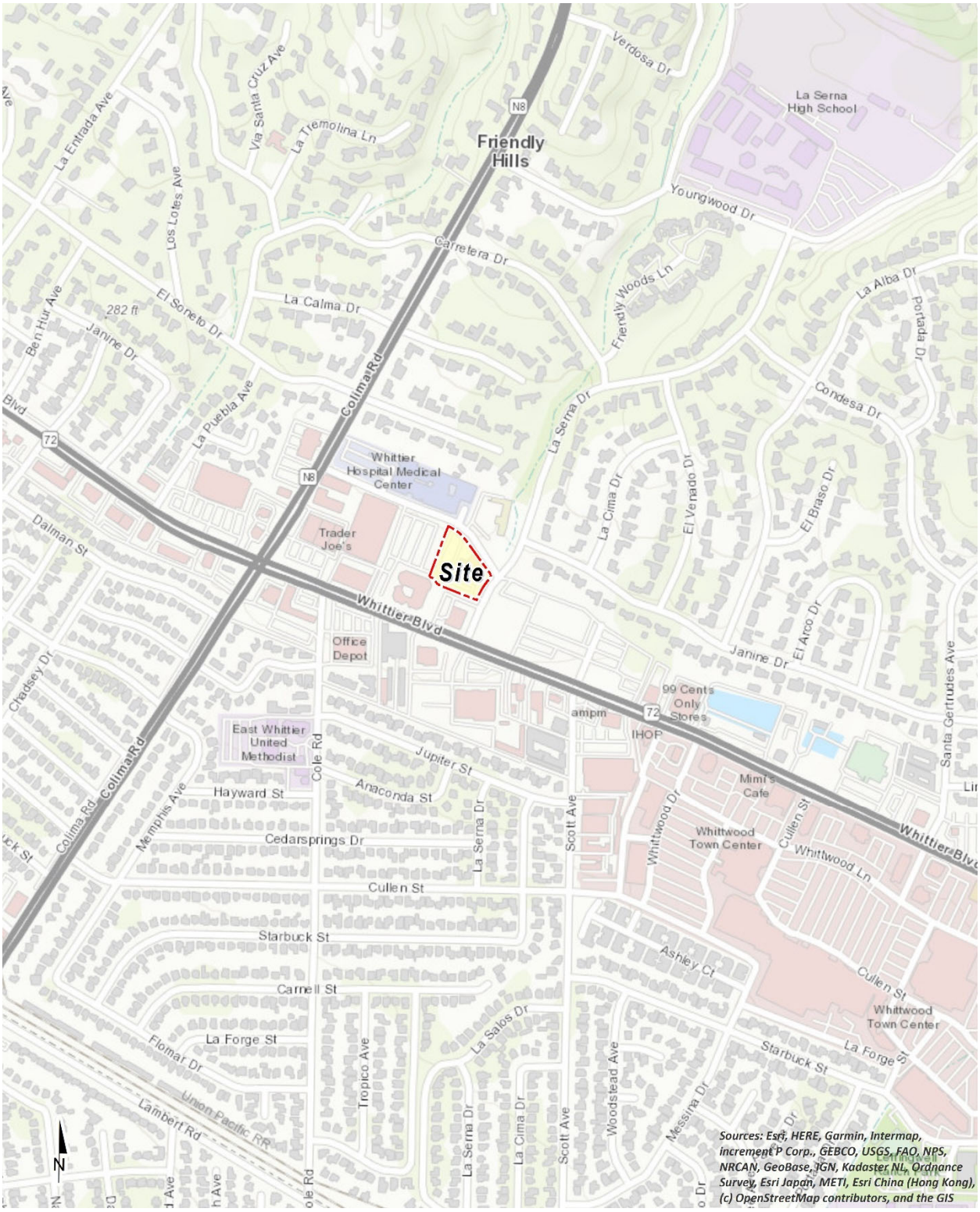


EXHIBIT 1-B: SITE PLAN

This page intentionally left blank.

2 AIR QUALITY SETTING

This section provides an overview of the existing air quality conditions in the Project area and region.

2.1 SOUTH COAST AIR BASIN

The Project site is located in the South Coast Air Basin (SCAB) within the jurisdiction of SCAQMD (7). The SCAQMD was created by the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Act, the SCAQMD is responsible for bringing air quality in areas under its jurisdiction into conformity with federal and state air quality standards. As previously stated, the Project site is located within the SCAB, a 6,745-square mile subregion of the SCAQMD, which includes portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County.

The SCAB is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Los Angeles County portion of the Mojave Desert Air Basin is bounded by the San Gabriel Mountains to the south and west, the Los Angeles / Kern County border to the north, and the Los Angeles / San Bernardino County border to the east. The Riverside County portion of the Salton Sea Air Basin is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley.

2.2 REGIONAL CLIMATE

The regional climate has a substantial influence on air quality in the SCAB. In addition, the temperature, wind, humidity, precipitation, and amount of sunshine influence the air quality.

The annual average temperatures throughout the SCAB vary from the low to middle 60s degrees Fahrenheit (°F). Due to a decreased marine influence, the eastern portion of the SCAB shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the SCAB, with average minimum temperatures of 47°F in downtown Los Angeles and 36°F in San Bernardino. All portions of the SCAB have recorded maximum temperatures above 100°F.

Although the climate of the SCAB can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of SCAB climate. Humidity restricts visibility in the SCAB, and the conversion of sulfur dioxide (SO_2) to sulfates (SO_4) is heightened in air with high relative humidity. The marine layer provides an environment for that conversion process, especially during the spring and summer months. The annual average relative humidity within the SCAB is 71% along the coast and 59% inland. Since the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

More than 90% of the SCAB's rainfall occurs from November through April. The annual average rainfall varies from approximately nine inches in Riverside to fourteen inches in downtown Los

Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thunderstorms near the coast and slightly heavier shower activity in the eastern portion of the SCAB with frequency being higher near the coast.

Due to its generally clear weather, about three-quarters of available sunshine is received in the SCAB. The remaining one-quarter is absorbed by clouds. The ultraviolet portion of this abundant radiation is a key factor in photochemical reactions. On the shortest day of the year there are approximately 10 hours of possible sunshine, and on the longest day of the year there are approximately 14½ hours of possible sunshine.

The importance of wind to air pollution is considerable. The direction and speed of the wind determines the horizontal dispersion and transport of the air pollutants. During the late fall to early spring rainy season, the SCAB is subjected to wind flows associated with the traveling storms moving through the region from the northwest. This period also brings five to ten periods of strong, dry offshore winds, locally termed "Santa Anas" each year. During the dry season, which coincides with the months of maximum photochemical smog concentrations, the wind flow is bimodal, typified by a daytime onshore sea breeze and a nighttime offshore drainage wind. Summer wind flows are created by the pressure differences between the relatively cold ocean and the unevenly heated and cooled land surfaces that modify the general northwesterly wind circulation over southern California. Nighttime drainage begins with the radiational cooling of the mountain slopes. Heavy, cool air descends the slopes and flows through the mountain passes and canyons as it follows the lowering terrain toward the ocean. Another characteristic wind regime in the SCAB is the "Catalina Eddy," a low level cyclonic (counterclockwise) flow centered over Santa Catalina Island which results in an offshore flow to the southwest. On most spring and summer days, some indication of an eddy is apparent in coastal sections.

In the SCAB, there are two distinct temperature inversion structures that control vertical mixing of air pollution. During the summer, warm high-pressure descending (subsiding) air is undercut by a shallow layer of cool marine air. The boundary between these two layers of air is a persistent marine subsidence/inversion. This boundary prevents vertical mixing which effectively acts as an impervious lid to pollutants over the entire SCAB. The mixing height for the inversion structure is normally situated 1,000 to 1,500 feet above mean sea level.

A second inversion-type forms in conjunction with the drainage of cool air off the surrounding mountains at night followed by the seaward drift of this pool of cool air. The top of this layer forms a sharp boundary with the warmer air aloft and creates nocturnal radiation inversions. These inversions occur primarily in the winter, when nights are longer and onshore flow is weakest. They are typically only a few hundred feet above mean sea level. These inversions effectively trap pollutants, such as nitrogen oxides (NO_X) and carbon monoxide (CO) from vehicles, as the pool of cool air drifts seaward. Winter is therefore a period of elevated levels of primary pollutants along the coastline.

2.3 WIND PATTERNS AND PROJECT LOCATION

The distinctive climate of the Project area and the SCAB is determined by its terrain and geographical location. The SCAB is located in a coastal plain with connecting broad valleys and

low hills, bounded by the Pacific Ocean in the southwest quadrant with high mountains forming the remainder of the perimeter.

Wind patterns across the south coastal region are characterized by westerly and southwesterly onshore winds during the day and easterly or northeasterly breezes at night. Winds are characteristically light although the speed is somewhat greater during the dry summer months than during the rainy winter season.

2.4 CRITERIA POLLUTANTS

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Criteria pollutants, their typical sources, and health effects are identified below (8):

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
CO	CO is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone (O_3), motor vehicles operating at slow speeds are the primary source of CO in the SCAB. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment and residential heating.	Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen (O_2) supply to the heart. Inhaled CO has no direct toxic effect on the lungs but exerts its effect on tissues by interfering with O_2 transport and competing with O_2 to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for O_2 supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (O_2 deficiency) as seen at high altitudes.

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
SO_2	SO_2 is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO_2 oxidizes in the atmosphere, it forms SO_4. Collectively, these pollutants are referred to as sulfur oxides (SO_X).	Coal or oil burning power plants and industries, refineries, diesel engines	A few minutes of exposure to low levels of SO_2 can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO_2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO_2. Animal studies suggest that despite SO_2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO_2 levels. In these studies, efforts to separate the effects of SO_2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically, or one pollutant alone is the predominant factor.

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
NO_X	NO_X consist of nitric oxide (NO) and nitrogen dioxide (NO_2) and five other compounds, which are formed when nitrogen (N) combines with oxygen. Their lifespan in the atmosphere ranges from one to seven days for NO and NO_2. NO_X is typically created during combustion processes and are major contributors to smog formation and acid deposition. NO_2 is a criteria air pollutant and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO_2 is the most abundant in the atmosphere. As ambient concentrations of NO_2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO_2 than those indicated by regional monitoring station.	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment and residential heating.	Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO_2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups. In animals, exposure to levels of NO_2 considerably higher than ambient concentrations result in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of O_3 exposure increases when animals are exposed to a combination of O_3 and NO_2.
O_3	O_3 is a highly reactive and unstable gas that is formed when VOCs and NO_X, both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the	Formed when reactive organic gases (ROG) and NO_X react in the presence of	Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
	presence of sunlight. O_3 concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.	sunlight. ROG sources include any source that burns fuels, (e.g., gasoline, natural gas, wood, oil) solvents, petroleum processing and storage and pesticides.	the most susceptible sub-groups for O_3 effects. Short-term exposure (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated O_3 levels are associated with increased school absences. In recent years, a correlation between elevated ambient O_3 levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple outdoor sports and live-in communities with high O_3 levels. O_3 exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes O_3 may be more toxic than exposure to O_3 alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
Particulate Matter (PM)	PM_{10}: A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. PM pollution is a major cause of reduce visibility (haze) which is caused by the scattering of light and consequently the significant reduction air clarity. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. Additionally, it should be noted that PM_{10} is considered a criteria air pollutant. $PM_{2.5}$: A similar air pollutant to PM_{10} consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include SO_4 formed from SO_2 release from power plants and industrial facilities and nitrates that are formed from NO_X release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions. $PM_{2.5}$ is a criteria air pollutant.	Sources of PM_{10} include road dust, windblown dust and construction. Also formed from other pollutants (acid rain, NO_X, SO_X, organics). Incomplete combustion of any fuel. $PM_{2.5}$ comes from fuel combustion in motor vehicles, equipment and industrial sources, residential and agricultural burning. Also formed from reaction of other pollutants (acid rain, NO_X, SO_X, organics).	A consistent correlation between elevated ambient fine PM (PM_{10} and $PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in lifespan, and an increased mortality from lung cancer. Daily fluctuations in $PM_{2.5}$ concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long term exposure to PM. The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM_{10} and $PM_{2.5}$.
VOC	VOCs are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms)	Organic chemicals are widely used as ingredients in household	Breathing VOCs can irritate the eyes, nose and throat, can cause difficulty breathing and nausea, and can damage

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
	that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form O_3 to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include CO, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant. The terms VOC and ROG (see below) interchangeably.	products. Paints, varnishes and wax all contain organic solvents, as do many cleaning, disinfecting, cosmetic, degreasing and hobby products. Fuels are made up of organic chemicals. All of these products can release organic compounds while you are using them, and, to some degree, when they are stored.	the central nervous system as well as other organs. Some VOCs can cause cancer. Not all VOCs have all these health effects, though many have several.
ROG	Similar to VOC, ROGs are also precursors in forming O_3 and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and NO_X react in the presence of sunlight. ROGs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant. The terms ROG and VOC (see previous) interchangeably.	Sources similar to VOCs.	Health effects similar to VOCs.
Lead (Pb)	Pb is a heavy metal that is highly persistent in the environment and is considered a criteria pollutant. In the past, the primary source of Pb in the air was	Metal smelters, resource recovery, leaded gasoline,	Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
	emissions from vehicles burning leaded gasoline. The major sources of Pb emissions are ore and metals processing, particularly Pb smelters, and piston-engine aircraft operating on leaded aviation gasoline. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturers. It should be noted that the Project does not include operational activities such as metal processing or Pb acid battery manufacturing. As such, the Project is not anticipated to generate a quantifiable amount of Pb emissions.	deterioration of Pb paint.	affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure. Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.
Odor	Odor means the perception experienced by a person when one or more chemical substances in the air come into contact with the human olfactory nerves (9).	Odors can come from many sources including animals, human activities, industry, natures, and vehicles.	Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, studies have shown that the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
			odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

2.5 EXISTING AIR QUALITY

Existing air quality is measured at established SCAQMD air quality monitoring stations. Monitored air quality is evaluated in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect are shown in Table 2-2 (10).

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards. The most recent state and federal standards and are presented in Table 2-2. Attainment status for a pollutant means that the SCAQMD meets the standards set by the U.S. Environmental Protection Agency (EPA) or the California EPA (CalEPA). Conversely, nonattainment means that an area has monitored air quality that does not meet the NAAQS or CAAQS standards. In order to improve air quality and meet the NAAQS in nonattainment areas, The federal Clean Air Act (CAA) requires the preparation of a State Implementation Plan (SIP) by CARB. The SIP outlines the measures that the state will take to improve air quality. Once nonattainment areas meet the standards and additional redesignation requirements, the EPA will designate the area as a maintenance area (11).

TABLE 2-2: AMBIENT AIR QUALITY STANDARDS (1 OF 2)

Ambient Air Quality Standards						
Pollutant	**Averaging Time**	**California Standards [1]**		**National Standards [2]**		
		Concentration [3]	**Method [4]**	**Primary [3,5]**	**Secondary [3,6]**	**Method [7]**
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	**No National Standards**		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			
See footnotes on next page …						

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

TABLE 2-2: AMBIENT AIR QUALITY STANDARDS (2 OF 2)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

2.6 REGIONAL AIR QUALITY

Air pollution contributes to a wide variety of adverse health effects. The EPA has established NAAQS for six of the most common air pollutants: CO, Pb, O_3, PM_{10}, $PM_{2.5}$, NO_2, and SO_2 which are known as criteria pollutants. The SCAQMD monitors levels of various criteria pollutants at 37 permanent monitoring stations and 5 single-pollutant source Pb air monitoring sites throughout the air district (12). On February 21, 2019, CARB posted the 2018 amendments to the state and national area designations. See Table 2-3 for attainment designations for the SCAB (13).

TABLE 2-3: ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SCAB

Criteria Pollutant	State Designation	Federal Designation
O_3 – 1-hour standard	Nonattainment	--
O_3 – 8-hour standard	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Unclassifiable/Attainment
NO_2	Attainment	Unclassifiable/Attainment
SO_2	Unclassifiable/Attainment	Unclassifiable/Attainment
Pb[1]	Attainment	Unclassifiable/Attainment

"-" = The national 1-hour O_3 standard was revoked effective June 15, 2005.

2.7 LOCAL AIR QUALITY

The Project site is located within the Source Receptor Area (SRA) 11. Within SRA 11, the SCAQMD South San Gabriel Valley monitoring station, located 3.32 miles southeast of the Project site, is the nearest long-term air quality monitoring station for CO, NO_2, O_3 and $PM_{2.5}$. The South San Gabriel Valley monitoring station does not include data for PM_{10}. As such, the next nearest monitoring station will be used. The East San Gabriel Valley 2 monitoring station, located in SRA 9, is the next nearest monitoring station for PM_{10} and is located approximately 13.69 miles northeast of the Project site. It should be noted that the East San Gabriel Valley 2 monitoring station was utilized in lieu of the South San Gabriel Valley monitoring station only in instances where data was not available.

The most recent three (3) years of data available is shown on Table 2-4 and identifies the number of days ambient air quality standards were exceeded for the study area, which is considered to be representative of the local air quality at the Project site. Data for O_3, CO, NO_2, PM_{10}, and $PM_{2.5}$ for 2018 through 2020 was obtained from the SCAQMD Air Quality Data Tables (14). Additionally, data for SO_2 has been omitted as attainment is regularly met in the SCAB and few monitoring stations measure SO_2 concentrations.

[1] The Federal nonattainment designation for lead is only applicable towards the Los Angeles County portion of the SCAB.

TABLE 2-4: PROJECT AREA AIR QUALITY MONITORING SUMMARY 2018-2020

Pollutant	Standard	Year		
		2018	2019	2020
O_3				
Maximum Federal 1-Hour Concentration (ppm)		0.115	0.108	0.169
Maximum Federal 8-Hour Concentration (ppm)		0.082	0.091	0.114
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	3	5	20
Number of Days Exceeding State/Federal 8-Hour Standard	> 0.070 ppm	5	7	23
CO				
Maximum Federal 1-Hour Concentration	> 35 ppm	2.0	1.9	3.1
Maximum Federal 8-Hour Concentration	> 20 ppm	1.8	1.5	1.7
NO_2				
Maximum Federal 1-Hour Concentration	> 0.100 ppm	76.8	61.8	69.2
Annual Federal Standard Design Value		18.3	17.6	17.8
PM_{10}				
Maximum Federal 24-Hour Concentration (µg/m^3)	> 150 µg/m^3	101	97	105
Annual Federal Arithmetic Mean (µg/m^3)		27.1	20.8	25.2
Number of Days Exceeding Federal 24-Hour Standard	> 150 µg/m^3	0	0	0
Number of Days Exceeding State 24-Hour Standard	> 50 µg/m^3	20	3	9
$PM_{2.5}$				
Maximum Federal 24-Hour Concentration (µg/m^3)	> 35 µg/m^3	35.40	29.60	35.40
Annual Federal Arithmetic Mean (µg/m^3)	> 12 µg/m^3	12.31	10.34	13.22
Number of Days Exceeding Federal 24-Hour Standard	> 35 µg/m^3	0	0	0

ppm= Parts Per Million
Source: SCAQMD Historical Air Quality Data by Year, Air Quality Data Tables

2.8 REGULATORY BACKGROUND

2.8.1 FEDERAL REGULATIONS

The EPA is responsible for setting and enforcing the NAAQS for O_3, CO, NO_X, SO_2, PM_{10}, and Pb (15). The EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The federal CAA was first enacted in 1955 and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The federal CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance (16). The federal CAA also mandates that states submit and implement SIPs for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the Project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions) (17) (18). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O_3, NO_2, SO_2, PM_{10}, CO, $PM_{2.5}$, and Pb. The NAAQS were amended in July 1997 to include an additional standard for O_3 and to adopt a NAAQS for $PM_{2.5}$. Table 2-3 (previously presented) provides the NAAQS within the SCAB.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and NO_X. NO_X is a collective term that includes all forms of NO_X which are emitted as byproducts of the combustion process.

2.8.2 CALIFORNIA REGULATIONS

CALIFORNIA AIR RESOURCES BOARD

The CARB, which became part of the CalEPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. AB 2595 mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. The CARB established the CAAQS for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for SO_4, visibility, hydrogen sulfide (H_2S), and vinyl chloride (C_2H_3Cl). However, at this time, H_2S and C_2H_3Cl are not measured at any monitoring stations in the SCAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS (19) (15).

Local air quality management districts, such as the SCAQMD, regulate air emissions from stationary sources such as commercial and industrial facilities. All air pollution control districts have been formally designated as attainment or non-attainment for each CAAQS.

Serious non-attainment areas are required to prepare Air Quality Plans (AQP) that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g., motor vehicle use generated by residential and commercial development);
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;

- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a 5% or more annual reduction in emissions or 15% or more in a period of three years for ROGs, NO_X, CO and PM_{10}. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than 5% per year under certain circumstances.

TITLE 24 ENERGY EFFICIENCY STANDARDS AND CALIFORNIA GREEN BUILDING STANDARDS

California Code of Regulations (CCR) Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. CCR, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on January 1, 2011, and is administered by the California Building Standards Commission. CALGreen is updated on a regular basis, with the most recent approved update consisting of the 2019 California Green Building Code Standards which became effective January 1, 2020. Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. CALGreen recognizes that many jurisdictions have developed existing construction and demolition ordinances and defers to them as the ruling guidance provided, they establish a minimum 65% diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. The State Building Code provides the minimum standard that buildings must meet in order to be certified for occupancy, which is generally enforced by the local building official.

Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas (GHG) emissions. The 2019 version of Title 24 was adopted by the California Energy Commission (CEC) and became effective on January 1, 2020.

The 2019 Title 24 standards will result in less energy use, thereby reducing air pollutant emissions associated with energy consumption in the SCAB and across the State of California. For example, the 2019 Title 24 standards will require solar photovoltaic systems for new homes, establish requirements for newly constructed healthcare facilities, encourage demand responsive technologies for residential buildings, and update indoor and outdoor lighting requirements for nonresidential buildings. The CEC anticipates that nonresidential buildings and high-rise residential buildings (four-stories and higher), such as the Project, will use approximately 30% less energy due to lighting upgrade requirements (20).

The 2019 CALGreen standards are applicable to the Project and require, among other items (21):

- Short-term bicycle parking. If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).

- Long-term bicycle parking. For new buildings with tenant spaces that have ten or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- Designated parking. In new projects or additions to alterations that add ten or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- Construction waste management. Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1. 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Excavated soil and land clearing debris. 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
    - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)
    - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
    - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2).
    - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of note more than 0.5 gallons per minute at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).
- Outdoor portable water use in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent (5.304.1).
- Water meters. Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 sf or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gal/day (5.303.1.1 and 5.303.1.2).

- Outdoor water use in rehabilitated landscape projects equal or greater than 2,500 sf. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).
- Commissioning. For new buildings 10,000 sf and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2).

2.8.3 AIR QUALITY MANAGEMENT PLANNING

Currently, the NAAQS and CAAQS are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of AQMPs to meet the NAAQS and CAAQs (22). AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy. A detailed discussion on the AQMP and Project consistency with the AQMP is provided in Section 3.10.

3 PROJECT AIR QUALITY IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it will violate an air quality standard, contribute to an existing or projected air quality violation, or determine if it will result in a cumulatively considerable net increase of a criteria pollutant for which the SCAB is non-attainment under an applicable NAAQS and CAAQS. Additionally, the Project has been evaluated to determine consistency with the applicable AQMP, exposure of sensitive receptors to substantial pollutant concentrations, and the impacts of odors. The significance of these potential impacts is described in the following section.

3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related air quality impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 CCR §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to air quality if it would (1):

- Conflict with or obstruct implementation of the applicable air quality plan.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard.
- Expose sensitive receptors to substantial pollutant concentrations.
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. affecting a substantial number of people.

The SCAQMD has also developed regional significance thresholds for other regulated pollutants, as summarized at Table 3-1 (23). The SCAQMD's CEQA Air Quality Significance Thresholds (April 2019) indicate that any projects in the SCAB with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

TABLE 3-1: MAXIMUM DAILY REGIONAL EMISSIONS THRESHOLDS

Pollutant	Construction	Operations
NO_X	100 lbs./day	55 lbs./day
VOC	75 lbs./day	55 lbs./day
PM_{10}	150 lbs./day	150 lbs./day
$PM_{2.5}$	55 lbs./day	55 lbs./day
SO_X	150 lbs./day	150 lbs./day
CO	550 lbs./day	550 lbs./day
Pb	3 lbs./day	3 lbs./day

lbs./day = Pounds Per Day
Source: Regional Thresholds presented in this table are based on the SCAQMD Air Quality Significance Thresholds, April 2019

3.3 CALIFORNIA EMISSIONS ESTIMATOR MODEL™ EMPLOYED TO ANALYZE AIR QUALITY

Land uses such as the Project affect air quality through construction-source and operational-source emissions.

In June, 2021 the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) in conjunction with California air districts, released the latest version of the California Emissions Estimator Model (CalEEMod) Version 2020.4.0. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation (24). Accordingly, the latest version of CalEEMod has been used for this Project to determine construction and operational air quality emissions. CalEEMod output for construction and operational activity are provided in Appendix 3.1.

3.3.1 EMISSION FACTORS MODEL

EMISSION FACTORS MODEL

On August 19, 2019, the EPA approved the 2017 version of the EMissions FACtor model (EMFAC) web database for use in SIP and transportation conformity analyses. EMFAC2017 is a mathematical model that was developed to calculate emission rates, fuel consumption, VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources (25). This AQIA utilizes EMFAC2017 emission factors in order to derive vehicle emissions associated with Project operational activities, which vary by season. Additionally, the EMFAC emission factors used in this analysis include adjustment factors for the SAFE Rule (26) (27).

3.4 CONSTRUCTION EMISSIONS

The proposed 42 townhome residential units is anticipated to be constructed in a single phase. The Project is anticipated to have an opening year of 2023.

Construction activities associated with the Project will result in emissions of VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$. Construction related emissions are expected from the following construction activities:

- Demolition
- Site Preparation
- Grading
- Building Construction
- Architectural Coating
- Paving

DEMOLITION/GRADING/EXCAVATION ACTIVITIES

Dust is typically a major concern during demolition, grading, and excavation activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). CalEEMod was utilized to calculate fugitive dust emissions resulting from these phases. This analysis assumes that approximately 120 tons of demolition debris would be hauled away while earthwork activities are expected to balance on-site and no import or export of soil will be required.

CONSTRUCTION WORKER VEHICLE TRIPS

Construction emissions for construction worker vehicles traveling to and from the Project site, as well as vendor trips (construction materials delivered to the Project site) were estimated based on information included in CalEEMod.

3.4.1 CONSTRUCTION DURATION

Construction is expected to commence in June 2022 and will continue through May 2023. The construction schedule utilized in the analysis, shown in Table 3-2, represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent.[2] The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA Guidelines. The duration of construction activities was based on Project specific data provided by the Project applicant, where available.

TABLE 3-2: CONSTRUCTION DURATION

Phase Name	Start Date	End Date	Days
Demolition	6/1/2022	6/7/2022	5
Site Preparation	6/8/2022	6/9/2022	2
Grading	6/10/2022	6/23/2022	10
Building Construction	6/24/2022	4/27/2023	220
Paving	4/14/2023	4/27/2023	10
Architectural Coating	4/14/2023	4/27/2023	10

Source: CalEEMod, Appendix 3.1.

3.4.2 CONSTRUCTION EQUIPMENT

Site specific construction fleet may vary due to specific project needs at the time of construction. The associated construction equipment was generally based on CalEEMod standard inputs. A modification to the default equipment list was made to allow the model to mor accurately

[2] As shown in the CalEEMod User's Guide Version 2020.4.0, Section 4.3 "Offroad Equipment" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

calculate fugitive dust from ground disturbance for purposes of the air quality localized significance threshold. As CalEEmod does not calculate ground disturbance for the backhoes/loaders/tractors equipment, these were replaced with crawler tractors with the same horse power and load factors of the backhoes/loaders/tractors equipment. This is discussed in greater detail in Section 3.6. A detailed summary of construction equipment assumptions by phase is provided at Table 3-3.

TABLE 3-3: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Phase Name	Equipment	Amount	Hours Per Day
Demolition	Concrete/Industrial Saws	1	8
	Rubber Tired Dozers	1	8
	Tractors/Loaders/Backhoes	3	8
Site Preparation	Crawler Tractors	1	8
	Graders	1	8
	Rubber Tired Dozers	1	8
Grading	Crawler Tractors	2	8
	Graders	1	8
	Rubber Tired Dozers	1	8
Building Construction	Cranes	1	8
	Forklifts	1	8
	Generator Sets	1	8
	Tractors/Loaders/Backhoes	1	8
	Welders	3	8
Paving	Cement and Mortar Mixers	1	8
	Pavers	1	8
	Paving Equipment	1	8
	Rollers	1	8
	Tractors/Loaders/Backhoes	1	8
Architectural Coating	Air Compressors	1	8

Source: CalEEMod, Appendix 3.1

3.4.1 CONSTRUCTION EMISSIONS SUMMARY

CalEEMod calculates maximum daily emissions for summer and winter periods. The estimated maximum daily construction emissions with compliance with Rules 403 and 1113 are summarized in Table 3-4. Detailed construction model outputs are presented in Appendix 3.1. This AQIA utilizes the "mitigated" emissions estimate in Appendix 3.1 to include the emissions reductions from compliance with SCAQMD rules. With the inclusion of these measures regional emissions would be less-than-significant, as shown at Table 3-4.

TABLE 3-4: OVERALL CONSTRUCTION EMISSIONS SUMMARY

Year	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
2022	2.05	20.53	16.59	0.03	4.39	2.42
2023	31.03	22.79	29.39	0.05	2.06	1.26
Maximum Daily Summer Emissions	**31.03**	**22.79**	**29.39**	**0.05**	**4.39**	**2.42**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**
Winter						
2022	2.06	20.54	16.41	0.03	4.39	2.42
2023	31.05	22.83	29.15	0.05	2.06	1.26
Maximum Daily Winter Emissions	**31.05**	**22.83**	**29.15**	**0.05**	**4.39**	**2.42**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod, Appendix 3.1.

3.5 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$. Operational emissions would be expected from the following primary sources:

- Area Source Emissions
- Energy Source Emissions

3.5.1 AREA SOURCE EMISSIONS

ARCHITECTURAL COATINGS

Over a period of time the buildings that are part of this Project will be sources of emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings as part of Project maintenance. The emissions associated with architectural coatings were calculated using CalEEMod which include reductions from compliance with SCAQMD Rule 1113.

CONSUMER PRODUCTS

Consumer products include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants. The emissions associated with use of consumer products were calculated based on defaults provided within CalEEMod.

HEARTHS

Hearths (wood stoves and fireplaces) would generate emissions from wood fuel combustion or natural gas consumption. GHG emissions from the combustion of wood or biomass are calculated and are considered biogenic emissions of CO_2. However, within the SCAQMD, Rule 445 no wood burning devices can be installed in new construction unless natural gas service is unavailable, or the units are at an elevation of 3,000 feet or greater above mean sea level. Therefore, this analysis assumes all fireplaces would be natural gas fueled. Based on CalEEMod defaults the modeling assumes 10% of the units would not have a hearth.

LANDSCAPE MAINTENANCE EQUIPMENT

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in CalEEMod.

3.5.2 ENERGY SOURCE EMISSIONS

COMBUSTION EMISSIONS ASSOCIATED WITH NATURAL GAS AND ELECTRICITY

Electricity and natural gas are used by almost every project. Criteria pollutant emissions are emitted through the generation of electricity and consumption of natural gas. However, because electrical generating facilities for the Project area are located either outside the region (state) or offset through the Regional Clean Air Incentives Market (RECLAIM), which provides pollution credits for generation within the SCAB, criteria pollutant emissions from offsite generation of electricity is generally excluded from the evaluation of significance and only natural gas use is considered. The emissions associated with natural gas use were calculated using CalEEMod.

TITLE 24 ENERGY EFFICIENCY STANDARDS

California's Energy Efficiency Standards for Residential and Nonresidential Buildings was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity. The 2019 version of Title 24 was adopted by the CEC and became effective on January 1, 2020 and is included in CalEEMod.

3.5.3 MOBILE SOURCE EMISSIONS

Project mobile source air quality impacts are dependent on both overall daily vehicle trip generation and the effect of the Project on peak hour traffic volumes and traffic operations in the vicinity of the Project. The Project-related operational air quality impacts are typically derived from the vehicle trips generated. However, based on the Project trip generation analysis, after considering the trips generated by the previous restaurant the Project produces zero net new trips (28). Therefore, the Project would not result in a net increase in mobile source emissions.

3.5.5 OPERATIONAL EMISSIONS SUMMARY

Operational activities for summer and winter scenarios are presented in Table 3-5. Detailed operational model outputs are presented in Appendix 3.1. Project operational-source emissions will not exceed the thresholds of significance emissions. Therefore, the Project would result in a less than significant impact to regional air quality. .

TABLE 3-5: SUMMARY OPERATIONAL EMISSIONS

Source	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
Area Source	1.11	0.67	3.75	0.00	0.07	0.07
Energy Source	0.02	0.14	0.06	0.00	0.01	0.01
Mobile Source Passenger Cars	0.00	0.00	0.00	0.00	0.00	0.00
Maximum Daily Summer Emissions	**1.12**	**0.81**	**3.80**	**0.01**	**0.08**	**0.08**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**
Winter						
Area Source	1.11	0.67	3.75	0.00	0.07	0.07
Energy Source	0.02	0.14	0.06	0.00	0.01	0.01
Mobile Source Passenger Cars	0.00	0.00	0.00	0.00	0.00	0.00
Maximum Daily Winter Emissions	**1.12**	**0.81**	**3.80**	**0.01**	**0.08**	**0.08**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod, Appendix 3.1

3.6 LOCALIZED EMISSIONS

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (LST Methodology) (29). The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the NAAQS and CAAQS. Collectively, these are referred to as Localized Significance Thresholds (LSTs).

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

LSTs were developed in response to environmental justice and health concerns raised by the public regarding exposure of individuals to criteria pollutants in local communities. To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential

localized adverse health effects. The analysis makes use of methodology included in the *LST Methodology* (30).

APPLICABILITY OF LSTS FOR THE PROJECT

For this Project, the appropriate SRA for the LST analysis is the SCAQMD South San Gabriel Valley (SRA 11). LSTs apply to CO, NO_2, PM_{10}, and $PM_{2.5}$. The SCAQMD produced look-up tables for projects less than or equal to 5 acres in size.

In order to determine the appropriate methodology for determining localized impacts that could occur as a result of Project-related construction, the following process is undertaken:

- Identify the maximum daily on-site emissions that will occur during construction activity:
    - The maximum daily on-site emissions could be based on information provided by the Project Applicant; or
    - The SCAQMD's *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds* and CalEEMod User's Guide *Appendix A: Calculation Details for CalEEMod* can be used to determine the maximum site acreage that is actively disturbed based on the construction equipment fleet and equipment hours as estimated in CalEEMod (31) (32).
- If the total acreage disturbed is less than or equal to 5 acres per day, then the SCAQMD's screening look-up tables are utilized to determine if a Project has the potential to result in a significant impact. The look-up tables establish a maximum daily emissions threshold in lbs/day that can be compared to CalEEMod outputs.
- If the total acreage disturbed is greater than 5 acres per day, then LST impacts may still be conservatively evaluated using the LST look-up tables for a 5-acre disturbance area. Use of the 5-acre disturbance area thresholds can be used to show that even if the daily emissions from all construction activity were emitted within a 5-acre area, and therefore concentrated over a smaller area which would result in greater site adjacent concentrations, the impacts would still be less than significant if the applicable 5-acre thresholds are utilized.
- The *LST Methodology* presents mass emission rates for each SRA, project sizes of 1, 2, and 5 acres, and nearest receptor distances of 25, 50, 100, 200, and 500 meters. For project sizes between the values given, or with receptors at distances between the given receptors, the methodology uses linear interpolation to determine the thresholds.

EMISSIONS CONSIDERED

SCAQMD's LST Methodology clearly states that "off-site mobile emissions from the Project should not be included in the emissions compared to LSTs (29)." Therefore, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered.

MAXIMUM DAILY DISTURBED-ACREAGE

The "acres disturbed" for analytical purposes are based on specific equipment type for each subcategory of construction activity and the estimated maximum area a given piece of equipment can pass over in an 8-hour workday (as shown on Table 3-7). The equipment-specific grading rates are summarized in the SCAQMD's *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds* and CalEEMod User's Guide *Appendix A: Calculation Details for CalEEMod*

(31) (32). It should be noted that the disturbed area per day is representative of a piece of equipment making multiple passes over the same land area. In other words, one Rubber Tired Dozer can make multiple passes over the same land area totaling 0.5 acres in a given 8-hour day. Appendix A of the CalEEMod User Manual only identifies equipment-specific grading rates for Crawler Tractors, Graders, Rubber Tired Dozers, and Scrapers; therefore, Excavators, Tractors/Loaders/Backhoes equipment that was included in site preparation or grading was replaced with crawler tractors that were adjusted to reflect the horsepower and operating profile of the Excavators, Tractors/Loaders/Backhoes equipment class.

As shown on Table 3-6, the Project's construction activities could disturb a maximum of approximately 2 acres per day for grading activities. However, based on the SCAQMD LST Methodology, construction impacts that are assessed against a smaller acreage threshold would represent a more conservative assessment, thus this analysis bases the LST on a 1-acre site.

TABLE 3-6 : MAXIMUM DAILY DISTURBED-ACREAGE

Construction Phase	Equipment Type	Equipment Quantity	Acres graded per 8-hour day	Operating Hours per Day	Acres graded per day
Demolition	Concrete/Industrial Saws	1	0.0	8	0
	Rubber Tired Dozers	1	0.5	8	0.5
	Crawler Tractors	3	0.5	8	1.5
Total acres disturbed per day during Demolition					2
Site Preparation	Crawler Tractors	1	0.5	8	0.5
	Graders	1	0.5	8	0.5
	Rubber Tired Dozers	1	0.5	8	0.5
Total acres disturbed per day during Site Preparation					1.5
Grading	Crawler Tractors	2	0.5	8	1
	Graders	1	0.5	8	0.5
	Rubber Tired Dozers	1	0.5	8	0.5
Total acres disturbed per day during Grading					2
Maximum acres disturbed per day					**2**

Source: CalEEMod, User Manual Appendix A.

SENSITIVE RECEPTORS

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, individuals with pre-existing respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Structures that house these persons or places where they gather to exercise are defined as "sensitive receptors". These structures typically include residences, hotels, hospitals, etc. as they are also known to be locations where an individual can remain for 24 hours. Consistent with the LST Methodology, the nearest land use where an individual could remain for 24 hours to the Project site (in this case the nearest residential land use) has been used to determine construction and operational air quality impacts for emissions of PM_{10} and

$PM_{2.5}$, since PM_{10} and $PM_{2.5}$ thresholds are based on a 24-hour averaging time. The nearest receptor used for evaluation of localized impacts of PM_{10} and $PM_{2.5}$ is represented by location R-1, which represents an existing Whittier Hospital Medical Center at 9080 Colima Road, approximately 71 feet north of the Project site. As such, the 71-foot distance will be used for evaluation of localized PM_{10} and $PM_{2.5}$ emission impacts.

Commercial and industrial facilities are not included in the definition of sensitive receptor because employees and patrons do not typically remain onsite for a full 24 hours but are typically onsite for eight hours or less. The LST Methodology explicitly states that "*LSTs based on shorter averaging periods, such as the NO_2 and CO LSTs, could also be applied to receptors such as industrial or commercial facilities since it is reasonable to assume that a worker at these sites could be present for periods of one to eight hours* (29)." For purposes of analysis, if an industrial/commercial use is located at a closer distance to the Project site than the nearest residential use, the nearest industrial/commercial use will be utilized to determine construction and operational LST air impacts for emissions of NO_2 and CO an individual could be present at these sites for periods of one to eight hours. The nearest non-residential receptor is the ATI College approximately 16 feet south of the Project site. As such, receptor R-5, at 16-feet, is used for the evaluation of localized impacts of NO_X and CO.

Project-related Sensitive Receptors

Receptors in the Project study area are described below and are shown on Exhibit 3-A.

R1: Location R1 represents Whittier Hospital Medical Center at 9080 Colima Road, approximately 71 feet north of the Project site. Receiver R1 is placed at nearest location someone may stand for up to one hour.

R2: Location R2 represents Shepherd of the Hills Lutheran Church at 15215 Janine Drive, approximately 164 feet north of the Project site. Receiver R2 is placed at the private outdoor use area.

R3: Location R3 represents an existing residence at 9804 La Serna Drive, approximately 155 feet east of the Project site. Receiver R3 is placed at the private outdoor living area (backyard).

R4: Location R4 represents the existing residence at 9888 Cole Road, approximately 613 feet southwest of the Project site. Receiver R4 is placed at the private outdoor living area (backyard).

R5: Location R5 represents the ATI College at 15141 Whittier Blvd, approximately 16 feet south of the Project site. Receiver R5 is placed at the College entrance.

EXHIBIT 3-A: SENSITIVE RECEPTOR LOCATIONS

CONSTRUCTION-SOURCE EMISSIONS LST ANALYSIS

Localized Thresholds for Construction Activity

SCAQMD's screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres. To be conservative and consistent with SCAQMD guidance, the thresholds presented in Table 3-7 were calculated were calculated based on the Project's disturbance of 1-acres.

TABLE 3-7: MAXIMUM DAILY LOCALIZED EMISSIONS THRESHOLDS

Pollutant	Construction Localized Thresholds[1]
NO_X	83 Lbs./day
CO	673 Lbs./day
PM_{10}	5 Lbs./day
$PM_{2.5}$	4 Lbs./day

[1] Based on 1 acres of disturbance at 25-meter distance for SRA 11.
Source: Localized Thresholds presented in this table are based on the SCAQMD Final LST Methodology, July 2008

Localized Construction-Source Emissions

Table 3-8 identifies the localized impacts at the nearest receptor location in the vicinity of the Project. The emissions report in Table 3-8 represents the maximum daily on-site emissions from any phase of construction (i.e. demolition, site preparation, grading and the combined phases of building construction, paving and architectural coatings). Emissions used in the LST A shown in Table 3-8 local construction emissions would be less than the applicable SCAQMD LSTs.

TABLE 3-8: LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION

On-Site Site Emissions	Emissions (lbs/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	22.0	26.2	3.9	2.3
SCAQMD Localized Threshold	83	673	5	4
Threshold Exceeded?	**No**	**No**	**No**	**No**

Source: CalEEMod, Appendix 3.1.

As stated in Section ES.3, Rule 403 requires the Project to implement feasible dust control measures, including at a minimum applying water to active construction areas 3 times per day, installing track-out devices at access points, and halting operations during high wind events. Based on Project modeling, LST impacts would be less than significant.

OPERATIONAL-SOURCE EMISSIONS LST ANALYSIS

Localized Thresholds for Construction Activity

The proposed project is located on approximately 1.84 acres. As previously stated, the total development is proposed to consist of 42 townhome family residential dwelling units. According

to SCAQMD LST methodology, LSTs would apply to the operational phase of a proposed project, if the project includes stationary sources, or attracts mobile sources that may spend long periods queuing and idling at the site (e.g., transfer facilities and warehouse buildings). The proposed project does not include such uses, and thus, due to the lack of significant stationary source emissions, no LST analysis is needed for operations.

3.7 CO "HOT SPOT" ANALYSIS

As discussed below, the Project would not result in potentially adverse CO concentrations or "hot spots." Further, detailed modeling of Project-specific CO "hot spots" is not needed to reach this conclusion. An adverse CO concentration, known as a "hot spot", would occur if an exceedance of the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur. At the time of the 1993 Handbook, the SCAB was designated nonattainment under the CAAQS and NAAQS for CO (33).

It has long been recognized that CO hotspots are caused by vehicular emissions, primarily when idling at congested intersections. In response, vehicle emissions standards have become increasingly stringent in the last twenty years. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentration in the SCAB is now designated as attainment-maintenance, as previously noted in Table 2-3.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO "hot spot" analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods. This "hot spot" analysis did not predict any violation of CO standards, as shown on Table 3-9.

TABLE 3-9: CO MODEL RESULTS

Intersection Location	CO Concentrations (ppm)		
	Morning 1-hour	Afternoon 1-hour	8-hour
Wilshire Boulevard/Veteran Avenue	4.6	3.5	4.2
Sunset Boulevard/Highland Avenue	4	4.5	3.9
La Cienega Boulevard/Century Boulevard	3.7	3.1	5.8
Long Beach Boulevard/Imperial Highway	3	3.1	9.3

Source: 2003 AQMP, Appendix V: Modeling and Attainment Demonstrations
Notes: Federal 1-hour standard is 35 ppm, and the deferral 8-hour standard is 9.0 ppm.

Based on the SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak CO concentrations in the SCAB were a result of unusual meteorological and topographical conditions and not a result of traffic volumes and congestion at a particular intersection. As evidence of this, a 9.3 ppm 8-hour CO concentration was measured at the Long Beach Boulevard and Imperial Highway intersection, which was the highest CO generating

intersection within the "hot spot" analysis. However, the SCAQMD determined that only 0.7 ppm was attributable to the traffic volumes and congestion at this intersection; the remaining 8.6 ppm were due to the ambient air measurements at the time the 2003 AQMP was prepared (34). In contrast, the ambient 8-hour CO concentration within the Project study area is estimated at 1.0 ppm—1.3 ppm (please refer to previous Table 2-3).

The traffic volumes used in the 2003 AQMP "hot spot" analysis are shown on Table 3-10. The busiest intersection evaluated for AM traffic volumes was at Wilshire Boulevard and Veteran Avenue, which had an AM traffic volume of approximately 8,062 vph (35). The 2003 AQMP calculated that the highest 1-hour concentration for the intersection of Wilshire Boulevard and Veteran Avenue was 4.6 ppm. This indicates that, should the hourly traffic volume increase four times to 32,250 vehicles per hour, CO concentrations (4.6 ppm x 4 = 18.4 ppm) would still not likely exceed the most stringent 1-hour CO standard (20.0 ppm).[3]

TABLE 3-10: TRAFFIC VOLUMES

Intersection Location	Total (AM/PM)				
Wilshire Boulevard/Veteran Avenue	4,954/2,069	1,830/3,317	721/1,400	560/933	8,062/7,719
Sunset Boulevard/Highland Avenue	1,417/1,764	1,342/1,540	2,304/1,832	1,551/2,238	6,614/5,374
La Cienega Boulevard/Century Boulevard	2,540/2,243	1,890/2,728	1,384/2,029	821/1,674	6,634/8,674
Long Beach Boulevard/Imperial Highway	1,217/2,020	1,760/1,400	479/944	756/1,150	4,212/5,514

Source: 2003 AQMP

Similar considerations are also employed by other Air Districts when evaluating potential CO concentration impacts. More specifically, the Bay Area Air Quality Management District (BAAQMD) concludes that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour (vph) —or 24,000 vph where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (36).

The proposed Project considered herein would generate zero net trips and thus would not produce the traffic required to generate a CO "hot spot" either in the context of the 2003 Los Angeles hot spot study or based on representative BAAQMD CO threshold considerations. Therefore, CO "hot spots" are not an environmental impact of concern for the proposed Project. Localized air quality impacts related to mobile-source emissions would therefore be less than significant.

3.8 AIR QUALITY MANAGEMENT PLANNING

The Project site is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 10,743 square-mile area consisting of the

[3] Based on the ratio of the CO standard (20.0 ppm) and the modeled value (4.6 ppm).

four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the SCAG, county transportation commissions, local governments, as well as state and federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet state and federal ambient air quality standards.

Currently, these state and federal air quality standards are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of AQMPs to meet the state and federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

In March 2017, the AQMD released the Final 2016 AQMP. The 2016 AQMP continues to evaluate current integrated strategies and control measures to meet the NAAQS, as well as explore new and innovative methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the federal, state, and local levels (37). Similar to the 2012 AQMP, the 2016 AQMP incorporates scientific and technological information and planning assumptions, including the 2016 Regional Transportation Plan (RTP)/ Sustainable Communities Strategy (SCS), a planning document that supports the integration of land use and transportation to help the region meet the federal CAA requirements (38). The Project's consistency with the AQMP will be determined using the 2016 AQMP as discussed below.

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's CEQA Air Quality Handbook (1993) (39). These indicators are discussed below:

Consistency Criterion No. 1: The proposed Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. NAAQS and CAAQS violations would occur if regional or localized significance thresholds were exceeded.

Construction Impacts – Consistency Criterion 1

Consistency Criterion No. 1 refers to violations of the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if LSTs or regional significance thresholds were exceeded. Based on the analysis herein, the Project's localized construction-source emissions would not exceed applicable regional significance thresholds or LST. As such, the Project is consistent with the AQMP with regard to regional construction-source air quality.

Operational Impacts – Consistency Criterion 1

As evaluated, the Project's localized operational-source emissions would not exceed applicable regional significance thresholds or LST . As such, the Project would not result in a less than significant impact with respect to this criterion.

On the basis of the preceding discussion, and the lack of thresholds exceedances the Project is determined to be consistent with the first criterion.

Consistency Criterion No. 2: The Project will not exceed the assumptions in the AQMP based on the years of Project build-out phase.

The 2016 AQMP demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law. Growth projections from local general plans adopted by cities in the SCAB are provided to the SCAG, which uses these to develop and the Regional Housing Needs Assessments (RHNA) for each jurisdiction along with regional population and VMT growth forecasts, which are then used to develop future air quality forecasts for the AQMP. Development consistent with these growth projections is considered to be consistent with the AQMP. Consistency can be evaluated using several methods, including, but not limited to, consistency with a local jurisdiction's land use designations and consistency with SCAG's jurisdictional growth projections, such as those in the RHNA.

Construction Impacts – Consistency Criterion 2

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. Irrespective of the site's land use designation, development of the site to its maximum potential would likely occur, with disturbance of the entire site occurring during construction activities.

Operational Impacts – Consistency Criterion 2

The City of Whittier Envision Whittier General Plan designates the Project site "Mixed Use 1 (30 du/ac)". The Mixed Use 1 designation reflects areas with housing densities of 30 dwelling units per acre. "Mixed-use development is characterized by pedestrian-oriented environments that integrate residential, commercial, cultural, and industrial uses. Mixed-use designation creates vibrant, compact, and walkable environments, with comfortable pedestrian connections between neighborhoods and destinations and interesting engaging, and place distinctive urban design features, including public art." (40). Land uses allowed with the Mixed-Use category includes residential, commercial goods and services, entertainment/recreation business that is compatible with residential land uses, public and private schools, religious intuitions, and public facilities/infrastructure. As previously stated, the total development is proposed to consist of 42 townhome units on 1.84 acres. Therefore, the proposed Project would not require a General Plan amendment to allow the proposed density.

The proposed Project would be consistent with City of Whittier General Plan land use and would not be expected to exceed regional growth projections.

On the basis of the preceding discussion, the Project is determined to be consistent with the second criterion.

AQMP Consistency Conclusion

The Project would not result in or cause NAAQS or CAAQS violations, as the Project's construction and operational emissions would not exceed the applicable threshold of significance. The Project

would also be consistent with the City of Whittier land use plans. As such, the Project is therefore considered to be consistent with the AQMP.

3.9 TOXIC AIR CONTAMINANTS

CONSTRUCTION ACTIVITY

During short-term construction activity, the Project will also result in some diesel particulate matter (DPM) which is a listed carcinogen and toxic air contaminant (TAC) in the State of California. The 2015 Office of Environmental Health Hazard Assessment (OEHHA) revised risk assessment guidelines suggest that construction projects as short as 2-6 months may warrant evaluation. Notwithstanding, based on Urban Crossroad's professional opinion and experience in preparing health risk assessments for development projects, given the distance of the Project from surrounding sensitive receptors, the dominant wind patterns blowing to the northwest away for receptors, and the annual $PM_{2.5}$ emissions from equipment during each year of construction, any DPM generated from construction activity would result in less than significant ground level concentrations of DPM and not result in a significant health risks and no further evaluation is required.

Furthermore, many air districts throughout the state, including the SCAQMD, are currently evaluating the applicability of age sensitivity factors and have not established CEQA guidance. More specifically in their response to comments received on SCAQMD New Source Review rule, the SCAQMD explicitly states that:

"The Proposed Amended Rules are separate from the CEQA significance thresholds. The SCAQMD staff is currently evaluating how to implement the Revised OEHHA Guidelines under CEQA. The SCAQMD staff will evaluate a variety of options on how to evaluate health risks under the Revised OEHHA Guidelines under CEQA. The SCAQMD staff will conduct public workshops to gather input before bringing recommendations to the Governing Board. In the interim, staff will continue to use the previous guidelines for CEQA determinations."

OPERATION ACTIVITIES

The project proposes commercial and residential land uses, which are not known emitters of substantial TAC concentrations. The project itself does not include any significant source of TACs that would potentially affect sensitive receptors. Land uses in the vicinity of the project include commercial and residential land uses. These land uses are not typically associated with the emission of TACs. Additionally, as stated in the *Air Quality and Land Use Handbook: A Community Health Perspective* the concern for residential land uses is generally limited to siting new development within 500 feet of a freeway or urban road with 100,000 daily vehicles or constructing a new freeway or urban road with 100,000 daily vehicles within 500 feet of existing residences. The Project site is adjacent to State Route 72 (Whittier Blvd) which has a volume of less than 50,000 daily vehicles thus exposure of persons on the Project site would be less than significant.

3.10 POTENTIAL IMPACTS TO SENSITIVE RECEPTORS

The potential impact of Project-generated air pollutant emissions at sensitive receptors has been considered under the LST analysis. Sensitive receptors can include uses such as long-term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, childcare centers, and athletic facilities can also be considered as sensitive receptors.

Results of the LST analysis indicate that with compliance with applicable Rules, the Project will not exceed the SCAQMD localized significance thresholds during construction. Therefore, sensitive receptors would not be exposed to substantial criteria pollutant concentrations during Project construction, and this is considered a less than significant impact.

Results of the LST analysis indicate that the Project will not exceed the SCAQMD localized significance thresholds during operational activity. Further Project traffic would not create or result in a CO "hotspot." Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations as the result of Project operations.

3.11 ODORS

The potential for the Project to generate objectionable odors has also been considered. Land uses generally associated with odor complaints include:

- Agricultural uses (livestock and farming)
- Wastewater treatment plants
- Food processing plants
- Chemical plants
- Composting operations
- Refineries
- Landfills
- Dairies
- Fiberglass molding facilities

The Project is a residential development and does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the proposed Project may result from construction equipment exhaust and the application of asphalt and architectural coatings during construction activities and the temporary storage of typical solid waste (refuse) associated with the proposed Project's (long-term operational) uses. Standard construction requirements would minimize odor impacts from construction. The construction odor emissions would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction and is thus considered less than significant. It is expected that Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the City of Whittier solid waste regulations. The proposed Project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public

nuisances. Therefore, odors associated with the proposed Project construction and operations would be less than significant and no mitigation is required (41).

3.12 CUMULATIVE IMPACTS

As previously shown in Table 2-3, the CAAQS designate the Project site as nonattainment for O_3 PM_{10}, and $PM_{2.5}$ while the NAAQS designates the Project site as nonattainment for O_3 and $PM_{2.5}$.

The AQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (42). In this report the AQMD clearly states (Page D-3):

> *…the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or Environmental Impact Report (EIR). The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.*
>
> *Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.*

Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

Construction Impacts

The Project-specific evaluation of emissions presented in the preceding analysis demonstrates that Project construction-source air pollutant emissions would not result in exceedances of applicable thresholds. Therefore, Project construction-source emissions would be considered less than significant on a project-specific and cumulative basis.

Operational Impacts

Project operational-source emissions would not exceed applicable SCAQMD thresholds of significance. Therefore, Project operational-source emissions would be considered less than significant on a project-specific and cumulative basis.

4 REFERENCES

1. **State of California.** *2019 CEQA California Environmental Quality Act.* 2019.
2. **South Coast Air Quality Management District.** RULE 403. FUGITIVE DUST. [Online] https://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf?sfvrsn=4.
3. —. *Rule 445 Wood-Burning Devices.*
4. —. RULE 1113. Architectural Coatings. [Online] http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/r1113.pdf.
5. **City of Whittier.** *Envision Whittier General Plan, Land Use and Community Character Element.* 2021.
6. **Urban Crossroads, Inc.** *La Serna Townhomes Vehicle Miles Traveled (VMT) Screening and Trip Generation Assessment.* 2022.
7. **South Coast Air Quality Management District.** Southern California Air Basins. [Online] https://www.arb.ca.gov/msprog/onroad/porttruck/maps/scabc7map.pdf.
8. —. *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning.* 2005.
9. **St. Croix Sensory, Inc.** *The "Gray Line" Between Odor Nuisance and Health Effects.* 2000.
10. **California Air Resources Board.** Ambient Air Quality Standards (AAQS). [Online] 2016. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.
11. **United State Environmental Protection Agency.** Frequent Questions about General Conformity . *EPA.* [Online] https://www.epa.gov/general-conformity/frequent-questions-about-general-conformity#8.
12. **South Coast Air Quality Management District.** Annual Air Quality Monitoring Network Plan. [Online] July 2018. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-monitoring-network-plan/annual-air-quality-monitoring-network-plan-v2.pdf?sfvrsn=2.
13. **Air Resources Board.** State and National Ambient Air Quality Standards. [Online] https://www.arb.ca.gov/regact/2019/statereadesignations/appc.pdf?_ga=2.169398369.1537615702.1554741141-1192937971.1505156621.
14. **District, South Coast Air Quality Management.** Air Quality Data Tables. [Online] https://www.aqmd.gov/home/air-quality/air-quality-data-studies/historical-data-by-year.
15. **Environmental Protection Agency.** National Ambient Air Quality Standards (NAAQS). [Online] 1990. https://www.epa.gov/environmental-topics/air-topics.
16. —. Air Pollution and the Clean Air Act. [Online] http://www.epa.gov/air/caa/.
17. **United States Environmental Protection Agency.** 1990 Clean Air Act Amendment Summary: Title I. [Online] https://www.epa.gov/clean-air-act-overview/1990-clean-air-act-amendment-summary-title-i.
18. —. 1990 Clean Air Act Amendment Summary: Title II. [Online] https://www.epa.gov/clean-air-act-overview/1990-clean-air-act-amendment-summary-title-ii.
19. **Air Resources Board.** California Ambient Air Quality Standards (CAAQS). [Online] 2009. [Cited: April 16, 2018.] http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm.
20. **The California Energy Commission.** 2019 Building Energy Efficiency Standards . *California Energy Commission.* [Online] 2018. https://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf.

21. **Department of General Services.** Building Standards Commission. *CALGreen.* [Online] https://codes.iccsafe.org/content/chapter/15778/.
22. **Southern California Association of Governments.** 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy. [Online] April 2016. http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf.
23. **South Coast Air Quality Management District (SCAQMD).** SCAQMD Air Quality Significance Thresholds. [Online] http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.
24. **California Air Pollution Control Officers Association (CAPCOA).** California Emissions Estimator Model (CalEEMod). [Online] June 2021. www.caleemod.com.
25. **California Department of Transportation.** EMFAC Software. [Online] http://www.dot.ca.gov/hq/env/air/pages/emfac.htm.
26. **California Air Resources Board.** *EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One.* 2019.
27. —. *EMFAC Off-Model Adjustment Factors for Carbon Dioxide (CO2) Emissions to Account for the SAFE Vehicles Rule Part One and the Final SAFE Rule.* 2020.
28. **Urban Crossroads, Inc.** *La Serna Townhomes Vehicle Miles Traveled (VMT) Screening and Trip Generation Assessment.* 2022.
29. **South Coast Air Quality Management District.** *Localized Significance Thresholds Methodology.* s.l. : South Coast Air Quality Managment District, 2003.
30. **Lake Environmental.** US EPA Models. *Lake Environmental.* [Online] http://www.weblakes.com/download/us_epa.html.
31. **South Coast Air Quality Management District.** Fact Sheet for Applying CalEEMod to Localized Significance Thresholds. [Online] http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf.
32. **California Air Pollution Control Officers Association (CAPCOA).** Appendix A: Calculation Details for CalEEMod. *CalEEMod.* [Online] October 2017. http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.
33. **South Coast Air Quality Management District.** 2003 Air Quality Management Plan. [Online] 2003. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2003-air-quality-management-plan/2003-aqmp-appendix-v.pdf.
34. —. 2003 Air Quality Management Plan. [Online] 2003. https://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/2003-aqmp.
35. —. 2003 Air Quality Management Plan. [Online] 2003. https://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/2003-aqmp.
36. **Bay Area Air Quality Management District.** [Online] http://www.baaqmd.gov/.
37. **South Coast Air Quality Management District.** Final 2016 Air Quality Management Plan (AQMP). [Online] March 2017. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=11.
38. **Southern California Association of Governments.** 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy. [Online] April 2016. http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf.

39. **South Coast Air Quality Management District.** *CEQA Air Quality Handbook (1993).* 1993.

40. **City of Whittier.** *Envision Whittier General Plan, Land Use and Community Character Element.* City of Whittier : s.n., 2021.

41. **South Coast Air Quality Management District.** RULE 402 NUISANCE. [Online] http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-402.pdf.

42. **Goss, Tracy A and Kroeger, Amy.** White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution. [Online] South Coast Air Quality Management District, 2003. http://www.aqmd.gov/rules/ciwg/final_white_paper.pdf.

43. **South Coast Association of Governments.** *Regional Housing Needs Assessment, 2021-2029.* 2021.

This page intentionally left blank.

5 CERTIFICATIONS

The contents of this air study report represent an accurate depiction of the environmental impacts associated with the proposed La Serna Townhomes Project. The information contained in this air quality impact assessment report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (619) 788-1971.

William Maddux
Senior Associate
URBAN CROSSROADS, INC.
(619) 788-1971
bmaddux@urbanxroads.com

EDUCATION

Bachelor of Science in Urban and Regional Planning
California Polytechnic State University, Pomona • June 2000

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
APA – American Planning Association
AWMA – Air and Waste Management Association

PROFESSIONAL CERTIFICATIONS

HARP Model Training – Bluescape Environmental • 2004
Air Dispersion Modeling – Lakes Environmental • 2008
2007
AB2588 Regulatory Standards – Trinity Consultants • November 2006
Air Dispersion Modeling – Lakes Environmental • June 2006

This page intentionally left blank.

APPENDIX 3.1:
CALEEMOD EMISSIONS MODEL OUTPUTS

This page intentionally left blank

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

14334 La Serna Townhomes

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.24	Acre	0.24	10,367.28	0
Parking Lot	108.00	Space	0.97	43,200.00	0
City Park	0.29	Acre	0.29	12,675.96	0
Condo/Townhouse High Rise	42.00	Dwelling Unit	0.43	42,000.00	120

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Bassed on Site Plan

Construction Phase - Client provided number of days for phases

Off-road Equipment - Tractor/Loader/Backhoe changed to crawler tractor to account for PM generation. Lopad Factors and Horsepower unchanged to represent same size equipmnet. Standard 8-hour work day assumed.

Off-road Equipment - Tractor/Loader/Backhoe changed to crawler tractor to account for PM generation. Lopad Factors and Horsepower unchanged to represent same size equipmnet. Standard 8-hour work day assumed.

Off-road Equipment - Tractor/Loader/Backhoe changed to crawler tractor to account for PM generation. Lopad Factors and Horsepower unchanged to represent same size equipmnet. Standard 8-hour work day assumed.

Off-road Equipment - Standard 8-hour work day assumed.

14334 La Serna Townhomes - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-road Equipment - Tractor/Loader/Backhoe changed to crawler tractor to account for PM generation. Lopad Factors and Horsepower unchanged to represent same size equipmnet. Standard 8-hour work day assumed.

Trips and VMT -

Demolition - 479 CY / 4 = 119.75 tons

Grading -

Vehicle Trips - the project would result in -364 net trips, thus all trips set to zero

Woodstoves - Per SCAQMD Rule 445 No Woord Burning Devices

Water And Wastewater - 2,736,469.08 - 20% = 2,189,175.26 per CalGreen indoor water use

Solid Waste - no actual park

Construction Off-road Equipment Mitigation - SCAQMD Rule 403

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	4.00	10.00
tblConstructionPhase	NumDays	200.00	220.00
tblFireplaces	NumberGas	35.70	38.00
tblFireplaces	NumberNoFireplace	4.20	4.00
tblFireplaces	NumberWood	2.10	0.00
tblLandUse	LandUseSquareFeet	10,454.40	10,367.28
tblLandUse	LandUseSquareFeet	12,632.40	12,675.96
tblLandUse	LotAcreage	0.66	0.43
tblOffRoadEquipment	HorsePower	212.00	97.00
tblOffRoadEquipment	HorsePower	212.00	97.00
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblSolidWaste	SolidWasteGenerationRate	0.02	0.00
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	4.91	0.00
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	4.09	0.00
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	5.44	0.00
tblWater	IndoorWaterUseRate	2,736,469.08	2,189,175.26
tblWoodstoves	NumberCatalytic	2.10	0.00
tblWoodstoves	NumberNoncatalytic	2.10	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

14334 La Serna Townhomes - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2022	2.0465	20.5343	16.5853	0.0335	8.2549	1.1017	9.3565	3.5689	1.0135	4.5824	0.0000	3,172.5340	3,172.5340	0.6726	0.0600	3,201.8405
2023	31.0268	22.7862	29.3911	0.0549	1.0238	1.0363	2.0601	0.2737	0.9857	1.2594	0.0000	5,225.9356	5,225.9356	0.9347	0.0624	5,267.8822
Maximum	**31.0268**	**22.7862**	**29.3911**	**0.0549**	**8.2549**	**1.1017**	**9.3565**	**3.5689**	**1.0135**	**4.5824**	**0.0000**	**5,225.9356**	**5,225.9356**	**0.9347**	**0.0624**	**5,267.8822**

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	lb/day										lb/day					
2022	2.0465	20.5343	16.5853	0.0335	3.2876	1.1017	4.3893	1.4100	1.0135	2.4235	0.0000	3,172.5340	3,172.5340	0.6726	0.0600	3,201.8405
2023	31.0268	22.7862	29.3911	0.0549	1.0238	1.0363	2.0601	0.2737	0.9857	1.2594	0.0000	5,225.9356	5,225.9356	0.9347	0.0624	5,267.8822
Maximum	**31.0268**	**22.7862**	**29.3911**	**0.0549**	**3.2876**	**1.1017**	**4.3893**	**1.4100**	**1.0135**	**2.4235**	**0.0000**	**5,225.9356**	**5,225.9356**	**0.9347**	**0.0624**	**5,267.8822**

14334 La Serna Townhomes - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	0.00	0.00	0.00	0.00	53.53	0.00	43.51	56.18	0.00	36.96	0.00	0.00	0.00	0.00	0.00	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	1.1065	0.6704	3.7451	4.2100e-003		0.0702	0.0702		0.0702	0.0702	0.0000	810.9688	810.9688	0.0215	0.0148	815.9024
Energy	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.8886	176.8886	3.3900e-003	3.2400e-003	177.9397
Mobile	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
Total	**1.1227**	**0.8090**	**3.8041**	**5.0900e-003**	**0.0000**	**0.0814**	**0.0814**	**0.0000**	**0.0814**	**0.0814**	**0.0000**	**987.8574**	**987.8574**	**0.0249**	**0.0180**	**993.8421**

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	1.1065	0.6704	3.7451	4.2100e-003		0.0702	0.0702		0.0702	0.0702	0.0000	810.9688	810.9688	0.0215	0.0148	815.9024
Energy	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.8886	176.8886	3.3900e-003	3.2400e-003	177.9397
Mobile	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
Total	**1.1227**	**0.8090**	**3.8041**	**5.0900e-003**	**0.0000**	**0.0814**	**0.0814**	**0.0000**	**0.0814**	**0.0814**	**0.0000**	**987.8574**	**987.8574**	**0.0249**	**0.0180**	**993.8421**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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	6/1/2022	6/7/2022	5	5	
2	Site Preparation	Site Preparation	6/8/2022	6/9/2022	5	2	
3	Grading	Grading	6/10/2022	6/23/2022	5	10	
4	Building Construction	Building Construction	6/24/2022	4/27/2023	5	220	
5	Paving	Paving	4/14/2023	4/27/2023	5	10	
6	Architectural Coating	Architectural Coating	4/14/2023	4/27/2023	5	10	

Acres of Grading (Site Preparation Phase): 3

Acres of Grading (Grading Phase): 20

Acres of Paving: 1.21

Residential Indoor: 85,050; Residential Outdoor: 28,350; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 3,214 (Architectural Coating – sqft)

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	Crawler Tractors	1	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Crawler Tractors	2	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	8.00	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	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	58.00	15.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	12.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

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	lb/day										lb/day					
Fugitive Dust					0.5136	0.0000	0.5136	0.0778	0.0000	0.0778			0.0000			0.0000
Off-Road	1.6889	16.6217	13.9605	0.0241		0.8379	0.8379		0.7829	0.7829		2,323.4168	2,323.4168	0.5921		2,338.2191
Total	**1.6889**	**16.6217**	**13.9605**	**0.0241**	**0.5136**	**0.8379**	**1.3515**	**0.0778**	**0.7829**	**0.8606**		**2,323.4168**	**2,323.4168**	**0.5921**		**2,338.2191**

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	lb/day										lb/day					
Hauling	0.0112	0.4031	0.0940	1.4900e-003	0.0420	2.9900e-003	0.0450	0.0115	2.8700e-003	0.0144		163.3861	163.3861	8.6800e-003	0.0259	171.3282
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
Worker	0.0450	0.0329	0.5124	1.3300e-003	0.1453	9.3000e-004	0.1462	0.0385	8.6000e-004	0.0394		135.2165	135.2165	3.6600e-003	3.2500e-003	136.2774
Total	**0.0562**	**0.4359**	**0.6064**	**2.8200e-003**	**0.1873**	**3.9200e-003**	**0.1912**	**0.0501**	**3.7300e-003**	**0.0538**		**298.6027**	**298.6027**	**0.0123**	**0.0292**	**307.6057**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

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	lb/day										lb/day					
Fugitive Dust					0.2003	0.0000	0.2003	0.0303	0.0000	0.0303			0.0000			0.0000
Off-Road	1.6889	16.6217	13.9605	0.0241		0.8379	0.8379		0.7829	0.7829	0.0000	2,323.4168	2,323.4168	0.5921		2,338.2191
Total	**1.6889**	**16.6217**	**13.9605**	**0.0241**	**0.2003**	**0.8379**	**1.0382**	**0.0303**	**0.7829**	**0.8132**	**0.0000**	**2,323.4168**	**2,323.4168**	**0.5921**		**2,338.2191**

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	lb/day										lb/day					
Hauling	0.0112	0.4031	0.0940	1.4900e-003	0.0420	2.9900e-003	0.0450	0.0115	2.8700e-003	0.0144		163.3861	163.3861	8.6800e-003	0.0259	171.3282
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
Worker	0.0450	0.0329	0.5124	1.3300e-003	0.1453	9.3000e-004	0.1462	0.0385	8.6000e-004	0.0394		135.2165	135.2165	3.6600e-003	3.2500e-003	136.2774
Total	**0.0562**	**0.4359**	**0.6064**	**2.8200e-003**	**0.1873**	**3.9200e-003**	**0.1912**	**0.0501**	**3.7300e-003**	**0.0538**		**298.6027**	**298.6027**	**0.0123**	**0.0292**	**307.6057**

14334 La Serna Townhomes - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

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	lb/day										lb/day					
Fugitive Dust					7.6128	0.0000	7.6128	3.4820	0.0000	3.4820			0.0000			0.0000
Off-Road	1.6320	17.2802	7.7882	0.0183		0.8428	0.8428		0.7754	0.7754		1,769.6320	1,769.6320	0.5723		1,783.9403
Total	**1.6320**	**17.2802**	**7.7882**	**0.0183**	**7.6128**	**0.8428**	**8.4556**	**3.4820**	**0.7754**	**4.2573**		**1,769.6320**	**1,769.6320**	**0.5723**		**1,783.9403**

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	lb/day										lb/day					
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
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
Worker	0.0277	0.0202	0.3153	8.2000e-004	0.0894	5.7000e-004	0.0900	0.0237	5.3000e-004	0.0242		83.2102	83.2102	2.2500e-003	2.0000e-003	83.8630
Total	**0.0277**	**0.0202**	**0.3153**	**8.2000e-004**	**0.0894**	**5.7000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0242**		**83.2102**	**83.2102**	**2.2500e-003**	**2.0000e-003**	**83.8630**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

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	lb/day										lb/day					
Fugitive Dust					2.9690	0.0000	2.9690	1.3580	0.0000	1.3580			0.0000			0.0000
Off-Road	1.6320	17.2802	7.7882	0.0183		0.8428	0.8428		0.7754	0.7754	0.0000	1,769.6320	1,769.6320	0.5723		1,783.9403
Total	**1.6320**	**17.2802**	**7.7882**	**0.0183**	**2.9690**	**0.8428**	**3.8118**	**1.3580**	**0.7754**	**2.1333**	**0.0000**	**1,769.6320**	**1,769.6320**	**0.5723**		**1,783.9403**

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	lb/day										lb/day					
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
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
Worker	0.0277	0.0202	0.3153	8.2000e-004	0.0894	5.7000e-004	0.0900	0.0237	5.3000e-004	0.0242		83.2102	83.2102	2.2500e-003	2.0000e-003	83.8630
Total	**0.0277**	**0.0202**	**0.3153**	**8.2000e-004**	**0.0894**	**5.7000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0242**		**83.2102**	**83.2102**	**2.2500e-003**	**2.0000e-003**	**83.8630**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

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	lb/day										lb/day					
Fugitive Dust					8.1431	0.0000	8.1431	3.5393	0.0000	3.5393			0.0000			0.0000
Off-Road	2.0119	20.5091	10.2727	0.0214		1.1010	1.1010		1.0129	1.0129		2,070.9497	2,070.9497	0.6698		2,087.6943
Total	**2.0119**	**20.5091**	**10.2727**	**0.0214**	**8.1431**	**1.1010**	**9.2441**	**3.5393**	**1.0129**	**4.5521**		**2,070.9497**	**2,070.9497**	**0.6698**		**2,087.6943**

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	lb/day										lb/day					
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
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
Worker	0.0346	0.0253	0.3941	1.0200e-003	0.1118	7.2000e-004	0.1125	0.0296	6.6000e-004	0.0303		104.0127	104.0127	2.8200e-003	2.5000e-003	104.8288
Total	**0.0346**	**0.0253**	**0.3941**	**1.0200e-003**	**0.1118**	**7.2000e-004**	**0.1125**	**0.0296**	**6.6000e-004**	**0.0303**		**104.0127**	**104.0127**	**2.8200e-003**	**2.5000e-003**	**104.8288**

14334 La Serna Townhomes - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

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	lb/day										lb/day					
Fugitive Dust					3.1758	0.0000	3.1758	1.3803	0.0000	1.3803			0.0000			0.0000
Off-Road	2.0119	20.5091	10.2727	0.0214		1.1010	1.1010		1.0129	1.0129	0.0000	2,070.9497	2,070.9497	0.6698		2,087.6943
Total	**2.0119**	**20.5091**	**10.2727**	**0.0214**	**3.1758**	**1.1010**	**4.2768**	**1.3803**	**1.0129**	**2.3932**	**0.0000**	**2,070.9497**	**2,070.9497**	**0.6698**		**2,087.6943**

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	lb/day										lb/day					
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
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
Worker	0.0346	0.0253	0.3941	1.0200e-003	0.1118	7.2000e-004	0.1125	0.0296	6.6000e-004	0.0303		104.0127	104.0127	2.8200e-003	2.5000e-003	104.8288
Total	**0.0346**	**0.0253**	**0.3941**	**1.0200e-003**	**0.1118**	**7.2000e-004**	**0.1125**	**0.0296**	**6.6000e-004**	**0.0303**		**104.0127**	**104.0127**	**2.8200e-003**	**2.5000e-003**	**104.8288**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

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	lb/day										lb/day					
Off-Road	1.8115	14.2318	14.0474	0.0247		0.6723	0.6723		0.6456	0.6456		2,253.5679	2,253.5679	0.4301		2,264.3208
Total	**1.8115**	**14.2318**	**14.0474**	**0.0247**		**0.6723**	**0.6723**		**0.6456**	**0.6456**		**2,253.5679**	**2,253.5679**	**0.4301**		**2,264.3208**

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	lb/day										lb/day					
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
Vendor	0.0295	0.7348	0.2519	2.9400e-003	0.0961	7.0000e-003	0.1031	0.0277	6.7000e-003	0.0344		315.6924	315.6924	0.0106	0.0455	329.5127
Worker	0.2007	0.1466	2.2860	5.9300e-003	0.6483	4.1600e-003	0.6525	0.1719	3.8300e-003	0.1758		603.2737	603.2737	0.0163	0.0145	608.0069
Total	**0.2303**	**0.8813**	**2.5379**	**8.8700e-003**	**0.7444**	**0.0112**	**0.7555**	**0.1996**	**0.0105**	**0.2101**		**918.9661**	**918.9661**	**0.0269**	**0.0600**	**937.5196**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

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	lb/day										lb/day					
Off-Road	1.8115	14.2318	14.0474	0.0247		0.6723	0.6723		0.6456	0.6456	0.0000	2,253.5679	2,253.5679	0.4301		2,264.3208
Total	**1.8115**	**14.2318**	**14.0474**	**0.0247**		**0.6723**	**0.6723**		**0.6456**	**0.6456**	**0.0000**	**2,253.5679**	**2,253.5679**	**0.4301**		**2,264.3208**

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	lb/day										lb/day					
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
Vendor	0.0295	0.7348	0.2519	2.9400e-003	0.0961	7.0000e-003	0.1031	0.0277	6.7000e-003	0.0344		315.6924	315.6924	0.0106	0.0455	329.5127
Worker	0.2007	0.1466	2.2860	5.9300e-003	0.6483	4.1600e-003	0.6525	0.1719	3.8300e-003	0.1758		603.2737	603.2737	0.0163	0.0145	608.0069
Total	**0.2303**	**0.8813**	**2.5379**	**8.8700e-003**	**0.7444**	**0.0112**	**0.7555**	**0.1996**	**0.0105**	**0.2101**		**918.9661**	**918.9661**	**0.0269**	**0.0600**	**937.5196**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

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	lb/day										lb/day					
Off-Road	1.6746	13.2881	13.9137	0.0247		0.5881	0.5881		0.5646	0.5646		2,253.8943	2,253.8943	0.4215		2,264.4308
Total	**1.6746**	**13.2881**	**13.9137**	**0.0247**		**0.5881**	**0.5881**		**0.5646**	**0.5646**		**2,253.8943**	**2,253.8943**	**0.4215**		**2,264.4308**

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	lb/day										lb/day					
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
Vendor	0.0173	0.5758	0.2231	2.7900e-003	0.0961	2.8900e-003	0.0990	0.0277	2.7700e-003	0.0304		300.4237	300.4237	0.0101	0.0432	313.5467
Worker	0.1857	0.1295	2.1018	5.7400e-003	0.6483	3.9100e-003	0.6522	0.1719	3.6000e-003	0.1755		587.3154	587.3154	0.0146	0.0134	591.6701
Total	**0.2030**	**0.7052**	**2.3248**	**8.5300e-003**	**0.7444**	**6.8000e-003**	**0.7512**	**0.1996**	**6.3700e-003**	**0.2060**		**887.7391**	**887.7391**	**0.0247**	**0.0566**	**905.2168**

14334 La Serna Townhomes - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

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	lb/day										lb/day					
Off-Road	1.6746	13.2881	13.9137	0.0247		0.5881	0.5881		0.5646	0.5646	0.0000	2,253.8943	2,253.8943	0.4215		2,264.4308
Total	**1.6746**	**13.2881**	**13.9137**	**0.0247**		**0.5881**	**0.5881**		**0.5646**	**0.5646**	**0.0000**	**2,253.8943**	**2,253.8943**	**0.4215**		**2,264.4308**

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	lb/day										lb/day					
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
Vendor	0.0173	0.5758	0.2231	2.7900e-003	0.0961	2.8900e-003	0.0990	0.0277	2.7700e-003	0.0304		300.4237	300.4237	0.0101	0.0432	313.5467
Worker	0.1857	0.1295	2.1018	5.7400e-003	0.6483	3.9100e-003	0.6522	0.1719	3.6000e-003	0.1755		587.3154	587.3154	0.0146	0.0134	591.6701
Total	**0.2030**	**0.7052**	**2.3248**	**8.5300e-003**	**0.7444**	**6.8000e-003**	**0.7512**	**0.1996**	**6.3700e-003**	**0.2060**		**887.7391**	**887.7391**	**0.0247**	**0.0566**	**905.2168**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

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	lb/day										lb/day					
Off-Road	0.7265	6.9997	9.8318	0.0152		0.3452	0.3452		0.3188	0.3188		1,455.8849	1,455.8849	0.4598		1,467.3791
Paving	0.3170					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0435**	**6.9997**	**9.8318**	**0.0152**		**0.3452**	**0.3452**		**0.3188**	**0.3188**		**1,455.8849**	**1,455.8849**	**0.4598**		**1,467.3791**

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	lb/day										lb/day					
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
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
Worker	0.0416	0.0290	0.4711	1.2900e-003	0.1453	8.8000e-004	0.1462	0.0385	8.1000e-004	0.0393		131.6397	131.6397	3.2800e-003	3.0000e-003	132.6157
Total	**0.0416**	**0.0290**	**0.4711**	**1.2900e-003**	**0.1453**	**8.8000e-004**	**0.1462**	**0.0385**	**8.1000e-004**	**0.0393**		**131.6397**	**131.6397**	**3.2800e-003**	**3.0000e-003**	**132.6157**

14334 La Serna Townhomes - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

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	lb/day										lb/day					
Off-Road	0.7265	6.9997	9.8318	0.0152		0.3452	0.3452		0.3188	0.3188	0.0000	1,455.8849	1,455.8849	0.4598		1,467.3791
Paving	0.3170					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0435**	**6.9997**	**9.8318**	**0.0152**		**0.3452**	**0.3452**		**0.3188**	**0.3188**	**0.0000**	**1,455.8849**	**1,455.8849**	**0.4598**		**1,467.3791**

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	lb/day										lb/day					
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
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
Worker	0.0416	0.0290	0.4711	1.2900e-003	0.1453	8.8000e-004	0.1462	0.0385	8.1000e-004	0.0393		131.6397	131.6397	3.2800e-003	3.0000e-003	132.6157
Total	**0.0416**	**0.0290**	**0.4711**	**1.2900e-003**	**0.1453**	**8.8000e-004**	**0.1462**	**0.0385**	**8.1000e-004**	**0.0393**		**131.6397**	**131.6397**	**3.2800e-003**	**3.0000e-003**	**132.6157**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

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	lb/day										lb/day					
Archit. Coating	27.7701					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2556	1.7373	2.4148	3.9600e-003		0.0944	0.0944		0.0944	0.0944		375.2641	375.2641	0.0225		375.8253
Total	**28.0257**	**1.7373**	**2.4148**	**3.9600e-003**		**0.0944**	**0.0944**		**0.0944**	**0.0944**		**375.2641**	**375.2641**	**0.0225**		**375.8253**

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	lb/day										lb/day					
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
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
Worker	0.0384	0.0268	0.4349	1.1900e-003	0.1341	8.1000e-004	0.1349	0.0356	7.5000e-004	0.0363		121.5135	121.5135	3.0300e-003	2.7700e-003	122.4145
Total	**0.0384**	**0.0268**	**0.4349**	**1.1900e-003**	**0.1341**	**8.1000e-004**	**0.1349**	**0.0356**	**7.5000e-004**	**0.0363**		**121.5135**	**121.5135**	**3.0300e-003**	**2.7700e-003**	**122.4145**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

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	lb/day										lb/day					
Archit. Coating	27.7701					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2556	1.7373	2.4148	3.9600e-003		0.0944	0.0944		0.0944	0.0944	0.0000	375.2641	375.2641	0.0225		375.8253
Total	**28.0257**	**1.7373**	**2.4148**	**3.9600e-003**		**0.0944**	**0.0944**		**0.0944**	**0.0944**	**0.0000**	**375.2641**	**375.2641**	**0.0225**		**375.8253**

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	lb/day										lb/day					
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
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
Worker	0.0384	0.0268	0.4349	1.1900e-003	0.1341	8.1000e-004	0.1349	0.0356	7.5000e-004	0.0363		121.5135	121.5135	3.0300e-003	2.7700e-003	122.4145
Total	**0.0384**	**0.0268**	**0.4349**	**1.1900e-003**	**0.1341**	**8.1000e-004**	**0.1349**	**0.0356**	**7.5000e-004**	**0.0363**		**121.5135**	**121.5135**	**3.0300e-003**	**2.7700e-003**	**122.4145**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	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
Unmitigated	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

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		
Condo/Townhouse High Rise	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse High Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	75 0.00	0	0	0

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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
Parking Lot	16.60	8.40	6.90	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	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374
Condo/Townhouse High Rise	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374
Other Asphalt Surfaces	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374
Parking Lot	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374

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	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.8886	176.8886	3.3900e-003	3.2400e-003	177.9397
NaturalGas Unmitigated	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.8886	176.8886	3.3900e-003	3.2400e-003	177.9397

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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
Condo/Townhouse High Rise	1503.55	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.8886	176.8886	3.3900e-003	3.2400e-003	177.9397
Other 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
Parking Lot	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		**0.0162**	**0.1386**	**0.0590**	**8.8000e-004**		**0.0112**	**0.0112**		**0.0112**	**0.0112**		**176.8886**	**176.8886**	**3.3900e-003**	**3.2400e-003**	**177.9397**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

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
Condo/Townhouse High Rise	1.50355	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.8886	176.8886	3.3900e-003	3.2400e-003	177.9397
Other 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
Parking Lot	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		**0.0162**	**0.1386**	**0.0590**	**8.8000e-004**		**0.0112**	**0.0112**		**0.0112**	**0.0112**		**176.8886**	**176.8886**	**3.3900e-003**	**3.2400e-003**	**177.9397**

6.0 Area Detail

6.1 Mitigation Measures Area

14334 La Serna Townhomes - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	1.1065	0.6704	3.7451	4.2100e-003		0.0702	0.0702		0.0702	0.0702	0.0000	810.9688	810.9688	0.0215	0.0148	815.9024
Unmitigated	1.1065	0.6704	3.7451	4.2100e-003		0.0702	0.0702		0.0702	0.0702	0.0000	810.9688	810.9688	0.0215	0.0148	815.9024

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	0.0761					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8512					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0738	0.6304	0.2682	4.0200e-003		0.0510	0.0510		0.0510	0.0510	0.0000	804.7059	804.7059	0.0154	0.0148	809.4879
Landscaping	0.1054	0.0401	3.4769	1.8000e-004		0.0192	0.0192		0.0192	0.0192		6.2630	6.2630	6.0600e-003		6.4145
Total	**1.1065**	**0.6704**	**3.7451**	**4.2000e-003**		**0.0702**	**0.0702**		**0.0702**	**0.0702**	**0.0000**	**810.9688**	**810.9688**	**0.0215**	**0.0148**	**815.9024**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

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	0.0761					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8512					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0738	0.6304	0.2682	4.0200e-003		0.0510	0.0510		0.0510	0.0510	0.0000	804.7059	804.7059	0.0154	0.0148	809.4879
Landscaping	0.1054	0.0401	3.4769	1.8000e-004		0.0192	0.0192		0.0192	0.0192		6.2630	6.2630	6.0600e-003		6.4145
Total	**1.1065**	**0.6704**	**3.7451**	**4.2000e-003**		**0.0702**	**0.0702**		**0.0702**	**0.0702**	**0.0000**	**810.9688**	**810.9688**	**0.0215**	**0.0148**	**815.9024**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

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

14334 La Serna Townhomes - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

14334 La Serna Townhomes

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.24	Acre	0.24	10,367.28	0
Parking Lot	108.00	Space	0.97	43,200.00	0
City Park	0.29	Acre	0.29	12,675.96	0
Condo/Townhouse High Rise	42.00	Dwelling Unit	0.43	42,000.00	120

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Bassed on Site Plan

Construction Phase - Client provided number of days for phases

Off-road Equipment - Tractor/Loader/Backhoe changed to crawler tractor to account for PM generation. Lopad Factors and Horsepower unchanged to represent same size equipmnet. Standard 8-hour work day assumed.

Off-road Equipment - Tractor/Loader/Backhoe changed to crawler tractor to account for PM generation. Lopad Factors and Horsepower unchanged to represent same size equipmnet. Standard 8-hour work day assumed.

Off-road Equipment - Tractor/Loader/Backhoe changed to crawler tractor to account for PM generation. Lopad Factors and Horsepower unchanged to represent same size equipmnet. Standard 8-hour work day assumed.

Off-road Equipment - Standard 8-hour work day assumed.

14334 La Serna Townhomes - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-road Equipment - Tractor/Loader/Backhoe changed to crawler tractor to account for PM generation. Lopad Factors and Horsepower unchanged to represent same size equipmnet. Standard 8-hour work day assumed.

Trips and VMT -

Demolition - 479 CY / 4 = 119.75 tons

Grading -

Vehicle Trips - the project would result in -364 net trips, thus all trips set to zero

Woodstoves - Per SCAQMD Rule 445 No Woord Burning Devices

Water And Wastewater - 2,736,469.08 - 20% = 2,189,175.26 per CalGreen indoor water use

Solid Waste - no actual park

Construction Off-road Equipment Mitigation - SCAQMD Rule 403

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	4.00	10.00
tblConstructionPhase	NumDays	200.00	220.00
tblFireplaces	NumberGas	35.70	38.00
tblFireplaces	NumberNoFireplace	4.20	4.00
tblFireplaces	NumberWood	2.10	0.00
tblLandUse	LandUseSquareFeet	10,454.40	10,367.28
tblLandUse	LandUseSquareFeet	12,632.40	12,675.96
tblLandUse	LotAcreage	0.66	0.43
tblOffRoadEquipment	HorsePower	212.00	97.00
tblOffRoadEquipment	HorsePower	212.00	97.00
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblSolidWaste	SolidWasteGenerationRate	0.02	0.00
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	4.91	0.00
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	4.09	0.00
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	5.44	0.00
tblWater	IndoorWaterUseRate	2,736,469.08	2,189,175.26
tblWoodstoves	NumberCatalytic	2.10	0.00
tblWoodstoves	NumberNoncatalytic	2.10	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

14334 La Serna Townhomes - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2022	2.0555	20.5370	16.4069	0.0332	8.2549	1.1017	9.3565	3.5689	1.0135	4.5824	0.0000	3,140.7561	3,140.7561	0.6726	0.0611	3,170.3806
2023	31.0460	22.8326	29.1549	0.0544	1.0238	1.0363	2.0601	0.2737	0.9857	1.2594	0.0000	5,182.1319	5,182.1319	0.9349	0.0638	5,224.5080
Maximum	**31.0460**	**22.8326**	**29.1549**	**0.0544**	**8.2549**	**1.1017**	**9.3565**	**3.5689**	**1.0135**	**4.5824**	**0.0000**	**5,182.1319**	**5,182.1319**	**0.9349**	**0.0638**	**5,224.5080**

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	lb/day										lb/day					
2022	2.0555	20.5370	16.4069	0.0332	3.2876	1.1017	4.3893	1.4100	1.0135	2.4235	0.0000	3,140.7561	3,140.7561	0.6726	0.0611	3,170.3806
2023	31.0460	22.8326	29.1549	0.0544	1.0238	1.0363	2.0601	0.2737	0.9857	1.2594	0.0000	5,182.1319	5,182.1319	0.9349	0.0638	5,224.5080
Maximum	**31.0460**	**22.8326**	**29.1549**	**0.0544**	**3.2876**	**1.1017**	**4.3893**	**1.4100**	**1.0135**	**2.4235**	**0.0000**	**5,182.1319**	**5,182.1319**	**0.9349**	**0.0638**	**5,224.5080**

14334 La Serna Townhomes - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	0.00	0.00	0.00	0.00	53.53	0.00	43.51	56.18	0.00	36.96	0.00	0.00	0.00	0.00	0.00	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	1.1065	0.6704	3.7451	4.2100e-003		0.0702	0.0702		0.0702	0.0702	0.0000	810.9688	810.9688	0.0215	0.0148	815.9024
Energy	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.8886	176.8886	3.3900e-003	3.2400e-003	177.9397
Mobile	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
Total	**1.1227**	**0.8090**	**3.8041**	**5.0900e-003**	**0.0000**	**0.0814**	**0.0814**	**0.0000**	**0.0814**	**0.0814**	**0.0000**	**987.8574**	**987.8574**	**0.0249**	**0.0180**	**993.8421**

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	1.1065	0.6704	3.7451	4.2100e-003		0.0702	0.0702		0.0702	0.0702	0.0000	810.9688	810.9688	0.0215	0.0148	815.9024
Energy	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.8886	176.8886	3.3900e-003	3.2400e-003	177.9397
Mobile	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
Total	**1.1227**	**0.8090**	**3.8041**	**5.0900e-003**	**0.0000**	**0.0814**	**0.0814**	**0.0000**	**0.0814**	**0.0814**	**0.0000**	**987.8574**	**987.8574**	**0.0249**	**0.0180**	**993.8421**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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	6/1/2022	6/7/2022	5	5	
2	Site Preparation	Site Preparation	6/8/2022	6/9/2022	5	2	
3	Grading	Grading	6/10/2022	6/23/2022	5	10	
4	Building Construction	Building Construction	6/24/2022	4/27/2023	5	220	
5	Paving	Paving	4/14/2023	4/27/2023	5	10	
6	Architectural Coating	Architectural Coating	4/14/2023	4/27/2023	5	10	

Acres of Grading (Site Preparation Phase): 3

Acres of Grading (Grading Phase): 20

Acres of Paving: 1.21

Residential Indoor: 85,050; Residential Outdoor: 28,350; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 3,214 (Architectural Coating – sqft)

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	Crawler Tractors	1	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Crawler Tractors	2	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	8.00	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	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	58.00	15.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	12.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

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	lb/day										lb/day					
Fugitive Dust					0.5136	0.0000	0.5136	0.0778	0.0000	0.0778			0.0000			0.0000
Off-Road	1.6889	16.6217	13.9605	0.0241		0.8379	0.8379		0.7829	0.7829		2,323.4168	2,323.4168	0.5921		2,338.2191
Total	**1.6889**	**16.6217**	**13.9605**	**0.0241**	**0.5136**	**0.8379**	**1.3515**	**0.0778**	**0.7829**	**0.8606**		**2,323.4168**	**2,323.4168**	**0.5921**		**2,338.2191**

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	lb/day										lb/day					
Hauling	0.0109	0.4194	0.0956	1.4900e-003	0.0420	3.0000e-003	0.0450	0.0115	2.8700e-003	0.0144		163.4340	163.4340	8.6600e-003	0.0259	171.3783
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
Worker	0.0482	0.0363	0.4704	1.2600e-003	0.1453	9.3000e-004	0.1462	0.0385	8.6000e-004	0.0394		128.0673	128.0673	3.7000e-003	3.4800e-003	129.1958
Total	**0.0591**	**0.4557**	**0.5661**	**2.7500e-003**	**0.1873**	**3.9300e-003**	**0.1913**	**0.0501**	**3.7300e-003**	**0.0538**		**291.5014**	**291.5014**	**0.0124**	**0.0294**	**300.5741**

14334 La Serna Townhomes - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

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	lb/day										lb/day					
Fugitive Dust					0.2003	0.0000	0.2003	0.0303	0.0000	0.0303			0.0000			0.0000
Off-Road	1.6889	16.6217	13.9605	0.0241		0.8379	0.8379		0.7829	0.7829	0.0000	2,323.4168	2,323.4168	0.5921		2,338.2191
Total	**1.6889**	**16.6217**	**13.9605**	**0.0241**	**0.2003**	**0.8379**	**1.0382**	**0.0303**	**0.7829**	**0.8132**	**0.0000**	**2,323.4168**	**2,323.4168**	**0.5921**		**2,338.2191**

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	lb/day										lb/day					
Hauling	0.0109	0.4194	0.0956	1.4900e-003	0.0420	3.0000e-003	0.0450	0.0115	2.8700e-003	0.0144		163.4340	163.4340	8.6600e-003	0.0259	171.3783
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
Worker	0.0482	0.0363	0.4704	1.2600e-003	0.1453	9.3000e-004	0.1462	0.0385	8.6000e-004	0.0394		128.0673	128.0673	3.7000e-003	3.4800e-003	129.1958
Total	**0.0591**	**0.4557**	**0.5661**	**2.7500e-003**	**0.1873**	**3.9300e-003**	**0.1913**	**0.0501**	**3.7300e-003**	**0.0538**		**291.5014**	**291.5014**	**0.0124**	**0.0294**	**300.5741**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

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	lb/day										lb/day					
Fugitive Dust					7.6128	0.0000	7.6128	3.4820	0.0000	3.4820			0.0000			0.0000
Off-Road	1.6320	17.2802	7.7882	0.0183		0.8428	0.8428		0.7754	0.7754		1,769.6320	1,769.6320	0.5723		1,783.9403
Total	**1.6320**	**17.2802**	**7.7882**	**0.0183**	**7.6128**	**0.8428**	**8.4556**	**3.4820**	**0.7754**	**4.2573**		**1,769.6320**	**1,769.6320**	**0.5723**		**1,783.9403**

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	lb/day										lb/day					
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
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
Worker	0.0296	0.0223	0.2895	7.7000e-004	0.0894	5.7000e-004	0.0900	0.0237	5.3000e-004	0.0242		78.8107	78.8107	2.2800e-003	2.1400e-003	79.5051
Total	**0.0296**	**0.0223**	**0.2895**	**7.7000e-004**	**0.0894**	**5.7000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0242**		**78.8107**	**78.8107**	**2.2800e-003**	**2.1400e-003**	**79.5051**

14334 La Serna Townhomes - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

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	lb/day										lb/day					
Fugitive Dust					2.9690	0.0000	2.9690	1.3580	0.0000	1.3580			0.0000			0.0000
Off-Road	1.6320	17.2802	7.7882	0.0183		0.8428	0.8428		0.7754	0.7754	0.0000	1,769.6320	1,769.6320	0.5723		1,783.9403
Total	**1.6320**	**17.2802**	**7.7882**	**0.0183**	**2.9690**	**0.8428**	**3.8118**	**1.3580**	**0.7754**	**2.1333**	**0.0000**	**1,769.6320**	**1,769.6320**	**0.5723**		**1,783.9403**

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	lb/day										lb/day					
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
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
Worker	0.0296	0.0223	0.2895	7.7000e-004	0.0894	5.7000e-004	0.0900	0.0237	5.3000e-004	0.0242		78.8107	78.8107	2.2800e-003	2.1400e-003	79.5051
Total	**0.0296**	**0.0223**	**0.2895**	**7.7000e-004**	**0.0894**	**5.7000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0242**		**78.8107**	**78.8107**	**2.2800e-003**	**2.1400e-003**	**79.5051**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

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	lb/day										lb/day					
Fugitive Dust					8.1431	0.0000	8.1431	3.5393	0.0000	3.5393			0.0000			0.0000
Off-Road	2.0119	20.5091	10.2727	0.0214		1.1010	1.1010		1.0129	1.0129		2,070.9497	2,070.9497	0.6698		2,087.6943
Total	**2.0119**	**20.5091**	**10.2727**	**0.0214**	**8.1431**	**1.1010**	**9.2441**	**3.5393**	**1.0129**	**4.5521**		**2,070.9497**	**2,070.9497**	**0.6698**		**2,087.6943**

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	lb/day										lb/day					
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
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
Worker	0.0371	0.0279	0.3619	9.7000e-004	0.1118	7.2000e-004	0.1125	0.0296	6.6000e-004	0.0303		98.5133	98.5133	2.8500e-003	2.6700e-003	99.3813
Total	**0.0371**	**0.0279**	**0.3619**	**9.7000e-004**	**0.1118**	**7.2000e-004**	**0.1125**	**0.0296**	**6.6000e-004**	**0.0303**		**98.5133**	**98.5133**	**2.8500e-003**	**2.6700e-003**	**99.3813**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

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	lb/day										lb/day					
Fugitive Dust					3.1758	0.0000	3.1758	1.3803	0.0000	1.3803			0.0000			0.0000
Off-Road	2.0119	20.5091	10.2727	0.0214		1.1010	1.1010		1.0129	1.0129	0.0000	2,070.9497	2,070.9497	0.6698		2,087.6943
Total	**2.0119**	**20.5091**	**10.2727**	**0.0214**	**3.1758**	**1.1010**	**4.2768**	**1.3803**	**1.0129**	**2.3932**	**0.0000**	**2,070.9497**	**2,070.9497**	**0.6698**		**2,087.6943**

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	lb/day										lb/day					
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
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
Worker	0.0371	0.0279	0.3619	9.7000e-004	0.1118	7.2000e-004	0.1125	0.0296	6.6000e-004	0.0303		98.5133	98.5133	2.8500e-003	2.6700e-003	99.3813
Total	**0.0371**	**0.0279**	**0.3619**	**9.7000e-004**	**0.1118**	**7.2000e-004**	**0.1125**	**0.0296**	**6.6000e-004**	**0.0303**		**98.5133**	**98.5133**	**2.8500e-003**	**2.6700e-003**	**99.3813**

14334 La Serna Townhomes - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

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	lb/day										lb/day					
Off-Road	1.8115	14.2318	14.0474	0.0247		0.6723	0.6723		0.6456	0.6456		2,253.5679	2,253.5679	0.4301		2,264.3208
Total	**1.8115**	**14.2318**	**14.0474**	**0.0247**		**0.6723**	**0.6723**		**0.6456**	**0.6456**		**2,253.5679**	**2,253.5679**	**0.4301**		**2,264.3208**

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	lb/day										lb/day					
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
Vendor	0.0292	0.7651	0.2606	2.9400e-003	0.0961	7.0200e-003	0.1031	0.0277	6.7200e-003	0.0344		315.8110	315.8110	0.0105	0.0456	329.6480
Worker	0.2149	0.1619	2.0989	5.6200e-003	0.6483	4.1600e-003	0.6525	0.1719	3.8300e-003	0.1758		571.3772	571.3772	0.0165	0.0155	576.4118
Total	**0.2441**	**0.9270**	**2.3595**	**8.5600e-003**	**0.7444**	**0.0112**	**0.7556**	**0.1996**	**0.0106**	**0.2101**		**887.1882**	**887.1882**	**0.0271**	**0.0611**	**906.0597**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

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	lb/day										lb/day					
Off-Road	1.8115	14.2318	14.0474	0.0247		0.6723	0.6723		0.6456	0.6456	0.0000	2,253.5679	2,253.5679	0.4301		2,264.3208
Total	**1.8115**	**14.2318**	**14.0474**	**0.0247**		**0.6723**	**0.6723**		**0.6456**	**0.6456**	**0.0000**	**2,253.5679**	**2,253.5679**	**0.4301**		**2,264.3208**

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	lb/day										lb/day					
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
Vendor	0.0292	0.7651	0.2606	2.9400e-003	0.0961	7.0200e-003	0.1031	0.0277	6.7200e-003	0.0344		315.8110	315.8110	0.0105	0.0456	329.6480
Worker	0.2149	0.1619	2.0989	5.6200e-003	0.6483	4.1600e-003	0.6525	0.1719	3.8300e-003	0.1758		571.3772	571.3772	0.0165	0.0155	576.4118
Total	**0.2441**	**0.9270**	**2.3595**	**8.5600e-003**	**0.7444**	**0.0112**	**0.7556**	**0.1996**	**0.0106**	**0.2101**		**887.1882**	**887.1882**	**0.0271**	**0.0611**	**906.0597**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

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	lb/day										lb/day					
Off-Road	1.6746	13.2881	13.9137	0.0247		0.5881	0.5881		0.5646	0.5646		2,253.8943	2,253.8943	0.4215		2,264.4308
Total	**1.6746**	**13.2881**	**13.9137**	**0.0247**		**0.5881**	**0.5881**		**0.5646**	**0.5646**		**2,253.8943**	**2,253.8943**	**0.4215**		**2,264.4308**

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	lb/day										lb/day					
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
Vendor	0.0167	0.6028	0.2301	2.8000e-003	0.0961	2.9100e-003	0.0990	0.0277	2.7900e-003	0.0305		300.9305	300.9305	0.0100	0.0433	314.0867
Worker	0.1996	0.1430	1.9319	5.4400e-003	0.6483	3.9100e-003	0.6522	0.1719	3.6000e-003	0.1755		556.3515	556.3515	0.0148	0.0143	560.9830
Total	**0.2162**	**0.7458**	**2.1619**	**8.2400e-003**	**0.7444**	**6.8200e-003**	**0.7512**	**0.1996**	**6.3900e-003**	**0.2060**		**857.2820**	**857.2820**	**0.0249**	**0.0576**	**875.0697**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

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	lb/day										lb/day					
Off-Road	1.6746	13.2881	13.9137	0.0247		0.5881	0.5881		0.5646	0.5646	0.0000	2,253.8943	2,253.8943	0.4215		2,264.4308
Total	**1.6746**	**13.2881**	**13.9137**	**0.0247**		**0.5881**	**0.5881**		**0.5646**	**0.5646**	**0.0000**	**2,253.8943**	**2,253.8943**	**0.4215**		**2,264.4308**

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	lb/day										lb/day					
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
Vendor	0.0167	0.6028	0.2301	2.8000e-003	0.0961	2.9100e-003	0.0990	0.0277	2.7900e-003	0.0305		300.9305	300.9305	0.0100	0.0433	314.0867
Worker	0.1996	0.1430	1.9319	5.4400e-003	0.6483	3.9100e-003	0.6522	0.1719	3.6000e-003	0.1755		556.3515	556.3515	0.0148	0.0143	560.9830
Total	**0.2162**	**0.7458**	**2.1619**	**8.2400e-003**	**0.7444**	**6.8200e-003**	**0.7512**	**0.1996**	**6.3900e-003**	**0.2060**		**857.2820**	**857.2820**	**0.0249**	**0.0576**	**875.0697**

14334 La Serna Townhomes - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

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	lb/day										lb/day					
Off-Road	0.7265	6.9997	9.8318	0.0152		0.3452	0.3452		0.3188	0.3188		1,455.8849	1,455.8849	0.4598		1,467.3791
Paving	0.3170					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0435**	**6.9997**	**9.8318**	**0.0152**		**0.3452**	**0.3452**		**0.3188**	**0.3188**		**1,455.8849**	**1,455.8849**	**0.4598**		**1,467.3791**

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	lb/day										lb/day					
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
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
Worker	0.0447	0.0321	0.4330	1.2200e-003	0.1453	8.8000e-004	0.1462	0.0385	8.1000e-004	0.0393		124.6995	124.6995	3.3200e-003	3.2000e-003	125.7376
Total	**0.0447**	**0.0321**	**0.4330**	**1.2200e-003**	**0.1453**	**8.8000e-004**	**0.1462**	**0.0385**	**8.1000e-004**	**0.0393**		**124.6995**	**124.6995**	**3.3200e-003**	**3.2000e-003**	**125.7376**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

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	lb/day										lb/day					
Off-Road	0.7265	6.9997	9.8318	0.0152		0.3452	0.3452		0.3188	0.3188	0.0000	1,455.8849	1,455.8849	0.4598		1,467.3791
Paving	0.3170					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0435**	**6.9997**	**9.8318**	**0.0152**		**0.3452**	**0.3452**		**0.3188**	**0.3188**	**0.0000**	**1,455.8849**	**1,455.8849**	**0.4598**		**1,467.3791**

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	lb/day										lb/day					
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
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
Worker	0.0447	0.0321	0.4330	1.2200e-003	0.1453	8.8000e-004	0.1462	0.0385	8.1000e-004	0.0393		124.6995	124.6995	3.3200e-003	3.2000e-003	125.7376
Total	**0.0447**	**0.0321**	**0.4330**	**1.2200e-003**	**0.1453**	**8.8000e-004**	**0.1462**	**0.0385**	**8.1000e-004**	**0.0393**		**124.6995**	**124.6995**	**3.3200e-003**	**3.2000e-003**	**125.7376**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

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	lb/day										lb/day					
Archit. Coating	27.7701					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2556	1.7373	2.4148	3.9600e-003		0.0944	0.0944		0.0944	0.0944		375.2641	375.2641	0.0225		375.8253
Total	**28.0257**	**1.7373**	**2.4148**	**3.9600e-003**		**0.0944**	**0.0944**		**0.0944**	**0.0944**		**375.2641**	**375.2641**	**0.0225**		**375.8253**

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	lb/day										lb/day					
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
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
Worker	0.0413	0.0296	0.3997	1.1200e-003	0.1341	8.1000e-004	0.1349	0.0356	7.5000e-004	0.0363		115.1072	115.1072	3.0700e-003	2.9600e-003	116.0655
Total	**0.0413**	**0.0296**	**0.3997**	**1.1200e-003**	**0.1341**	**8.1000e-004**	**0.1349**	**0.0356**	**7.5000e-004**	**0.0363**		**115.1072**	**115.1072**	**3.0700e-003**	**2.9600e-003**	**116.0655**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

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	lb/day										lb/day					
Archit. Coating	27.7701					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2556	1.7373	2.4148	3.9600e-003		0.0944	0.0944		0.0944	0.0944	0.0000	375.2641	375.2641	0.0225		375.8253
Total	**28.0257**	**1.7373**	**2.4148**	**3.9600e-003**		**0.0944**	**0.0944**		**0.0944**	**0.0944**	**0.0000**	**375.2641**	**375.2641**	**0.0225**		**375.8253**

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	lb/day										lb/day					
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
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
Worker	0.0413	0.0296	0.3997	1.1200e-003	0.1341	8.1000e-004	0.1349	0.0356	7.5000e-004	0.0363		115.1072	115.1072	3.0700e-003	2.9600e-003	116.0655
Total	**0.0413**	**0.0296**	**0.3997**	**1.1200e-003**	**0.1341**	**8.1000e-004**	**0.1349**	**0.0356**	**7.5000e-004**	**0.0363**		**115.1072**	**115.1072**	**3.0700e-003**	**2.9600e-003**	**116.0655**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	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
Unmitigated	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

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		
Condo/Townhouse High Rise	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse High Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	**104** 0.00	0	0	0

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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
Parking Lot	16.60	8.40	6.90	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	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374
Condo/Townhouse High Rise	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374
Other Asphalt Surfaces	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374
Parking Lot	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374

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	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.8886	176.8886	3.3900e-003	3.2400e-003	177.9397
NaturalGas Unmitigated	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.8886	176.8886	3.3900e-003	3.2400e-003	177.9397

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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
Condo/Townhouse High Rise	1503.55	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.8886	176.8886	3.3900e-003	3.2400e-003	177.9397
Other 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
Parking Lot	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		**0.0162**	**0.1386**	**0.0590**	**8.8000e-004**		**0.0112**	**0.0112**		**0.0112**	**0.0112**		**176.8886**	**176.8886**	**3.3900e-003**	**3.2400e-003**	**177.9397**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

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
Condo/Townhouse High Rise	1.50355	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.8886	176.8886	3.3900e-003	3.2400e-003	177.9397
Other 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
Parking Lot	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		**0.0162**	**0.1386**	**0.0590**	**8.8000e-004**		**0.0112**	**0.0112**		**0.0112**	**0.0112**		**176.8886**	**176.8886**	**3.3900e-003**	**3.2400e-003**	**177.9397**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	1.1065	0.6704	3.7451	4.2100e-003		0.0702	0.0702		0.0702	0.0702	0.0000	810.9688	810.9688	0.0215	0.0148	815.9024
Unmitigated	1.1065	0.6704	3.7451	4.2100e-003		0.0702	0.0702		0.0702	0.0702	0.0000	810.9688	810.9688	0.0215	0.0148	815.9024

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	0.0761					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8512					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0738	0.6304	0.2682	4.0200e-003		0.0510	0.0510		0.0510	0.0510	0.0000	804.7059	804.7059	0.0154	0.0148	809.4879
Landscaping	0.1054	0.0401	3.4769	1.8000e-004		0.0192	0.0192		0.0192	0.0192		6.2630	6.2630	6.0600e-003		6.4145
Total	**1.1065**	**0.6704**	**3.7451**	**4.2000e-003**		**0.0702**	**0.0702**		**0.0702**	**0.0702**	**0.0000**	**810.9688**	**810.9688**	**0.0215**	**0.0148**	**815.9024**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

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	0.0761					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8512					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0738	0.6304	0.2682	4.0200e-003		0.0510	0.0510		0.0510	0.0510	0.0000	804.7059	804.7059	0.0154	0.0148	809.4879
Landscaping	0.1054	0.0401	3.4769	1.8000e-004		0.0192	0.0192		0.0192	0.0192		6.2630	6.2630	6.0600e-003		6.4145
Total	**1.1065**	**0.6704**	**3.7451**	**4.2000e-003**		**0.0702**	**0.0702**		**0.0702**	**0.0702**	**0.0000**	**810.9688**	**810.9688**	**0.0215**	**0.0148**	**815.9024**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

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

Appendix C Preliminary Geotechnical Investigation

ALBUS & ASSOCIATES
formerly Albus-Keefe & Associates, Inc.

April 23, 2021
J.N.: 2962.00

Mr. Jason Keller
Mission Pacific Land Company
4100 Newport Place, Suite 480
Newport Beach, CA 92660

Subject: **Preliminary Geotechnical Investigation, Proposed Multi-Family Residential Development, (La Serna Apartments) TTM No. 83435, 9829 La Serna Drive, Whittier, California**

Dear Mr. Keller,

Pursuant to your request, ***Albus & Associates, Inc***. is pleased to present to you our preliminary geotechnical investigation report for the proposed development at the subject site. This report presents the results of our aerial photo and literature review, subsurface exploration, laboratory testing, and engineering analyses. Conclusions and recommendations relevant to the design and construction of the proposed site development are also presented herein based on the findings of our work.

We appreciate this opportunity to be of service to you. If you should have any questions regarding the contents of this report, please do not hesitate to call.

Sincerely,

ALBUS & ASSOCIATES, INC.

Michael O. Spira
Principal Engineering Geologist

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 PURPOSE AND SCOPE 1
1.2 SITE LOCATION AND DESCRIPTION 1
1.3 PROPOSED DEVELOPMENT 3
2.0 INVESTIGATION 3
2.1 RESEARCH 3
2.2 SUBSURFACE EXPLORATION 3
2.3 LABORATORY TESTING 4
3.0 SUBSURFACE CONDITIONS 4
3.1 SOIL CONDITIONS 4
3.2 GROUNDWATER 4
3.3 FAULTING 4
4.0 ANALYSES 5
4.1 SEISMICITY 5
4.2 STATIC SETTLEMENT 6
5.0 CONCLUSIONS 7
5.1 FEASIBILITY OF PROPOSED DEVELOPMENT 7
5.2 GEOLOGIC HAZARDS 7
5.2.1 Ground Rupture 7
5.2.2 Ground Shaking 7
5.2.3 Landsliding 7
5.2.4 Liquefaction 7
5.3 STATIC SETTLEMENT 8
5.4 EXCAVATION AND MATERIAL CHARACTERISTICS 8
5.5 SHRINKAGE/BULKAGE AND SUBSIDENCE 8
5.6 SOIL EXPANSION 8
6.0 RECOMMENDATIONS 9
6.1 EARTHWORK 9
6.1.1 General Earthwork and Grading Specifications 9
6.1.2 Pre-Grade Meeting and Geotechnical Observation 9
6.1.3 Site Clearing 9
6.1.4 Ground Preparation (Removals and Overexcavations) 10
6.1.5 Scarification 10
6.1.6 Fill Placement 10
6.1.7 Import Materials 11
6.1.8 Temporary Excavations 11
6.2 SEISMIC DESIGN PARAMETERS 11
6.2.1 Mapped Seismic Design Parameters 11
6.2.2 Site-Specific Seismic Design Parameters 12
6.3 PRELIMINARY FOUNDATION DESIGN 13
6.3.1 General 13
6.3.2 Soil Expansion 13
6.3.3 Static and Seismic Settlement 13
6.3.4 Allowable Bearing Value 13
6.3.5 Lateral Resistance 13

6.3.6 Footing and Slab on Grade 14
6.3.7 Post-Tensioned Slab on Grade 14
6.3.8 Foundation Observations 15
6.4 RETAINING AND SCREENING WALLS 15
6.4.1 General 15
6.4.2 Allowable Bearing Value and Lateral Resistance 16
6.4.3 Active Earth Pressures 16
6.4.4 Drainage and Moisture-Proofing 17
6.4.5 Foundation Observations 17
6.4.6 Wall Backfill 17
6.5 EXTERIOR FLATWORK 17
6.6 CONCRETE MIX DESIGN 18
6.7 CORROSION 18
6.8 PRELIMINARY PAVEMENT DESIGN 19
6.8.1 Preliminary Pavement Structural Sections 19
6.8.2 Subgrade Preparation 19
6.8.3 Aggregate Base 19
6.8.4 Asphaltic Concrete 20
6.8.5 Concrete Paver 20
6.8.6 Portland Cement Concrete 20
6.9 POST GRADING CONSIDERATIONS 20
6.9.1 Site Drainage and Irrigation 20
6.9.2 Utility Trenches 21
6.10 PERCOLATION CHARACTERISTICS 21
6.11 PLAN REVIEW AND CONSTRUCTION SERVICES 22
7.0 LIMITATIONS 22
REFERENCES 24

FIGURES AND PLATES

Figure 1 - Site Location Map
Plate 1 - Geotechnical Map

APPENDICES

APPENDIX A - EXPLORATION LOGS
Plates A-0 through A-7

APPENDIX B - LABORATORY TESTS RESULTS
Table B – Summary of Laboratory Test Results
Plate B-1 through B-3 – Grain Size Distribution Plots
Plates B-4 through B-8 – Consolidation Plots
Plates B-9 – Direct Shear Plot
Plate B-10 - R-Value Test Results

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purposes of our preliminary geotechnical investigation were to evaluate geotechnical conditions within the project area and to provide conclusions and recommendations relevant to the design and construction of the proposed improvements at the subject site. The scope of this investigation included the following:

- Review of the historical aerial photographs
- Review of published geologic and seismic data for the site and surrounding area
- Review of environmental reports for the site
- Exploratory drilling and soil sampling
- Laboratory testing of selected soil samples
- Engineering analyses of data obtained from our review, exploration, and laboratory testing
- Evaluation of site seismicity, liquefaction potential, settlement potential and onsite infiltration
- Preparation of this report

1.2 SITE LOCATION AND DESCRIPTION

The site is located at the address of 9829 La Serna Drive within the city of Whittier, California. The site is bordered by Credit Union of Southern California building and associated parking lot to the south, Janine Drive to the north and northeast, La Serna Drive to the southeast, and by an office building and associated parking lot to the west and northwest. The location of the site and its relationship to the surrounding areas is shown on the Site Location Map, Figure 1.

Topographically, the project site very gently slopes to the south with elevations ranging from 279 feet above mean sea level at the far northern corner of the site to 266 feet above mean sea level at the far southern corner of the site. The site generally drains to the south towards La Serna Drive.

The site was previously occupied by a Marie Callender's Restaurant. Associated with the restaurant was a single-story building in the eastern portion of the site, an asphalt-covered parking area and various landscaping elements with large tress. A shared driveway is also present along the southern margin of the site At the time of our investigation, the restaurant building had been recently demolished leaving a large dirt covered patch. The remainder of the site was not disturbed. Chain link fencing currently encloses the parking lot and former building area.

From our review of aerial photographs and of the referenced Phase I Environmental Assessment Report Targhee, Inc. Environmental Consulting, dated, January 11, 1993, the restaurant building was

© 2020 Google

N

SITE LOCATION MAP

TTM No. 83435
9829 La Serna Dr.
Whittier, California

NOT TO SCALE

FIGURE 1

constructed in 1977. Prior to then the site was part of large orchard. No other previous site use is known.

1.3 PROPOSED DEVELOPMENT

Based on the conceptual design site plan dated March 2, 2021, prepared by WHA Architects and the preliminary engineered site plan prepared by C&V Consulting, Inc., site development is anticipated to consist of 44 three-story townhome units with associated interior driveways, parking stalls and underground utilities.

No grading or structural plans were available in preparing this proposal. However, we anticipate demolition of existing site improvements and some minor cuts and fills will be required to achieve future surface configuration. We anticipate that future foundation loads will be moderate. All structures are anticipated to be at grade.

2.0 INVESTIGATION

2.1 RESEARCH

We have reviewed the referenced geologic publications and maps (see references) and historical aerial photographs. We also reviewed the referenced environmental reports for the site. Data from these sources were utilized to develop some of the findings and conclusions presented herein.

2.2 SUBSURFACE EXPLORATION

Subsurface exploration for this investigation was conducted on March 16, 2020 and consisted of the drilling of four (4) soil borings to depths ranging from approximately 16.5 to 51.5 feet below the existing ground surface (bgs). The borings were drilled using a truck-mounted, continuous flight, hollow-stem-auger drill rig. A representative of Albus & Associates, Inc. logged the exploratory borings. Visual and tactile identifications were made of the materials encountered, and their descriptions are presented in the Exploration Logs in Appendix A. The approximate locations of the exploratory excavations completed by this firm are shown on the enclosed Geotechnical Map, Plate 1.

Bulk, relatively undisturbed and Standard Penetration Test (SPT) samples were obtained at selected depths within the exploratory borings for subsequent laboratory testing. Relatively undisturbed samples were obtained using a 3-inch O.D., 2.5-inch I.D., California split-spoon soil sampler lined with brass rings. SPT samples were obtained from the boring using a standard, unlined SPT soil sampler. During each sampling interval, the sampler was driven 18 inches with successive drops of a 140-pound automatic hammer falling 30 inches. The number of blows required to advance the sampler was recorded for each six inches of advancement. The total blow count for the lower 12 inches of advancement per soil sample is recorded on the exploration log. Samples were placed in sealed containers or plastic bags and transported to our laboratory for analyses. The borings were backfilled with auger cuttings upon completion of sampling.

2.3 LABORATORY TESTING

Selected samples obtained from our subsurface exploration were tested in our soil laboratory. Tests consisted of in-situ moisture content and dry density, maximum dry density and optimum moisture content, expansion index, soluble sulfate content, direct shear, consolidation/collapse potential, grain-size distribution analysis, corrosivity testing (pH, chloride, and resistivity) and R-Value. A description of laboratory test criteria and test results is presented in Appendix B.

3.0 SUBSURFACE CONDITIONS

3.1 SOIL CONDITIONS

Descriptions of the earth materials encountered during our investigation are summarized below and are presented in detail on the Exploration Logs presented in Appendix A.

Soil materials encountered at the subject site consisted of older alluvium overlain by artificial fill. The artificial fill typically consists of mottled light brown and brown, damp and stiff to very stiff silty clay/clayey silt with various amounts of sand. The thickness of artificial fill encountered across the site in our exploratory borings varied from 1.5 to 3.5 feet. Thicker accumulations of artificial fill may be encountered locally where the former building was located and associated with underground utilities.

Older alluvial materials were encountered below the artificial fill materials to the maximum depth of exploration (51.5 feet below the ground surface). These deposits are typically reddish brown, yellowish brown, and light brown in color, dry to damp and very stiff to hard silty clay and medium dense to dense silty sand. A more detailed description of the soil material encountered at each of the boring locations is presented in Appendix A.

3.2 GROUNDWATER

Groundwater was not encountered during this firm's subsurface exploration to a maximum depth of 51.5 feet below the existing ground surface. The CDMG Special Report 037 suggests that historic high groundwater for the subject site is between 80 to 100 feet.

3.3 FAULTING

Based on our review of the referenced publications and seismic data, no active faults are known to project through or immediately adjacent the subject sites and the sites do not lie within an "Earthquake Fault Zone" as defined by the State of California in Earthquake Fault Zoning Act. Table 3.1 presents a summary of known seismically active faults within 10 miles of the sites based on the 2008 USGS National Seismic Hazard Maps.

TABLE 3.1
Summary of Faults

Name	Dist. (miles)	Slip Rate (mm/yr.)	Preferred Dip (degrees)	Slip Sense	Rupture Top (km)	Fault Length (km)
Puente Hills (Santa Fe Springs)	1.53	0.7	29	thrust	2.8	11
Elsinore;W	1.65	2.5	75	strike slip	0	45
Elsinore;W+GI+T	1.65	n/a	84	strike slip	0	124
Elsinore;W+GI	1.65	n/a	81	strike slip	0	83
Elsinore;W+GI+T+J	1.65	n/a	84	strike slip	0	199
Elsinore;W+GI+T+J+CM	1.65	n/a	84	strike slip	0	241
Puente Hills (Coyote Hills)	4.37	0.7	26	thrust	2.8	17
Puente Hills (LA)	7.27	0.7	27	thrust	2.1	22
San Jose	9.41	0.5	74	strike slip	0	20
Elysian Park (Upper)	9.99	1.3	50	thrust	3	20

4.0 ANALYSES

4.1 SEISMICITY

2019 CBC requires seismic parameters in accordance with ASCE 7-16. Unless noted otherwise, all section numbers cited in the following refer to the sections in ASCE 7-16.

Per Section 20.3 the project site was designated as Site Class D. We used the OSHPD seismic hazard tool to obtain the basic mapped acceleration parameters, including short periods (S_S) and 1-second period (S_1) MCE_R Spectral Response Accelerations. Section 11.4.8 requires site-specific ground hazard analysis for structures on Site Class E with S_S greater than or equal to 1.0 or Site Class D or E with S_1 greater than or equal to 0.2. Based on the mapped values of S_S and S_1 the project site falls within this category, requiring site-specific hazard analysis in accordance with Section 21.2.

However, "A ground motion hazard analysis is not required for structures where: Structures on Site Class D sites with S_1 greater than or equal to 0.2, provided the value of the seismic response coefficient Cs is determined by Eq. (12.8-2) for values of $T \leq 1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either Eq. (12.8-3) for $T_L \geq T > 1.5T_s$ or Eq. (12.8-4) for $T > T_L$." Assuming this exception is met for this project, a ground motion hazard analysis is not required and mapped seismic values can be used. Should this exception not be met, a ground motion hazard analysis is required to determine the Design response spectra for the proposed structures at this site.

Both mapped and site-specific seismic design parameters are provided in this report as presented in Section 6.2. Details of a ground motion hazard analysis are explained below.

According to Section 21.2.3 (Supplement 1), the site-specific Risk Targeted Maximum Considered Earthquake (MCE_R) spectral response acceleration at any period is the lesser of the probabilistic and the deterministic response accelerations, subject to the exception specified in the same section. The probabilistic response spectrum was developed using the computer program OpenSHA (Field et al., 2013), which implements Method 1 as described on Section 21.2.1.1. Fault Models 3.1 and 3.2 from the Third Uniform California Earthquake Rupture Forecast (UCERF3) were used as the earthquake rupture forecast models for the PSHA. In addition to known fault sources, background seismicity was also included in the PSHA. The ground motion Prediction Equations (GMPEs) selected for use in this analysis are those developed for the Pacific Earthquake Engineering Research Center (PEER) Next Generation Attenuation (NGA) West 2 project. Four GMPEs - Abrahamson et al. (2014), Boore et al. (2014), Campbell and Bozorgnia (2014), and Chiou and Youngs (2014) were used to perform the analysis.

In accordance with Section 21.2.2 (Supplement 1), the deterministic spectral response acceleration at each period was calculated as the 84th percentile, 5% damped response acceleration, using NGA-West2 GMPE Worksheet. For this, the information from at least three causative faults with the greatest contribution per deaggregation analysis were used and the larger acceleration spectrum among these was selected as the deterministic response spectrum. The deterministic spectrum was adjusted per requirements in Section 21.2.2 (Supplement 1) where applicable. Both probabilistic and deterministic spectra were subjected to the maximum direction scale factors specified in Section 21.2 to produce the maximum acceleration spectra.

Design response spectrum was developed by subjecting the site-specific MCE_R response spectrum to the provisions outlined in Section 21.3. This process included comparison with 80% code-based design spectrum determined in accordance with Section 11.4.6. The short period and long period site coefficient (Fa and Fv, respectively) were determined per Section 21.3 in conjunction with Table 11.4-1. Site specific design acceleration parameters (S_{MS}, S_{M1}, S_{DS}, and S_{D1}) were calculated according to Section 21.4.

Per Section 11.2 (definitions on Page 79 of ASCE7-16) for evaluation of liquefaction, lateral spreading, seismic settlements, and other soil-related issues, Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration PGA_M shall be used. The site-specific PGA_M is calculated per Section 21.5.3, as the lesser of the probabilistic PGA_M (Section 21.5.1) and deterministic PGA_M (Section 21.5.2), but no less than 80% site modified peak ground acceleration, PGA_M, obtained from OSHPD seismic hazard tool. From our analyses, we obtain a PGA_M of 0.792g.

4.2 STATIC SETTLEMENT

Laboratory testing of older alluvial materials suggests they are somewhat overconsolidated. The over consolidation ratio (OCR) was interpreted to range about 5 in the upper 10 feet. Two analyses were performed to evaluate settlement of the structures. The first model was based on a conventional shallow strip footing 2 feet wide and a wall load of 2,000 psf. This model yielded a total settlement of 0.4 inches. The second model was based on a conventional square footing with 5

feet width and a column load of 2,000 psf. This model yielded a total settlement of 0.4 inches. Both analyses assume the upper 2 feet of existing fill soils would be removed and replaced as compacted fill.

5.0 CONCLUSIONS

5.1 FEASIBILITY OF PROPOSED DEVELOPMENT

From a geotechnical point of view, the proposed site development is considered feasible provided the recommendations presented in this report are incorporated into the design and construction of the project. Furthermore, it is also our opinion that the proposed development will not adversely impact the stability of adjoining properties. Key issues that could have significant fiscal impacts on the geotechnical aspects of the proposed site development are discussed in the following sections of this report.

5.2 GEOLOGIC HAZARDS

5.2.1 Ground Rupture

No known active faults are known to project through the subject sites nor do the sites lie within the boundaries of an "Earthquake Fault Zone" as defined by the State of California in the Whittier Earthquake Fault Zoning Act. The closest known active fault is Elsinore fault zone, Whittier section (Whittier fault) fault located approximately 1.65 miles away. Therefore, potential for ground rupture due to an earthquake beneath the sites is considered low.

5.2.2 Ground Shaking

The site is situated in a seismically active area that has historically been affected by generally moderate to occasionally high levels of ground motion. The site lies in relatively close proximity to several seismically active faults; therefore, during the life of the proposed improvements, the property will probably experience similar moderate to occasionally high ground shaking from these fault zones, as well as some background shaking from other seismically active areas of the Southern California region. Design and construction in accordance with the current California Building Code (CBC) requirements is anticipated to address the issues related to potential ground shaking.

5.2.3 Landsliding

Geologic hazards associated with landsliding are not anticipated at the site since the site is relatively level.

5.2.4 Liquefaction

Engineering research of soil liquefaction potential (Youd, et al., 2001) indicates that generally three basic factors must exist concurrently in order for liquefaction to occur. These factors include:

- A source of ground shaking, such as an earthquake, capable of generating soil mass distortions.
- A relatively loose silty and/or sandy soil.

- A relative shallow groundwater table (within approximately 50 feet below ground surface) or completely saturated soil conditions that will allow positive pore pressure generation.

Considering that the site is not underlain by relatively loose silty and/or sandy soils and that groundwater was not encountered to the maximum depth of 51.5 feet during our site exploration, the potential for liquefaction to occur beneath the site is considered very low. The site is **not** located within a State-designated zone of potentially liquefiable soils.

5.3 STATIC SETTLEMENT

Analyses were performed to evaluate potential for static settlement of the underlying older alluvium. Our analyses were based on the results of consolidation tests performed on selected samples from our borings as well as the correlations between deformation properties (elastic modulus) and the onsite soil properties as represented by standard penetration test blow counts corrected for hammer efficiency (N_{60}).

Provided site grading is performed in accordance with the recommendations provided herein and based on the anticipated relatively light foundation loads, total and differential static settlement is not anticipated to exceed 1 inch and ½-inch over 30 feet, respectively, for the proposed residential structure. The estimated magnitudes of static settlements are considered within tolerable limits for the proposed structure.

5.4 EXCAVATION AND MATERIAL CHARACTERISTICS

Onsite earth materials are anticipated to be relatively easy to excavate with conventional heavy earthmoving equipment. The site earth materials are generally considered suitable for reuse as fill provided they are cleared on deleterious debris and oversized rocks (greater than 4 inches in greatest dimension). Concrete debris and asphalt from demolition of the existing parking lot can be reduced in size (4" minus) and incorporated within fill soils during earthwork operations.

5.5 SHRINKAGE/BULKAGE AND SUBSIDENCE

Volumetric changes in earth quantities will occur when excavated onsite soil materials are replaced as properly compacted fill. We estimate that the near surface soils will shrink approximately less than 5 to 10 percent when removed and replaced as compacted fill. Subsidence due to processing of excavations exposing competent materials is anticipated to be negligible. The estimates of shrinkage and subsidence are intended as an aid for project engineers in determining earthwork quantities. However, these estimates should be used with some caution since they are not absolute values. Contingencies should be made for balancing earthwork quantities based on actual shrinkage and subsidence that occurs during the grading process.

5.6 SOIL EXPANSION

Based on our laboratory test results and the USCS visual manual classification, the near-surface soils are generally anticipated to possess a **Low** to **High** expansion potential. High expansion potential was observed in samples collected in B-4 at 4 feet within the older alluvial materials. Adverse

effects from expansive materials can be mitigated through the use of adequately designed foundations and slab systems. Specific recommendations for foundations and slab systems are presented in a later section of this report. Additional mitigation can also be achieved by lime treatment, removal and replacement, and the placement of compacted fills below slabs on grade at lower relative compactions and higher moistures to lessen their expansion potential. Specific recommendations for these additional mitigation measures can be provided, if requested. Additional testing for soil expansion will be required subsequent to rough grading and prior to construction of foundations and other concrete flatwork to confirm these conditions.

6.0 RECOMMENDATIONS

6.1 EARTHWORK

6.1.1 General Earthwork and Grading Specifications

All earthwork and grading should be performed in accordance with applicable requirements of Cal/OSHA, applicable specifications of the Grading Codes of the City of Whittier, California in addition to the recommendations presented herein.

6.1.2 Pre-Grade Meeting and Geotechnical Observation

Prior to commencement of grading, we recommend a meeting be held between the developer, City Inspector, grading contractor, civil engineer, and geotechnical consultant to discuss the proposed grading and construction logistics. We also recommend a geotechnical consultant be retained to provide soil engineering and engineering geologic services during site grading and foundation construction. This is to observe compliance with the design specifications and recommendations and to allow for design changes in the event that subsurface conditions differ from those anticipated. If conditions are encountered that appear to be different than those indicated in this report, the project geotechnical consultant should be notified immediately. Design and construction revisions may be required.

6.1.3 Site Clearing

Areas to be graded should be cleared of vegetation, existing asphalt, underground improvements to be abandoned and deleterious materials. Under certain conditions, existing underground utility lines may also be abandoned in place. However, specific recommendations should be provided by this firm in advance. Any seepage pits and water wells encountered during future site grading should also be properly destroyed or abandoned in accordance with the requirements established by the governing agencies as well as recommendations made in the field by the project geotechnical consultant.

The project geotechnical consultant should be notified at the appropriate times to provide observation services during clearing operations to verify compliance with the above recommendations. Voids created by clearing and excavation should be left open for observation by the geotechnical consultant. Should any unusual soil conditions or subsurface structures be encountered during site clearing or grading that are not described or anticipated herein, these conditions should be brought to the immediate attention of the project geotechnical consultant for corrective recommendations as needed.

Temporary construction equipment (office trailers, power poles, etc.) should be positioned to allow adequate room for clearing and recommended ground preparation to be performed for proposed structures, pavements, and hardscapes.

6.1.4 Ground Preparation (Removals and Overexcavations)

In general, the artificial fill materials are considered unsuitable for support of the proposed development and should be removed down to competent older alluvium. Based on our exploratory borings, the depth of the artificial fill materials is anticipated to be up to 3.5 feet. However, deeper fills are expected in the areas of the previous site improvements (i.e., utility lines) and where the former building was demolished. In addition to the artificial fill materials, disturbed older alluvial materials in the vicinity of the existing trees may also be present and will require removal.

Removal of unsuitable materials should extend laterally beyond the limits of proposed buildings and structural improvements a distance equal to the depth of removal (i.e., 1:1, H:V projection) but not less than 5 feet. However, removals for retaining walls and pavement may be limited to the edge of the foundations or pavement where lateral restrictions to removals are present such as property lines. The estimated depths of unsuitable materials, based on our exploratory borings, are shown on the Geotechnical Map, Plate 1. The actual depth and limits of removals should be determined by the geotechnical consultant during grading.

Following removals, all building pads and walls should be overexcavated to a minimum depth of 1 foot below the bottoms of footings. The building pad overexcavations should extend at least 5 feet beyond the outside edge of the perimeter foundations, whereas for the wall, the overexcavations maybe limited to the edge of the foundations. Pavement areas should also be overexcavated at least 2 feet below finish grades. The overexcavations for pavement areas should extend to the outside edge of the pavement.

All removal and overexcavations buttons excavations should be evaluated by the geotechnical consultant during grading to confirm the exposed conditions are as anticipated and to provide supplemental recommendations if required.

6.1.5 Scarification

Prior to placement of compacted fill, the exposed ground should be scarified to a depth of 6 to 8 inches, moisture conditioned to at least 110 percent of the optimum moisture content, then compacted to at least 90 percent of the laboratory standard. The laboratory standard for maximum dry density and optimum moisture content for each soil type should be determined in accordance with ASTM D 1557.

6.1.6 Fill Placement

Materials excavated from the site may be reused as fill provided they are free of deleterious material (i.e. tree roots) and particles greater than 4 inches in maximum dimension (oversized materials). Asphaltic and concrete debris generated during site demolition or encountered within the existing fill can be incorporated within new fill soils during earthwork operations provided they are reduced to no more than 4 inches in maximum dimension. Such materials should be mixed thoroughly with fill soils to prevent nesting. All fill should be placed in lifts no greater than 8 inches in loose thickness, moisture conditioned to at least the optimum moisture content, then compacted in place to at least 90

percent of the laboratory standard. Each lift should be treated in a similar manner. Subsequent lifts should not be placed until the project geotechnical consultant has approved the preceding lift.

6.1.7 Import Materials

If import materials are required to achieve the proposed finish grades, the proposed import soils should have an Expansion Index (EI, ASTM D 4829) less than 91 and possess negligible soluble sulfate concentrations. Import sources should be indicated to the geotechnical consultant prior to hauling the materials to the site so that appropriate testing and evaluation of the fill materials can be performed in advance.

6.1.8 Temporary Excavations

Temporary construction slopes in site materials that are not surcharged may be cut vertically up to a height of 4 feet. Temporary excavations greater than 4 feet but no greater than 10 feet in height that are not surcharged should be laid back at a maximum gradient of 1:1 (H:V) or properly shored.

Excavations should not be left open for prolonged periods of time. The project geotechnical consultant should observe all temporary cuts to confirm anticipated conditions and to provide alternate recommendations if conditions dictate. All excavations should conform to the requirements of Cal/OSHA. Based on the anticipated removal/overexcavation depths discussed herein and the current positions of the buildings from property lines, we anticipate that removals can be accomplished with open cuts. However, if deeper removals are required during grading or final building locations are closer to property lines than currently shown on the referenced plans resulting in insufficient room for recommended lay back cuts, shoring or slot cutting methods may be required. Additional recommendations for such conditions can be provided after reviewing final site plans and during grading.

6.2 SEISMIC DESIGN PARAMETERS

6.2.1 Mapped Seismic Design Parameters

For design of the project in accordance with Chapter 16 of the 2019 CBC, the mapped seismic parameters may be taken as presented in the tables 6.1.

TABLE 6.1
2019 CBC Mapped Seismic Design Parameters

Parameter	Value
Site Class	D
Mapped MCE_R Spectral Response Acceleration, short periods, S_S	1.795
Mapped MCE_R Spectral Response Acceleration, at 1-sec. period, S_1	0.639
Site Coefficient, F_a	1.0
Site Coefficient, F_v	1.7*
Adjusted MCE_R Spectral Response Acceleration, short periods, S_{MS}	1.795
Adjusted MCE_R Spectral Response Acceleration, at 1-sec. period, S_{M1}	1.086
Design Spectral Response Acceleration, short periods, S_{DS}	1.196
Design Spectral Response Acceleration, at 1-sec. period, S_{D1}	0.724
Long-Period Transition Period, T_L (sec.)	8
Seismic Design Category for Risk Categories I-IV	II

MCE_R = Risk-Targeted Maximum Considered Earthquake

*According to Section 11.4.8 in ASCE 7-16, "a ground motion hazard analysis shall be performed in accordance with Section 21.2 for the following structures on Site Class D and E sites with S_1 greater than or equal to 0.2." However, "A ground motion hazard analysis is not required for structures where: Structures on Site Class D sites with S_1 greater than or equal to 0.2, provided the value of the seismic response coefficient C_s is determined by Eq. (12.8-2) for values of $T \leq 1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either Eq. (12.8-3) for $T_L \geq T > 1.5T_s$ or Eq. (12.8-4) for $T > T_L$." The F_v value of 1.7 above from Table 11.4-2 assumes that this exception is met and that a ground motion hazard analysis is not required. Should this exception not be met, the site-specific seismic design parameters provided in the next section should be used.

6.2.2 Site-Specific Seismic Design Parameters

In addition to the Code Spectra parameters presented in Table 6.1, we have performed a site-specific ground motion hazard analysis in accordance with Chapter 21 of ASCE 7-16 to obtain site-specific seismic design acceleration parameters, the risk-targeted maximum considered earthquake response spectrum, and the design earthquake response spectrum. The site-specific seismic design parameters are presented in Table 6.2.

TABLE 6.2
2019 CBC Site Specific Seismic Design Parameters

Parameter	Value
Site Class	D
Adjusted MCE Spectral Response Acceleration, short periods, S_{MS}	1.945
Adjusted MCE Spectral Response Acceleration, at 1-sec. period, S_{M1}	1.278
Design Spectral Response Acceleration, short periods, S_{DS}	1.297
Design Spectral Response Acceleration, at 1-sec. period, S_{D1}	0.852

MCE = Maximum Considered Earthquake

6.3 PRELIMINARY FOUNDATION DESIGN

6.3.1 General

The following design parameters are provided to assist the project structural engineer to design foundations for structures at the site. These design parameters are based on typical site materials encountered during subsurface exploration and are provided for preliminary design and estimating purposes. The project geotechnical consultant should provide final design parameters following observation and testing of site materials during grading. Depending on actual materials encountered during site grading, the design parameters presented herein may require modification.

6.3.2 Soil Expansion

The recommendations presented herein are based on soils with a **High** expansion potential. Following site grading, additional testing of site soils should be performed by the project geotechnical consultant to confirm the basis of these recommendations. If site soils with higher expansion potentials are encountered or imported to the site, the recommendations contained herein may require modification.

6.3.3 Static and Seismic Settlement

Provided that the recommendations for ground preparation in this report are followed and based on anticipated foundation loads discussed herein, total and differential static settlements are anticipated to be less than 1 inch and ½ inch over 30 feet, respectively. These values are considered within tolerable limits of proposed structures and site improvements. Design of the structures should consider these maximum anticipated settlements.

6.3.4 Allowable Bearing Value

Foundations in compacted fill or competent native soils may utilize a bearing value of 1,300 pounds per square foot (psf) for continuous and pad footings a minimum width of 12 inches and founded at a minimum depth of 12 inches below the lowest adjacent grade. This value may be increased by 170 psf and 510 psf for each additional foot in width and depth, respectively, up to a maximum value of 3,000 psf. Recommended allowable bearing values include both dead and live loads, and may be increased by one-third for wind and seismic forces.

6.3.5 Lateral Resistance

A passive earth pressure of 300 pounds per square foot per foot of depth (psf/ft) up to a maximum value of 2,000 pounds per square foot (psf) may be used to determine lateral bearing for footings. This value may be increased by one-third when designing for wind and seismic forces. A coefficient of friction of 0.29 times the dead load forces may also be used between concrete and the supporting soils to determine lateral sliding resistance. No increase in the coefficient of friction should be used when designing for wind and seismic forces.

The above values are based on footings placed directly against compacted fill or competent native soils. In the case where footing sides are formed, all backfill against the footings should be compacted to at least 90 percent of the laboratory standard.

6.3.6 Footing and Slab on Grade

Exterior and interior building footings should be founded at a minimum depth of 18 inches and 12 inches, respectively, below the lowest adjacent grade. All continuous footings should be reinforced with a minimum of four No. 5 bars, two top and two bottom. The structural engineer may require different reinforcement and should dictate if greater than the recommendations provided herein.

Interior isolated pad footings should be a minimum of 24 inches square and founded at minimum depths of 12 inches below the lowest adjacent final grade. Exterior isolated pad footings intended for support of patio covers or similar construction should be a minimum of 24 inches square and founded at a minimum depth of 24 inches below the lowest adjacent final grade.

Interior concrete slabs constructed on grade should be a minimum 5 inches thick and should be reinforced with No. 3 bars spaced 12 inches on center, each way. Care should be taken to ensure the placement of reinforcement at mid-slab height. The structural engineer may recommend a greater slab thickness and reinforcement based on the proposed use and loading conditions and such recommendations should govern if greater than the recommendations presented herein.

Concrete floor slabs in areas to receive carpet, tile, or other moisture-sensitive coverings should be underlain with a minimum of 10-mil moisture vapor retarder conforming to ASTM E 1745-11, Class A. The membrane should be properly lapped, sealed, and underlain with at least 4 inches of sand having a SE no less than 30. One inch of this sand may be placed over the membrane to aid in the curing of the concrete. This vapor retarder system is anticipated to be suitable for most flooring finishes that can accommodate some vapor emissions. However, this system may emit more than 4 pounds of water per 1000 sq. ft. and, therefore, may not be suitable for all flooring finishes. Additional steps should be taken if such vapor emission levels are too high for anticipated flooring finishes.
Special consideration should be given to slabs in areas to receive ceramic tile or other rigid, crack-sensitive floor coverings. Design and construction of such areas should mitigate hairline cracking as recommended by the structural engineer.

For design of the slab in accordance with the WRI, an effective Plastic Index (PI) of 41 should be used in the design. This value includes factors for ground slope and overconsolidation. The beams should be reinforced with a minimum of four No. 4 bars, two top and two bottom. Beams should be spaced at a maximum spacing of 15 feet in each direction. From our preliminary calculations, beams spaced at 15 feet on center and having a depth of 12 inches below the bottom of slab meet the minimum requirements of the WRI.

6.3.7 Post-Tensioned Slab on Grade

As an alternative, a post-tension foundation system can be used for support of the proposed buildings. Perimeter edge beams for the post-tensioned slabs should have a minimum effective width of 12 inches and be founded at a minimum depth of 12 inches below the lowest adjacent final ground surface. Where a post-tensioned mat is utilized, the exterior edge of the mat should be embedded at least 8 inches below the lowest adjacent grade. The thickness of the floor slab/mat should be determined by the project structural engineer; however, we recommend a minimum slab thickness of 4 inches.

Concrete floor slabs in areas to receive carpet, tile, or other moisture-sensitive coverings should be underlain with a minimum of 10-mil moisture vapor retarder conforming to ASTM E 1745, Class A. The membrane should be properly lapped, sealed, and underlain within a layer of sand at least 4 inches thick. One inch of sand may be placed over the membrane to aid in the curing of the concrete. The sand should have a SE no less than 30. This vapor retarder system is anticipated to be suitable for most flooring finishes that can accommodate some vapor emissions. However, this system may emit more than 4 pounds of water per 1000 sq. ft. and therefore, may not be suitable for all flooring finishes. Additional steps should be taken if such vapor emission levels are too high for anticipated flooring finishes. Where a mat is utilized, the sand may be reduced to 1 inch provided the mat is at least 8 inches thick.

Prior to placing concrete, subgrade soils below slab-on-grade/mat areas should be thoroughly moistened to provide moisture contents that are at least 110 percent of the optimum moisture content to a depth of 12 inches.

Based on the guidelines provided in the "Design of Post-Tensioned Slabs-on-Ground" 3rd Edition by Post-Tensioning Institute, the e_m and y_m values are summarized in Table 6.2 below.

TABLE 6.2
PTI Design Parameters

Parameter	Value
Edge Lift Moisture Variation Distance, e_m	3.8 feet
Edge Lift, y_m	3.311 inches
Center Lift Moisture Variation Distance, e_m	6.5 feet
Center Lift, y_m	2.669 inches

6.3.8 Foundation Observations

Foundation excavation should be observed by the project geotechnical consultant to verify that they have been excavated into competent bearing soils and to the minimum embedment recommended above. These observations should be performed prior to placement of forms or reinforcement. The excavations should be trimmed neat, level and square. Loose, sloughed or moisture-softened materials and debris should be removed prior to placing concrete.

6.4 RETAINING AND SCREENING WALLS

6.4.1 General

The following preliminary design and construction recommendations are provided for general retaining and screen walls supported by engineered compacted fill or competent native soils. Final wall designs specific to the site development should be provided for review once completed. The structural engineer and architect should provide appropriate recommendations for sealing at all joints and applying moisture-proofing material on the back of the walls.

6.4.2 Allowable Bearing Value and Lateral Resistance

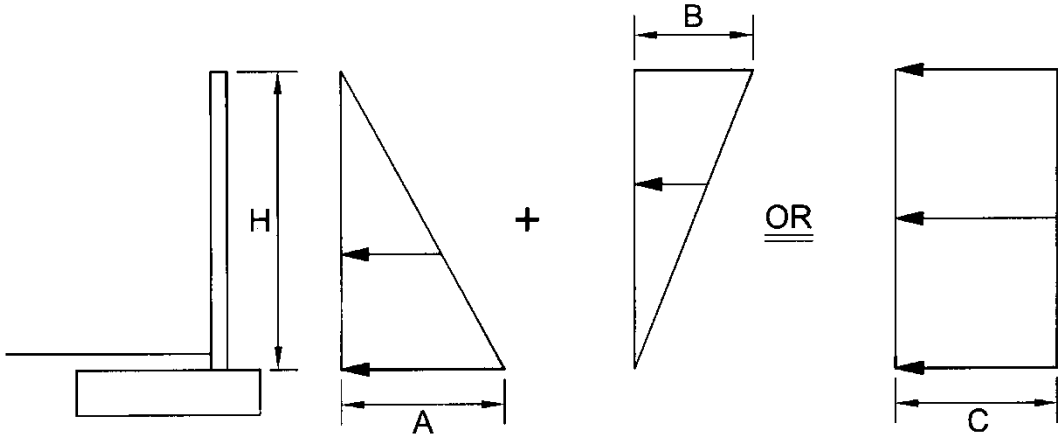
Design of retaining and screen walls may utilize the bearing and lateral resistance values provided in Section 6.3.4 and 6.3.5. The passive earth pressure for walls along property lines, where lateral removals are likely restricted should be reduced by 50%.

6.4.3 Active Earth Pressures

Static and seismic earth pressures for level and 2:1 (H:V) backfill conditions are provided in Table 6.3. Seismic earth pressures provided herein are based on the method provided by Seed & Whitman (1970) using a peak ground acceleration (PGA) of 0.46 g for 10% probability of exceedance in 50 years. As indicated in Section 1803.5.12 of the 2019 CBC, retaining walls supporting 6 feet of backfill or less are not required to be designed for seismic earth pressures. The values provided in the following table do not consider hydrostatic pressure. Retaining walls should also be designed to support adjacent surcharge loads imposed by other nearby footings or traffic loads in addition to the earth pressure.

TABLE 6.3

SEISMIC EARTH PRESSURES
Pressure Diagram



Static Component | Seismic Component | Total Force

Pressure Values
Walls Up To 10 Feet High

Value	Backfill Condition	
	Level	2H:1V Slope
A	46H	26H
B	14H	14H
C	30H	20H

Note:
H is in feet and resulting pressure is in psf. Design may utilize either the sum of the static component and the seismic component force diagrams or the total force diagram above. SEAOSC has suggested using a load factor of 1.7 for the static component and 1.0 for the seismic component. The actual load factors should be determined by the structural engineer.

6.4.4 Drainage and Moisture-Proofing

Retaining walls should be constructed with a perforated pipe and gravel subdrain to prevent entrapment of water in the backfill. The perforated pipe should consist of 4-inch-diameter, ABS SDR-35 or PVC Schedule 40 with the perforations laid down. The pipe should be embedded in ¾- to 1½-inch open-graded gravel wrapped in filter fabric. The gravel should be at least one foot wide and extend at least one foot up the wall above the footing and drainage outlet. Drainage gravel and piping should not be placed below outlets and weepholes. Filter fabric should consist of Mirafi 140N, or equal. Outlet pipes should be directed to positive drainage devices.

The use of weepholes may be considered in locations where aesthetic issues from potential nuisance water are not a concern. Weepholes should be 2 inches in diameter and provided at least every 6 feet on center. Where weepholes are used, perforated pipe may be omitted from the gravel subdrain.

Retaining walls supporting backfill should also be coated with a moisture-proofing compound or covered with such material to inhibit infiltration of moisture through the walls. Moisture-proofing material should cover any portion of the back of wall that will be in contact with soil and should lap over and onto the top of footing. A drainage panel should be provided between the soil backfill and waterproofing. The panel should extend from the top of the backdrain gravel up to within 12 inches of finish grade. The top of footing should be finished smooth with a trowel to inhibit the infiltration of water through the wall. The project structural engineer should provide specific recommendations for moisture-proofing, water stops, and joint details.

6.4.5 Foundation Observations

Footing excavations should be observed by the project geotechnical consultant to verify that they have been excavated into competent bearing soils and to the minimum embedment recommended herein. These observations should be performed prior to placement of forms or reinforcement. The excavations should be trimmed neat, level and square. Loose, sloughed or moisture-softened materials and debris should be removed prior to placing concrete.

6.4.6 Wall Backfill

Onsite soils may generally be used for backfill of retaining walls. However, soils with an expansion index equal to or greater than 70 should not be used. The project geotechnical consultant should approve all backfill used for retaining walls. Wall backfill should be moisture-conditioned to slightly over the optimum moisture content; placed in lifts no greater than 12 inches in thickness, and then mechanically compacted with appropriate equipment to at least 90 percent of the laboratory standard. Hand-operated compaction equipment should be used to compact the backfill placed immediately adjacent to the wall to avoid damage to the wall. Flooding or jetting of backfill material is not recommended.

6.5 EXTERIOR FLATWORK

Exterior flatwork should be a minimum 4 inches thick. Cold joints or saw cuts should be provided at least every 5 feet in each direction. Flatwork having a minimum dimension more than 5 feet should be reinforced with No. 3 bars spaced 24 inches center to center each way or 6-inch by 6-inch, W2.9

by W2.9 welded wire mesh. Special jointing detail should be provided in areas of block-outs, notches, or other irregularities to avoid cracking at points of high stress. Subgrade soils below flatwork should be thoroughly moistened to at least 120 percent of the optimum moisture content to a depth of 12 inches. Moistening should be accomplished by lightly spraying the area over a period of a few days just prior to pouring concrete. The geotechnical consultant should observe and verify the density and moisture content of subgrade soils prior to pouring concrete to ensure that the required compaction and pre-moistening recommendations have been met.

Drainage from flatwork areas should be directed to local area drains and/or other appropriate collection devices designed to carry runoff water to the street or other approved drainage structures. The concrete flatwork should also be sloped at a minimum gradient of 2 percent away from building foundations and retaining walls.

6.6 CONCRETE MIX DESIGN

Laboratory testing of near-surface soils for soluble sulfate content indicates soluble sulfate concentration of 0.014%. We recommend following the procedures provided in ACI 318, Table 4.3.1 for **S1** sulfate exposure. Upon completion of rough grading, an evaluation of as-graded conditions and further laboratory testing should be completed for the site to confirm or modify the recommendations provided in this section.

6.7 CORROSION

Results of preliminary testing of soils for pH and minimum resistivity indicate the site is potentially **Severely Corrosive** to metals that are in contact or close proximity to onsite soils. As such, specific recommendations should be obtained from a corrosion specialist if construction will include metals that will be near or in direct contact with site soils.

Results of preliminary testing of soils for chloride indicate a relatively low risk for corrosion due to chlorides in site soils. Construction of reinforced concrete in accordance with the current ACI requirements for concrete cover over rebar is anticipated to provide appropriate protection of reinforcing steel.

6.8 PRELIMINARY PAVEMENT DESIGN

6.8.1 Preliminary Pavement Structural Sections

Preliminary pavement sections are provided in Table 6.4. They are based on an R-Value of 8 from our laboratory testing of onsite soils and an estimated traffic index. The sections provided below are for planning purposes only and should be re-evaluated subsequent to site grading. Final pavement sections should be based on actual R-value testing of in-place soils and analysis of anticipated traffic. ***Due to a high swell strain noted in one of the consolidation test results and high expansion potential, full depth AC can be used for driveways and parking stalls to help reduce infiltration in the subsurface.***

TABLE 6.4
PRELIMINARY PAVEMENT STRUCTURAL SECTIONS

Location	Traffic Index	AC (inches)	Concrete Pavers (mm)	PCC (inches)	AB (inches)
Private Driveway	5.5	3.0 4.0 5.0 8.0	--	--	12.0 10.0 7.0 0
		--	--	8.0	--
		--	80.0	--	13.0
Parking Stalls	--	3.0	--	--	6.0
		5.5			0.0

6.8.2 Subgrade Preparation

Prior to placement of paving elements, subgrade soils should be scarified 6 inches, moisture-conditioned to above the optimum moisture content then compacted to at least 90 percent of the maximum dry density determined in accordance with ASTM D1557. Areas observed to pump or yield under vehicle traffic should be removed and replaced with firm and unyielding engineered compacted soil or aggregate base materials.

6.8.3 Aggregate Base

Aggregate base materials should be Crushed Aggregate Base or Crushed Miscellaneous Base conforming to Section 200-2 of the Standard Specification for Public Works Construction (Greenbook) or Class 2 Aggregate Base conforming to the Caltrans' Standard Specifications. The materials should be moisture conditioned to slightly over the optimum moisture content then compacted to at least 95 percent of ASTM D 1557.

6.8.4 Asphaltic Concrete

Paving asphalt should be PG 64-10 conforming to the requirements of Section 203-1 of the Greenbook. Asphalt concrete materials should conform to Section 203-6 and construction should conform to Section 302 of the Greenbook.

6.8.5 Concrete Paver

Concrete pavers should conform to the requirements of ASTM C 936. Construction of the pavers, including bedding sand, should follow manufacturer's specifications. The typical thickness of bedding sand is about 1 inch. The gradation of bedding sand should meet the requirement in Table 6.5.

TABLE 6.5
Gradation for Sand Bedding

Sieve Size	Percent Passing
⅜"	100
No. 4	95 - 100
No. 8	80 - 100
No. 16	50 - 85
No. 30	25 - 60
No. 50	5 - 30
No. 100	0 - 10
No. 200	0 - 1

6.8.6 Portland Cement Concrete

Portland cement concrete used to construct concrete paving should conform to Section 201 of the Greenbook and should have a minimum compressive strength of 3,250 pounds per square inch (psi) at 28 days. Reinforcement and jointing of concrete pavement sections should be designed according to the minimum recommendations provided by the Portland Cement Association (PCA). For rigid pavement, transverse and longitudinal contraction joints should be provided at spacing no greater than 15 feet. Score joints may be constructed by saw cutting to a depth of ¼ of the slab thickness. Expansion/cold joints may be used in lieu of score joints. Such joints should be properly sealed. Where traffic will traverse over cold joints without keyways or dowels or edges of concrete paving, the edges should be thickened by 20% of the design thickness toward the edge over a horizontal distance of 5 feet.

6.9 POST GRADING CONSIDERATIONS

6.9.1 Site Drainage and Irrigation

The ground immediately adjacent to foundations should be provided with positive drainage away from the structures in accordance with 2019 CBC, Section 1804.4. No rain or excess water should be allowed to pond against structures such as walls, foundations, flatwork, etc.

Excessive irrigation water can be detrimental to the performance of the proposed site development. Water applied in excess of the needs of vegetation will tend to percolate into the ground. Such

percolation can lead to nuisance seepage and shallow perched groundwater. Seepage can form on slope faces, on the faces of retaining walls, in streets, or other low-lying areas. These conditions could lead to adverse effects such as the formation of stagnant water that breeds insects, distress or damage of trees, surface erosion, slope instability, discoloration and salt buildup on wall faces, and premature failure of pavement. Excessive watering can also lead to elevated vapor emissions within buildings that can damage flooring finishes or lead to mold growth inside the home.

Key factors that can help mitigate the potential for adverse effects of overwatering include the judicious use of water for irrigation, use of irrigation systems that are appropriate for the type of vegetation and geometric configuration of the planted area, the use of soil amendments to enhance moisture retention, use of low-water demand vegetation, regular use of appropriate fertilizers, and seasonal adjustments of irrigation systems to match the water requirements of vegetation. Specific recommendations should be provided by a landscape architect or other knowledgeable professional.

6.9.2 Utility Trenches

Trench excavations should be constructed in accordance with the recommendations contained in Section 6.1.8 of this report. Trench excavations must also conform to the requirements of Cal/OSHA.

Trench backfill materials and compaction criteria should conform to the requirements of the local municipalities. As a minimum, utility trench backfill should be compacted to at least 90 percent of the laboratory standard. Materials placed within the pipe zone (6 inches below and 12 inches above the pipe) should consist of particles no greater than ¾ inches and have a SE of at least 30. The materials within the pipe zone should be moisture-conditioned and compacted by hand-operated compaction equipment. Above the pipe zone (>1 foot above pipe), the backfill may consist of general fill materials. Trench backfill should be moisture-conditioned to slightly over the optimum moisture content, placed in lifts no greater than 12 inches in thickness, and then mechanically compacted with appropriate equipment to at least 90 percent of the laboratory standard. For trenches with sloped walls, backfill material should be placed in lifts no greater than 8 inches in loose thickness, and then compacted by rolling with a sheepsfoot roller or similar equipment. The project geotechnical consultant should perform density testing along with probing to verify that adequate compaction has been achieved.

Within shallow trenches (less than 18 inches deep) where pipes may be damaged by heavy compaction equipment, imported clean sand having a SE of 30 or greater may be utilized. The sand should be placed in the trench, thoroughly watered, and then compacted with a vibratory compactor. For utility trenches located below a 1:1 (H:V) plane projecting downward from the outside edge of the adjacent footing base or crossing footing trenches, concrete or slurry should be used as trench backfill.

6.10 PERCOLATION CHARACTERISTICS

Based on the subsurface exploration and percolation testing, infiltration of stormwater is not considered to be feasible due to the site being underlain by the fine-grained nature of the subsurface soils, which have impeded the infiltration testing. Infiltration of stormwater through the use of a shallow chamber system or dry well at the site is deemed unfeasible. Percolation characteristics of

site soils are not anticipated to meet the minimum requirements of the Los Angeles County guidelines. Therefore, the treatment of stormwater will require the use of other methods such as biofiltration.

6.11 PLAN REVIEW AND CONSTRUCTION SERVICES

We recommend ***Albus & Associates, Inc.*** be engaged to review any future development plans, including civil plans (grading plans), foundation plans, and proposed structural loads, prior to construction. This is to verify that the assumptions of this report are valid and that the preliminary conclusions and recommendations contained in this report have been properly interpreted and are incorporated into the project plans and specifications. If we are not provided the opportunity to review these documents, we take no responsibility for misinterpretation of our preliminary conclusions and recommendations.

We recommend that a geotechnical consultant be retained to provide soil engineering services during the construction of the project. These services are to observe compliance with the design, specifications or recommendations, and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

If the project plans change significantly from the assumed development described herein, the project geotechnical consultant should review our preliminary design recommendations and their applicability to the revised construction. If conditions are encountered during construction that appears to be different than those indicated in this report or subsequent design reports, the project geotechnical consultant should be notified immediately. Design and construction revisions may be required.

7.0 LIMITATIONS

This report is based on the proposed development and geotechnical data as described herein. The materials encountered on the project site and utilized in our laboratory testing for this investigation are believed representative of the total project area, and the conclusions and recommendations contained in this report are presented on that basis. However, soil and bedrock materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could affect the conclusions and recommendations contained herein. As such, observation and testing by a geotechnical consultant during the grading and construction phases of the project are essential to confirm the basis of this report.

This report has been prepared consistent with that level of care being provided by other professionals providing similar services at the same locale and time period. The contents of this report are professional opinions and as such, are not to be considered a guaranty or warranty.

This report should be reviewed and updated after a period of one year or if the site ownership or project concept changes from that described herein.

This report has been prepared for the exclusive use of **Mission Pacific Land Company** and their project consultants in the planning and design of the proposed development. This report has not

been prepared for use by parties or projects other than those named or described herein. This report may not contain sufficient information for other parties or other purposes.

This report is subject to review by the controlling governmental agency.

Respectfully submitted,

ALBUS & ASSOCIATES, INC.

Eung Jin Jeon, Ph.D.
Associate Engineer
G.E. 3096

Michael O. Spira
Principal Engineering Geologist
C.E.G. 1976

REFERENCES

Reports

Smith-Emery Company. 1993. Phase I Environmental Assessment Update Report, 9829 La Serna Drive, Whittier, California. Report dated November 2, 1993.

Targhee, Inc. Environmental Consulting. 1993. Phase I Environmental Assessment Report, 9829 La Serna Drive, Whittier, California. Report dated January 11, 1993.

Publications

Abrahamson, N.A., Silva, W.J., and Kamai, R. 2014. "Update of the AS08 Ground-Motion Prediction Equations Based on the NGA-West2 Data Set." Earthquake Spectra 30 (3): 1179-1197.

American Society of Civil Engineers, 2017, Minimum Design Loads and Associated Criteria for Buildings and Other Structures, ASCE 7-16.

Boore, D.M., Stewart, J.P., Seyhan, E., and Atkinson, G.M. 2014. "NGA-West2 Equations for Predicting PGA, PGV, and 5% damped PSA for Shallow Crustal Earthquakes." Earthquake Spectra 30 (3): 1057-1085.

Dibblee, T.W., Jr. 2001. Geologic map of the Whittier and La Habra quadrangles, Los Angeles and Orange County, California: Dibblee Geological Foundation, Map DF-74, scale 1:24,000.

California Geologic Survey. 2008. Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117A.

California Department of Conservation, Division of Mines and Geology. 1998. "Seismic Hazard Zone Report for the Whittier 7.5-Minute Quadrangle, Los Angles and Orange Counties, California." Seismic Hazard Report 037.

Campbell, K.W., and Bozorgnia, Y. 2014. "NGA-West2 Ground Motion Model for the Average Horizontal Components of PGA, PGV, and 5%-damped Linear Acceleration Response Spectra." Earthquake Spectra 30 (3): 1087-1115.

Chiou, B.S.-J., and Youngs, R.R. 2014. "Update of the Chiou and Youngs NGA Model for the Average Horizontal Component of Peak Ground Motion and Response Spectra, Earthquake Spectra, 30 (3): 1117-1153.

Field, E.H., Biasi, G.P., Bird, P., Dawson, T.E., Felzer, K.R., Jackson, D.D., Johnson, K.M., Jordan, T.H., Madden, C., Michael, A.J., Milner, K.R., Page, M.T., Parsons, T., Powers, P.M., Shaw, B.E., Thatcher, W.R., Weldon, R.J., II, and Zeng, Y., 2013, Uniform California earthquake rupture forecast, version 3 (UCERF3)—The time-independent model: U.S. Geological Survey Open-File Report 2013–1165, 97 p., California Geological Survey Special Report 228, and Southern California Earthquake Center Publication 1792, http://pubs.usgs.gov/of/2013/1165/.

REFERENCES (cont.)

Los Angeles County Department of Public Works Well Data (accessed 2021): https://dpw.lacounty.gov/general/wells/

Post-Tensioning Institute, 2004, Post-Tensioned Slabs-on-Ground 3rd Edition.

Seed, H.B., and Whitman, R.V. "Design of Earth Retaining Structures for Dynamic Loads," ASCE Specialty Conference, Lateral Stresses in the Ground and Design of Earth Retaining Structures, Cornell Univ., Ithaca, New York, 103-147, 1970

Wood, J., 1973. "Earthquake-induced Soil Pressure on Structures", Report EERL 73-05, California Institute of Technology, Pasadena, California, 311 pp, 1973.

Youd, T.L., Idriss, I.M., Andrus, R.D., Arango, I., Castro, G., Christian, J., Dobry, R., Finn, W.D.L., Harder, L.F., Hynes, M.E., Ishihara, K., Koester, J.P., Liao, S.S.C., Marcuson, W.F., Martin, G.R., Mitchell, J.K., Moriwaki, Y., Power, M.S., Robertson, P.K., Seed, R.B., and Stokoe, K.H. 2001. "Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils." ASCE Journal of Geotechnical and Geoenvironmental Engineering 127 (10): 817-833.

Plans

Preliminary Engineered Site Plan, 9829 La Serna Drive, Whittier, California, prepared by C&V Consulting Inc., Scale 1"=20'.

Conceptual Design Site Plan, La Serna Townhomes, Whittier, California, prepared by WHA Architects, dated March 2, 20201, Scale 1"=20'.

Aerial Photographs

Historical Aerial Photo website by
https://historicaerials.com/viewer

ALBUS & ASSOCIATES

GEOTECHNICAL MAP

Job No.: 2962.00	Date: 04/13/21	Plate: 1

EXPLANATION
(Locations Approximate)

- Exploratory Boring

3.5 - Estimated Depth of Unsuitable Materials (in feet)

1" = 20'

0 10 20 40

CITY OF WHITTIER

PUBLIC WORKS DEPARTMENT

13230 PENN STREET
WHITTIER, CA 90602-1716
TEL. (562) 567-9500

NO.	DATE	BY	DESCRIPTION	APPROVED

REVISIONS

CONSULTANT INFORMATION :

C&V CONSULTING, INC.
9830 IRVINE CENTER DR.
IRVINE, CA., 92618
949-916-3800

C&V CONSULTING, INC. CIVIL ENGINEERING LAND PLANNING & SURVEYING

REVIEWED BY : DATE :

CONSULTANTS

PREPARED BY :

REGISTERED PROFESSIONAL ENGINEER RYAN J. BITTNER No. 68167 CIVIL STATE OF CALIFORNIA

DATE

ENGINEER

REFERENCE:
WF- S-
P- SD-

PROJECT FILE:

APPROVED BY:

KYLE CASON
INTERIM DIRECTOR

DATE

ENGINEERING DIVISION

TENTATIVE TRACT NO. 83435
9829 LA SERNA DRIVE
WHITTIER, CALIFORNIA
PRELIMINARY ENGINEERED SITE PLAN

DESIGNED BY : MM
DRAWN BY : DA
CHECKED BY : RJB
CONSULTANT JOB/SHEET NO.
DWG. NO.
SHT 1 OF 1 SHTS

APPENDIX A

EXPLORATION LOGS

Field Identification Sheet

Light gray

Gray

Dark gray

Gray Brown

Light brown

Brown

Dark Brown

Olive brown

Olive

Yellow

Yellowish brown

Yellowish red

Red

Reddish Brown

Tan

Description Order:

Description, Color, Moisture, Density, Grain Size, Additional Description

Description	%	Example
	0-5	Sand
trace	5-15	Sand trace Silt
with	15-30	Sand with Silt
	30+	Silty Sand

More Examples

Sand with Silt trace Clay

Sand trace Silt and Clay

Sand with Silt and Clay

Gravelly Sand with Silt trace Clay

Silty Clay with Sand trace Gravel

Moisture

Dry	absence of water
Damp	below optimum
Moist	near optimum
Very Moist	above optimum
Wet	free water visible

Density (Navfac)

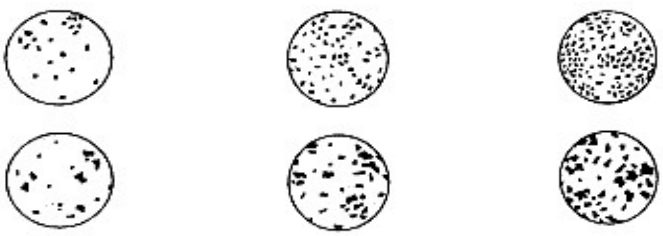
Coarse grained soils	SPT	CA
Very Loose	0-3	0-5
Loose	3-8	5-13
Medium Dense	8-14	13-22
Dense	14-25	22-40
Very Dense	25>	40>
Fine grained soils		
Very Soft	2<	0-3
Soft	2-4	3-6
Medium Stiff	4-8	6-13
Stiff	8-15	13-24
Very Stiff	15-30	24-48
Hard	30>	48>

Grain Size

Description		Sieve Size	Approx. Size
Boulders		>12"	Larger than basketball
Cobbles		3-12"	Fist to basketball
Gravel	coarse	3/4-3"	Thumb to Fist
	fine	#4-3/4"	Pea to Thumb
Sand	coarse	#10-4	Rock Salt to Pea
	medium	#40-10	Sugar to Rock Salt
	fine	#200-40	Flour to Sugar
Fines		Pass #200	Smaller than Flour

Additional Description (ie. roots, pinhole pores, debris, etc.)

Trace 5% Moderate 15% Abundant 30%



EXPLORATION LOG

Project:		Location:
Address:		Elevation:
Job Number:	Client:	Date:
Drill Method:	Driving Weight:	Logged By:

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		EXPLANATION							
		Solid lines separate geologic units and/or material types.							
		Dashed lines indicate unknown depth of geologic unit change or material type change.							
5		**Solid black rectangle** in Core column represents California Split Spoon sampler (2.5in ID, 3in OD).							
		Double triangle in core column represents SPT sampler.							
10		**Vertical Lines** in core column represents Shelby sampler.							
		Solid black rectangle in Bulk column respresents large bag sample.							
		Other Laboratory Tests:							
15		Max = Maximum Dry Density/Optimum Moisture Content							
		EI = Expansion Index							
		SO4 = Soluble Sulfate Content							
		DSR = Direct Shear, Remolded							
		DS = Direct Shear, Undisturbed							
		SA = Sieve Analysis (1" through #200 sieve)							
		Hydro = Particle Size Analysis (SA with Hydrometer)							
20		200 = Percent Passing #200 Sieve							
		Consol = Consolidation							
		SE = Sand Equivalent							
		Rval = R-Value							
		ATT = Atterberg Limits							

EXPLORATION LOG

Project: La Serna Apartments		Location: B-1
Address: 9829 La Serna Dr, Whittier, CA		Elevation: 271
Job Number: 2962.00	Client: Mission Pacific Investments	Date: 3/16/2021
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: sdonyanavard

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		ARTIFICIAL FILL (Af) Silty Clay with Sand trace Gravel (CL): Brown, damp, very stiff, fine to coarse grained sand, fine to coarse gravel, pocket sand, rootlets							Max EI SO4 DS pH Resist Ch
				26		■	12.9	113.6	
		OLDER ALLUVIUM (Qoal) Silty Clay trace Sand (CL): Reddish brown, damp, very stiff, mica present, rootlets, pin-hole pores,caliche		22		■	10.2	106.9	Consol
5									
		@ 6 ft, hard		42		■	13.5	112.9	Consol
10		Silt with Clay and Sand (ML): Yellowish brown, damp, very stiff, fine to medium grained sand, pin-hole pores, caliche		27		■	12.5	111.6	SA Hydro
15		@ 15 ft, dry, hard		53		■			

Albus & Associates, Inc.

Plate A-2

EXPLORATION LOG

Project: La Serna Apartments		Location: B-1
Address: 9829 La Serna Dr, Whittier, CA		Elevation: 271
Job Number: 2962.00	Client: Mission Pacific Investments	Date: 3/16/2021
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: sdonyanavard

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		@ 20 ft, magnesium stainings		66					
25		Sandy Silt trace Clay (ML): Yellowish brown, damp, hard, fine grained sand		43					SA Hydro
30		@ 30 ft, fine to coarse grained sand, increased sand content		43					
35		@ 35 ft, fine grained sand, caliche		66					

Albus & Associates, Inc.

Plate A-3

EXPLORATION LOG

Project: La Serna Apartments		Location: B-1
Address: 9829 La Serna Dr, Whittier, CA		Elevation: 271
Job Number: 2962.00	Client: Mission Pacific Investments	Date: 3/16/2021
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: sdonyanavard

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		Sandy Silt (ML): Yellowish brown, damp to moist, hard, fine to coarse grained sand, mica present		44					SA Hydro
45		Sandy Clay trace Gravel (CL): Reddish brown, dry, hard, fine to coarse grained sand, fine gravel		90/ 11"					
50				65					
		End of the boring at depth of 51.5 feet. No groundwater encountered. Backfilled with soil cuttings.							

EXPLORATION LOG

Project: La Serna Apartments		Location: B-2
Address: 9829 La Serna Dr, Whittier, CA		Elevation: 267.8
Job Number: 2962.00	Client: Mission Pacific Investments	Date: 3/16/2021
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: sdonyanavard

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		Asphalt (AC): 4 inch asphalt							
		Crushed Aggregate Base (AB): 3 inch base							
		ARTIFICIAL FILL (Af) Clay (CL): Dark brown, damp							
		OLDER ALLUVIUM (Qoal) Clay (CL): Dark brown, moist, stiff		18	■		19.6	106.4	
5		Silty Clay (CL): Yellowish brown, moist, stiff, pin-hole pores, mica present		21	■		17.5	107.7	Consol
				18	■		17.1	104.2	
10		Silty Clay with Sand (CL): Reddish brown, damp, hard, medium grained sand, caliche, mica present		49	■		13.2	117.6	
15		Sandy Silt trace Clay (ML): Reddish brown, damp, hard, fine to medium grained sand, mica present, caliche		20	▼				
		End of boring at depth of 16.5 feet. No groundwater encountered. Backfilled with soil cuttings.							

EXPLORATION LOG

Project: La Serna Apartments		Location: B-3
Address: 9829 La Serna Dr, Whittier, CA		Elevation: 271.7
Job Number: 2962.00	Client: Mission Pacific Investments	Date: 3/16/2021
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: sdonyanavard

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		Asphalt (AC): 3 inch asphalt							
		Crushed Aggregate Base (CAB): 8 inch base							
		ARTIFICIAL FILL (Af) Clayey Silt (ML): Mottled light brown and brown, damp, stiff		19			13.9	105.4	
		OLDER ALLUVIUM (Qoal) Clayey Silt (ML): Yellowish brown, damp, very stiff		33			10.8	104.7	
5		Sandy Silt trace Clay (ML): Light brown, dry to damp, very stiff, fine grained sand, pin-hole pores		21			6.3	102.8	Consol
10		Silty Sand (SM): Light brown, dry to damp, medium dense, fine grained sand, mica present		27			5.5	110.5	
15				18					
		End of boring at depth of 16.5 feet. No groundwater encountered. Backfilled with soil cuttings.							

EXPLORATION LOG

Project: La Serna Apartments		Location: B-4
Address: 9829 La Serna Dr, Whittier, CA		Elevation: 276.6
Job Number: 2962.00	Client: Mission Pacific Investments	Date: 3/16/2021
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: sdonyanavard

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		Asphalt (AC): 6 inch asphalt							
		Crushed Aggregate Base (CAB): 3 inch base							
		ARTIFICIAL FILL (Af) Silty Clay trace Sand (CL): Mottled light brown and brown, dry to damp, hard, fine to medium grained sand		50	■		11.3	113	Consol ATT
		ALLUVIUM (Qal) Silty Clay trace Sand (CL): Yellowish brown, dry to damp, hard, fine grained sand, pin-hole pores		72	■		9.3	114.2	Consol ATT
5				70	■		11.4	102.2	Consol ATT
10		Sandy Silt/Silty Sand (ML/SM): Yellowish brown, dry, hard/dense, fine grained sand, pin-hole pores		41	■		5.9	105.9	
15		Silty Sand (SM): Light brown, dry, dense, fine grained sand, caliche		25	▼				
		End of boring at depth of 16.5 feet. No groundwater encountered. Backfilled with soil cuttings.							

APPENDIX B

LABORATORY TEST RESULTS

LABORATORY TESTING PROGRAM

Soil Classification

Soils encountered within the exploratory borings were initially classified in the field in general accordance with the visual-manual procedures of the Unified Soil Classification System (ASTM D 2488). The samples were re-examined in the laboratory and classifications were reviewed and then revised where appropriate. The assigned group symbols are presented on the Exploration Logs provided in Appendix A.

In-Situ Moisture Content and Dry Density

Moisture content and dry density of in-place soil materials were determined in representative strata. Test data are summarized on the Exploration Logs, Appendix A.

Atterberg Limits

Atterberg Limits (Liquid Limit, Plastic Limit, and Plasticity Index) were performed in accordance with Test Method ASTM D 4318. Pertinent test values are presented within Table B-1.

Maximum Dry Density and Optimum Moisture Content

Maximum dry density and optimum moisture content were performed on a representative sample of the site materials obtained from our field explorations. The test was performed in accordance with ASTM D 1557. Pertinent test values are given in Table B-1.

Expansion Potential

Expansion index testing was performed on selected samples. The tests were performed in general accordance with ASTM D4829. One test was performed on a selected compacted sample (B-1 at 0-5' sample). Additional expansion index (swell) testing was performed on selected undisturbed ring samples. The additional tests were performed in accordance with ASTM D4829 but the specimens were undisturbed samples. The test results and expansion potential are presented in Table B-1.

Soluble Sulfate Content

A chemical analysis was performed on a selected sample to determine soluble sulfate content. This test was performed in our soil laboratory in accordance with California Test Method No 417. The test result is included in Table B-1.

Particle Size Analyses

Particle size analyses were performed on representative samples of site materials in accordance with ASTM D 422. The results are presented graphically on the attached Plate B-1 to B-3.

Consolidation

Consolidation tests were performed for selected soil samples in general conformance with ASTM D 2435. Axial loads were applied in several increments to a laterally restrained 1-inch-high sample. Loads were applied in geometric progression by doubling the previous load, and the resulting

deformations were recorded at selected time intervals. The specific test samples were inundated at selected loads to evaluate the effects of a sudden increase in moisture content (hydro-consolidation potential). Results of the tests are graphically presented on Plates B-4 to B-8.

Direct Shear

The Coulomb shear strength parameters, angle of internal friction and cohesion, were determined for a bulk sample and intact samples obtained from one our borings. The tests were performed in general conformance with Test Method ASTM D 3080. The bulk sample was remolded to 90 percent of maximum dry density and at the optimum moisture content. Three specimens were prepared for each test, artificially saturated, and then sheared under varied loads at an appropriate constant rate of strain. Results are graphically presented on Plate B-9.

Corrosion

Select samples were tested for minimum resistivity, chloride, pH in accordance with California Test Method 643. Results of these tests are provided in Table B-1.

R-Value

A sample of soil was tested for R-value in accordance with California Test Method (CTM) 301. Results are presented on Plate B-10.

TABLE B-1
SUMMARY OF LABORATORY TEST RESULTS [1]

Boring No.	Sample Depth (ft.)	Soil Description	Test Results	
B-1	0-5	Silty Clay with Sand	Maximum Dry Density (pcf): Optimum Moisture (%): Expansion Index: Expansion Potential: Soluble Sulfate Content (%): Sulfate Exposure: Min. Resistivity (ohm-cm): Chloride (ppm): pH:	123 11.5 72 [2] Medium 0.014 Negligible 250 37.5 7.0
B-4	2	Silty Clay trace Sand	Expansion Index: Expansion Potential: Liquid Limit: Plastic Index:	40 Low 41 19.1

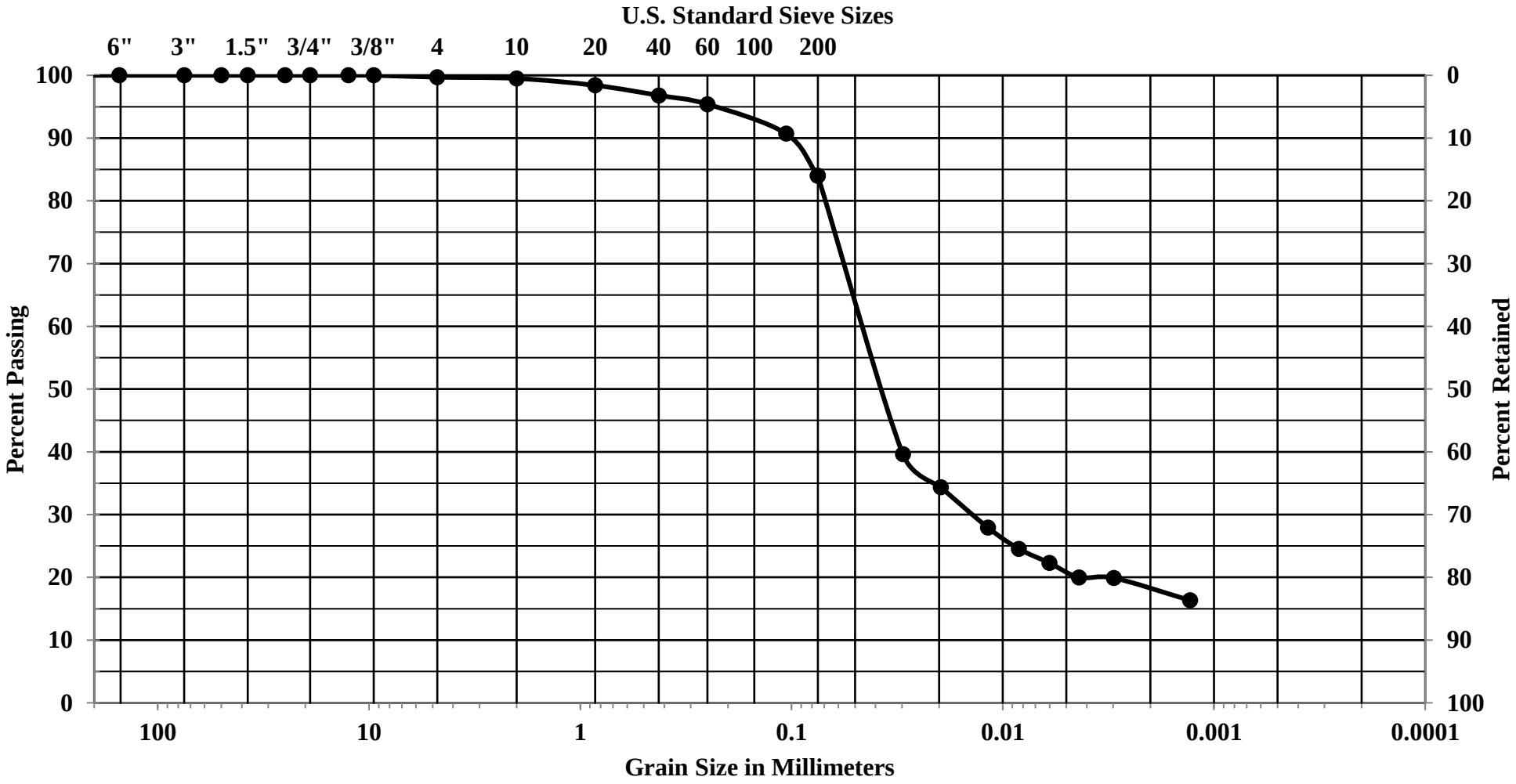
B-4	4	Silty Clay trace Sand	Expansion Index: Expansion Potential: Liquid Limit: Plastic Index:	106 High 37 19.6
B-4	6	Silty Clay trace Sand	Expansion Index: Expansion Potential: Liquid Limit: Plastic Index:	100 High 30.5 10.1

Note:

1. Additional laboratory test results are provided on the boring logs provided in Appendix A.

GRAIN SIZE DISTRIBUTION

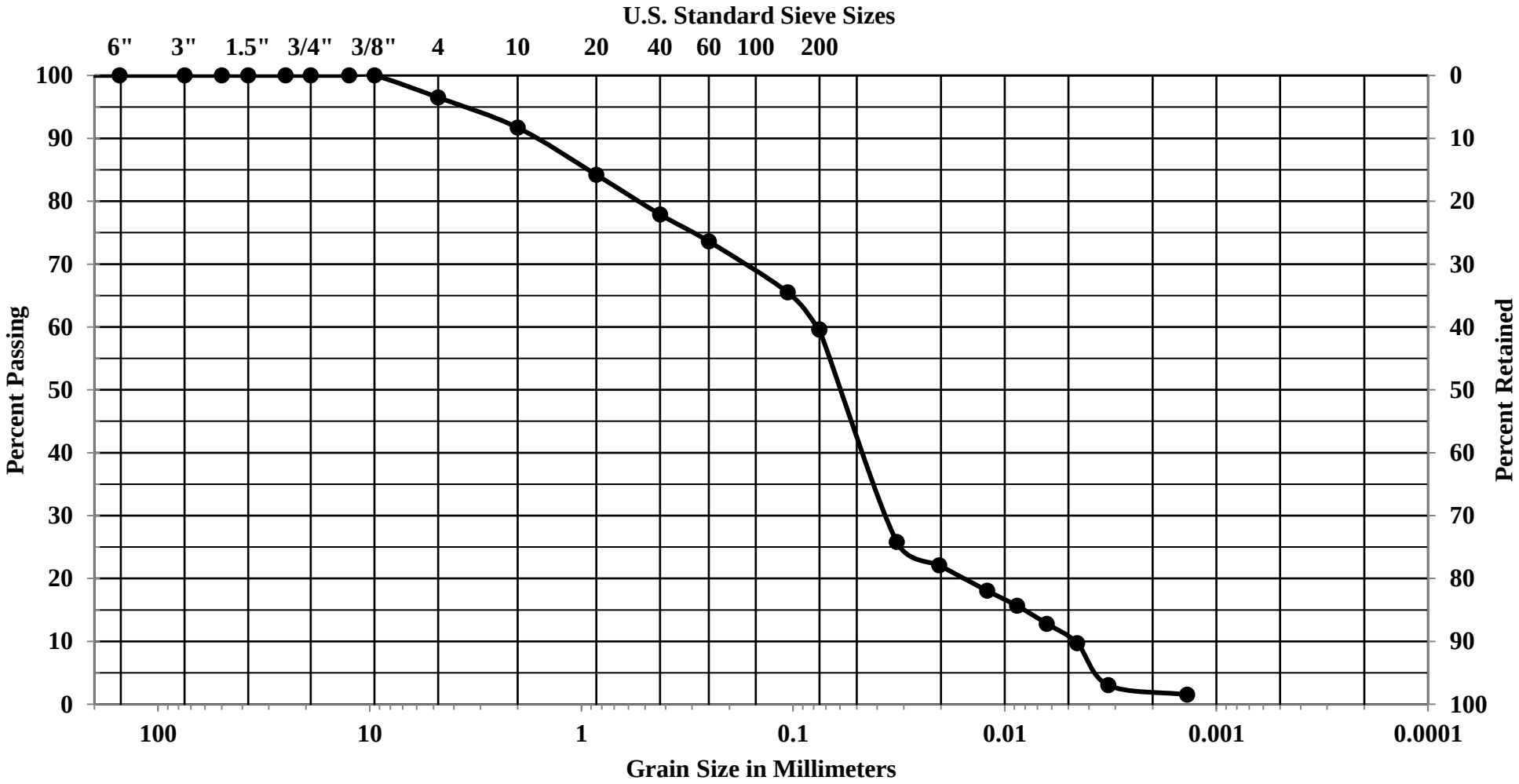
COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



Job Number	Location	Depth	Description
2962.00	B-1	10	Silt with Clay and Sand

GRAIN SIZE DISTRIBUTION

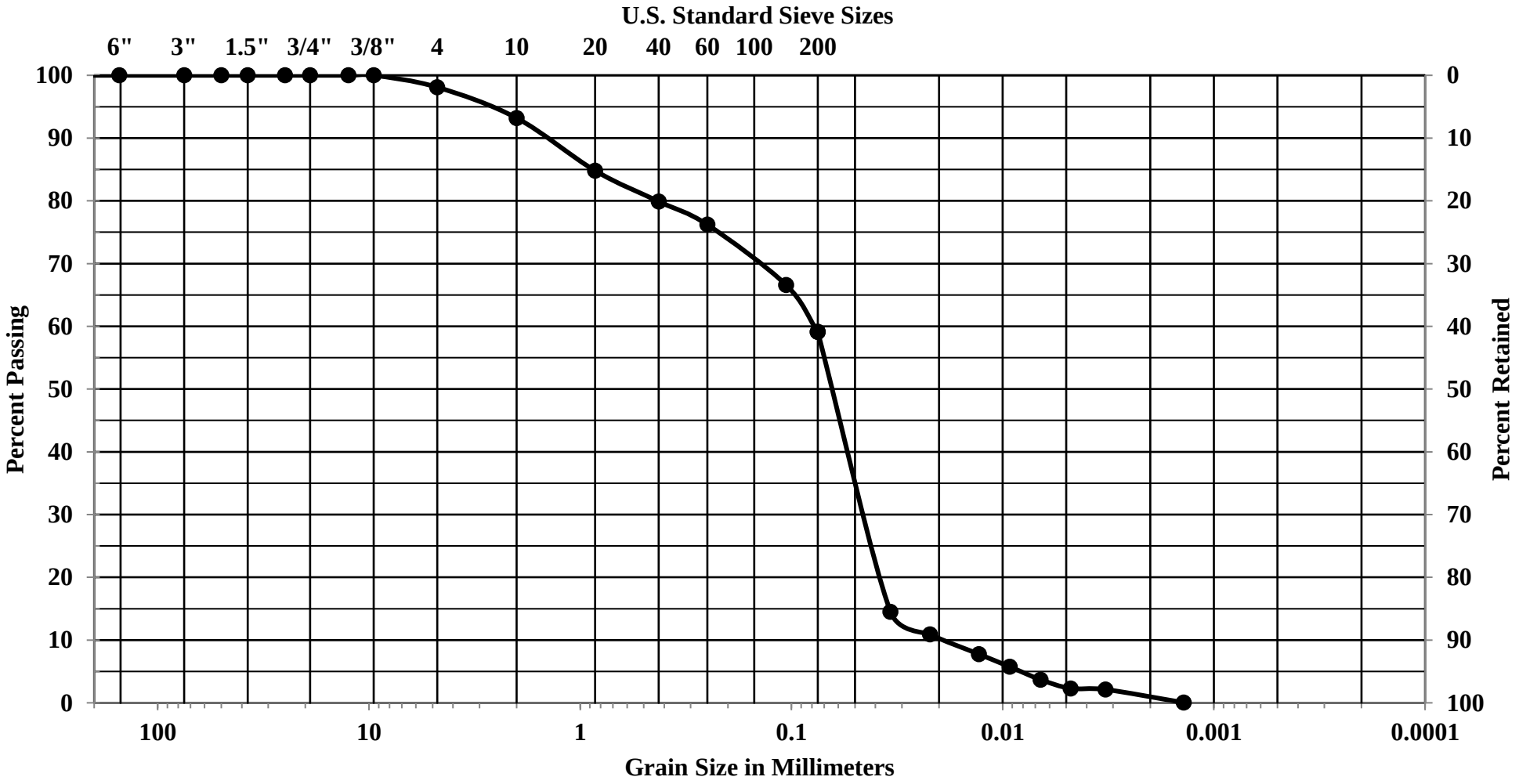
COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



Job Number	Location	Depth	Description
2962.00	B-1	25	Sandy Silt trace Clay

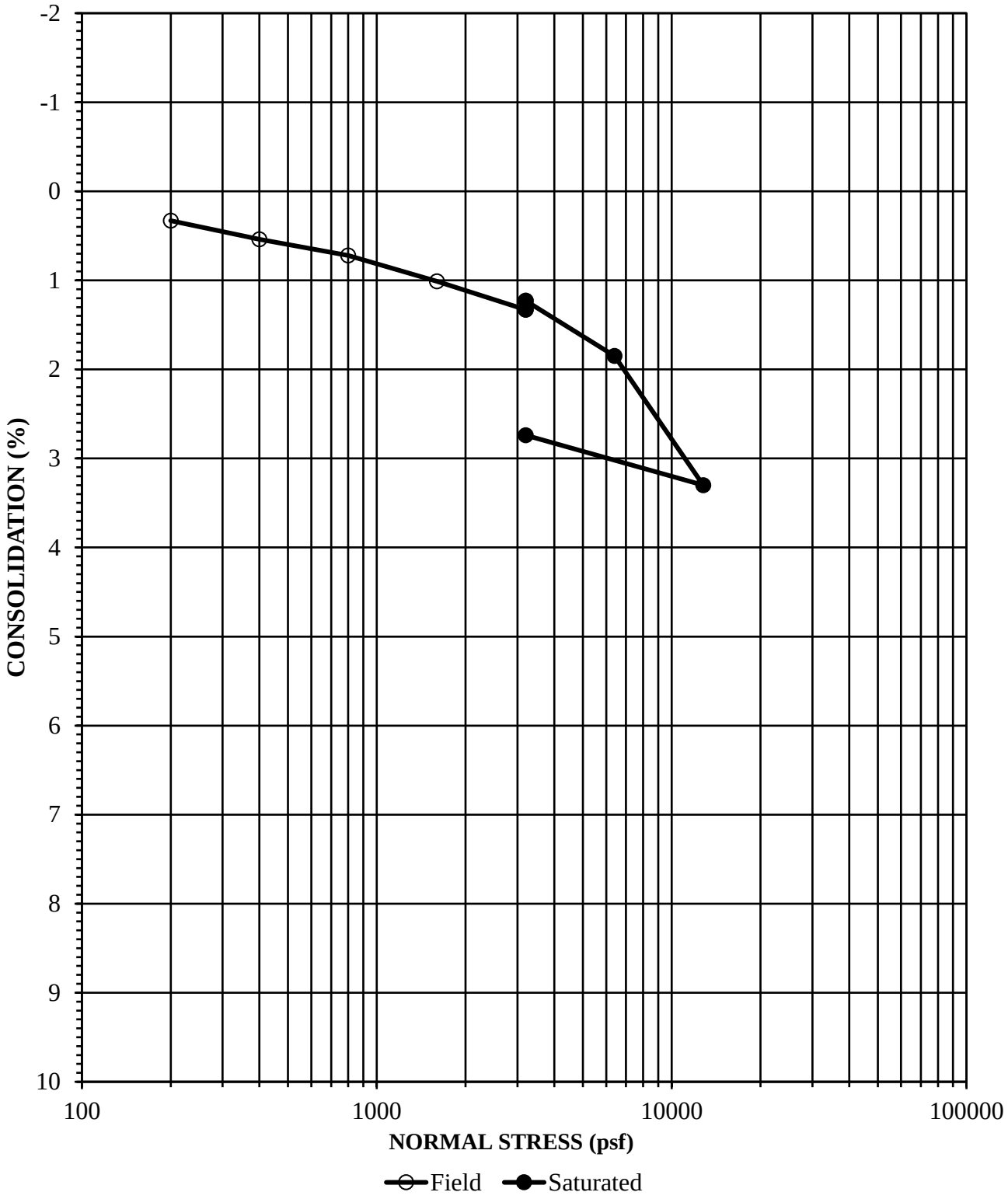
GRAIN SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



Job Number	Location	Depth	Description
2962.00	B-1	40	Sandy Silt

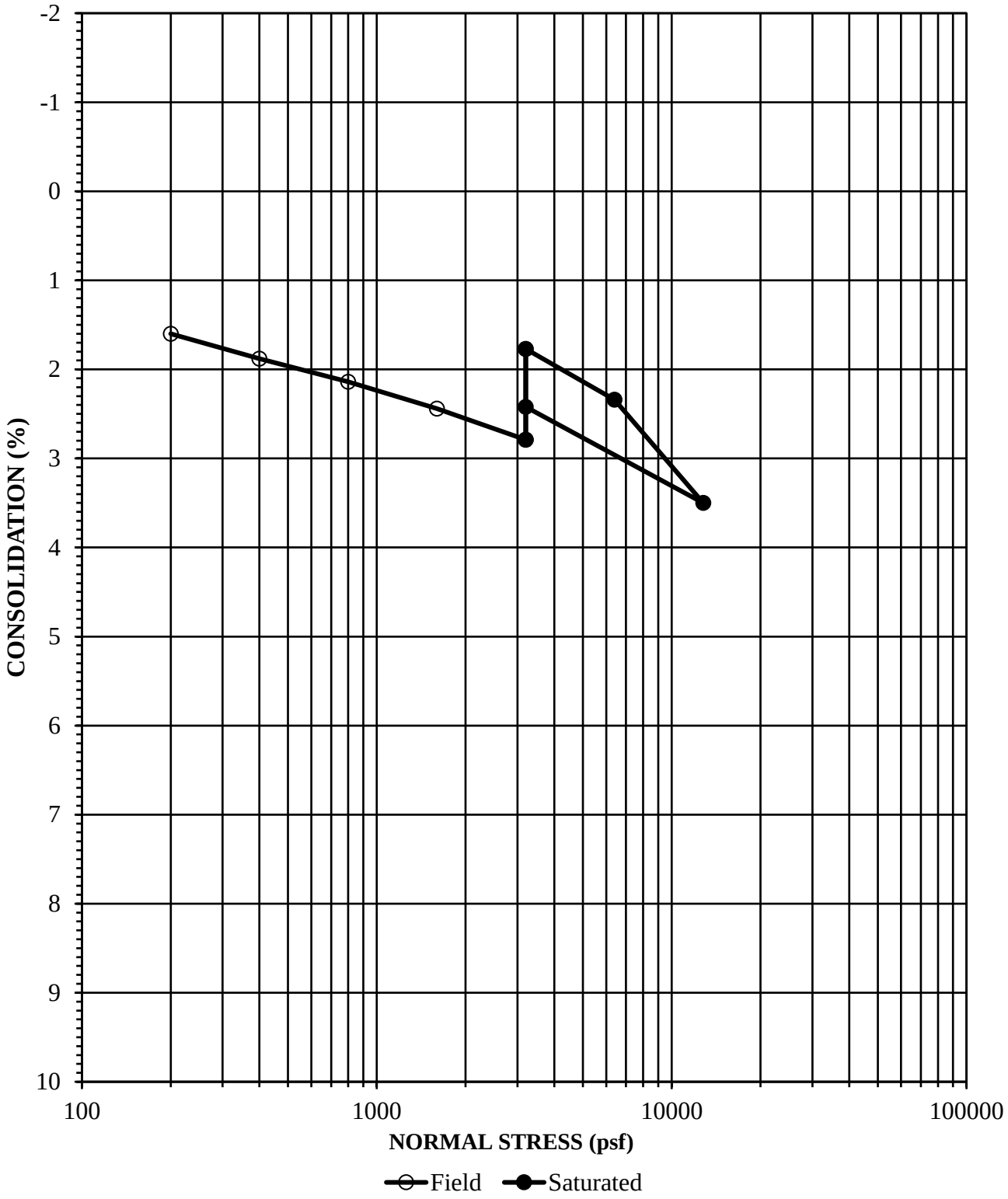
CONSOLIDATION



Job Number	Location	Depth	Description
2962.00	B-1	4	Silty Clay with Sand

Initial Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Concent (%)
107.7	9.6	18.1

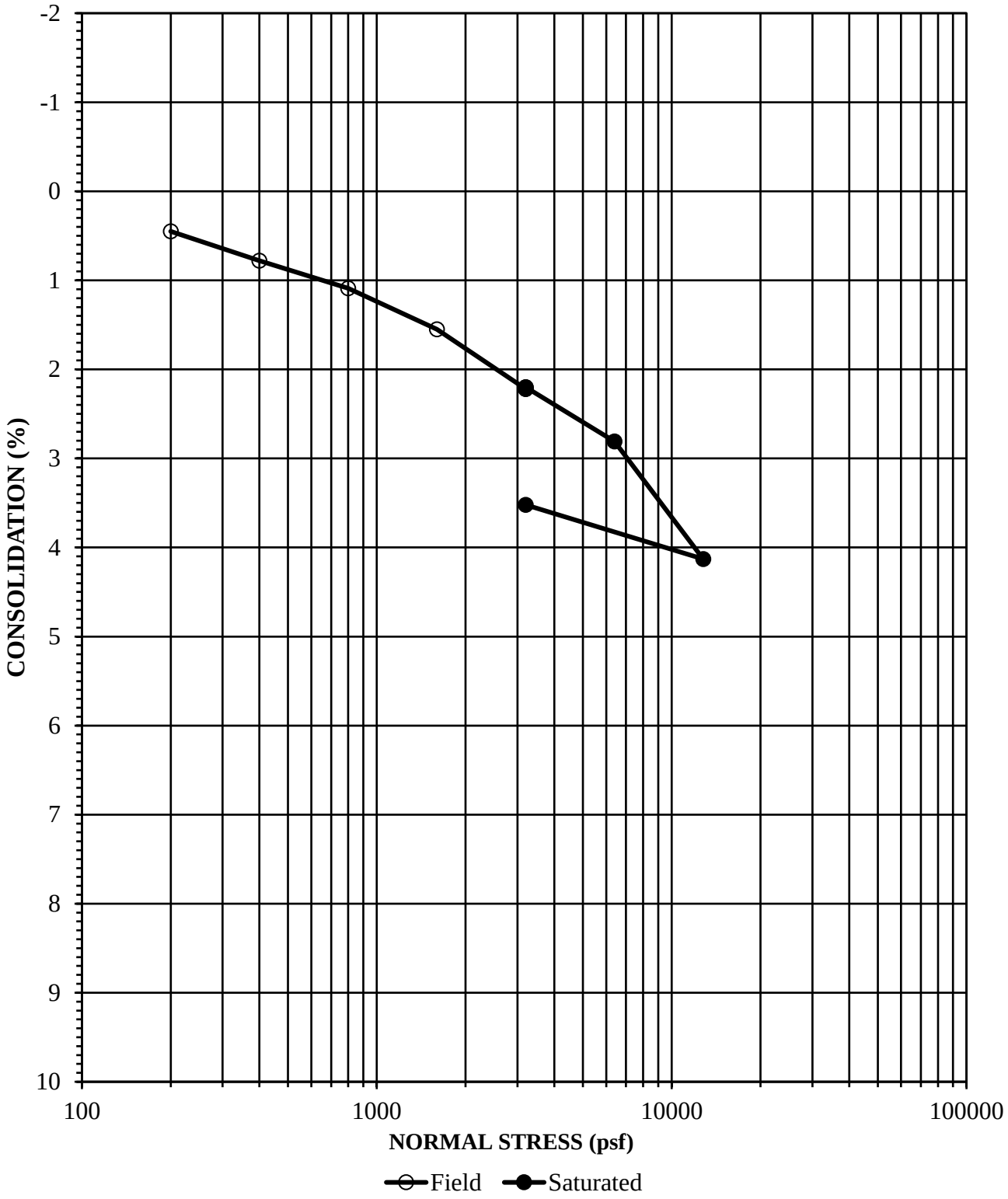
CONSOLIDATION



Job Number	Location	Depth	Description
2962.00	B-1	6	Silty Clay trace Sand

Initial Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Concent (%)
115.2	12.8	15.9

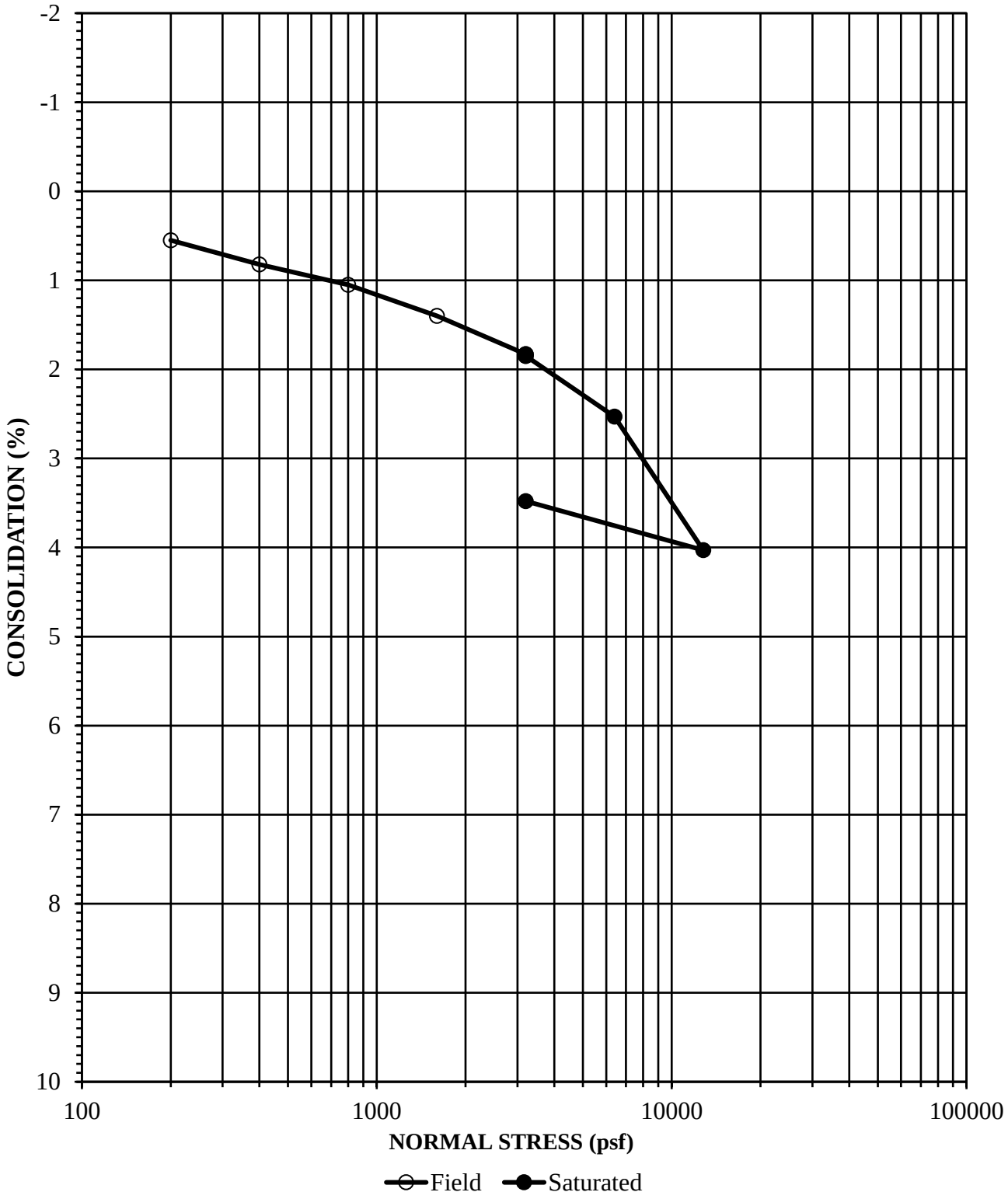
CONSOLIDATION



Job Number	Location	Depth	Description
2962.00	B-2	4	Silty Clay trace Sand

Initial Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Concent (%)
106.2	18.1	18.9

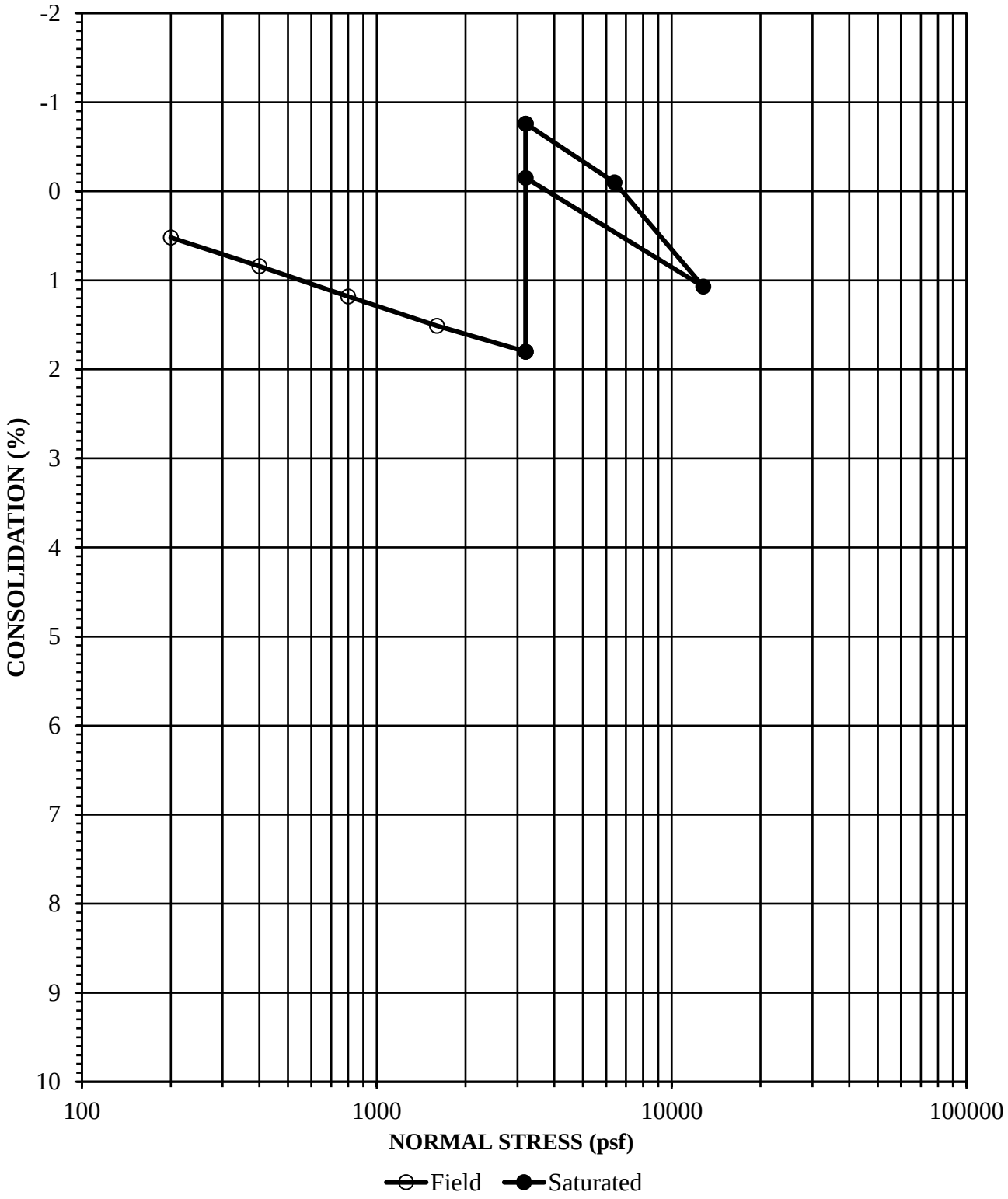
CONSOLIDATION



Job Number	Location	Depth	Description
2962.00	B-3	6	Sandy Silt trace Clay

Initial Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Concent (%)
96.5	10.2	25.1

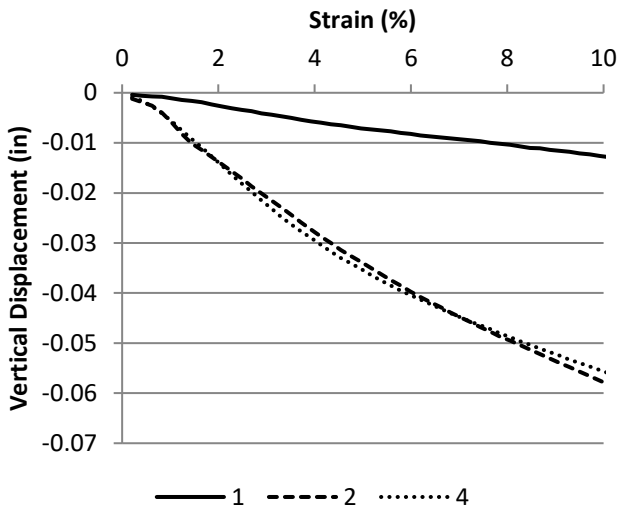
CONSOLIDATION

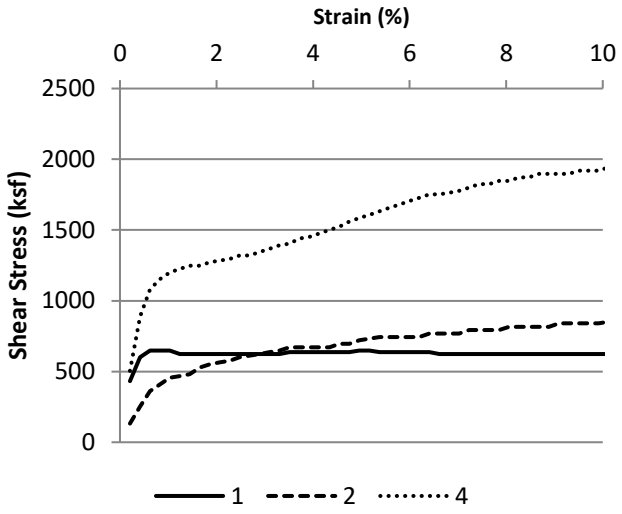


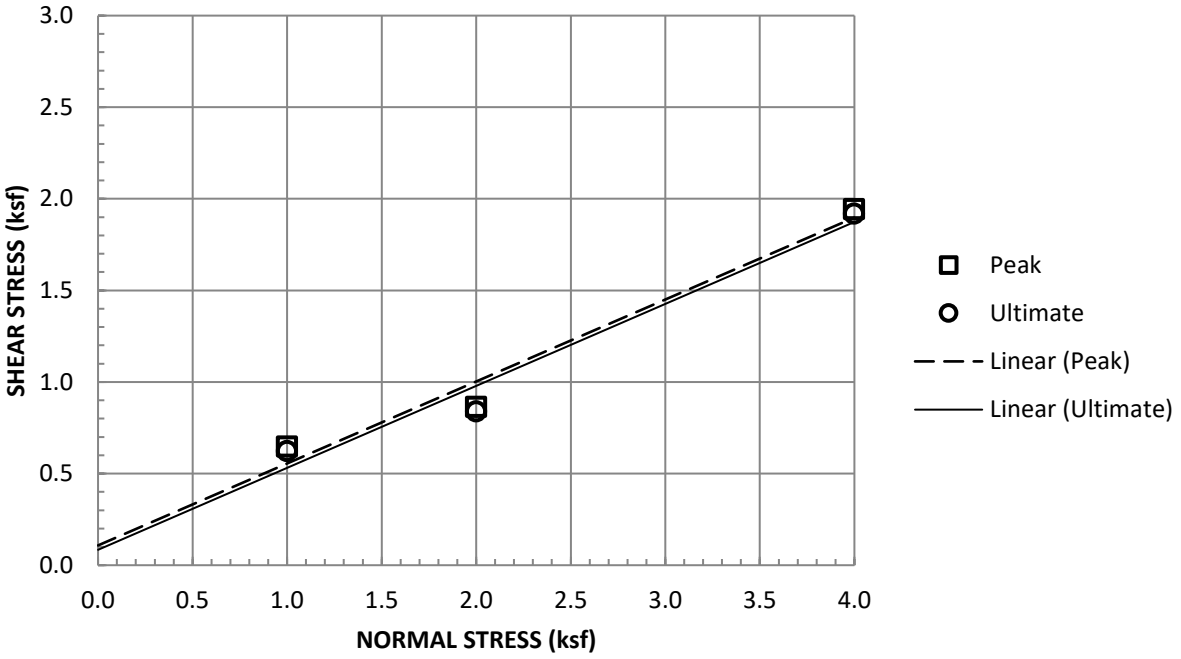
Job Number	Location	Depth	Description
2962.00	B-4	4	Clayey Silt trace Sand

Initial Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Concent (%)
113.5	12.3	17.7

DIRECT SHEAR







Sample Type:	Remolded, Saturated		
Normal Stress (ksf)	1	2	4
Peak Shear Stress (ksf)	0.648	0.864	1.944
Peak Displacement (in)	0.013	0.059	0.057
Ultimate Shear Stress (ksf)	0.624	0.84	1.92
Ultimate Displacement (in)	0.25	0.25	0.25
Initial Dry Density (pcf)	110	110	110
Initial Moisture Content (%)	12.3	12.3	12.3
Final Moisture Content (%)	16.5	13.7	17
Strain Rate (in/min)	.005		

Job Number	Location	Depth	Description
2962.00	B-1	0-5	Silty Clay

'R' VALUE CA 301

Client: Albus Date: 4/16/21 By: LD

Client's Job No.: 2967.00 Sample : B-3 @ 0 - 5'

GLA Reference: 2005-011 Soil Type: Brown, Silty Clay w. trace Gravel

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**140**	**70**	**60**	
Initial Moisture Content	%	**12.2**	**12.2**	**12.2**	
Water Added	ml	**40**	**68**	**80**	
Moisture at Compaction	%	15.9	18.6	19.7	
Sample & Mold Weight	gms	**3227**	**3205**	**3168**	
Mold Weight	gms	**2098**	**2106**	**2103**	
Net Sample Weight	gms	1129	1099	1065	
Sample Height	in.	**2.532**	**2.543**	**2.559**	
Dry Density	pcf	116.5	110.4	105.4	
Pressure	lbs	**7585**	**5800**	**3740**	
Exudation Pressure	psi	604	462	298	
Expansion Dial	x 0.0001	**125**	**90**	**50**	
Expansion Pressure	psf	541	390	217	
Ph at 1000lbs	psi	**42**	**50**	**64**	
Ph at 2000lbs	psi	**106**	**120**	**140**	
Displacement	turns	**3.11**	**3.4**	**4.18**	
R' Value		29	20	8	
Corrected 'R' Value		**29**	**20**	**8**	

FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	**8**
By Epansion Pressure :	**2**
TI = 5	

Geo-Logic ASSOCIATES

Plate B-10

Appendix D Greenhouse Gas Analysis

LA SERNA TOWNHOMES

GREENHOUSE GAS ANALYSIS

CITY OF WHITTIER

PREPARED BY:

William Maddux
bmaddux@urbanxroads.com
(619) 778-1971

Ali Dadabhoy
adadahoy@urbanxroads.com

FEBRUARY 11, 2022

TABLE OF CONTENTS

Table of Contents ..... **i**
Appendices ..... **ii**
List of Exhibits ..... **ii**
List of Tables ..... **ii**
List of Abbreviated Terms ..... **iii**
Executive Summary **1**
ES.1 Summary of Findings 1
ES.2 Project Requirements 1
1 Introduction **3**
1.1 Site Location 3
1.2 Project Description 3
2 Climate Change Setting **7**
2.1 Introduction to Global Climate Change 7
2.2 Global Climate Change Defined 7
2.3 Greenhouse Gases 7
2.4 Global Warming Potential 14
2.5 Greenhouse Gas Emissions Inventories 15
2.6 Effects of Climate Change in California 15
2.7 Regulatory Setting 17
2.8 Discussion on Establishment of Significance Thresholds 32
3 Project Greenhouse Gas Impact **35**
3.1 Introduction 35
3.2 Standards of Significance 35
3.3 California Emissions Estimator Model™ Employed To Analyze GHG Emissions 35
3.4 Life-Cycle Analysis Not Required 35
3.5 Construction Emissions 36
3.6 Operational Emissions 37
3.7 Emissions Summary 40
3.8 Greenhouse Gas Emissions Findings and Recommendations 40
4 References **47**
5 Certifications **51**

APPENDICES

Appendix 3.1: CalEEMod Emissions Model Outputs

LIST OF EXHIBITS

Exhibit 1-A: Location Map 4
Exhibit 1-B: Site Plan 5
Exhibit 2-A: Summary of Projected Global Warming Impact, 2070-2099 (as compared with 1961-1990) 14

LIST OF TABLES

Table ES-1: Summary of CEQA Significance Findings 1
Table 2-1: Greenhouse Gases 8
Table 2-2: GWP and Atmospheric Lifetime of Select GHGs 15
Table 3-1: Construction Duration 37
Table 3-2: Construction Equipment Assumptions 38
Table 3-3 Amortized Annual Construction Emissions 38
Table 3-4: Project GHG Emissions 40
Table 3-5: 2017 Scoping Plan Consistency Summary 41

LIST OF ABBREVIATED TERMS

%	percent
°F	degrees Fahrenheit
AB	Assembly Bill
AB 1881	California Water Conservation in Landscaping Act of 2006
AB 32	Global Warming Solutions Act of 2006
ACC	Advanced Clean Cars
C_2F_6	hexafluoroethane
C_2H_6	ethane
CAA	Clean Air Act
CAFE	Corporate Average Fuel Economy
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALGAPS	California LBNL GHG Analysis of Policies Spreadsheet
CALGreen	California Green Building Standards Code
CalSTA	California State Transportation Agency
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resource Board
CCR	California Code of Regulations
CDFA	Department of Food and Agriculture
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CF_4	tetrafluoromethane
CFCs	Chlorofluorocarbons
CH_2FCF	1,1,1,2-tetrafluoroethane
CH_3CF_2	1,1-difluoroethane
CH_4	methane
CHF_3	fluoroform
CNRA	California Natural Resources Agency
CNRA 2009	2009 California Climate Adaptation Strategy
CO_2	carbon dioxide
CO_2e	CO_2 equivalent
CPUC	California Public Utility Commission
CTC	California Transportation Commission
EMFAC	EMissions FACtor model

EPA	U.S. Environmental Protection Agency
EV	electric vehicles
GCC	Global Climate Change
GHG	greenhouse gas
GHGA	La Serna Townhomes Greenhouse Gas Analysis
GO-Biz	Governor's Office of Business and Economic Development
GWP	global warming potential
HDT	heavy-duty trucks
HFCs	hydrofluorocarbons
IPCC	Intergovernmental Panel on Climate Change
IRP	Integrated Resource Planning
LBNL	Lawrence Berkeley National Laboratory
lbs	pounds
LCA	life-cycle analysis
LCFS	Low Carbon Fuel Standard
MD	medium duty
MMT CO_2e	million metric tons of CO_2e
Mpg	miles per gallon
MT	metric tons
MT CO_2	metric tons of CO_2e
MT CO_2e/yr	MT CO_2e per year
/yr	per year
MW	megawatts
MWELO	Model Water Efficient Landscape Ordinance
MWh	MW-hour
MY	model year
N_2O	nitrous oxide
NF_3	Nitrogen Trifluoride
NHTSA	National Highway Traffic Safety Administration
NIOSH	National Institute for Occupational Safety and Health
PFCs	perfluorocarbons
Ppb	parts per billion
Ppm	parts per million
Ppt	parts per trillion
Project	La Serna Townhomes Project
SAFE Rule	*Safer Affordable Fuel-Efficient Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks*
SB	Senate Bill

SB 1078	Renewable Portfolio Standards
SB 1368	Retail Provider Emissions Performance Standards
SB 32	California Global Warming Solutions Act of 2006
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SF_6	sulfur hexafluoride
SGC	Strategic Growth Council
SP	service population
U.S. Court	United States Supreme Court
VMT	vehicle miles traveled
WCI	Western Climate Initiative
WRI	World Resources Institute
ZEV	zero-emission vehicles

This page intentionally left blank.

EXECUTIVE SUMMARY

ES.1 SUMMARY OF FINDINGS

The results of this La Serna Townhomes Greenhouse Gas Analysis (GHGA) is summarized below based on the significance criteria in Section 3 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1). Table ES-1 shows the findings of significance for potential greenhouse gas (GHG) impacts under CEQA.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
GHG Impact #1: Would the Project generate direct or indirect GHG emission that would result in a significant impact on the environment?	3.8	*Less Than Significant*	*N/A*
GHG Impact #2: Would the Project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs?	3.8	*Less Than Significant*	*N/A*

ES.2 PROJECT REQUIREMENTS

The Project would be required to comply with regulations imposed by the State of California and the South Coast Air Quality Management District (SCAQMD) aimed at the reduction of air pollutant emissions. Those that are directly and indirectly applicable to the Project and that would assist in the reduction of GHG emissions include:

- Global Warming Solutions Act of 2006 (Assembly Bill (AB) 32) (2).
- Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies (Senate Bill (SB) 375) (3).
- Pavley Fuel Efficiency Standards (AB 1493). Establishes fuel efficiency ratings for new vehicles (4).
- California Building Code (Title 24 California Code of Regulations (CCR)). Establishes energy efficiency requirements for new construction (5).
- Appliance Energy Efficiency Standards (Title 20 CCR). Establishes energy efficiency requirements for appliances (6).
- Low Carbon Fuel Standard (LCFS). Requires carbon content of fuel sold in California to be 10% (percent) less by 2020 (7).
- California Water Conservation in Landscaping Act of 2006 (AB 1881). Requires local agencies to adopt the Department of Water Resources updated Water Efficient Landscape Ordinance or equivalent by January 1, 2010, to ensure efficient landscapes in new development and reduced water waste in existing landscapes (8).

- Statewide Retail Provider Emissions Performance Standards (SB 1368). Requires energy generators to achieve performance standards for GHG emissions (9).
- Renewable Portfolio Standards (SB 1078 – also referred to as RPS). Requires electric corporations to increase the amount of energy obtained from eligible renewable energy resources to 20 percent (%) by 2010 and 33% by 2020 (10).
- California Global Warming Solutions Act of 2006 (SB 32). Requires the state to reduce statewide GHG emissions to 40% below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15 (11).

Promulgated regulations that will affect the Project's emissions are accounted for in the Project's GHG calculations provided in this report. In particular, AB 1493, LCFS, and RPS, and therefore are accounted for in the Project's emission calculations.

1 INTRODUCTION

This report presents the results of the Greenhouse Gas Analysis (GHGA) prepared by Urban Crossroads, Inc., for the proposed La Serna Townhomes Project (Project). The purpose of this GHGA is to evaluate Project-related construction and operational emissions and determine the level of GHG impacts as a result of constructing and operating the proposed Project.

1.1 SITE LOCATION

The proposed La Serna Townhomes ("Project") is located on the southwest corner of La Serna Drive and Janine Drive in the City of Whittier. The Project's location in relation to the surrounding area is shown on Exhibit 1-A.

The Project site is generally surrounded by commercial, medical, and residential land uses, with the nearest residential land use is approximately 155 feet northeast of the Project site and the Whittier Hospital Medical Center is located northwest of the Project site. The Project site is designated "Mixed Use 1" on the City of Whittier General Plan Land Use Map (12).

1.2 PROJECT DESCRIPTION

Exhibit 1-B illustrates the preliminary Project site plan. The proposed Project consists of the development of a 42-unit townhome development within six 3-story buildings with units ranging from 2-3 bedrooms. There is one point of access proposed on La Serna Drive and one driveway proposed on Janine Drive. Based on the Project traffic report, after considering the trips generated by the former restaurant land use, the proposed Project is anticipated to generate zero net trips per day (13).

EXHIBIT 1-A: LOCATION MAP

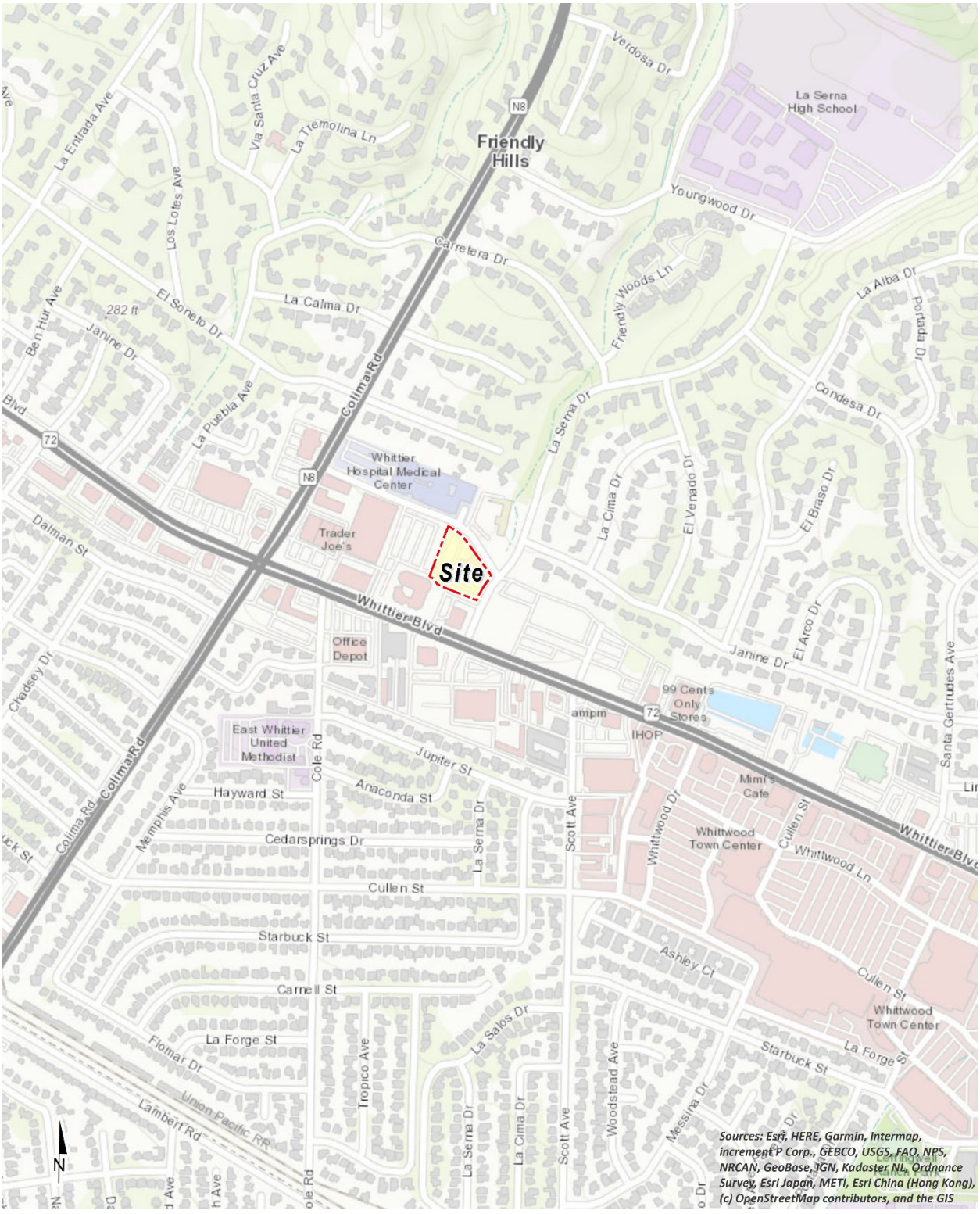


EXHIBIT 1-B: SITE PLAN

This page intentionally left blank.

2 CLIMATE CHANGE SETTING

2.1 INTRODUCTION TO GLOBAL CLIMATE CHANGE

Global Climate Change (GCC) is defined as the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. The majority of scientists believe that the climate shift taking place since the Industrial Revolution is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of GHGs in the earth's atmosphere, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases. The majority of scientists believe that this increased rate of climate change is the result of GHGs resulting from human activity and industrialization over the past 200 years.

An individual project like the proposed Project evaluated in this GHGA cannot generate enough GHG emissions to affect a discernible change in global climate. However, the proposed Project may participate in the potential for GCC by its incremental contribution of GHGs combined with the cumulative increase of all other sources of GHGs, which when taken together constitute potential influences on GCC. Because these changes may have serious environmental consequences, Section 3.0 will evaluate the potential for the proposed Project to have a significant effect upon the environment as a result of its potential contribution to the greenhouse effect.

2.2 GLOBAL CLIMATE CHANGE DEFINED

GCC refers to the change in average meteorological conditions on the earth with respect to temperature, wind patterns, precipitation, and storms. Global temperatures are regulated by naturally occurring atmospheric gases such as water vapor, CO_2, N_2O, CH_4, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These particular gases are important due to their residence time (duration they stay) in the atmosphere, which ranges from 10 years to more than 100 years. These gases allow solar radiation into the earth's atmosphere, but prevent radioactive heat from escaping, thus warming the earth's atmosphere. GCC can occur naturally as it has in the past with the previous ice ages.

Gases that trap heat in the atmosphere are often referred to as GHGs. GHGs are released into the atmosphere by both natural and anthropogenic activity. Without the natural GHG effect, the earth's average temperature would be approximately 61 degrees Fahrenheit (°F) cooler than it is currently. The cumulative accumulation of these gases in the earth's atmosphere is considered to be the cause for the observed increase in the earth's temperature.

2.3 GREENHOUSE GASES

GREENHOUSE GASES AND HEALTH EFFECTS

GHGs trap heat in the atmosphere, creating a GHG effect that results in global warming and climate change. Many gases demonstrate these properties and as discussed in Table 2-1. For the purposes of this analysis, emissions of CO_2, CH_4, and N_2O were evaluated (see Table 3-1 later in

this report) because these gases are the primary contributors to GCC from development projects. Although there are other substances such as fluorinated gases that also contribute to GCC, these fluorinated gases were not evaluated as their sources are not well-defined and do not contain accepted emissions factors or methodology to accurately calculate these gases.

TABLE 2-1: GREENHOUSE GASES

Greenhouse Gases	Description	Sources	Health Effects
Water	Water is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered to be a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. A climate feedback is an indirect, or secondary, change, either positive or negative, that occurs within the climate system in response to a forcing mechanism. The feedback loop in which water is involved is critically important to projecting future climate change. As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to 'hold' more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold	The main source of water vapor is evaporation from the oceans (approximately 85%). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from sea ice and snow, and transpiration from plant leaves.	There are no known direct health effects related to water vapor at this time. It should be noted however that when some pollutants react with water vapor, the reaction forms a transport mechanism for some of these pollutants to enter the human body through water vapor.

TABLE 2-1: GREENHOUSE GASES

Greenhouse Gases	Description	Sources	Health Effects
	more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is unknown as there are also dynamics that hold the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the earth's surface and heat it up) (14).		
CO_2	CO_2 is an odorless and colorless GHG. Since the industrial revolution began in the mid-1700s, the sort of human activity that increases GHG emissions has increased dramatically in scale and distribution. Data from the past 50 years suggests a corollary increase in levels and concentrations. As an example, prior to the industrial revolution, CO_2 concentrations were fairly stable at 280 parts per million (ppm). Today, they are around 370 ppm, an increase of more than 30%. Left unchecked, the concentration of CO_2 in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources (15).	CO_2 is emitted from natural and manmade sources. Natural sources include: the decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources include: the burning of coal, oil, natural gas, and wood. CO_2 is naturally removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks (16).	Outdoor levels of CO_2 are not high enough to result in negative health effects. According to the National Institute for Occupational Safety and Health (NIOSH) high concentrations of CO_2 can result in health effects such as: headaches, dizziness, restlessness, difficulty breathing, sweating, increased heart rate, increased cardiac output, increased blood pressure, coma, asphyxia, and/or convulsions. It should be noted that current concentrations of CO_2 in the earth's atmosphere are estimated to be approximately 370 ppm, the actual reference exposure level (level at which adverse health effects typically occur) is at exposure levels of 5,000

TABLE 2-1: GREENHOUSE GASES

Greenhouse Gases	Description	Sources	Health Effects
			ppm averaged over 10 hours in a 40-hour workweek and short-term reference exposure levels of 30,000 ppm averaged over a 15 minute period (17).
CH_4	CH_4 is an extremely effective absorber of radiation, although its atmospheric concentration is less than CO_2 and its lifetime in the atmosphere is brief (10-12 years), compared to other GHGs.	CH_4 has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of CH_4. Other anthropocentric sources include fossil-fuel combustion and biomass burning (18).	CH_4 is extremely reactive with oxidizers, halogens, and other halogen-containing compounds. Exposure to high levels of CH_4 can cause asphyxiation, loss of consciousness, headache and dizziness, nausea and vomiting, weakness, loss of coordination, and an increased breathing rate.
N_2O	N_2O, also known as laughing gas, is a colorless GHG. Concentrations of N_2O also began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion (ppb).	N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power	N_2O can cause dizziness, euphoria, and sometimes slight hallucinations. In small doses, it is considered harmless. However, in some cases, heavy and extended use can cause Olney's Lesions (brain damage) (19).

TABLE 2-1: GREENHOUSE GASES

Greenhouse Gases	Description	Sources	Health Effects
		plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant, i.e., in whipped cream bottles. It is also used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars. N_2O can be transported into the stratosphere, be deposited on the earth's surface, and be converted to other compounds by chemical reaction (19).	
Chlorofluorocarbons (CFCs)	CFCs are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface).	CFCs have no natural source but were first synthesized in 1928. They were used for refrigerants, aerosol propellants and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and was extremely successful, so much so that levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that	In confined indoor locations, working with CFC-113 or other CFCs is thought to result in death by cardiac arrhythmia (heart frequency too high or too low) or asphyxiation.

TABLE 2-1: GREENHOUSE GASES

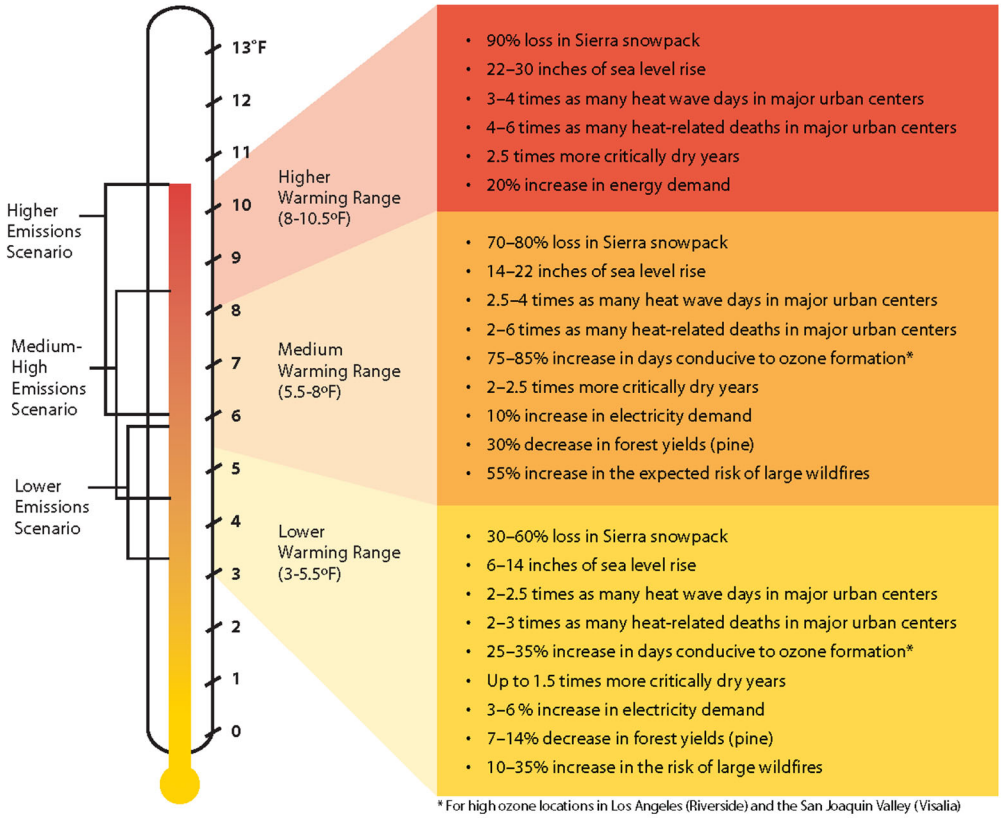
Greenhouse Gases	Description	Sources	Health Effects
		some of the CFCs will remain in the atmosphere for over 100 years (20).	
HFCs	HFCs are synthetic, man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, they are one of three groups with the highest global warming potential (GWP). The HFCs with the largest measured atmospheric abundances are (in order), fluoroform (CHF_3), 1,1,1,2-tetrafluoroethane (CH_2FCF), and 1,1-difluoroethane (CH_3CF_2). Prior to 1990, the only significant emissions were of CHF_3. CH_2FCF emissions are increasing due to its use as a refrigerant.	HFCs are manmade for applications such as automobile air conditioners and refrigerants.	No health effects are known to result from exposure to HFCs.
PFCs	PFCs have stable molecular structures and do not break down through chemical processes in the lower atmosphere. High-energy ultraviolet rays, which occur about 60 kilometers above earth's surface, are able to destroy the compounds. Because of this, PFCs have exceedingly long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). The EPA estimates that concentrations of CF_4 in the atmosphere are over 70 parts per trillion (ppt).	The two main sources of PFCs are primary aluminum production and semiconductor manufacture.	No health effects are known to result from exposure to PFCs.
SF_6	SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest GWP of any gas evaluated (23,900) (21). The EPA indicates that	SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry,	In high concentrations in confined areas, the gas presents the hazard of suffocation because it displaces the oxygen needed for breathing.

TABLE 2-1: GREENHOUSE GASES

Greenhouse Gases	Description	Sources	Health Effects
	concentrations in the 1990s were about 4 ppt.	in semiconductor manufacturing, and as a tracer gas for leak detection.	
Nitrogen Trifluoride (NF_3)	NF_3 is a colorless gas with a distinctly moldy odor. The World Resources Institute (WRI) indicates that NF_3 has a 100-year GWP of 17,200 (22).	NF_3 is used in industrial processes and is produced in the manufacturing of semiconductors, Liquid Crystal Display panels, types of solar panels, and chemical lasers.	Long-term or repeated exposure may affect the liver and kidneys and may cause fluorosis (23).

The potential health effects related directly to the emissions of CO_2, CH_4, and N_2O as they relate to development projects such as the proposed Project are still being debated in the scientific community. Their cumulative effects to GCC have the potential to cause adverse effects to human health. Increases in Earth's ambient temperatures would result in more intense heat waves, causing more heat-related deaths. Scientists also purport that higher ambient temperatures would increase disease survival rates and result in more widespread disease. Climate change will likely cause shifts in weather patterns, potentially resulting in devastating droughts and food shortages in some areas (24). Exhibit 2-A presents the potential impacts of global warming (25).

EXHIBIT 2-A: SUMMARY OF PROJECTED GLOBAL WARMING IMPACT, 2070-2099 (AS COMPARED WITH 1961-1990)



Source: Barbara H. Allen-Diaz. "Climate change affects us all." *University of California, Agriculture and Natural Resources*, 2009.

2.4 GLOBAL WARMING POTENTIAL

GHGs have varying GWP values. GWP of a GHG indicates the amount of warming a gas causes over a given period of time and represents the potential of a gas to trap heat in the atmosphere. CO_2 is utilized as the reference gas for GWP, and thus has a GWP of 1. CO_2 equivalent (CO_2e) is a term used for describing the difference GHGs in a common unit. CO_2e signifies the amount of CO_2 which would have the equivalent GWP.

The atmospheric lifetime and GWP of selected GHGs are summarized at Table 2-2. As shown in the table below, GWP for the Second Assessment Report, the Intergovernmental Panel on Climate Change (IPCC)'s scientific and socio-economic assessment on climate change, range from 1 for CO_2 to 23,900 for SF_6 and GWP for the IPCC's 5th Assessment Report range from 1 for CO_2 to 23,500 for SF_6 (26).

TABLE 2-2: GWP AND ATMOSPHERIC LIFETIME OF SELECT GHGS

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)	
		Second Assessment Report	5th Assessment Report
CO_2	See*	1	1
CH_4	12 .4	21	28
N_2O	121	310	265
HFC-23	222	11,700	12,400
HFC-134a	13.4	1,300	1,300
HFC-152a	1.5	140	138
SF_6	3,200	23,900	23,500

*As per Appendix 8.A. of IPCC's 5th Assessment Report, no single lifetime can be given.
Source: Table 2.14 of the IPCC Fourth Assessment Report, 2007

2.5 GREENHOUSE GAS EMISSIONS INVENTORIES

STATE OF CALIFORNIA

California has significantly slowed the rate of growth of GHG emissions due to the implementation of energy efficiency programs as well as adoption of strict emission controls but is still a substantial contributor to the U.S. emissions inventory total (27). The California Air Resource Board (CARB) compiles GHG inventories for the State of California. Based upon the 2020 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2018 In 2018, emissions from GHG emitting activities statewide were 425 million metric tons of carbon dioxide equivalent (MMT CO2e), 0.8 MMT CO_2e higher than 2017 levels and 6 MMT CO2e below the 2020 GHG Limit of 431 MMT CO2e. (MMT CO_2e/yr) (28).

2.6 EFFECTS OF CLIMATE CHANGE IN CALIFORNIA

PUBLIC HEALTH

Higher temperatures may increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation could increase from 25 to 35% under the lower warming range to 75 to 85% under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances, depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55% more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming range scenario, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures could increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

WATER RESOURCES

A vast network of man-made reservoirs and aqueducts captures and transports water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

If temperatures continue to increase, more precipitation could fall as rain instead of snow, and the snow that does fall could melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90%. Under the lower warming range scenario, snowpack losses could be only half as large as those possible if temperatures were to rise to the higher warming range. How much snowpack could be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snowpack could pose challenges to water managers and hamper hydropower generation. It could also adversely affect winter tourism. Under the lower warming range, the ski season at lower elevations could be reduced by as much as a month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding.

The State's water supplies are also at risk from rising sea levels. An influx of saltwater could degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta – a major fresh water supply.

AGRICULTURE

Increased temperatures could cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. First, California farmers could possibly lose as much as 25% of the water supply needed. Although higher CO_2 levels can stimulate plant production and increase plant water-use efficiency, California's farmers could face greater water demand for crops and a less reliable water supply as temperatures rise. Crop growth and development could change, as could the intensity and frequency of pest and disease outbreaks. Rising temperatures could aggravate ozone pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures could worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits, and nuts.

In addition, continued GCC could shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion could occur in many species while range contractions may be less likely in rapidly evolving species with significant populations already established. Should range contractions occur, new or different weed species could fill the emerging gaps. Continued GCC could alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

FORESTS AND LANDSCAPES

GCC has the potential to intensify the current threat to forests and landscapes by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55%, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. In contrast, wildfires in northern California could increase by up to 90% due to decreased precipitation.

Moreover, continued GCC has the potential to alter natural ecosystems and biological diversity within the state. For example, alpine and subalpine ecosystems could decline by as much as 60 to 80% by the end of the century as a result of increasing temperatures. The productivity of the state's forests has the potential to decrease as a result of GCC.

RISING SEA LEVELS

Rising sea levels, more intense coastal storms, and warmer water temperatures could increasingly threaten the state's coastal regions. Under the higher warming range scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate low-lying coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. Under the lower warming range scenario, sea level could rise 12-14 inches.

2.7 REGULATORY SETTING

FEDERAL

Prior to the last decade, there have been no concrete federal regulations of GHGs or major planning for climate change adaptation. The following are actions regarding the federal government, GHGs, and fuel efficiency.

GHG Endangerment. In *Massachusetts v. Environmental Protection Agency* 549 U.S. 497 (2007), decided on April 2, 2007, the United States Supreme Court (U.S. Court) found that four GHGs, including CO_2, are air pollutants subject to regulation under Section 202(a)(1) of the Clean Air Act (CAA). The Court held that the EPA Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the CAA:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs— CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section "Clean Vehicles" below. After a lengthy legal challenge, the U.S. Court declined to review an Appeals Court ruling that upheld the EPA Administrator's findings (29).

Clean Vehicles. Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the U.S. On April 1, 2010, the EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the U.S.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty (MD) passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon (mpg) if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards would cut CO_2 emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016). The EPA and the NHTSA issued final rules on a second-phase joint rulemaking establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012. The new standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and MD passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of CO_2 in model year 2025, which is equivalent to 54.5 mpg if achieved exclusively through fuel economy improvements.

The EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks (HDT) and buses on September 15, 2011, effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that begin in the 2014 model year and achieve up to a 20% reduction in CO_2 emissions and fuel consumption by the 2018 model year. For HDT and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10% reduction for gasoline vehicles and a 15% reduction for diesel vehicles by the 2018 model year (12 and 17% respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10% reduction in fuel consumption and CO_2 emissions from the 2014 to 2018 model years.

On April 2, 2018, the EPA signed the Mid-term Evaluation Final Determination, which declared that the Model Year (MY) 2022-2025 GHG standards are not appropriate and should be revised (30). This Final Determination serves to initiate a notice to further consider appropriate standards for MY 2022-2025 light-duty vehicles. On August 2, 2018, the NHTSA in conjunction with the EPA, released a notice of proposed rulemaking, the *Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks* (SAFE Rule). The SAFE Vehicles Rule was proposed to amend exiting Corporate Average Fuel Economy (CAFE) and tailpipe CO_2

standards for passenger cars and light trucks and to establish new standards covering model years 2021 through 2026. As of March 31, 2020, the NHTSA and EPA finalized the SAFE Rule which increased stringency of CAFE and CO_2 emissions standards by 1.5% each year through model year 2026 (31).

As of January 2021, Executive Order 13990 directed the U.S. Environmental Protection Agency (EPA) to reconsider the Agency's 2019 action titled "The Safer Affordable Fuel-Efficient Vehicles Rule Part One: One National Program Rule (SAFE-1)" for the purposes of rescinding the action taken by the prior administration. Therefore the U.S. EPA is seeking public comment on its reconsideration of the SAFE-1 and is reviewing public comment on the Notice of Reconsideration (32).

Mandatory Reporting of GHGs. The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of GHGs Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the U.S. and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons (MT) per year (/yr) or more of GHG emissions are required to submit annual reports to the EPA.

New Source Review. The EPA issued a final rule on May 13, 2010, that establishes thresholds for GHGs that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these CAA permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the Federal Code of Regulations, the EPA states:

"This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the CAA, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to GHG sources, starting with the largest GHG emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources but excludes certain smaller sources from Prevention of Significant Deterioration and Title V permitting for GHG emissions until at least April 30, 2016."

The EPA estimates that facilities responsible for nearly 70% of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities.

Standards of Performance for GHG Emissions for New Stationary Sources: Electric Utility Generating Units. As required by a settlement agreement, the EPA proposed new performance standards for emissions of CO_2 for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 megawatts (MW) would be required to meet

an output-based standard of 1,000 pounds (lbs) of CO_2 per MW-hour (MWh), based on the performance of widely used natural gas combined cycle technology. It should be noted that on February 9, 2016, the U.S. Court issued a stay of this regulation pending litigation. Additionally, the current EPA Administrator has also signed a measure to repeal the Clean Power Plan, including the CO_2 standards. The Clean Power Plan was officially repealed on June 19, 2019, when the EPA issued the final Affordable Clean Energy rule. Under the Affordable Clean Energy rule, new state emission guidelines were established that provided existing coal-fired electric utility generating units with achievable standards.

Cap-and-Trade. Cap-and-trade refers to a policy tool where emissions are limited to a certain amount and can be traded or provides flexibility on how the emitter can comply. Successful examples in the U.S. include the Acid Rain Program and the N_2O Budget Trading Program and Clean Air Interstate Rule in the northeast. There is no federal GHG cap-and-trade program currently; however, some states have joined to create initiatives to provide a mechanism for cap-and-trade.

The Regional GHG Initiative is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps CO_2 emissions from power plants, auctions CO_2 emission allowances, and invests the proceeds in strategic energy programs that further reduce emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008 and in 2020 has retained all participating states.

The Western Climate Initiative (WCI) partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15% below 2005 levels by 2020. The partners were originally California, British Columbia, Manitoba, Ontario, and Quebec. However, Manitoba and Ontario are not currently participating. California linked with Quebec's cap-and-trade system January 1, 2014, and joint offset auctions took place in 2015. While the WCI has yet to publish whether it has successfully reached the 2020 emissions goal initiative set in 2007, SB 32, requires that California, a major partner in the WCI, adopt the goal of reducing statewide GHG emissions to 40% below the 1990 level by 2030.

SmartWay Program. The SmartWay Program is a public-private initiative between the EPA, large and small trucking companies, rail carriers, logistics companies, commercial manufacturers, retailers, and other federal and state agencies. Its purpose is to improve fuel efficiency and the environmental performance (reduction of both GHG emissions and air pollution) of the goods movement supply chains. SmartWay is comprised of four components (33):

1. SmartWay Transport Partnership: A partnership in which freight carriers and shippers commit to benchmark operations, track fuel consumption, and improve performance annually.
2. SmartWay Technology Program: A testing, verification, and designation program to help freight companies identify equipment, technologies, and strategies that save fuel and lower emissions.
3. SmartWay Vehicles: A program that ranks light-duty cars and small trucks and identifies superior environmental performers with the SmartWay logo.
4. SmartWay International Interests: Guidance and resources for countries seeking to develop freight sustainability programs modeled after SmartWay.

SmartWay effectively refers to requirements geared towards reducing fuel consumption. Most large trucking fleets driving newer vehicles are compliant with SmartWay design requirements. Moreover, over time, all HDTs will have to comply with the CARB GHG Regulation that is designed with the SmartWay Program in mind, to reduce GHG emissions by making them more fuel-efficient. For instance, in 2015, 53 foot or longer dry vans or refrigerated trailers equipped with a combination of SmartWay-verified low-rolling resistance tires and SmartWay-verified aerodynamic devices would obtain a total of 10% or more fuel savings over traditional trailers.

Through the SmartWay Technology Program, the EPA has evaluated the fuel saving benefits of various devices through grants, cooperative agreements, emissions and fuel economy testing, demonstration projects and technical literature review. As a result, the EPA has determined the following types of technologies provide fuel saving and/or emission reducing benefits when used properly in their designed applications, and has verified certain products:

- Idle reduction technologies – less idling of the engine when it is not needed would reduce fuel consumption.
- Aerodynamic technologies minimize drag and improve airflow over the entire tractor-trailer vehicle. Aerodynamic technologies include gap fairings that reduce turbulence between the tractor and trailer, side skirts that minimize wind under the trailer, and rear fairings that reduce turbulence and pressure drop at the rear of the trailer.
- Low rolling resistance tires can roll longer without slowing down, thereby reducing the amount of fuel used. Rolling resistance (or rolling friction or rolling drag) is the force resisting the motion when a tire rolls on a surface. The wheel will eventually slow down because of this resistance.
- Retrofit technologies include things such as diesel particulate filters, emissions upgrades (to a higher tier), etc., which would reduce emissions.
- Federal excise tax exemptions.

CALIFORNIA

Legislative Actions to Reduce GHGs

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation such as AB 32 was specifically enacted to address GHG emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

AB 32. The California State Legislature enacted AB 32, which required that GHGs emitted in California be reduced to 1990 levels by the year 2020 (this goal has been met[1]). GHGs as defined under AB 32 include CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. Since AB 32 was enacted, a seventh

[1] Based upon the 2019 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2017 GHG emissions period, California emitted an average 424.1 MMT CO_2e (28). This is less than the 2020 emissions target of 431 MMT CO_2e.

chemical, nitrogen trifluoride, has also been added to the list of GHGs. The CARB is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

"Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems."

SB 32. SB 32 requires the state to reduce statewide GHG emissions to 40% below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15. The new legislation builds upon the AB 32 goal and provides an intermediate goal to achieving S-3-05, which sets a statewide GHG reduction target of 80% below 1990 levels by 2050. AB 197 creates a legislative committee to oversee regulators to ensure that CARB not only responds to the Governor, but also the Legislature (11).

CARB Scoping Plan Update. In November 2017, CARB released the *Final 2017 Scoping Plan Update*, which identifies the State's post-2020 reduction strategy. The *Final 2017 Scoping Plan Update* reflects the 2030 target of a 40% reduction below 1990 levels, set by Executive Order B-30-15 and codified by SB 32. Key programs that the proposed Second Update builds upon include the Cap-and-Trade Regulation, the LCFS, and much cleaner cars, trucks, and freight movement, utilizing cleaner, renewable energy, and strategies to reduce CH_4 emissions from agricultural and other wastes.

The *Final 2017 Scoping Plan Update* establishes a new emissions limit of 260 MMT CO_2e for the year 2030, which corresponds to a 40% decrease in 1990 levels by 2030 (34).

California's climate strategy will require contributions from all sectors of the economy, including the land base, and will include enhanced focus on zero- and near-zero-emission vehicle technologies; continued investment in renewables, including solar roofs, wind, and other distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (CH_4, black carbon, and fluorinated gases); and an increased focus on integrated land use planning to support livable, transit-connected communities and conservation of agricultural and other lands. Requirements for direct GHG reductions at refineries will further support air quality co-benefits in neighborhoods, including in disadvantaged communities historically located adjacent to these large stationary sources, as well as efforts with California's local districts to tighten emission limits on a broad spectrum of industrial sources. Major elements of the *Final 2017 Scoping Plan Update* framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing zero-emission vehicles (ZEV) buses and trucks.
- LCFS, with an increased stringency (18% by 2030).
- Implementing SB 350, which expands the RPS to 50% RPS and doubles energy efficiency savings by 2030.

- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing CH_4 and hydroflurocarbon emissions by 40% and anthropogenic black carbon emissions by 50% by year 2030.
- Continued implementation of SB 375.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- 20% reduction in GHG emissions from refineries by 2030.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Note, however, that the *Final 2017 Scoping Plan Update* acknowledges that:

"[a]chieving net zero increases in GHG emissions, resulting in no contribution to GHG impacts, may not be feasible or appropriate for every project, however, and the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA."

In addition to the statewide strategies listed above, the *Final 2017 Scoping Plan Update* also identifies local governments as essential partners in achieving the State's long-term GHG reduction goals and identifies local actions to reduce GHG emissions. As part of the recommended actions, CARB recommends that local governments achieve a community-wide goal to achieve emissions of no more than 6 metric tons of CO_2e (MT CO_2e) or less per capita by 2030 and 2 MT CO_2e or less per capita by 2050. For CEQA projects, CARB states that lead agencies may develop evidenced-based bright-line numeric thresholds—consistent with the Scoping Plan and the State's long-term GHG goals—and projects with emissions over that amount may be required to incorporate on-site design features and mitigation measures that avoid or minimize project emissions to the degree feasible; or a performance-based metric using a Climate Action Plan (CAP) or other plan to reduce GHG emissions is appropriate.

According to research conducted by the Lawrence Berkeley National Laboratory (LBNL) and supported by CARB, California, under its existing and proposed GHG reduction policies, could achieve the 2030 goals under SB 32. The research utilized a new, validated model known as the California LBNL GHG Analysis of Policies Spreadsheet (CALGAPS), which simulates GHG and criteria pollutant emissions in California from 2010 to 2050 in accordance to existing and future GHG-reducing policies. The CALGAPS model showed that by 2030, emissions could range from 211 to 428 MT CO_2e per year (MT CO_2e/yr), indicating that "even if all modeled policies are not implemented, reductions could be sufficient to reduce emissions 40% below the 1990 level [of SB 32]." CALGAPS analyzed emissions through 2050 even though it did not generally account for policies that might be put in place after 2030. Although the research indicated that the emissions would not meet the State's 80% reduction goal by 2050, various combinations of policies could allow California's cumulative emissions to remain very low through 2050 (35) (36).

Cap-and-Trade Program. The Scoping Plan identifies a Cap-and-Trade Program as one of the key strategies for California to reduce GHG emissions. According to CARB, a cap-and-trade program will help put California on the path to meet its goal of achieving a 40% reduction in GHG emissions

from 1990 levels by 2030. Under cap-and-trade, an overall limit on GHG emissions from capped sectors is established, and facilities subject to the cap will be able to trade permits to emit GHGs within the overall limit.

CARB adopted a California Cap-and-Trade Program pursuant to its authority under AB 32. The Cap-and-Trade Program is designed to reduce GHG emissions from regulated entities by more than 16% between 2013 and 2020, and by an additional 40% by 2030. The statewide cap for GHG emissions from the capped sectors (e.g., electricity generation, petroleum refining, and cement production) commenced in 2013 and will decline over time, achieving GHG emission reductions throughout the program's duration.

Covered entities that emit more than 25,000 MT CO_2e/yr must comply with the Cap-and-Trade Program. Triggering of the 25,000 MT CO_2e/yr "inclusion threshold" is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of GHG Emissions (Mandatory Reporting Rule).

Under the Cap-and-Trade Program, CARB issues allowances equal to the total amount of allowable emissions over a given compliance period and distributes these to regulated entities. Covered entities are allocated free allowances in whole or part (if eligible), and may buy allowances at auction, purchase allowances from others, or purchase offset credits. Each covered entity with a compliance obligation is required to surrender "compliance instruments" for each MT CO_2e of GHG they emit. There also are requirements to surrender compliance instruments covering 30% of the prior year's compliance obligation by November of each year (37).

The Cap-and-Trade Program provides a firm cap, which provides the highest certainty of achieving the 2030 target. An inherent feature of the Cap-and-Trade program is that it does not guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are only guaranteed on an accumulative basis. As summarized by CARB in the *First Update to the Climate Change Scoping Plan*:

"The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced. In other words, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions is considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative." (38)

The Cap-and-Trade Program covered approximately 80% of California's GHG emissions (34). The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period. The Cap-and-Trade

Program covers the GHG emissions associated with the combustion of transportation fuels in California, whether refined in-state or imported.

SB 375 – the Sustainable Communities and Climate Protection Act of 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40% of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: it (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Concerning CEQA, SB 375, as codified in Public Resources Code Section 21159.28, states that CEQA findings for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts, or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network, if the project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that the CARB accepts as achieving the GHG emission reduction targets.
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies).
3. Incorporates the mitigation measures required by an applicable prior environmental document.

AB 1493. California AB 1493 requires CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the U.S. District Court for the District of Columbia in 2011.

The standards phase in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards will result in about a 22% reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards will result in about a 30% reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program or the Advanced Clean Cars program (ACC). The Advanced Clean Car program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce GHGs from new cars by 34% from 2016 levels by 2025. The new rules will clean up gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles (EV) and hydrogen fuel cell cars. The package will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

SB 350— Clean Energy and Pollution Reduction Act of 2015. SB 350 requires an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for EV charging stations. Provisions for a 50% reduction in the use of petroleum statewide were removed from the Bill because of opposition and concern that it would prevent the Bill's passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33% to 50% by 2030, with interim targets of 40% by 2024, and 25% by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission (CPUC), the California Energy Commission (CEC), and local publicly owned utilities.
- Reorganize the Independent System Operator to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States.

EXECUTIVE ORDERS RELATED TO GHG EMISSIONS

California's Executive Branch has taken several actions to reduce GHGs through the use of Executive Orders. Although not regulatory, they set the tone for the state and guide the actions of state agencies.

Executive Order B-55-18 and SB 100. SB 100 raises California's RPS requirement to 50% renewable resources target by December 31, 2026, and to achieve a 60% target by December 31, 2030. SB 100 also requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44% of retail sales by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030. Executive Order B-55-18 establishes a carbon neutrality goal for the state of California by 2045; and sets a goal to maintain net negative emissions thereafter. The Executive Order directs the California Natural Resources Agency (CNRA), California Environmental Protection Agency (CalEPA), the Department of Food and Agriculture (CDFA), and CARB to include sequestration targets in the Natural and Working Lands Climate Change Implementation Plan consistent with the carbon neutrality goal.

Executive Order S-3-05. Executive Order S-3-05 set the following reduction targets for GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80% below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. AB 32 as adopted enacts the 2020 GHG reduction goal identified in this Executive Order. However, the Legislature did not include the 2050 GHG reduction goal.

Executive Order S-01-07 – Low Carbon Fuel Standard. Executive Order S-01-07 mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020. The CARB adopted the LCFS on April 23, 2009.

In 2018, the CARB approved amendments to the regulation, which included strengthening the carbon intensity benchmarks through 2030 in compliance with the SB 32 GHG emissions reduction target for 2030. The amendments included crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector (39).

Executive Order S-13-08. Executive Order S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the Order, the 2009 California Climate Adaptation Strategy (CNRA 2009) was adopted, which is the "…first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order B-30-15. Executive Order B-30-15 sets an interim statewide GHG emission reduction target to reduce GHG emissions to 40% below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80% below 1990 levels by 2050 and directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of MMT CO_2e. The Order also requires the state's climate adaptation plan to be updated every three years, and for the State to continue its climate change research program, among other provisions. As with Executive Order S-3-05, this Order is not legally enforceable for local governments and the private sector. However, SB 32 as adopted enacts the 2030 GHG reduction goal identified in this Executive Order but not the 2050 GHG reduction goal.

CALIFORNIA REGULATIONS AND BUILDING CODES

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations, contained in the California Code of Regulations (CCR), have kept California's energy consumption relatively flat even with rapid population growth.

Title 20 CCR. CCR, Title 20: Division 2, Chapter 4, Article 4, Sections 1601-1608: Appliance Efficiency Regulations regulates the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. 23 categories of appliances are included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles or other mobile equipment.

Title 24 CCR. CCR Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient

buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2019 version of Title 24 was adopted by the CEC and became effective on January 1, 2020.

The 2019 Title 24 standards require solar photovoltaic systems for new homes, establish requirements for newly constructed healthcare facilities, encourage demand responsive technologies for residential buildings, update indoor and outdoor lighting for nonresidential buildings. Single-family homes built with the 2019 standards will use approximately 7% less energy compared to the residential homes built under the 2016 standards. Additionally, after implementation of solar photovoltaic systems, homes built under the 2019 standards will about 53% less energy than homes built under the 2016 standards. Nonresidential buildings will use approximately 30% less energy due to lighting upgrades (40).

CCR, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on January 1, 2011, and is administered by the California Building Standards Commission. CALGreen is updated on a regular basis along with the rest of Title 24, with the most recent update is the 2019 CALGreen edition. Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. CALGreen recognizes that many jurisdictions have developed existing construction and demolition ordinances and defers to them as the ruling guidance provided, they establish a minimum 65% diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. The State Building Code provides the minimum standard that buildings must meet in order to be certified for occupancy, which is generally enforced by the local building official. 2019 CALGreen standards are applicable to the Project and require (41):

- Short-term bicycle parking. If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- Designated parking. In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- Construction waste management. Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1. 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Excavated soil and land clearing debris. 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phase project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling,

including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).

- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
    - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)
    - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
    - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2).
    - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of note more than 0.5 gallons per minute at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).
- Outdoor portable water use in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent (5.304.1).
- Water meters. Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 sf or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gal/day (5.303.1.1 and 5.303.1.2).
- Outdoor water use in rehabilitated landscape projects equal or greater than 2,500 sf. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).
- Commissioning. For new buildings 10,000 sf and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2).

MWELO. The MWELO requirements were updated by AB 1881, the Water Conservation Act. The bill requires local agencies to adopt a local landscape ordinance at least as effective in conserving water as MWELO by January 1, 2010. On April 1, 2015, the Department of Water Resources was ordered by the governor to update MWELO through expedited regulation. The California Water Commission approved the revised MWELO on July 15, 2015, and it became effective December 15, 2015. New development projects that include landscape areas of 500 sf or more are subject to the MWELO. The update requires:

- More efficient irrigation systems;
- Incentives for graywater usage;
- Improvements in on-site stormwater capture;
- Limiting the portion of landscapes that can be planted with high water use plants; and
- Reporting requirements for local agencies.

SB 97 and the CEQA Guidelines Update. SB 97 added Section 21083.05 to the Public Resources Code. The code states "(a) On or before July 1, 2009, the OPR shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the OPR pursuant to subdivision (a)." Section 21097 was also added to the Public Resources Code. It provided CEQA protection until January 1, 2010, for transportation projects funded by the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 or projects funded by the Disaster Preparedness and Flood Prevention Bond Act of 2006, in stating that the failure to analyze adequately the effects of GHGs would not violate CEQA.

On December 28, 2018, the Natural Resources Agency announced the OAL approved the amendments to the CEQA Guidelines for implementing the CEQA. The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

Section 15064.3 was added the CEQA Guidelines and states that in determining the significance of a project's GHG emissions, the lead agency should focus its analysis on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national, or global emissions. The agency's analysis should consider a timeframe that is appropriate for the project. The agency's analysis also must reasonably reflect evolving scientific knowledge and state regulatory schemes. Additionally, a lead agency may use a model or methodology to estimate GHG emissions resulting from a project. The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change. The lead agency must support its selection of a model or methodology with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use (42).

REGIONAL

The Project is within the South Coast Air Basin (SCAB), which is under the jurisdiction of the SCAQMD.

SCAQMD

SCAQMD is the agency responsible for air quality planning and regulation in the SCAB. The SCAQMD addresses the impacts to climate change of projects subject to SCAQMD permit as a lead agency if they are the only agency that has discretionary approval for the project and acts as a responsible agency when a land use agency must also approve discretionary permits for the project. The SCAQMD acts as an expert commenting agency for impacts to air quality. This expertise carries over to GHG emissions, so the agency helps local land use agencies through the development of models and emission thresholds that can be used to address GHG emissions.

In 2008, SCAQMD formed a Working Group to identify GHG emissions thresholds for land use projects that could be used by local lead agencies in the SCAB. The Working Group developed several different options that are contained in the SCAQMD Draft Guidance Document – Interim CEQA GHG Significance Threshold, which could be applied by lead agencies. The working group has not provided additional guidance since release of the interim guidance in 2008 (43). The SCAQMD Board has not approved the thresholds; however, the Guidance Document provides substantial evidence supporting the approaches to significance of GHG emissions that can be considered by the lead agency in adopting its own threshold. The current interim thresholds consist of the following tiered approach:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a GHG reduction plan. If a project is consistent with a qualifying local GHG reduction plan, it does not have significant GHG emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:
    - Residential and Commercial land use: 3,000 MT CO_2e/yr
    - Industrial land use: 10,000 MT CO_2e/yr
    - Based on land use type: residential: 3,500 MT CO_2e/yr; commercial: 1,400 MT CO_2e/yr; or mixed use: 3,000 MT CO_2e/yr
- Tier 4 has the following options:
    - Option 1: Reduce BAU emissions by a certain percentage; this percentage is currently undefined.
    - Option 2: Early implementation of applicable AB 32 Scoping Plan measures
    - Option 3: 2020 target for service populations (SP), which includes residents and employees: 4.8 MT CO_2e/SP/year for projects and 6.6 MT CO_2e/SP/year for plans;
    - Option 3, 2035 target: 3.0 MT CO_2e/SP/year for projects and 4.1 MT CO_2e/SP/year for plans
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The SCAQMD's interim thresholds used the Executive Order S-3-05-year 2050 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to worldwide efforts to cap CO_2 concentrations at 450 ppm, thus stabilizing global climate.

SCAQMD only has authority over GHG emissions from development projects that include air quality permits. At this time, it is unknown if the Project would include stationary sources of emissions subject to SCAQMD permits. Notwithstanding, if the Project requires a stationary permit, it would be subject to the applicable SCAQMD regulations.

SCAQMD Regulation XXVII, adopted in 2009 includes the following rules:

- Rule 2700 defines terms and post global warming potentials.
- Rule 2701, SoCal Climate Solutions Exchange, establishes a voluntary program to encourage, quantify, and certify voluntary, high quality certified GHG emission reductions in the SCAQMD.
- Rule 2702, GHG Reduction Program created a program to produce GHG emission reductions within the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties.

2.8 DISCUSSION ON ESTABLISHMENT OF SIGNIFICANCE THRESHOLDS

The City of Whittier has not adopted its own numeric threshold of significance for determining impacts with respect to greenhouse gas (GHG) emissions. A screening threshold of 3,000 MT CO_2e per year to determine if additional analysis is required is an acceptable approach for small projects. This approach is a widely accepted screening threshold used by numerous cities in the South Coast Air Basin and is based on the South Coast Air Quality Management District (SCAQMD) staff's proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD's *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* ("SCAQMD Interim GHG Threshold"). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required (44). As noted by the SCAQMD:

> "…the…screening level for stationary sources is based on an emission capture rate of 90 percent for all new or modified projects...the policy objective of [SCAQMD's] recommended interim GHG significance threshold proposal is to achieve an emission capture rate of 90 percent of all new or modified stationary source projects. A GHG significance threshold based on a 90 percent emission capture rate may be more appropriate to address the long-term adverse impacts associated with global climate change because most projects will be required to implement GHG reduction measures. Further, a 90 percent emission capture rate sets the emission threshold low enough to capture a substantial fraction of future stationary source projects that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions. This assertion is based on the fact that [SCAQMD] staff estimates that these GHG emissions would account for slightly less than one percent of future 2050 statewide GHG emissions target (85 [MMT CO2e/yr]). In addition, these small projects may be subject to future applicable

> GHG control regulations that would further reduce their overall future contribution to the statewide GHG inventory. Finally, these small sources are already subject to [Best Available Control Technology] (BACT) for criteria pollutants and are more likely to be single-permit facilities, so they are more likely to have few opportunities readily available to reduce GHG emissions from other parts of their facility." (44)

Thus, and based on guidance from the SCAQMD, if a non-industrial project would emit GHGs less than 3,000 MT CO_2e per year, the project is not considered a substantial GHG emitter and the GHG impact is less than significant, requiring no additional analysis and no mitigation. On the other hand, if a non-industrial project would emit GHGs in excess of 3,000 MT CO_2e per year, then the project could be considered a substantial GHG emitter, requiring additional analysis and potential mitigation.

As previously discussed, a screening threshold of 3,000 MT CO_2e per year is an acceptable approach for small projects to determine if additional analysis is required and is therefore applied for this Project.

This page intentionally left blank.

3 PROJECT GREENHOUSE GAS IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it will result in a significant GHG impact. The significance of these potential impacts is described in the following section.

3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related GHG impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 California Code of Regulations §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to GHG if it would (45):

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

3.3 CALIFORNIA EMISSIONS ESTIMATOR MODEL™ EMPLOYED TO ANALYZE GHG EMISSIONS

In June, 2021 the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) in coordination with California air districts, released the latest version of the California Emissions Estimator Model (CalEEMod) Version 2020.4.0. The purpose of this model is to calculate construction-source and operational-source criteria pollutant and GHG emissions (CO_2, CH_4, and N_2O) from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation (46). Accordingly, the latest version of CalEEMod has been used for this Project to determine construction and operational air quality emissions. CalEEMod output for construction and operational activity are provided in Appendix 3.1.

3.3.1 EMISSION FACTORS MODEL

On August 19, 2019, the EPA approved the 2017 version of the EMissions FACtor model (EMFAC) web database for use in SIP and transportation conformity analyses. EMFAC2017 is a mathematical model that was developed to calculate emission rates, fuel consumption, VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources (47). The EMFAC emission factors used in this analysis include adjustment factors for the SAFE Rule and thus represent a conservative scenario (48) (49).

3.4 LIFE-CYCLE ANALYSIS NOT REQUIRED

A full life-cycle analysis (LCA) for construction and operational activity is not included in this analysis due to the lack of consensus guidance on LCA methodology at this time (50). Life-cycle analysis (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in the project development, infrastructure, and on-going

operations) depends on emission factors or econometric factors that are not well established for all processes. At this time, an LCA would be extremely speculative and thus has not been prepared.

Additionally, the SCAQMD recommends analyzing direct and indirect project GHG emissions generated within California and not life-cycle emissions because the life-cycle effects from a project could occur outside of California, might not be very well understood or documented, and would be challenging to mitigate (51). Additionally, the science to calculate life cycle emissions is not yet established or well defined; therefore, SCAQMD has not recommended, and is not requiring, life-cycle emissions analysis.

3.5 CONSTRUCTION EMISSIONS

Project construction actvities would generate CO_2 and CH_4 emissions The report *La Serna Townhomes Air Quality Impact Analysis Report* contains detailed information regarding Project construction activities (52). Construction related emissions are expected from the following activities:

- Demolition
- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

3.5.1 CONSTRUCTION DURATION

Construction is expected to commence in June 2022 and will continue through April 2023. The construction schedule utilized in the analysis, shown in Table 3-1, represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent.[2] The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA Guidelines. The duration of construction activities was based on CalEEMod defaults and an opening year of 2023.

[2] As shown in the CalEEMod User's Guide Version 2020.4.0, Section 4.3 "Offroad Equipment" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

TABLE 3-1: CONSTRUCTION DURATION

Phase Name	Start Date	End Date	Days
Demolition	6/1/2022	6/7/2022	5
Site Preparation	6/8/2022	6/9/2022	2
Grading	6/10/2022	6/23/2022	10
Building Construction	6/24/2022	4/27/2023	220
Paving	4/14/2023	4/27/2023	10
Architectural Coating	4/14/2023	4/27/2023	10

Source: CalEEMod, Appendix 3.1.

3.5.2 CONSTRUCTION EQUIPMENT

Site specific construction fleet may vary due to specific Project needs at the time of construction. The construction equipment estimates are generally based on CalEEMod standard inputs. A modification to the default equipment list was made to allow the model to mor accurately calculate fugitive dust from ground disturbance for purposes of the air quality localized significance threshold. As CalEEmod does not calculate ground disturbance for the backhoes/loaders/tractors equipment, these were replaced with crawler tractors with the same horse power and load factors of the backhoes/loaders/tractors equipment. A detailed summary of construction equipment assumptions by phase is provided at Table 3-2. Please refer to specific detailed modeling inputs/outputs contained in Appendix 3.1.

3.5.3 CONSTRUCTION EMISSIONS SUMMARY

To evaluate Project construction emissions, GHG emissions are quantified and amortized over the life of the Project and added to the operations emissions. To amortize the emissions over the life of the Project, the SCAQMD recommends calculating the total GHG emissions for the construction activities, dividing it by a 30-year project life then adding that number to the annual operational GHG emissions (53). Therefore, Project construction emissions have been amortized over a 30-year period and added to the annual operational GHG emissions. The amortized construction emissions are presented in Table 3-3.

3.6 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of CO_2, CH_4, and N_2O from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Water Supply, Treatment, and Distribution
- Solid Waste

TABLE 3-2: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Phase Name	Equipment	Amount	Hours Per Day
Demolition	Concrete/Industrial Saws	1	8
	Rubber Tired Dozers	1	8
	Tractors/Loaders/Backhoes	3	8
Site Preparation	Crawler Tractors	1	8
	Graders	1	8
	Rubber Tired Dozers	1	8
Grading	Crawler Tractors	2	8
	Graders	1	8
	Rubber Tired Dozers	1	8
Building Construction	Cranes	1	8
	Forklifts	1	8
	Generator Sets	1	8
	Tractors/Loaders/Backhoes	1	8
	Welders	3	8
Paving	Cement and Mortar Mixers	1	8
	Pavers	1	8
	Paving Equipment	1	8
	Rollers	1	8
	Tractors/Loaders/Backhoes	1	8
Architectural Coating	Air Compressors	1	8

Source: CalEEMod, Appendix 3.1

TABLE 3-3 AMORTIZED ANNUAL CONSTRUCTION EMISSIONS

Year	Emissions (MT/yr)			
	CO_2	CH_4	N_2O	Total CO_2e
2022	211.73	0.03	0.00	213.71
2023	128.26	0.02	0.00	129.40
Total Annual Construction Emissions	339.99	0.05	0.01	343.11
Amortized Construction Emissions ($MTCO_2e$)	**11.33**	**0.00**	**0.00**	**11.44**

Source: CalEEMod, Appendix 3.1

3.6.1 AREA SOURCE EMISSIONS

Landscape maintenance equipment are typically the only area sources that would generate emissions GHG emissions, which are primarily due to fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on standard assumptions included in CalEEMod.

3.6.2 ENERGY SOURCE EMISSIONS

COMBUSTION EMISSIONS ASSOCIATED WITH NATURAL GAS AND ELECTRICITY

GHGs are emitted from buildings as a result of activities for which electricity and natural gas are typically used as energy sources. Combustion of any type of fuel emits CO_2 and other GHGs directly into the atmosphere; these emissions are considered direct emissions associated with a building; the building energy use emissions do not include street lighting[3]. GHGs are also emitted during the generation of electricity from fossil fuels; these emissions are indirect emissions. Unless otherwise noted, CalEEMod default parameters were used.

RENEWABLE PORTFOLIO STANDARD

Indirect emissions from electricity use were modeled based on electricity intensity factors for the Project utility provider, Southern California Edison (SCE). CalEEMOD derives energy intensity factors from 2019 data, which indicates that in 2019 SCE generated 393 pounds of CO_2e for each megawatt-hour (MWh) of electricity delivered. SCE had a power mix with 38% renewables in 2019 and is projected to meet the 44% renewables requirement by 2024 (54). The 2019 reported energy intensity factors were used in this analysis of GHG emissions.

TITLE 24 ENERGY EFFICIENCY STANDARDS

California's Energy Efficiency Standards for Residential and Nonresidential Buildings was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity. The 2019 version of Title 24 was adopted by the CEC and became effective on January 1, 2020 (5). The 2019 Energy Code is used in this analysis.

3.6.3 MOBILE SOURCE EMISSIONS

Mobile source GHG impacts are dependent on both overall daily vehicle trip generation, trip purpose, and trip distance. However, the Project's would result in a net zero trip generation as the previous restaurant use generated 372 more trips than the proposed Project (55). Therefore, there is no increase in mobile emission sources associated with the proposed Project.

3.6.4 WATER SUPPLY, TREATMENT AND DISTRIBUTION

Indirect GHG emissions result from the production of electricity used to convey, treat, and distribute water and wastewater. The amount of electricity required to convey, treat and distribute water depends on the volume of water as well as the sources of the water. CalEEMod default end use water demand rates are based on 2000 water demand data. Since 2013 CalGreen has required a 20% reduction in indoor water use over base line rates (56). This was implemented through design requirements in the code for water closets, faucets and other plumbing fixtures

[3]

to achieve the 20% decrease by decreasing the flow rates by 20%. Therefore, CalEEMod default parameters were modified to reflect this post 2000 requirement.

3.6.5 SOLID WASTE

Residential land uses will result in the generation and disposal of solid waste. A large percentage of this waste will be diverted from landfills by a variety of means, such as reducing the amount of waste generated, recycling, and/or composting. The remainder of the waste not diverted will be disposed of at a landfill. GHG emissions from landfills are associated with the anaerobic breakdown of material. GHG emissions associated with the disposal of solid waste associated with the proposed Project were calculated by CalEEMod using standard generation rates.

3.7 EMISSIONS SUMMARY

The annual GHG emissions associated with the operation of the proposed Project without mitigation are estimated to be approximately 106.14 CO_2e/yr as summarized in Table 3-4.

TABLE 3-4: PROJECT GHG EMISSIONS

Emission Source	Emissions (MT/yr)			
	CO_2	CH_4	N_2O	Total CO_2e
Annual construction-related emissions amortized over 30 years	11.33	0.00	0.00	11.44
Area Source	9.84	0.00	0.00	9.91
Energy Source	62.57	0.00	0.00	62.92
Mobile Source	0.00	0.00	0.00	0.00
Waste	3.92	0.23	0.00	9.72
Water Usage	9.83	0.07	0.00	12.16
Total CO_2e (All Sources)	**106.14**			
SCAQMD Threshold	**3,000**			
Significant?	**No**			

Source: CalEEMod, Appendix 3.1
-- = Emission factor only provided in MT CO_2e

3.8 GREENHOUSE GAS EMISSIONS FINDINGS AND RECOMMENDATIONS

3.8.1 GHG IMPACT 1

The Project could generate direct or indirect GHG emissions that would result in a significant impact on the environment.

IMPACTS WITHOUT PROJECT DESIGN FEATURES AND MITIGATION

The annual GHG emissions associated with the operation of the proposed Project are estimated to be 106.14 MT CO_2e per year as summarized in Table 3-4. Direct and indirect operational emissions associated with the Project are compared with the SCAQMD threshold of significance for small land use projects, which is 3,000 MT CO_2e per year (57). As shown, the proposed Project would result in a less than significant impact with respect to GHG emissions.

3.8.2 GHG IMPACT 2

The Project could not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

As previously stated, pursuant to 15604.4 of the *CEQA Guidelines*, a lead agency may rely on qualitative analysis or performance-based standards to determine the significance of impacts from GHG emissions (45). As such, the Project's consistency with SB 32 (2017 Scoping Plan), is discussed below. Consistency with AB 32 and the 2008 Scoping Plan is not necessary, since the target year for AB 32 and the 2008 Scoping Plan was 2020, and the Project's buildout year for modeling is 2023. As such the 2017 Scoping Plan is the most relevant statewide plan. Project consistency with SB 32 is evaluated in the following discussion.

SB 32/2017 SCOPING PLAN CONSISTENCY

The 2017 Scoping Plan Update reflects the 2030 target of a 40% reduction below 1990 levels, set by Executive Order B-30-15 and codified by SB 32. Table 3-5 summarizes the Project's consistency with the 2017 Scoping Plan. As summarized, the Project will not conflict with any of the provisions of the Scoping Plan and in fact supports seven of the action categories.

TABLE 3-5: 2017 SCOPING PLAN CONSISTENCY SUMMARY

Action	Responsible Parties	Consistency
Implement SB 350 by 2030		
Increase the Renewables Portfolio Standard to 50% of retail sales by 2030 and ensure grid reliability.	CPUC, CEC, CARB	Consistent. This measure is not directly applicable to development projects, but the proposed Project would use energy from Southern California Edison, which has committed to diversify its portfolio of energy sources by increasing energy from wind and solar sources. Additionally, as the project buildings are less than 4-stories, they would be required to install solar PV systems to increase renewable energy availability for the Project.
Establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas end uses by 2030.		Consistent. Although this measure is directed towards policymakers, the proposed Project would be designed consistent with Title 24 2019, which increases in overall energy efficiency from Title 24 2016.

TABLE 3-5: 2017 SCOPING PLAN CONSISTENCY SUMMARY

Action	Responsible Parties	Consistency
Reduce GHG emissions in the electricity sector through the implementation of the above measures and other actions as modeled in Integrated Resource Planning (IRP) to meet GHG emissions reductions planning targets in the IRP process. Load-serving entities and publicly- owned utilities meet GHG emissions reductions planning targets through a combination of measures as described in IRPs.		Not applicable. This measure is not within the purview of this Project.
Implement Mobile Source Strategy (Cleaner Technology and Fuels)		
At least 1.5 million zero emission and plug-in hybrid light-duty electric vehicles by 2025.	CARB, California State Transportation Agency (CalSTA), Strategic Growth Council (SGC), California Department of Transportation (Caltrans), CEC, OPR, Local Agencies	No conflict. These are CARB enforced standards; vehicles that access the Project that are required to comply with the standards will comply with the strategy.
At least 4.2 million zero emission and plug-in hybrid light-duty electric vehicles by 2030.		No conflict. These are CARB enforced standards; vehicles that access the Project that are required to comply with the standards will comply with the strategy.
Further increase GHG stringency on all light-duty vehicles beyond existing Advanced Clean cars regulations.		No conflict. These are CARB enforced standards; vehicles that access the Project that are required to comply with the standards will comply with the strategy.
Medium- and Heavy-Duty GHG Phase 2.		No conflict. These are CARB enforced standards; vehicles that access the Project that are required to comply with the standards will comply with the strategy.
Innovative Clean Transit: Transition to a suite of to-be-determined innovative clean transit options. Assumed 20% of new urban buses purchased beginning in 2018 will be zero emission buses with the penetration of zero-emission technology ramped up to 100% of new sales in 2030. Also, new natural gas buses, starting in 2018, and diesel buses, starting in 2020, meet the optional heavy-duty low-NO_X standard.		Not applicable. This measure is not within the purview of this Project.

TABLE 3-5: 2017 SCOPING PLAN CONSISTENCY SUMMARY

Action	Responsible Parties	Consistency
Last Mile Delivery: New regulation that would result in the use of low NO_X or cleaner engines and the deployment of increasing numbers of zero-emission trucks primarily for class 3-7 last mile delivery trucks in California. This measure assumes ZEVs comprise 2.5% of new Class 3–7 truck sales in local fleets starting in 2020, increasing to 10% in 2025 and remaining flat through 2030.		Not applicable. This Project is not responsible for implementation of SB 375 and would therefore not conflict with this measure.
Further reduce VMT through continued implementation of SB 375 and regional Sustainable Communities Strategies; forthcoming statewide implementation of SB 743; and potential additional VMT reduction strategies not specified in the Mobile Source Strategy but included in the document "Potential VMT Reduction Strategies for Discussion."		No conflict. This Project is not responsible for implementation of SB 375 and would therefore not conflict with this measure. However, the project does result in net negative tip generation in the City of Whittier as the Project would generate fewer trips than the previous land use.
Increase stringency of SB 375 Sustainable Communities Strategy (2035 targets).	CARB	Not applicable. The Project is not within the purview of SB 375 and would therefore not conflict with this measure.
By 2019, adjust performance measures used to select and design transportation facilities		
Harmonize project performance with emissions reductions and increase competitiveness of transit and active transportation modes (e.g., via guideline documents, funding programs, project selection, etc.).	CalSTA, SGC, OPR, CARB, Governor's Office of Business and Economic Development (GO-Biz), California Infrastructure and Economic Development Bank, Department of Finance, California Transportation Commission (CTC), Caltrans	Not applicable. Although this is directed towards CARB and Caltrans, the proposed Project would be designed to promote and support pedestrian activity on-site and in the Project Site area.

TABLE 3-5: 2017 SCOPING PLAN CONSISTENCY SUMMARY

Action	Responsible Parties	Consistency
By 2019, develop pricing policies to support low-GHG transportation (e.g., low-emission vehicle zones for heavy duty, road user, parking pricing, transit discounts).	CalSTA, Caltrans, CTC, OPR, SGC, CARB	Not applicable. Although this measure is directed towards policymakers, the proposed Project would comply with AB 939, which sets a statewide policy that not less than 65% of solid waste generated be source reduced, recycled, or composted. Additionally, the proposed Project would be required to participate in the City of Whittier recycling program and recycling collection. During construction, the proposed Project shall recycle and reuse construction and demolition waste per City of Whittier solid waste procedures.
Implement California Sustainable Freight Action Plan		
Improve freight system efficiency.	CalSTA, CalEPA, CNRA, CARB, Caltrans, CEC, GO-Biz	Not applicable. This measure is not within the purview of this Project.
Deploy over 100,000 freight vehicles and equipment capable of zero emission operation and maximize both zero and near-zero emission freight vehicles and equipment powered by renewable energy by 2030.		Not applicable. This measure is not within the purview of this Project.
Adopt a Low Carbon Fuel Standard with a Carbon Intensity reduction of 18%.	CARB	No conflict. This measure would apply to all fuel purchased and used by the Project in the state.
Implement the Short-Lived Climate Pollutant Strategy by 2030		
40% reduction in methane and hydrofluorocarbon emissions below 2013 levels.	CARB, CalRecycle, CDFA, SWRCB, Local Air Districts	Not applicable. This measure is not within the purview of this Project.
50% reduction in black carbon emissions below 2013 levels.		Not applicable. This measure is not within the purview of this Project.
By 2019, develop regulations and programs to support organic waste landfill reduction goals in the SLCP and SB 1383.	CARB, CalRecycle, CDFA SWRCB, Local Air Districts	Not applicable. This measure is not within the purview of this Project.

TABLE 3-5: 2017 SCOPING PLAN CONSISTENCY SUMMARY

Action	Responsible Parties	Consistency
Implement the post-2020 Cap-and-Trade Program with declining annual caps.	CARB	Not applicable. This measure is not within the purview of this Project.
By 2018, develop Integrated Natural and Working Lands Implementation Plan to secure California's land base as a net carbon sink		
Protect land from conversion through conservation easements and other incentives.	CNRA, Departments Within CDFA, CalEPA, CARB	Not applicable. This measure is not within the purview of this Project.
Increase the long-term resilience of carbon storage in the land base and enhance sequestration capacity		Not applicable. This measure is not within the purview of this Project.
Utilize wood and agricultural products to increase the amount of carbon stored in the natural and built environments		Not applicable. This measure is not within the purview of this Project.
Establish scenario projections to serve as the foundation for the Implementation Plan		Not applicable. This measure is not within the purview of this Project.
Establish a carbon accounting framework for natural and working lands as described in SB 859 by 2018	CARB	Not applicable. This measure is not within the purview of this Project.
Implement Forest Carbon Plan	CNRA, California Department of Forestry and Fire Protection, CalEPA and Departments Within	Not applicable. This measure is not within the purview of this Project.
Identify and expand funding and financing mechanisms to support GHG reductions across all sectors.	State Agencies & Local Agencies	Not applicable. This measure is not within the purview of this Project.

As shown above, the Project would not conflict with any of the 2017 Scoping Plan elements as any regulations adopted would apply directly or indirectly to the Project. Further, recent studies show that the State's existing and proposed regulatory framework will allow the State to reduce its GHG emissions level to 40% below 1990 levels by 2030 (35).

SUMMARY

As shown, the Project does not directly conflict with any applicable plans or policies adopted for the purpose of reducing GHG emissions. Additionally, the project would not exceed the City of Whittier threshold of 3,000 MT CO_2e. Therefore, Project-related emissions would be less than significant relative to GHG reduction plans.

This page intentionally left blank.

4 REFERENCES

1. **State of California.** *2019 CEQA California Environmental Quality Act.* 2019.
2. **Air Resources Board.** Assembly Bill 32: Global Warming Solutions Act. [Online] 2006. http://www.arb.ca.gov/cc/ab32/ab32.htm.
3. —. Sustainable Communities. [Online] 2008. http://www.arb.ca.gov/cc/sb375/sb375.htm.
4. —. Clean Car Standards - Pavley, Assembly Bill 1493. [Online] September 24, 2009. http://www.arb.ca.gov/cc/ccms/ccms.htm.
5. **Building Standards Commission.** California Building Standards Code (Title 24, California Code of Regulations). [Online] http://www.bsc.ca.gov/codes.aspx.
6. **California Energy Commission.** California Code of Regulations, TITLE 20, Division 2. [Online] September 3, 2013. http://www.energy.ca.gov/reports/title20/index.html.
7. **Air Resources Board.** Title 17 - California Code of Regulation. [Online] 2010. http://www.arb.ca.gov/regs/regs-17.htm.
8. **Department of Water Resources.** Updated Model Water Efficient Landscape Ordinance AB 1881. [Online] 2006. [Cited: November 13, 2013.] http://www.water.ca.gov/wateruseefficiency/landscapeordinance/updatedOrd_history.cfm.
9. **California Energy Commission.** SB 1368 Emission Performance Standards. [Online] September 29, 2006. http://www.energy.ca.gov/emission_standards/.
10. —. Renewables Portfolio Standard (RPS). [Online] 2002. http://www.energy.ca.gov/portfolio/.
11. **California Legislative Information.** Senate Bill No. 32. [Online] September 8, 2016. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB32.
12. **City of Whittier.** *Envision Whittier General Plan, Land Use and Community Character Element.* 2021.
13. **Urban Crossroads, Inc.** *La Serna Townhomes Vehicle Miles Traveled (VMT) Screening and Trip Generation Assessment.* 2022.
14. **National Oceanic and Atmospheric Administration.** Greenhouse Gases - Water Vapor. *NOAA National Centers For Environmental Information.* [Online] https://www.ncdc.noaa.gov/monitoring-references/faq/greenhouse-gases.php?section=watervapor.
15. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report.* **International Panel on Climate Change.** 4, 2007.
16. *The Carbon Cycle and Climate Change.* **Bennington, Bret J.** 1, s.l. : Brooks/Cole. ISBN 1 3: 978-0-495-73855-8.
17. **The National Institute for Occupational Safety and Health.** Carbon Dioxide. *Centers for Disease Control and Prevention.* [Online] https://www.cdc.gov/niosh/npg/npgd0103.html.
18. **National Oceanic and Atmospheric Administration.** Greenhouse Gases - Methane. *NOAA National Centers for Environmental Information.* [Online] https://www.ncdc.noaa.gov/monitoring-references/faq/greenhouse-gases.php?section=methane.
19. **World Resources Institute.** Climate Analysis Indicator Tool (CAIT). [Online] http://cait.wri.org.
20. **National Oceanic and Atmospheric Administration.** Greenhouse Gases - Chlorofluorocarbons. *NOAA National Centers For Environmental Information.* [Online] https://www.ncdc.noaa.gov/monitoring-references/faq/greenhouse-gases.php?section=chlorofluorocarbons.

21. **United States Environmental Protection Agency.** Regulation for Reducting Sulfur Hexafluoride Emissions from Gas Insulated Switchgear. *Environmental Protection Agency.* [Online] May 7, 2014. https://www.epa.gov/sites/production/files/2016-02/documents/mehl-arb-presentation-2014-wkshp.pdf.

22. **World Resources Institute.** Nitrogen Trifluoride Now Required in GHG Protocol Greenhouse Gas Emissions Inventory. [Online] May 22, 2013. https://www.wri.org/blog/2013/05/nitrogen-trifluoride-now-required-ghg-protocol-greenhouse-gas-emissions-inventories.

23. **National Center for Biotechnology Information.** Nitrogen Trifluoride. *PubChem Compound Database.* [Online] https://pubchem.ncbi.nlm.nih.gov/compound/24553 .

24. **American Lung Association.** Climate Change. [Online] http://www.lung.org/our-initiatives/healthy-air/outdoor/climate-change/.

25. **Barbara H. Allen-Diaz.** Climate change affects us all. *University of California Agriculture and Natural Resources.* [Online] April 1, 2009. http://calag.ucanr.edu/Archive/?article=ca.v063n02p51.

26. **Intergovernmental Panel on Climate Change.** Climate Change 2013 The Physical Science Basis - Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. *AR5 Climate Change 2013: The Physical Science Basis.* [Online] September 2013. https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_all_final.pdf.

27. **World Resources Institute.** Climate Analysis Indicator Tool (CAIT). [Online] http://cait.wri.org.

28. **Air Resources Board.** 2020 GHG Inventory. *California Greenhouse Gas Emission Inventory 2000-2018 Edition.* [Online] [Cited: May 20, 2021.] https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/ghg_inventory_trends_00-18.pdf.

29. **Agency, United States Environmental Protection.** Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Section 202(a) of the Clean Air Act. *United States Environmental Protection Agency.* [Online] https://www.epa.gov/ghgemissions/endangerment-and-cause-or-contribute-findings-greenhouse-gases-under-section-202a-clean.

30. **Federal Register.** Mid-Term Evaluation of Greenhouse Gas Emissions Standards for Model Year 2022-2025 Light-Duty Vehicles. [Online] 2018. https://www.federalregister.gov/documents/2018/04/13/2018-07364/mid-term-evaluation-of-greenhouse-gas-emissions-standards-for-model-year-2022-2025-light-duty.

31. **Administration, National Highway Traffic Safety.** SAFE: The Safer Affordable Fuel-Efficient 'SAFE' Vehicle Rule. *National Highway Traffic Safety Administration.* [Online] 2020. https://www.nhtsa.gov/corporate-average-fuel-economy/safe.

32. **U.S. Environmental Protection Agency.** *EPA Reconsiders Previous Administration's Withdrawal of California's Waiver to Enforce Greenhouse Gas Standards for Cars and Light Trucks.* Washinbgton D.C. : s.n., April 26, 2021.

33. **United States Environmental Protection Agency.** SmartWay. [Online] https://www.epa.gov/smartway/learn-about-smartway.

34. **California Air Resources Board.** California's 2017 Climate Change Scoping Plan . [Online] 2017. https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017_es.pdf.

35. **Lawrence Berkeley National Laboratory.** California's Policies Can Significantly Cut Greenhouse Gas Emissions through 2030. *Lawrence Berkeley National Laboratory.* [Online] January 22, 2015. http://newscenter.lbl.gov/2015/01/22/californias-policies-can-significantly-cut-greenhouse-gas-emissions-2030/.

36. **Ernest Orlando Lawrence Berkeley National Laboratory.** Modeling California policy impacts on greenhouse gas emissions. [Online] 2015. https://eaei.lbl.gov/sites/all/files/lbnl-7008e.pdf.

37. **California Air Resources Board.** Legal Disclaimer & User's Notice. [Online] April 2019. https://ww3.arb.ca.gov/cc/capandtrade/capandtrade/ct_reg_unofficial.pdf.

38. —. Climate Change Scoping Plan. [Online] 2014. https://ww3.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf.

39. —. Low Carbon Fuel Standard. [Online] December 2019. https://ww3.arb.ca.gov/fuels/lcfs/lcfs.htm.

40. **The California Energy Commission.** 2019 Building Energy Efficiency Standards . *California Energy Commission.* [Online] 2018. https://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf.

41. **Department of General Services.** Building Standards Commission. *CALGreen.* [Online] https://www.dgs.ca.gov/BSC/Resources/Page-Content/Building-Standards-Commission-Resources-List-Folder/CALGreen.

42. **Association of Environmental Professionals.** *2018 CEQA California Environmental Quality Act.* 2018.

43. **South Coast Air Quality Management District.** Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans. [Online] http://www.aqmd.gov/hb/2008/December/081231a.htm.

44. —. Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans. [Online] http://www.aqmd.gov/hb/2008/December/081231a.htm.

45. **State of California.** *2019 CEQA California Environmental Quality Act.* 2019.

46. **California Air Pollution Control Officers Association (CAPCOA).** California Emissions Estimator Model (CalEEMod). [Online] June 2021. www.caleemod.com.

47. **California Department of Transportation.** 2017 EMFAC Software. [Online] http://www.dot.ca.gov/hq/env/air/pages/emfac.htm.

48. **California Air Resources Board.** *EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One.* 2019.

49. —. *EMFAC Off-Model Adjustment Factors for Carbon Dioxide (CO2) Emissions to Account for the SAFE Vehicles Rule Part One and the Final SAFE Rule.* 2020.

50. **California Natural Resources Agency.** Final Statement of Reasons for Regulatory Action, Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97. [Online] December 2009.

51. *Minutes for the GHG CEQA Significance.* **South Coast Air Quality Managment District.** 2008.

52. **Urban Crossroads, Inc.** *La Serna Townhomes Air Quality Impact Analysis Report.* 2022.

53. **South Coast Air Quality Management District.** *Greenhouse Gas CEQA Significance Threshold Stakeholder Working Group #13.* [Powerpoint] Diamond Bar : s.n., 2009.

54. **California Public Utilities Comission.** *Annual Report to the Legistaure.* 2020.

55. **Urban Crossroads, Inc.** *La Serna Townhomes Vehile Miles Traveled (VMT Screening and Trip Generation Assessment.* 2022.

56. **California Energy Comission.** *California Bulding Code, Part 11 CalGreen - Residential Mandatory Measures, Section 4.303.1.* 2013.

57. **South Coast Air Quality Management District.** Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans. [Online] http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-8/ghg-meeting-8-minutes.pdf?sfvrsn=2.

5 CERTIFICATIONS

The contents of this GHG study report represent an accurate depiction of the GHG impacts associated with the proposed La Serna Townhomes Project. The information contained in this GHG report is based on the best available data at the time of preparation. If you have any questions, please contact me directly (619) 778-1971.

William Maddux
Senior Associate
URBAN CROSSROADS, INC.
(619) 788-1971
bmaddux@urbanxroads.com

EDUCATION

Bachelor of Science in Urban and Regional Planning
California Polytechnic State University, Pomona • June 2000

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
APA – American Planning Association
AWMA – Air and Waste Management Association

PROFESSIONAL CERTIFICATIONS

HARP Model Training – Bluescape Environmental • 2004
Air Dispersion Modeling – Lakes Environmental • 2008

This page intentionally left blank.

APPENDIX 3.1:
CALEEMOD EMISSIONS MODEL OUTPUTS

This page intentionally left blank.

14334 La Serna Townhomes - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

14334 La Serna Townhomes

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.24	Acre	0.24	10,367.28	0
Parking Lot	108.00	Space	0.97	43,200.00	0
City Park	0.29	Acre	0.29	12,675.96	0
Condo/Townhouse High Rise	42.00	Dwelling Unit	0.43	42,000.00	120

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Bassed on Site Plan

Construction Phase - Client provided number of days for phases

Off-road Equipment - Tractor/Loader/Backhoe changed to crawler tractor to account for PM generation. Lopad Factors and Horsepower unchanged to represent same size equipmnet. Standard 8-hour work day assumed.

Off-road Equipment - Tractor/Loader/Backhoe changed to crawler tractor to account for PM generation. Lopad Factors and Horsepower unchanged to represent same size equipmnet. Standard 8-hour work day assumed.

Off-road Equipment - Tractor/Loader/Backhoe changed to crawler tractor to account for PM generation. Lopad Factors and Horsepower unchanged to represent same size equipmnet. Standard 8-hour work day assumed.

Off-road Equipment - Standard 8-hour work day assumed.

14334 La Serna Townhomes - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-road Equipment - Tractor/Loader/Backhoe changed to crawler tractor to account for PM generation. Lopad Factors and Horsepower unchanged to represent same size equipmnet. Standard 8-hour work day assumed.

Trips and VMT -

Demolition - 479 CY / 4 = 119.75 tons

Grading -

Vehicle Trips - the project would result in -364 net trips, thus all trips set to zero

Woodstoves - Per SCAQMD Rule 445 No Woord Burning Devices

Water And Wastewater - 2,736,469.08 - 20% = 2,189,175.26 per CalGreen indoor water use

Solid Waste - no actual park

Construction Off-road Equipment Mitigation - SCAQMD Rule 403

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	4.00	10.00
tblConstructionPhase	NumDays	200.00	220.00
tblFireplaces	NumberGas	35.70	38.00
tblFireplaces	NumberNoFireplace	4.20	4.00
tblFireplaces	NumberWood	2.10	0.00
tblLandUse	LandUseSquareFeet	10,454.40	10,367.28
tblLandUse	LandUseSquareFeet	12,632.40	12,675.96
tblLandUse	LotAcreage	0.66	0.43
tblOffRoadEquipment	HorsePower	212.00	97.00
tblOffRoadEquipment	HorsePower	212.00	97.00
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblSolidWaste	SolidWasteGenerationRate	0.02	0.00
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	4.91	0.00
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	4.09	0.00
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	5.44	0.00
tblWater	IndoorWaterUseRate	2,736,469.08	2,189,175.26
tblWoodstoves	NumberCatalytic	2.10	0.00
tblWoodstoves	NumberNoncatalytic	2.10	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

14334 La Serna Townhomes - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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					
2022	0.1549	1.1942	1.2167	2.4600e-003	0.1004	0.0549	0.1553	0.0350	0.0524	0.0874	0.0000	211.7319	211.7319	0.0332	3.8600e-003	213.7115
2023	0.2245	0.6336	0.7426	1.4900e-003	0.0320	0.0272	0.0592	8.6000e-003	0.0261	0.0347	0.0000	128.2562	128.2562	0.0192	2.2300e-003	129.4013
Maximum	**0.2245**	**1.1942**	**1.2167**	**2.4600e-003**	**0.1004**	**0.0549**	**0.1553**	**0.0350**	**0.0524**	**0.0874**	**0.0000**	**211.7319**	**211.7319**	**0.0332**	**3.8600e-003**	**213.7115**

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					
2022	0.1549	1.1942	1.2167	2.4600e-003	0.0701	0.0549	0.1250	0.0220	0.0524	0.0744	0.0000	211.7317	211.7317	0.0332	3.8600e-003	213.7113
2023	0.2245	0.6336	0.7426	1.4900e-003	0.0320	0.0272	0.0592	8.6000e-003	0.0261	0.0347	0.0000	128.2561	128.2561	0.0192	2.2300e-003	129.4012
Maximum	**0.2245**	**1.1942**	**1.2167**	**2.4600e-003**	**0.0701**	**0.0549**	**0.1250**	**0.0220**	**0.0524**	**0.0744**	**0.0000**	**211.7317**	**211.7317**	**0.0332**	**3.8600e-003**	**213.7113**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	**0.00**	**0.00**	**0.00**	**0.00**	**22.86**	**0.00**	**14.11**	**29.91**	**0.00**	**10.68**	**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)
2	**5-1-2022**	**7-31-2022**	0.4063	0.4063
3	**8-1-2022**	**10-31-2022**	0.5643	0.5643
4	**11-1-2022**	**1-31-2023**	0.5513	0.5513
5	**2-1-2023**	**4-30-2023**	0.6783	0.6783
		Highest	0.6783	0.6783

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	0.1833	0.0129	0.4380	7.0000e-005		3.0400e-003	3.0400e-003		3.0400e-003	3.0400e-003	0.0000	9.8354	9.8354	8.6000e-004	1.7000e-004	9.9068
Energy	2.9600e-003	0.0253	0.0108	1.6000e-004		2.0400e-003	2.0400e-003		2.0400e-003	2.0400e-003	0.0000	62.5734	62.5734	3.3700e-003	8.8000e-004	62.9191
Mobile	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
Waste						0.0000	0.0000		0.0000	0.0000	3.9218	0.0000	3.9218	0.2318	0.0000	9.7161
Water						0.0000	0.0000		0.0000	0.0000	0.6945	9.1352	9.8297	0.0721	1.7800e-003	12.1621
Total	**0.1863**	**0.0382**	**0.4487**	**2.3000e-004**	**0.0000**	**5.0800e-003**	**5.0800e-003**	**0.0000**	**5.0800e-003**	**5.0800e-003**	**4.6163**	**81.5440**	**86.1603**	**0.3081**	**2.8300e-003**	**94.7042**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

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	0.1833	0.0129	0.4380	7.0000e-005		3.0400e-003	3.0400e-003		3.0400e-003	3.0400e-003	0.0000	9.8354	9.8354	8.6000e-004	1.7000e-004	9.9068
Energy	2.9600e-003	0.0253	0.0108	1.6000e-004		2.0400e-003	2.0400e-003		2.0400e-003	2.0400e-003	0.0000	62.5734	62.5734	3.3700e-003	8.8000e-004	62.9191
Mobile	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
Waste						0.0000	0.0000		0.0000	0.0000	3.9218	0.0000	3.9218	0.2318	0.0000	9.7161
Water						0.0000	0.0000		0.0000	0.0000	0.6945	9.1352	9.8297	0.0721	1.7800e-003	12.1621
Total	**0.1863**	**0.0382**	**0.4487**	**2.3000e-004**	**0.0000**	**5.0800e-003**	**5.0800e-003**	**0.0000**	**5.0800e-003**	**5.0800e-003**	**4.6163**	**81.5440**	**86.1603**	**0.3081**	**2.8300e-003**	**94.7042**

	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	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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	6/1/2022	6/7/2022	5	5	
2	Site Preparation	Site Preparation	6/8/2022	6/9/2022	5	2	
3	Grading	Grading	6/10/2022	6/23/2022	5	10	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Building Construction	Building Construction	6/24/2022	4/27/2023	5	220	
5	Paving	Paving	4/14/2023	4/27/2023	5	10	
6	Architectural Coating	Architectural Coating	4/14/2023	4/27/2023	5	10	

Acres of Grading (Site Preparation Phase): 3

Acres of Grading (Grading Phase): 20

Acres of Paving: 1.21

Residential Indoor: 85,050; Residential Outdoor: 28,350; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 3,214 (Architectural Coating – sqft)

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	Crawler Tractors	1	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Crawler Tractors	2	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Paving	Rollers	1	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	8.00	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	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	58.00	15.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	12.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

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					1.2800e-003	0.0000	1.2800e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.2200e-003	0.0416	0.0349	6.0000e-005		2.0900e-003	2.0900e-003		1.9600e-003	1.9600e-003	0.0000	5.2694	5.2694	1.3400e-003	0.0000	5.3030
Total	**4.2200e-003**	**0.0416**	**0.0349**	**6.0000e-005**	**1.2800e-003**	**2.0900e-003**	**3.3700e-003**	**1.9000e-004**	**1.9600e-003**	**2.1500e-003**	**0.0000**	**5.2694**	**5.2694**	**1.3400e-003**	**0.0000**	**5.3030**

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	3.0000e-005	1.0600e-003	2.4000e-004	0.0000	1.0000e-004	1.0000e-005	1.1000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3706	0.3706	2.0000e-005	6.0000e-005	0.3886
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	1.1000e-004	9.0000e-005	1.2100e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.2948	0.2948	1.0000e-005	1.0000e-005	0.2974
Total	**1.4000e-004**	**1.1500e-003**	**1.4500e-003**	**0.0000**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**1.2000e-004**	**1.0000e-005**	**1.4000e-004**	**0.0000**	**0.6654**	**0.6654**	**3.0000e-005**	**7.0000e-005**	**0.6860**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

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					5.0000e-004	0.0000	5.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.2200e-003	0.0416	0.0349	6.0000e-005		2.0900e-003	2.0900e-003		1.9600e-003	1.9600e-003	0.0000	5.2694	5.2694	1.3400e-003	0.0000	5.3030
Total	**4.2200e-003**	**0.0416**	**0.0349**	**6.0000e-005**	**5.0000e-004**	**2.0900e-003**	**2.5900e-003**	**8.0000e-005**	**1.9600e-003**	**2.0400e-003**	**0.0000**	**5.2694**	**5.2694**	**1.3400e-003**	**0.0000**	**5.3030**

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	3.0000e-005	1.0600e-003	2.4000e-004	0.0000	1.0000e-004	1.0000e-005	1.1000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3706	0.3706	2.0000e-005	6.0000e-005	0.3886
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	1.1000e-004	9.0000e-005	1.2100e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.2948	0.2948	1.0000e-005	1.0000e-005	0.2974
Total	**1.4000e-004**	**1.1500e-003**	**1.4500e-003**	**0.0000**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**1.2000e-004**	**1.0000e-005**	**1.4000e-004**	**0.0000**	**0.6654**	**0.6654**	**3.0000e-005**	**7.0000e-005**	**0.6860**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

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					7.6100e-003	0.0000	7.6100e-003	3.4800e-003	0.0000	3.4800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6300e-003	0.0173	7.7900e-003	2.0000e-005		8.4000e-004	8.4000e-004		7.8000e-004	7.8000e-004	0.0000	1.6054	1.6054	5.2000e-004	0.0000	1.6184
Total	**1.6300e-003**	**0.0173**	**7.7900e-003**	**2.0000e-005**	**7.6100e-003**	**8.4000e-004**	**8.4500e-003**	**3.4800e-003**	**7.8000e-004**	**4.2600e-003**	**0.0000**	**1.6054**	**1.6054**	**5.2000e-004**	**0.0000**	**1.6184**

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	3.0000e-005	2.0000e-005	3.0000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0726	0.0726	0.0000	0.0000	0.0732
Total	**3.0000e-005**	**2.0000e-005**	**3.0000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0726**	**0.0726**	**0.0000**	**0.0000**	**0.0732**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

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					2.9700e-003	0.0000	2.9700e-003	1.3600e-003	0.0000	1.3600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6300e-003	0.0173	7.7900e-003	2.0000e-005		8.4000e-004	8.4000e-004		7.8000e-004	7.8000e-004	0.0000	1.6054	1.6054	5.2000e-004	0.0000	1.6184
Total	**1.6300e-003**	**0.0173**	**7.7900e-003**	**2.0000e-005**	**2.9700e-003**	**8.4000e-004**	**3.8100e-003**	**1.3600e-003**	**7.8000e-004**	**2.1400e-003**	**0.0000**	**1.6054**	**1.6054**	**5.2000e-004**	**0.0000**	**1.6184**

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	3.0000e-005	2.0000e-005	3.0000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0726	0.0726	0.0000	0.0000	0.0732
Total	**3.0000e-005**	**2.0000e-005**	**3.0000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0726**	**0.0726**	**0.0000**	**0.0000**	**0.0732**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

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					0.0407	0.0000	0.0407	0.0177	0.0000	0.0177	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0101	0.1026	0.0514	1.1000e-004		5.5000e-003	5.5000e-003		5.0600e-003	5.0600e-003	0.0000	9.3937	9.3937	3.0400e-003	0.0000	9.4696
Total	**0.0101**	**0.1026**	**0.0514**	**1.1000e-004**	**0.0407**	**5.5000e-003**	**0.0462**	**0.0177**	**5.0600e-003**	**0.0228**	**0.0000**	**9.3937**	**9.3937**	**3.0400e-003**	**0.0000**	**9.4696**

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	1.4000e-004	1.8600e-003	0.0000	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4535	0.4535	1.0000e-005	1.0000e-005	0.4575
Total	**1.7000e-004**	**1.4000e-004**	**1.8600e-003**	**0.0000**	**5.5000e-004**	**0.0000**	**5.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4535**	**0.4535**	**1.0000e-005**	**1.0000e-005**	**0.4575**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

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					0.0159	0.0000	0.0159	6.9000e-003	0.0000	6.9000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0101	0.1026	0.0514	1.1000e-004		5.5000e-003	5.5000e-003		5.0600e-003	5.0600e-003	0.0000	9.3937	9.3937	3.0400e-003	0.0000	9.4696
Total	**0.0101**	**0.1026**	**0.0514**	**1.1000e-004**	**0.0159**	**5.5000e-003**	**0.0214**	**6.9000e-003**	**5.0600e-003**	**0.0120**	**0.0000**	**9.3937**	**9.3937**	**3.0400e-003**	**0.0000**	**9.4696**

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	1.4000e-004	1.8600e-003	0.0000	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4535	0.4535	1.0000e-005	1.0000e-005	0.4575
Total	**1.7000e-004**	**1.4000e-004**	**1.8600e-003**	**0.0000**	**5.5000e-004**	**0.0000**	**5.5000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4535**	**0.4535**	**1.0000e-005**	**1.0000e-005**	**0.4575**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

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	0.1232	0.9678	0.9552	1.6800e-003		0.0457	0.0457		0.0439	0.0439	0.0000	139.0194	139.0194	0.0265	0.0000	139.6827
Total	**0.1232**	**0.9678**	**0.9552**	**1.6800e-003**		**0.0457**	**0.0457**		**0.0439**	**0.0439**	**0.0000**	**139.0194**	**139.0194**	**0.0265**	**0.0000**	**139.6827**

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	1.9900e-003	0.0525	0.0174	2.0000e-004	6.4300e-003	4.8000e-004	6.9000e-003	1.8600e-003	4.6000e-004	2.3100e-003	0.0000	19.4777	19.4777	6.5000e-004	2.8100e-003	20.3312
Worker	0.0135	0.0113	0.1464	3.9000e-004	0.0432	2.8000e-004	0.0435	0.0115	2.6000e-004	0.0117	0.0000	35.7748	35.7748	1.0200e-003	9.7000e-004	36.0898
Total	**0.0155**	**0.0637**	**0.1638**	**5.9000e-004**	**0.0497**	**7.6000e-004**	**0.0504**	**0.0133**	**7.2000e-004**	**0.0141**	**0.0000**	**55.2526**	**55.2526**	**1.6700e-003**	**3.7800e-003**	**56.4211**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

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	0.1232	0.9678	0.9552	1.6800e-003		0.0457	0.0457		0.0439	0.0439	0.0000	139.0192	139.0192	0.0265	0.0000	139.6825
Total	**0.1232**	**0.9678**	**0.9552**	**1.6800e-003**		**0.0457**	**0.0457**		**0.0439**	**0.0439**	**0.0000**	**139.0192**	**139.0192**	**0.0265**	**0.0000**	**139.6825**

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	1.9900e-003	0.0525	0.0174	2.0000e-004	6.4300e-003	4.8000e-004	6.9000e-003	1.8600e-003	4.6000e-004	2.3100e-003	0.0000	19.4777	19.4777	6.5000e-004	2.8100e-003	20.3312
Worker	0.0135	0.0113	0.1464	3.9000e-004	0.0432	2.8000e-004	0.0435	0.0115	2.6000e-004	0.0117	0.0000	35.7748	35.7748	1.0200e-003	9.7000e-004	36.0898
Total	**0.0155**	**0.0637**	**0.1638**	**5.9000e-004**	**0.0497**	**7.6000e-004**	**0.0504**	**0.0133**	**7.2000e-004**	**0.0141**	**0.0000**	**55.2526**	**55.2526**	**1.6700e-003**	**3.7800e-003**	**56.4211**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

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	0.0703	0.5581	0.5844	1.0400e-003		0.0247	0.0247		0.0237	0.0237	0.0000	85.8773	85.8773	0.0161	0.0000	86.2788
Total	**0.0703**	**0.5581**	**0.5844**	**1.0400e-003**		**0.0247**	**0.0247**		**0.0237**	**0.0237**	**0.0000**	**85.8773**	**85.8773**	**0.0161**	**0.0000**	**86.2788**

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	7.1000e-004	0.0254	9.5000e-003	1.2000e-004	3.9700e-003	1.2000e-004	4.0900e-003	1.1500e-003	1.2000e-004	1.2600e-003	0.0000	11.4548	11.4548	3.8000e-004	1.6500e-003	11.9556
Worker	7.7300e-003	6.1400e-003	0.0832	2.3000e-004	0.0267	1.6000e-004	0.0269	7.0900e-003	1.5000e-004	7.2400e-003	0.0000	21.5142	21.5142	5.7000e-004	5.5000e-004	21.6931
Total	**8.4400e-003**	**0.0315**	**0.0927**	**3.5000e-004**	**0.0307**	**2.8000e-004**	**0.0310**	**8.2400e-003**	**2.7000e-004**	**8.5000e-003**	**0.0000**	**32.9690**	**32.9690**	**9.5000e-004**	**2.2000e-003**	**33.6488**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

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	0.0703	0.5581	0.5844	1.0400e-003		0.0247	0.0247		0.0237	0.0237	0.0000	85.8772	85.8772	0.0161	0.0000	86.2787
Total	**0.0703**	**0.5581**	**0.5844**	**1.0400e-003**		**0.0247**	**0.0247**		**0.0237**	**0.0237**	**0.0000**	**85.8772**	**85.8772**	**0.0161**	**0.0000**	**86.2787**

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	7.1000e-004	0.0254	9.5000e-003	1.2000e-004	3.9700e-003	1.2000e-004	4.0900e-003	1.1500e-003	1.2000e-004	1.2600e-003	0.0000	11.4548	11.4548	3.8000e-004	1.6500e-003	11.9556
Worker	7.7300e-003	6.1400e-003	0.0832	2.3000e-004	0.0267	1.6000e-004	0.0269	7.0900e-003	1.5000e-004	7.2400e-003	0.0000	21.5142	21.5142	5.7000e-004	5.5000e-004	21.6931
Total	**8.4400e-003**	**0.0315**	**0.0927**	**3.5000e-004**	**0.0307**	**2.8000e-004**	**0.0310**	**8.2400e-003**	**2.7000e-004**	**8.5000e-003**	**0.0000**	**32.9690**	**32.9690**	**9.5000e-004**	**2.2000e-003**	**33.6488**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

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	3.6300e-003	0.0350	0.0492	8.0000e-005		1.7300e-003	1.7300e-003		1.5900e-003	1.5900e-003	0.0000	6.6038	6.6038	2.0900e-003	0.0000	6.6559
Paving	1.5900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.2200e-003**	**0.0350**	**0.0492**	**8.0000e-005**		**1.7300e-003**	**1.7300e-003**		**1.5900e-003**	**1.5900e-003**	**0.0000**	**6.6038**	**6.6038**	**2.0900e-003**	**0.0000**	**6.6559**

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	2.1000e-004	1.6000e-004	2.2200e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5741	0.5741	2.0000e-005	1.0000e-005	0.5788
Total	**2.1000e-004**	**1.6000e-004**	**2.2200e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5741**	**0.5741**	**2.0000e-005**	**1.0000e-005**	**0.5788**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

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	3.6300e-003	0.0350	0.0492	8.0000e-005		1.7300e-003	1.7300e-003		1.5900e-003	1.5900e-003	0.0000	6.6038	6.6038	2.0900e-003	0.0000	6.6559
Paving	1.5900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.2200e-003**	**0.0350**	**0.0492**	**8.0000e-005**		**1.7300e-003**	**1.7300e-003**		**1.5900e-003**	**1.5900e-003**	**0.0000**	**6.6038**	**6.6038**	**2.0900e-003**	**0.0000**	**6.6559**

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	2.1000e-004	1.6000e-004	2.2200e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5741	0.5741	2.0000e-005	1.0000e-005	0.5788
Total	**2.1000e-004**	**1.6000e-004**	**2.2200e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5741**	**0.5741**	**2.0000e-005**	**1.0000e-005**	**0.5788**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

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	0.1389					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2800e-003	8.6900e-003	0.0121	2.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.7022	1.7022	1.0000e-004	0.0000	1.7047
Total	**0.1401**	**8.6900e-003**	**0.0121**	**2.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**1.7022**	**1.7022**	**1.0000e-004**	**0.0000**	**1.7047**

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	1.9000e-004	1.5000e-004	2.0500e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5299	0.5299	1.0000e-005	1.0000e-005	0.5343
Total	**1.9000e-004**	**1.5000e-004**	**2.0500e-003**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**6.6000e-004**	**1.7000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.5299**	**0.5299**	**1.0000e-005**	**1.0000e-005**	**0.5343**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

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	0.1389					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2800e-003	8.6900e-003	0.0121	2.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.7022	1.7022	1.0000e-004	0.0000	1.7047
Total	**0.1401**	**8.6900e-003**	**0.0121**	**2.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**1.7022**	**1.7022**	**1.0000e-004**	**0.0000**	**1.7047**

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	1.9000e-004	1.5000e-004	2.0500e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5299	0.5299	1.0000e-005	1.0000e-005	0.5343
Total	**1.9000e-004**	**1.5000e-004**	**2.0500e-003**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**6.6000e-004**	**1.7000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.5299**	**0.5299**	**1.0000e-005**	**1.0000e-005**	**0.5343**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.0000	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
Unmitigated	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

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		
Condo/Townhouse High Rise	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse High Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	**77** 0.00	0	0	0

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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
Parking Lot	16.60	8.40	6.90	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	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374
Condo/Townhouse High Rise	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374
Other Asphalt Surfaces	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374
Parking Lot	0.544785	0.062844	0.187478	0.127235	0.023089	0.006083	0.010475	0.008012	0.000925	0.000611	0.024394	0.000698	0.003374

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

14334 La Serna Townhomes - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	33.2875	33.2875	2.8100e-003	3.4000e-004	33.4592
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	33.2875	33.2875	2.8100e-003	3.4000e-004	33.4592
NaturalGas Mitigated	2.9600e-003	0.0253	0.0108	1.6000e-004		2.0400e-003	2.0400e-003		2.0400e-003	2.0400e-003	0.0000	29.2859	29.2859	5.6000e-004	5.4000e-004	29.4599
NaturalGas Unmitigated	2.9600e-003	0.0253	0.0108	1.6000e-004		2.0400e-003	2.0400e-003		2.0400e-003	2.0400e-003	0.0000	29.2859	29.2859	5.6000e-004	5.4000e-004	29.4599

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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
Condo/Townhouse High Rise	548797	2.9600e-003	0.0253	0.0108	1.6000e-004		2.0400e-003	2.0400e-003		2.0400e-003	2.0400e-003	0.0000	29.2859	29.2859	5.6000e-004	5.4000e-004	29.4599
Other 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
Parking Lot	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		**2.9600e-003**	**0.0253**	**0.0108**	**1.6000e-004**		**2.0400e-003**	**2.0400e-003**		**2.0400e-003**	**2.0400e-003**	**0.0000**	**29.2859**	**29.2859**	**5.6000e-004**	**5.4000e-004**	**29.4599**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

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
Condo/Townhouse High Rise	548797	2.9600e-003	0.0253	0.0108	1.6000e-004		2.0400e-003	2.0400e-003		2.0400e-003	2.0400e-003	0.0000	29.2859	29.2859	5.6000e-004	5.4000e-004	29.4599
Other 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
Parking Lot	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		**2.9600e-003**	**0.0253**	**0.0108**	**1.6000e-004**		**2.0400e-003**	**2.0400e-003**		**2.0400e-003**	**2.0400e-003**	**0.0000**	**29.2859**	**29.2859**	**5.6000e-004**	**5.4000e-004**	**29.4599**

14334 La Serna Townhomes - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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
Condo/Townhouse High Rise	172578	30.6060	2.5800e-003	3.1000e-004	30.7639
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	15120	2.6815	2.3000e-004	3.0000e-005	2.6953
Total		**33.2875**	**2.8100e-003**	**3.4000e-004**	**33.4592**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

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
Condo/Townhouse High Rise	172578	30.6060	2.5800e-003	3.1000e-004	30.7639
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	15120	2.6815	2.3000e-004	3.0000e-005	2.6953
Total		**33.2875**	**2.8100e-003**	**3.4000e-004**	**33.4592**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	0.1833	0.0129	0.4380	7.0000e-005		3.0400e-003	3.0400e-003		3.0400e-003	3.0400e-003	0.0000	9.8354	9.8354	8.6000e-004	1.7000e-004	9.9068
Unmitigated	0.1833	0.0129	0.4380	7.0000e-005		3.0400e-003	3.0400e-003		3.0400e-003	3.0400e-003	0.0000	9.8354	9.8354	8.6000e-004	1.7000e-004	9.9068

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	0.0139					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1554					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	9.2000e-004	7.8800e-003	3.3500e-003	5.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	9.1252	9.1252	1.7000e-004	1.7000e-004	9.1794
Landscaping	0.0132	5.0100e-003	0.4346	2.0000e-005		2.4000e-003	2.4000e-003		2.4000e-003	2.4000e-003	0.0000	0.7102	0.7102	6.9000e-004	0.0000	0.7274
Total	**0.1833**	**0.0129**	**0.4380**	**7.0000e-005**		**3.0400e-003**	**3.0400e-003**		**3.0400e-003**	**3.0400e-003**	**0.0000**	**9.8354**	**9.8354**	**8.6000e-004**	**1.7000e-004**	**9.9068**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

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	0.0139					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1554					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	9.2000e-004	7.8800e-003	3.3500e-003	5.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	9.1252	9.1252	1.7000e-004	1.7000e-004	9.1794
Landscaping	0.0132	5.0100e-003	0.4346	2.0000e-005		2.4000e-003	2.4000e-003		2.4000e-003	2.4000e-003	0.0000	0.7102	0.7102	6.9000e-004	0.0000	0.7274
Total	**0.1833**	**0.0129**	**0.4380**	**7.0000e-005**		**3.0400e-003**	**3.0400e-003**		**3.0400e-003**	**3.0400e-003**	**0.0000**	**9.8354**	**9.8354**	**8.6000e-004**	**1.7000e-004**	**9.9068**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	9.8297	0.0721	1.7800e-003	12.1621
Unmitigated	9.8297	0.0721	1.7800e-003	12.1621

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.34553	0.6808	6.0000e-005	1.0000e-005	0.6843
Condo/Townhouse High Rise	2.18918 / 1.72517	9.1489	0.0721	1.7700e-003	11.4778
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**9.8297**	**0.0721**	**1.7800e-003**	**12.1621**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.34553	0.6808	6.0000e-005	1.0000e-005	0.6843
Condo/Townhouse High Rise	2.18918 / 1.72517	9.1489	0.0721	1.7700e-003	11.4778
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**9.8297**	**0.0721**	**1.7800e-003**	**12.1621**

8.0 Waste Detail

8.1 Mitigation Measures Waste

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	3.9218	0.2318	0.0000	9.7161
Unmitigated	3.9218	0.2318	0.0000	9.7161

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	19.32	3.9218	0.2318	0.0000	9.7161
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**3.9218**	**0.2318**	**0.0000**	**9.7161**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	19.32	3.9218	0.2318	0.0000	9.7161
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**3.9218**	**0.2318**	**0.0000**	**9.7161**

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

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number

11.0 Vegetation

Appendix E

E-1: Phase I Environmental Site Assessment Report
E-2: Limited Phase II ESA Report
E-3: Hazardous Material Survey Inspection Report

SMITH-EMERY GEOSERVICES

A MEMBER OF THE SMITH-EMERY COMPANIES, ESTABLISHED 1904

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

February 13, 2020

9829 LA SERNA DRIVE
WHITTIER, CA 90605

Prepared For:

Mission Pacific Investors, LLC
4100 Newport Place, Suite 480
Newport Beach, California 92660

Prepared By:

Smith-Emery GeoServices
791 East Washington Boulevard
Los Angeles, CA 90021

SEG Project No.: 46556-1
SEG Report No.: G-20-1936

Environmental Engineers · Geologists · Scientists · Geotechnical Engineers

SMITH-EMERY GEOSERVICES
A MEMBER OF THE SMITH-EMERY COMPANIES, ESTABLISHED 1904

February 13, 2020

SEG Project No.: 46556-1
SEG Report No.: G-20-1936

Mission Pacific Investors, LLC
4100 Newport Place, Suite 480
Newport Beach, California 92660

Attention: Mr. Mark Rael

Dear Mr. Rael,

We are submitting our "Phase I Environmental Site Assessment, for 9829 La Serna Drive, Whittier, California," SEG Report No. G-20-1936 prepared for Mission Pacific Investors, LLC. If you have any questions regarding this document, please contact us at (213) 699-7812.

Respectfully submitted,

SMITH - EMERY GEOSERVICES

AFNAN ASGHAR
Project Manager

TABLE OF CONTENTS

ENVIRONMENTAL PROFESSIONAL QUALIFICATIONS AND STATEMENT 1

EXECUTIVE SUMMARY 2

1.0 INTRODUCTION 4

1.1 Purpose 4
1.2 Report Shelf Life 4
1.3 Scope of Work 4
1.4 Non-Scope Considerations 5
1.5 Limits of Liability/Assessment 5
1.6 Reliance for User 5

2.0 SITE DESCRIPTION 6

2.1 Physical Setting 6
2.2 Legal Description 6
2.3 Zoning / Land Use Records 6
2.4 Current and Historical Addresses 6
2.5 Regional Hydrogeology 6

3.0 SITE RECONNAISSANCE/INTERVIEWS 8

3.1 Site Reconnaissance 8
3.1.2 Adjacent Sites 9
3.2 Interviews 9
3.2.1 Current Owner/Key Site Manager/Tenants 10
3.2.2 Previous Owners/Tenants 10
3.2.3 Regulatory Officials 10
3.3 User Provided Information 10
3.3.1 Environmental Liens/Activity and Use Limitations 10
3.3.2 Specialized Knowledge or Experience 11
3.3.3 Actual Knowledge 11
3.3.4 Commonly Known/Reasonably Ascertainable Information 11
3.3.5 Reasons for Significantly Lower Purchase Price 11
3.3.6 Reason for Conducting this Phase I ESA Report 11
3.3.7 User Provided Documents 11

4.0 HISTORICAL LAND USE 12

4.1 Sanborn Map Review 12
4.2 Aerial Photograph Review 12
4.3 Building Permit Review 13
4.4 City Directory Search 13
4.5 Historical Summary 14
4.5.1 Subject Site 14
4.5.2 Adjacent Sites 15
4.6 Historical Data Gaps 15

TABLE OF CONTENTS

5.0 HAZARDOUS SUBSTANCE SEARCH 16

5.1 Underground Storage Tanks and Hazardous Materials 16

6.0 REGULATORY LIST REVIEW 17

6.1 Subject Site 18
6.2 Adjacent Site and immediately Surrounding Sites 18
6.3 Vapor Encroachment Condition 19

7.0 EVALUATION OF ADDITIONAL RISKS 20

7.1 Oil Well Drilling Activity 20
7.2 PCB Potential 20
7.3 Non-Scope Considerations 21
7.3.1 Asbestos Potential 21
7.3.2 Lead Potential 22
7.3.3 Radon Potential 23
7.3.4 Mold 23

8.0 CONCLUSIONS AND RECOMMENDATIONS 25

ILLUSTRATIONS AND APPENDICES

PLATE NO. 1 – VICINITY MAP

PLATE NO. 2 – SITE SCHEMATIC

PLATE NO. 3 – SUBJECT SITE DIAGRAM

PLATES NO. 4A – 4F – PHOTO PLATES

APPENDIX A – SITE DOCUMENTATION

APPENDIX B – REGULATORY DATABASE REPORT

APPENDIX C – RESUMES / CONTRACT / REFERENCES

ENVIRONMENTAL PROFESSIONAL QUALIFICATIONS AND STATEMENT

AYESHA SYEDA, M.S.

Ms. Syeda began working in the environmental industry in 1986 while attending university in India where she obtained her Bachelors of Science degree in Civil Engineering. Upon coming to the United States, she continued to work as an intern while furthering her education at the California State University, Long Beach, obtaining her Masters of Science degree in Environmental Engineering. Ms. Syeda has performed hundreds of Phase I Environmental Site Assessments since 1993 and currently oversees, manages and reviews all Phase I and Phase II Environmental Site Assessment's performed by Smith-Emery GeoServices. A copy of Ms. Syeda's resume is included in Appendix C.

"I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined by in §312.10 of 40 CFR 213. 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."

Respectfully submitted,

Smith-Emery GeoServices

AYESHA SYEDA
M.S. Environmental Engineering
Manager of GeoServices

AS/AA

EXECUTIVE SUMMARY

Smith-Emery GeoServices (SEG) has performed a Phase I Environmental Site Assessment at 9829 La Serna Drive in the City of Whittier, County of Los Angeles, and State of California. The research conducted for this study and the report prepared are in conformance with the United States Environmental Protection Agency (US EPA) on appropriate inquiry AAI standard and the American Society of Testing and Materials ASTM E 1527-13 scope of work.

Site Description

The site is located at the southwest corner of the intersection of La Serna Drive and Janine Drive. The site is described as Assessors Parcel Numbers 8224-017-022 and 8224-017-023. The site is approximately 78,000 square feet in size and is occupied by a single-story commercial structure which is 9,200 square feet in size. Currently, the site is vacant and was formerly occupied by Marie Callender's Restaurant & Bakery. The interior areas observed included reception area, waiting area, dining area, bar area, kitchen area, employee room, walk-in freezer/cooler, office room, electric room, and restrooms. Items observed onsite include miscellaneous computer desktops and cash registers, fire panels, smoke detectors, fire extinguishers, TVs, HVAC equipment, CCTV and security cameras, commercial grills, ovens, refrigerators, and fryers, typical office and restaurant furnishing, and bar accessories. A 55-gallon grease/waste oil trap container with secondary containment was observed on northwestern portion of the structure. No items of any negative environmental conditions were observed during our site reconnaissance.

Site History

Based on SEG's interpretation of the historical research, from before 1928 to early 1960s, the site was used for agricultural purposes. In 1963, the southeastern portion of the site was a baseball field. The site was vacant land in the 1970s. The existing onsite structure was built in 1978 and was used for restaurant and bakery purposes through 2019 by Marie Callender's Restaurant. The site is currently vacant.

Hazardous Substance Search/ Regulatory Database /Vapor Encroachment Condition

No records of any USTs and/or any hazardous materials inventories were on file for the subject site at any of the regulatory agencies researched. The subject site is not listed on any of the regulatory database researched. The adjacent site to the north-northwest is listed as small quantity generator, handling a UST, and as being permitted for air emissions with no violation found. The adjacent site to the southwest is listed as a small quantity generator in 2007 with no violation found. The adjacent site at 15175 Whittier Boulevard to the south is listed as a gas station (1961 to before 1980). SEG did not find any UST records at regulatory agencies for this gas station as it operated during a pre regulatory oversight era. Please note that, the historical USTs were single walled steel construction and were known to develop holes within 10 years. In addition, gas station operations and UST maintenance were not regulated by agencies as they are presently. The adjacent gas station falls within the area of concern. Hence, it is SEG's opinion that that a VEC may exist at the subject site. Hence, it is SEG's opinion that further Tier 2 Vapor Encroachment Screening including (physical soil vapor sampling) warranted for the subject site.

PCBs and Oil Well Related Concerns

Based on our research, the potential for PCBs and oil well related concerns at the subject site are considered to be low.

Non Scope Considerations

Based on the age of the onsite structure, there is potential for the presence of asbestos and lead based paints in the onsite structure.

Conclusions, Opinions, & Recommendations

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-13 of the subject site located at 9829 La Serna Drive in the City of Whittier, California. Any exceptions to, or deletions from, this practice are described in the various sections of this report. **This assessment has revealed evidence of gas station use on the adjacent site to the south in 1961~1980 which in our opinion constitutes a Recognized Environmental Condition. The concern is related to the potential for subject site to be impacted in case of tank spills and/or leaks. SEG recommends further environmental investigation including subsurface soils and soil vapor investigation to determine if the subject site has been impacted. Based on the age of the onsite structure, SEG recommends complete asbestos and lead based surveys prior to any significant renovations and/or demolition activities that would potentially disturb the existing building materials.**

1.0 INTRODUCTION

At the request of Mission Pacific Investors, LLC. (User), Smith-Emery GeoServices (SEG) performed a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of ASTM Practice E 1527-13 at the site located at 9829 La Serna Drive, City of Whittier, California as shown on the Vicinity Map, Plate No.1. The layout of the site and the adjacent sites are shown on the Site Schematic, Plate No. 2. The layout of the site is shown in the Subject Site Diagram, Plate No. 3. Photographs of the site are displayed as Plates No. 4A-4F. Subject site documentation is included in Appendix A. The regulatory database report is included in Appendix B. References and contractual conditions are included in Appendix C. The purpose reported by the User for the completion of the Phase I is to satisfy due diligence requirements.

1.1 Purpose

The purpose of this ESA is to identify "Recognized Environmental Conditions" (REC), Historical RECs (HREC), or Controlled RECs (CREC) as defined by ASTM Standard E1527-13) affecting the subject site. This ESA was performed to satisfy User one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) liability (hereinafter, the "landowner liability protections," or "LLPs"). ASTM Standard E1527-13 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). RECs are defined in the ASTM E 1527-13 Standard as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment." The definitions of RECs, HRECs, and CRECs are as follows:

- REC - is presence or likely presence of any hazardous substances or petroleum products in, on, or at a property due to any release to the environment or under conditions that pose a material threat of a release to the environment (de minimis conditions are not RECs).
- Historical REC (HREC) - is a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed in a manner accepted by the applicable regulatory authority without subjecting the property to any activity and use limitations.
- Controlled REC (CREC) - is a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority and that subjects the property to activity and use limitations.

1.2 Report Shelf Life

In conformance with the ASTM Practice E 1527-13, this Phase I Environmental Site Assessment is valid for 180 days from date of this report. After 180 days from the date of this report, the following sections may be updated up to one year from the date of this report: Environmental Professional Statement; Site Reconnaissance; Interviews; Environmental Lien Search; Regulatory List Review.

1.3 Scope of Work

The scope of work for this ESA is in general accordance with the requirements of ASTM Standard E1527-13 and included the following: Subject site reconnaissance and survey of surrounding land use from publicly accessible areas; Review of historical aerial photographs, Sanborn Maps, and City Directory listings; Review of environmental Liens and other User Provided Information; Interviews with available and cooperative current site occupants/owners, past site occupants/owners, and government officials; Regulatory Database Report Review; Review of the history and past usage of the referenced site and surrounding properties; Summary of regional geology and hydrology; Review of files at local, state, and federal agencies to identify spills, tank leaks, hazardous materials storage, oil wells, underground tanks, landfills, or industrial discharge in the site vicinity; Evaluation of potential for presence of current or historical petroleum activities and polychlorinated biphenyls (PCBs); Evaluation for potential of vapor migration from adjoining/surrounding properties; Evaluation of potential for presence of non-scope considerations including asbestos containing building materials, lead based paints, mold, polychlorinated biphenyls (PCBs), and radon; Preparation of this report presenting our findings.

1.4 Non-Scope Considerations

The ASTM E 1527-13 Standard includes the following list of "additional issues" that are non-scope considerations outside of the scope of the ASTM Phase I practice: asbestos-containing materials, biological agents, radon, lead-based paint, lead in drinking water, wetlands, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality unrelated to releases of hazardous substances or petroleum products into the environment, and mold. A general opinion on non-scope items included in this Phase I are radon, PCBs, mold, radon, lead-based paints and asbestos containing building materials.

1.5 Limits of Liability/Assessment

The findings, conclusions, and recommendations contained in this report are based on site conditions as they existed at the time of our investigation. Our review of all documents, lists, databases, and public agency files has been conducted with due diligence. However, our conclusions are based on available information and are further subject to constraints imposed by public agencies on review procedures and information retrieval. As a result, Smith-Emery GeoServices may have been unable to identify potential concerns.

Smith-Emery GeoServices assumes no responsibility for conditions that did not come to our attention despite reasonable care, or for conditions which were not generally recognizable as environmentally unacceptable at the time of this report. Opinions and judgments expressed are based on our understanding and interpretations of currently available regulatory standards and should not be construed as legal opinions or advice.

The factual data and interpretations contained herein pertain to the specific project described in this report and are not applicable to any other project or site. Our investigation was performed using the standard of care and level of skill ordinarily exercised under similar circumstances by reputable environmental assessors and geologists currently practicing in these or similar localities. No other warranty, express or implied, is made as to the conclusions and professional advice included in this report.

This Phase I ESA Report is compliant and consistent with the United States Environmental Protection Agency's 40 CFR Part 312 Standards and Practices for All Appropriate Inquiries and the ASTM E 1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, based on the information provided by the User. Smith-Emery GeoServices assumes no responsibility for errors or omissions of information provided by the User. Please note that the report does not address whether other requirements in addition to all appropriate inquiry have been met. Other requirements may include, but are not limited to, the continuing obligation not to impede the integrity and effectiveness of existing activity and use limitations (AULs), the duty to take reasonable steps to prevent releases, or the duty to comply with legally required release reporting information. Please note that sampling and chemical analysis of soils and/or groundwater was not within the scope of this study. This Report is not intended to be nor interpreted as Legal advice. Third party data and representations may have been utilized in providing the conclusions of this report, however, SEG does not verifying the data, findings, or conclusions of third party providers, or attest to the completeness, accuracy, or adequacy of their work. SEG accepts no liability or responsibility for any data, representations, or conclusions made by third parties. Third party work is accepted and used solely on the basis of the certifications, registrations, and/or reputation of the parties completing the work. Please note that sampling and chemical analysis of air, soils, groundwater, and/or building materials was not within the scope of this investigation.

1.6 Reliance for User

This document has been prepared for the sole use and benefit of **Mission Pacific Investors, LLC**. Any reliance on this document by any other person or entity shall be at that party's sole risk. **Mission Pacific Investors, LLC.** may designate assignees to this report, which may assume the same rights of reliance as **Mission Pacific Investors, LLC.** for all errors and omissions. However, any potential assignee must provide Smith-Emery GeoServices with information necessary to update Section 3.3 User Provided Information of this report, and is bound by the terms and conditions of the original contract. A copy of the original contract is provided in Appendix C of this Report.

2.0 SITE DESCRIPTION

2.1 Physical Setting

The site is located at the southwest corner of the intersection of La Serna Drive and Janine Drive. San Gabriel River Freeway (605) is located approximately 5.0 miles west of the site. The property is located approximately 1.0 mile north of the Leffingwell Creek, 1.4 miles northeast of the La Canada Verde Creek, and approximately 3.0 miles northwest of Coyote Creek at an elevation of approximately 276 feet above mean sea level. The site is currently occupied by one vacant commercial structure and is located in a mixed commercial and residential neighborhood.

2.2 Legal Description

Based on records available at the Los Angeles County Assessors office website, the site is located in the City of Whittier, and State of California. The site is described as Assessors Parcel Numbers 8224-017-022 and 8224-017-023. Copies of maps and relevant information are included in Appendix A.

2.3 Zoning / Land Use Records

According to information on file at the City of Whittier, SCAG 2009 Zoning Map website, the site is located in an area zoned “SP” for specific plan usage. Copies of maps, zoning definitions, and other relevant information are included in Appendix A.

2.4 Current and Historical Addresses

Based on our research, the current and historical addresses associated with the subject site include 9829 La Serna Drive.

2.5 Regional Hydrogeology

The property is located approximately 1.0 mile north of the Leffingwell Creek, 1.4 miles northeast of the La Canada Verde Creek, and approximately 3.0 miles northwest of Coyote Creek at an elevation of approximately 276 feet above mean sea level (MSL). Topography in the vicinity of the site slopes generally to the south-southwest.

Surficial soil consists of urban land with variable soil surface textures. The underlying hydrogeologic unit is comprised of Cenozoic – Tertiary-Pliocene that was deposited into stratified sequence.

Based on GeoTracker (RWQCB website), the groundwater in monitoring wells located approximately 1,000 feet southeast is approximately ranged from 14 to 52 feet below ground surface; however, the actual depth to the water table may vary depending on extraction activities, and manual or artificial recharge rates. Based on the direction of surface water, the groundwater flow direction is inferred to be towards the south-southwest. Note that the actual groundwater flow direction is often locally influenced by factors such as underground structures, seasonal fluctuations, soil and bedrock geology, production wells, an other factors beyond the scope of this study. The actual groundwater flow direction under the site can only be accurately determined by installing groundwater monitoring wells which was beyond the scope of this project.

3.0 SITE RECONNAISSANCE/INTERVIEWS

3.1 Site Reconnaissance

The objective of the site reconnaissance is to obtain information indicating the likelihood of identifying recognized environmental conditions in connection with the property. Refer to Illustrations for site plots and photos. Our site observations are briefly summarized in the following tables:

Reconnaissance Date/ SEG Personnel/Escort(s)	January 29, 2020 / Ms. Ayesha Syeda and Mr. Afnan Asghar / Mr. Mark Rael (Buyer).
Boundaries	Janine Dr. to the NE, La Serna Dr. to the SE, and parking lots on all remaining sides.
Site Area	77,835 square feet.
Number of buildings/sizes/age	One building totaling 9,244 square feet in size. Building date: 1978 (Los Angeles County Assessor Portal).
Onsite business(s)	Vacant. (Former Marie Callender's Restaurant & Bakery).
Site Operations	No site operation.
Interior areas	Reception area, waiting area, dining area, bar area, kitchen area, employee room, walk-in freezer/cooler, office room, electric room, patio, and restrooms.
Items observed onsite	Miscellaneous computer desktops and cash registers, fire panels, smoke detectors, fire extinguishers, TVs, HVAC equipment, CCTV and security cameras, commercial grills, ovens, refrigerators, and fryers, typical office and restaurant furnishing, and bar accessories.
Additional areas	No additional areas were observed within the structure.
Reconnaissance Limitations	No significant limitations were encountered during our reconnaissance of the site.
Building materials	Concrete construction with red brick and exterior stucco finish, acoustic ceiling, drywall ceiling, vinyl floor tiles, ceramic floor tiles, drywall partitions, brick walls, wooden frame ceiling, concrete floors, and carpeted floors.
Exterior items	The outside areas are asphalt paved and used for parking purposes. A concrete/fence dumpster enclosure was observed northwest of the structure.

Additional Items	Aboveground Storage Tanks	Not Observed
	Underground Storage Tanks	Not Observed
	Drums / containers	A 55-gallon grease/waste oil trap container with secondary containment was observed on northwestern portion of the structure.
	Odors/Pools of Liquid	Not Observed
	Waste Water	Not Observed
	Unidentified Substance Containers	Not Observed
	Pole Mounted Transformers/PCBs	Not Observed
	Stained Soil or Pavement	Minor oil staining was observed near the grease trap area located on northwestern portion of the structure.
	Pits/Ponds, Lagoons/Wells	Not Observed
	Solid Waste	Not Observed
	Evidence of Past Site Uses	Not Observed
	Evidence of Microbial Contamination (Mold) in visually accessible areas	Not Observed
Utilities	Heating / Cooling Systems	SCE
	Potable Water Supply	City of Whittier
	Sewage Disposal System	Municipal

Site Reconnaissance Summary:

- The site is approximately 78,000 square feet in size and is occupied by a single-story commercial structure which is 9,200 square feet in size. Currently, the site is vacant and was formerly occupied by Marie Callender's Restaurant. The remnants of the former restaurant observed included reception area, waiting area, dining area, bar area, kitchen area, employee room, walk-in freezer/cooler, office room, patio, electric room, and restrooms. Items observed onsite include miscellaneous computer desktops and cash registers, fire panels, smoke detectors, fire extinguishers, TVs, HVAC equipment, CCTV and security cameras, commercial grills, ovens, refrigerators, and fryers, typical office and restaurant furnishing, and bar accessories. A 55-gallon grease/waste oil trap container with secondary containment was observed near the dumpster enclosure. No items of any negative environmental conditions were observed during our site reconnaissance.

3.1.2 Adjacent Sites

The adjacent sites, their apparent uses, and observed environmental concerns, if any, are described in the following table.

ADJACENT SITE OBSERVATIONS

Direction Relative to Subject Site	Business Name / Residence	Adjacent Site Address	Site Use / Observed Environmental Concerns
North	Whittier Hospital Medical Center	15175 & 15151 Janine Dr., & 9080 Colima Rd.	Hospital / None
East & Northeast	Shepherd of the Hills Lutheran Church and Pre-school	15215 Janine Dr.	Commercial / None
Southeast	Vacant Building	15225 Whittier Blvd.	Commercial / None
South	Popular Community Bank/ Talias Coffee Co.	15175 Whittier Blvd.	Commercial / None
Southwest	Professional Physical Therapy Associates/Bank of Whittier	15141 Whittier Blvd.	Commercial / None
West & Northwest	Parking lot	15130 Janine Dr.	Parking / None

3.2 Interviews

Interviews were planned and conducted by Ms. Ayesha Syeda via written questionnaires and in person. The objective of interviews is to obtain information indicating recognized environmental conditions in connection with the property. Copies of the questionnaires completed and the records of conversation pertaining to the interviews conducted are included in Appendix A.

3.2.1 Current Owner/Key Site Manager/Tenants

Based on the information provided in completed questionnaire, the property has been owned by Lafranchi Trust for last twenty five (25) years. Currently, the site is vacant and formerly used by Marie Callender's for restaurant purposes. The onsite structure was 9,244 square feet in size and indicated that no USTs are presently located at the subject site.

3.2.2 Previous Owners/Tenants

SEG attempted to identify contact information for individuals or businesses, for the purpose of conducting interviews of persons with past knowledge of the site, by conducting internet searches by business name and the name of individual identified, and by referral from persons currently associated with the site. None of the past owners or occupants were able to be contacted based on the contact information identified.

3.2.3 Regulatory Officials

Personnel at various regulatory agencies who were questioned about the subject site directed SEG to the paper files for review. The information obtained from the files is discussed in section 3.0 in the report.

3.3 User Provided Information

The User provided the following information, which was reviewed by SEG to help identify possible recognized environmental conditions relating to the property and for documenting the purpose of performing the Phase I. A copy of the information received from the User is included in Appendix A.

3.3.1 Environmental Liens/Activity and Use Limitations

No environmental liens and/or activity and use limitations research/reports were provided to SEG. According to the EDR regulatory database search report, there are no liens listed in the United States Environmental Protection Agency (US EPA)'s Federal Superfund Liens List, and no known recorded land-use environmental deed restrictions pertaining to the subject site listed in DTSC's liens database.

3.3.2 Specialized Knowledge or Experience

The User indicated that no spills and/or leaks have occurred at the subject site.

3.3.3 Actual Knowledge

The User was not aware of any environmental liens and/or activity and use limitations for the subject.

3.3.4 Commonly Known/Reasonably Ascertainable Information

The User stated that previously the site was used as a restaurant.

3.3.5 Reasons for Significantly Lower Purchase Price

The User reported that the sale price of the property was at fair market value.

3.3.6 Reason for Conducting this Phase I ESA Report

The User indicated that the purpose of the Phase I report was to satisfy due diligence requirements.

3.3.7 User Provided Documents

The User provided SEG with completed questionnaire.

4.0 HISTORICAL LAND USE

4.1 Sanborn Map Review

Sanborn Maps were originally compiled for fire insurance purposes. The Sanborn Fire Insurance maps were initially produced by private companies for the insurance industry to provide information regarding risks associated with fires in the structures and often contained detailed information regarding the history and past uses of a property as well as historical addresses associated with the site. No Sanborn Map Coverage was available for the subject site and/or the adjacent sites.

4.2 Aerial Photograph Review

Historical aerial photographs searches were conducted at EDR. The purpose of our review of aerial photographs was to examine the property and surrounding areas for any signs of potential negative environmental impact.

Items searched for in each photograph included, but were not limited to: evidence of tanks or gas stations on the subject or surrounding properties; evidence of any industrial site usage which may have impacted the subsurface soils; historical drains and water drainage pathways; areas which show evidence of drums or excessive debris; soil areas suspected as being discolored or stained; areas of distressed vegetation, etc. Copies of available aerial photographs are included in Appendix A. The following descriptions are summaries of the aerial photographs as they appeared.

Date: 1928, 1938, 1947, 1952, & 1954	
Subject Site:	Depicted as agricultural land.
North:	Depicted as agricultural land.
South:	Depicted as agricultural land.
East:	Depicted as agricultural land. In 1952, the site is depicted as residential building.
West:	Depicted as agricultural land.
Date: 1963, 1970, & 1972	
Subject Site:	The southeastern portion of the site depicted as a baseball field and the remaining area depicted as undeveloped land. In 1970 and 1972, the site depicted as undeveloped land.
North:	A newer commercial structure depicted.
South:	Depicted as a gas station.
East:	No significant changes noted. In 1972, a new commercial structure with parking lot to the southeast is depicted.
West:	No significant changes noted. In 1972, a new parking lot is depicted.

Date:	*1981, 1989, 1990, 1994, 2002, 2005, 2009, 2012, & 2016*
Subject Site:	A new commercial structure with parking lot is depicted, similar to the layout as today.
North:	No significant changes noted
South:	A newer commercial structure depicted.
East:	No significant changes noted. In 2012 & 2016, the commercial structure depicted in the southeastern and rest of site appears to have been razed and depicted as vacant land.
West:	No significant changes noted

4.3 Building Permit Review

Addresses for the subject property were reviewed at the City of Whittier Department of Building and Safety. The purpose of our review of building permits and other documents is to construct a chain of ownership and history of construction activities onsite.

Items considered in the course of building permit research included: construction or demolition of any structures that may have a potential negative environmental impact, previous site usage, previous ownership, and any other historical information. The following building permits were on file for the subject site. Copies of the building permits are included in Appendix A.

9829 La Serna Drive (Subject Site)

Date	Owner/Business	Comments
02/28/1977	John D. Lusk & Sons/ Restaurant	Permit for new single story restaurant with patio.
12/21/1983	Marie Callender's Pie Shop	Permit for enclosing existing patio to create additional interior dining & pasta bar.
05/07/1984	Marie Callender	Permit for installing wall sign.
10/15/1986	Marie Callender's Restaurant	Permit for re-roofing.
04/27/1998	Marie Callender's Restaurant	Permit for tearing off and re-tiling of the floor.
08/05/2002	Marie Callender's	Permit for installing illuminated sign.

Building Permit Summary:

- Based on review of the building permits, the earliest permit dated 1977 was issued to John D. Lusk & Sons for constructing a new single-story restaurant with patio. According to miscellaneous improvements, alteration, and permits dated between 1977 and 2002, the site was used for restaurant purposes. The site tenant was reported as Marie Callender's Restaurant.

4.4 City Directory Search

The purpose of the City Directory research was to determine the businesses that were historically located onsite. City Directories have been published for cities and towns across the US since the 1700s. Originally a list of residents, the city directory developed into a sophisticated tool for locating individuals and businesses in particular. With each address

the directory lists the name of the resident or if a business operated from this addresses, and a street index. While city directory coverage is usually comprehensive for major cities, it may be spotty for rural areas and small towns. The following tabulated information was listed for the subject and adjacent sites. A copy of the City Directory Research is included in Appendix A.

Subject Site
9829 La Serna Dr.
1980-2011 Marie Callender's Restaurant & Bakery

Adjacent Sites	
15215 Janine Dr.	**15141 Whittier Blvd.**
2000-2011 Luthrn Chrchs Shphrd Of The, Shepherd Center Preschool	2011 Commercial Building (28 occupants)
1980-1995 Lutheran Church Shepherd, Shepherd Center, Shepherd Hills Lutheran	2006 Commercial Building (40 occupants)
1966-1972 Garden Nursery Schl Luskey	2000 Commercial Building (40 occupants)
1962-1975 Shepherd Of THe Hills Luth Ch	1995 Commercial Building (33 occupants)
15151 Janine Dr.	1991 Commercial Building (36 occupants)
2000 Cytology Services Group, Tel Med Whittr Hosp	1986 Commercial Building (11 occupants)
1995 Commercial Building (5 occupants)	**15175 Whittier Blvd.**
1991 Commercial Building (7 occupants)	2011 Banco Popular, Starbucks
1986 Commercial Building (6 occupants)	2006 Quaker Cty Fdrl Svngs Loan Asn, Starbucks
1980 Commercial Building (6 occupants)	2000 Quaker City Federal Savings & Loan
1975 Commercial Building (5 occupants)	1980-1995 Great Western Bank Svg
1962-1972 Whittier Hospital Luskey	1962-1972 Friendly Hills Shell Luskey
	9804 La Serna Dr.
	1962-2011 Residential

4.5 Historical Summary

4.5.1 Subject Site

The following site history is based on information obtained from the Site Reconnaissance, Owner and Client Interviews, Sanborn Maps, Aerial Photographs, Building Permits, and City Directory for the subject site.

- From before 1928 to the 1960s: The site was used for agricultural purposes. In 1963, the southeastern portion of the site was used as a baseball field.

- From 1970s to present: In the 1970s, the site was vacant land. The existing onsite structure was built in 1978 and used for restaurant and bakery purposes through 2019 by Marie Callender's Restaurant. The site is presently vacant.

4.5.2 Adjacent Sites

In general, the adjacent sites have been used for mixed commercial and residential purposes. Commercial uses included gas station on adjacent site to the south was observed in Aerial Photograph and City Directory from 1962 to 1972. The adjacent sites are discussed in detail in the following sections of the report: Site Reconnaissance, Aerial Photograph Review, Sanborn Maps, City Directory Search, and Regulatory Database Review. Based on our research, the adjacent sites in our opinion are not expected to have significantly impacted the subject site.

4.6 Historical Data Gaps

A data gap is considered a lack of, or inability to obtain, information required by the ASTM E 1527-13 practice despite good faith efforts by the environmental professional to gather such information. This Phase I Environmental Site Assessment has not identified significant data gaps that affect our ability to identify recognized environmental conditions.

5.0 HAZARDOUS SUBSTANCE SEARCH

5.1 Underground Storage Tanks and Hazardous Materials

Research for Underground Storage Tanks (USTs), hazardous materials inventories, and/or any related cases was conducted for the subject site at the following agencies:

Agency	Agency
Los Angeles County Fire Department Health Hazardous Materials Division	No records
Los Angeles County Department of Public Works (LADPW)	No files
County Sanitation Districts of Los Angeles County	No records
South Coast Air Quality Management District (SCAQMD)	In 1989, the application for equipment charbroiler-natural gas was cancelled. At the time of inspection in first quarter of 1989, the site tenant was Marie Callender's Restaurant.
Regional Water Quality Control Board (RWQCB) website GeoTracker	No environmental cases listed
Department of Toxic Substances Control Board (DTSC) website Envirostor	No environmental cases listed
Regulatory Database Report (EDR)	No UST, hazmat, and/or any cases listed

Hazardous Substance Summary:

- No records of any USTs and/or any hazardous materials inventories were on file for the subject site at any of the regulatory agencies researched. The adjacent site to the south at 15175 Whittier Boulevard was used as a gas station from at least 1961 to before 1980. SEG did not find any UST records at regulatory agencies for the gas station as it was during a pre regulatory oversight era. Please note that, the historical USTs were single walled steel construction and were known to develop holes within 10 years. In addition, gas station operations and UST maintenance were not regulated by agencies as they are presently. There is potential for subject site to be impacted in case of spills and/or leaks which in our opinion Constitutes a Recognized Environmental Condition. SEG recommends further environmental investigation including subsurface soils and soil vapor investigation to determine if the subject site has been impacted.

6.0 REGULATORY LIST REVIEW

An outside information service, EDR, was contracted to perform a database search of government record sources and to provide a compiled report of listed sites within a one-mile radius of the subject property. EDR's report is attached as Appendix B of this report and should be referenced for specific information and explanation of government records sources, dates of source listings, and locations of sites. A select list of records searched, summary of listed sites, and the potential for listed sites to impact the subject property are discussed as follows:

Database	Description	Search Distance
NPL	National Priorities List (Superfund)	1.0 Mile
De-listed NPL	Former National Priorities List (Superfund)	0.5 Mile
CERCLIS / CERCLIS NFRAP	Comprehensive Environmental Response, Compensation and Liability Information System / Archived CERCLIS	0.5 Mile
RCRA CORRACTS	Corrective Action Report	1.0 Mile
RCRA-TSD	Resource Conservation and Recovery Act (Transport, Storage and Disposal Facilities)	0.5 Mile
RCRA GNTR	RCRA registered small or large generators of hazardous waste	Subject and Adjacent Sites
US ENG / US INST CONTROLS	Federal Engineering and Institutional Controls	Subject Site
ERNS	Emergency Response Notification System	Subject Site
STATE / TRIBAL NPL	State and/or Tribal Equivalents to the Federal NPL	1.0 Mile
STATE / TRIBAL CERCLIS	State and/or Tribal Equivalents to the Federal CERCLIS	0.5 Mile
STATE / TRIBAL LANDFILL	State and/or Tribal *landfill* or *solid waste disposal* sites	0.5 Mile
STATE / TRIBAL LUSTs	State and/or Tribal leaking storage tanks	0.5 Mile
STATE / TRIBAL RSTs	State and/or Tribal registered storage tanks	Subject and Adjacent Sites
STATE / TRIBAL ENG / INST CONTROLS	State and/or Tribal Engineering and Institutional Controls	Subject Site
STATE / TRIBAL VCS	State and/or Tribal Voluntary Cleanup Sites	0.5 Mile
STATE / TRIBAL BROWNFIELD	State and/or Tribal Brownfield sites	0.5 Mile

Most of the listings in the EDR report do not appear to have impacted the subject site with hazardous materials based on one or more of the following reasons:

- Listed on CERCLIS but a preliminary assessment has determined that no hazard was identified and no further action is needed.
- Listed as having registered underground storage tanks (USTs), or as small or large quantity generators only, and are not listed on any other lists indicating that a release to the environment had occurred.
- Listed on LUST as having a leaking tank but is greater than 0.25 miles from the subject site, is located hydrologically cross or down gradient, or is indicated to have a signed-off site status.

- Listed on other listings and in our opinion is unlikely to have impacted the subject site based on one or more of the following reasons: located hydrologically cross or downgradient, have a signed-offsite status, is located over 0.25 miles away from the subject site, and/or lack of impacted resources.

The sites that do not fall in the above mentioned categories, in our opinion, do not constitute a recognized environmental condition. These sites are likely to be considered a *de minimus* condition, (under ASTM Standard E1527), as they "generally would not be the subject of an enforcement action if brought to the attention of appropriate government agencies" with regards to the subject site.

Regulatory Database Review Table

The following table summarizes the regulatory listings in the EDR Radius Map Report for the subject site and immediately adjacent sites:

EDR Map ID#	Site Name/Address & Distance/ Direction from subject site	Regulatory database	Site Status	Potential for a REC
A1	Friendly Hills Shell 15175 E. Whittier Blvd. (0.030 Miles – S)	EDR HIST. AUTO	- The site is listed as a gasoline station in 1961.	Moderate
B2-B3	Whittier Hospital Medical Cent 15175 E. Janine Dr. (0.032 miles – N-NW)	RCRA-SQG, FINDS, ECHO, EMI, UST	- The site is listed as a large quantity generator in 1992 with no violation found and small quantity generator in 1996. - Based on EMI database handled by AQMD, the site generated 1.0 ton of total organic hydrocarbon gases, 1.0 ton of carbon monoxide emissions, and 2.0 tons of NOX in 1990 and 1996 annually, 1.0 ton of carbon monoxide emissions, and 2.0 tons of NOX in 1995, 1.0 ton of total organic hydrocarbon gases, 1.0 ton of reactive organic gases, 1.0 ton of carbon monoxide emissions, and 2.0 tons of NOX from 1997 to 2001 annually. The site is also listed on UST database with Los Angeles County.	Low
A4	Quest Diagnostics Whittier 15141 E. Whittier Blvd. (0.038 Miles – SW)	RCRA-SQG	- The site is listed as a small quantity generator in 2007 including laboratory waste chemicals and ignitable waste with no violation found.	Low

Regulatory Database Review Conclusions:

6.1 Subject Site

- The subject site is not listed on any of the regulatory database researched.

6.2 Adjacent Site and immediately Surrounding Sites

- The adjacent site to the south is listed as a gasoline station in 1961.

- The adjacent site to the north-northwest is listed on RCRA-SQG, FINDS, ECHO, EMI, UST databases with no violation found.

- The adjacent site to the southwest is listed as a small quantity generator in 2007 including laboratory waste chemicals and ignitable waste with no violation found.

- The remaining listed sites with the exception of sites listed within the area of concern, in our opinion, are considered to have a low potential for negative impact at the subject site. These sites are likely to be considered a de minimus condition, (under ASTM Standard E1527), as they "generally would not be the subject of an enforcement action if brought to the attention of appropriate government agencies" with regard to the subject site.

6.3 Vapor Encroachment Condition

The following distances were used for evaluating the potential for a Vapor Encroachment Condition (VEC):

> *The trigger distances used for petroleum hydrocarbon concerns is 528-feet (0.1-miles) for sites located up gradient, 165-feet (0.03-miles) for sites located cross gradient, and 100-feet (0.019-miles) for sites located down gradient. The trigger distances used for VOC/chemicals of concern (Table X6.1 E-2600-10) is 1,760-feet (0.333-miles) for sites located up gradient, 365-feet (0.07-miles) for sites located cross gradient, and 100-feet (0.019-miles) for sites located down gradient.*

Based on evidence of a gas station located on adjacent site to the south; within the area of concern, it is SEG's opinion that that a VEC may exist at the subject site. Hence, it is SEG's opinion that further Tier 2 Vapor Encroachment Screening including (physical soil vapor sampling) warranted for the subject site.

7.0 EVALUATION OF ADDITIONAL RISKS

7.1 Oil Well Drilling Activity

The California Department of Conservation, Division of Oil and Gas and Geothermal Resources (DOGGR) regulates the drilling, operation, and abandonment of gas and oil wells throughout the State of California. If an active, idle, or abandoned well is located on or adjacent to a proposed construction site, DOGGR requires a site plan review prior to issuing a building permit. Abandoned oil wells must meet the current regulatory standards.

The DOGGR Online Mapping System Website (references) was reviewed to attempt to determine the location of oil well drilling activity in the vicinity of the property. The site is located in the Township-2-South, Range-11-West, and Section 35. According to the DOGGR information, no oil wells are located on the subject site, on any of the adjacent sites. There are two oil wells located within one mile radius from the subject site. The nearest well is approximately 1,600 feet south-southeast of the subject site and has plugged and abandoned status.

Oil Well Drilling Activity Summary:

- Based on our review of the DOGGR Database, the potential for oil well related concerns at the subject site is considered to be low.

7.2 PCB Potential

Polychlorinated biphenyls (PCBs) were once used as industrial chemicals whose high stability contributed to both their commercial usefulness and their long-term deleterious environmental and health effects. These substances have been listed as carcinogens by the Environmental Protection Agency (EPA). PCBs were banned from general commercial use in 1977. Items which may potentially impact the subject site with PCBs include electrical capacitors and transformers, fluorescent light ballasts, hydraulic oils used in hydraulic lifts and elevators, vacuum pumps, gas turbines, and other petroleum products manufactured prior to the 1977 ban. Pole mounted transformers may contain PCBs in their internal cooling oil. Unless labeled “No PCBs”, fluorescent light ballasts should be assumed

to contain PCB's and disposed of appropriately at the end of their service life. No pole mounted transformers were observed near the subject site.

PCB Potential Summary:

- Based on the above information, the potential for PCB-related concerns onsite is considered to be low.

7.3 Non-Scope Considerations

7.3.1 Asbestos Potential

Asbestos is a natural occurring mineral fiber utilized in a multitude of building material products due to its high tensile strength and excellent fire resistant properties. The EPA has defined asbestos materials as being either friable or non-friable materials. Friable material is defined as being easily broken or crushed by hand pressure (e.g., soft acoustical ceilings or blown-on fireproofing).

Non-friable asbestos is generally found in pre-manufactured products that bind the asbestos in an adhesive material, such as roofing felts, floor tile, transite pipe and mastics. This is significant, due to the ability to create a fiber release and cause human exposure during normal activities. The EPA currently does not require the removal of asbestos-containing materials that do not present a problem for human exposure. Most friable asbestos-containing materials were banned in building materials by 1978.

On November 9, 1994, a new FED-OSHA ruling became effective which redefined building materials perceived as asbestos containing into four classes of work and modified the way in which these asbestos-containing materials are handled. Under this ruling, "thermal system insulation and sprayed-on or troweled on or otherwise applied surfacing materials installed before 1980 are considered presumed asbestos-containing material (PACM) unless sampled and identified by a certified individual as to asbestos content".

These materials are considered high-risk materials for abatement and their removal is classified under Class I removal activities. Other building materials such as "floor or ceiling tiles, siding, roofing, transite panels, (floor sheeting, floor or roof mastics) are also

considered PACM" unless sampled and identified by a certified individual as to asbestos content but are considered low risk materials for abatement and their removal is classified under Class II, III and IV removal and repair and maintenance operations.

Significant under these new regulations is the deletion of the category of "Small Scale Short Term Duration" removal activities which regularly allowed Class I through IV activities to proceed with less regulatory oversight. Under the NESHAPS laws of 1976 and as later amended, asbestos does not have to be removed from a facility until such time as it undergoes major renovations or is demolished. Until that time, the present emphasis by the EPA is to recommend repair of any damaged areas and management materials.

Prior to any renovation work being done involving ACBM of 260 lineal feet or 160 square feet in area, the local branch of the EPA must be notified. Prior to the demolition of any building or house, mandatory bulk sampling must be accomplished and, if asbestos is present, notification must be made to the local branch of the EPA and Air Quality Management District. In California, for the removal of any ACBM greater than 0.1 percent by weight, notifications must also be made to CAL-OSHA and a licensed contractor with an asbestos certification is required for any work, which exceeds 100 square feet.

Asbestos Potential Summary:

- The onsite structure was built in 1978 during the 1978 federal regulations banning the use of asbestos containing building materials (ACBMs). However, the use of ACBMS continued until the mid 1980s. Hence, there is potential for the presence of ACBMs in the onsite building. SEG recommends complete asbestos survey prior to any demolition and/or any significant renovations that would potentially disturb the existing building materials.

7.3.2 Lead Potential

Lead and lead compounds can be found in many types of paint. In 1978, the Consumer Product Safety Commission set the allowable lead levels in paint at 0.06% by weight in a dry film of newly applied paint. In the 1970s, the chief concern of lead paint was its cumulative effect on bodily systems, primarily when paint chips containing lead were ingested by children. Research in the early 1980s showed that lead dust is of special

concern, because the smaller particles are more easily absorbed by the body. Common methods of paint removal, such as sanding, scraping, and burning, create excessive amounts of dust. Lead dust is especially hazardous to young children because they on the floor and engage in a great deal of hand-to mouth activity, increasing their potential for exposure. Lead based paints were commonly used on buildings built prior to 1970s.

Lead Potential Summary:

- The onsite structure was built in 1978 during the 1978 federal regulations banning the use of lead based paints. However, the use of lead based paints continued until the 1980s. Hence, there is potential for the presence of lead based paints in the onsite building. SEG recommends complete lead paint survey prior to any demolition and/or any significant renovations that would potentially disturb the existing building materials.

7.3.3 Radon Potential

High levels of radon may be found in every state. Medical and environmental studies have shown that radon can be a health risk, primarily as a cause of lung cancer. Radon is a naturally occurring colorless, odorless and tasteless gas produced by the decay of uranium and radium. Radon levels vary from place to place depending on the underlying geology.

Radon Potential Summary:

- Based on our research at the California Department of Health Services, Radon Program Database, the radon level for Los Angeles County is classified as Federal EPA Radon Zone 2. This is a classification designated for zones with average radon levels ranging between 2 and 4 picoCuries/liter (pCi/L), which is below the action level set by the Environmental Protection Agency of 4 pCi/L.

7.3.4 Mold

Molds are microscopic organisms found virtually everywhere, indoors and outdoors. Mold will grow and multiply under the right conditions, needing only sufficient moisture (e.g.in the form of very high humidity, condensation, or water from a leaking pipe, etc.) and organic material (e.g., ceiling tile, drywall, paper, or natural fiber carpet padding). SEG observed accessible, interior areas for the subject property building for significant evidence of mold growth with the exceptions detailed in Section 3.1 of this report; however, this ESA should not be used as a mold survey or inspection. Additionally, this limited assessment was not designed to assess all areas of potential mold growth that may be affected by mold growth

on the subject property. Rather, it is intended to give the client an indication as to whether or not conspicuous (based on observed areas) mold growth is present at the subject property. This evaluation did not include a review of pipe chases, mechanical systems, or areas behind enclosed walls and ceilings.

Mold Potential Summary:

- SEG did not observe any evidence of mold in visually accessible areas. Hence, the potential for mold-related concerns onsite is considered to be low.

8.0 CONCLUSIONS AND RECOMMENDATIONS

At the request of Mission Pacific Investors, LLC (User), Smith-Emery GeoServices (SEG) has performed a Phase I Environmental Site Assessment at 9829 La Serna Drive in the City of Whittier, Los Angeles County, and State of California. The research conducted for this study and the report prepared are in conformance with the United States Environmental Protection Agency (US EPA) on appropriate inquiry AAI standard and the American Society of Testing and Materials ASTM E 1527 - 13 scope of work.

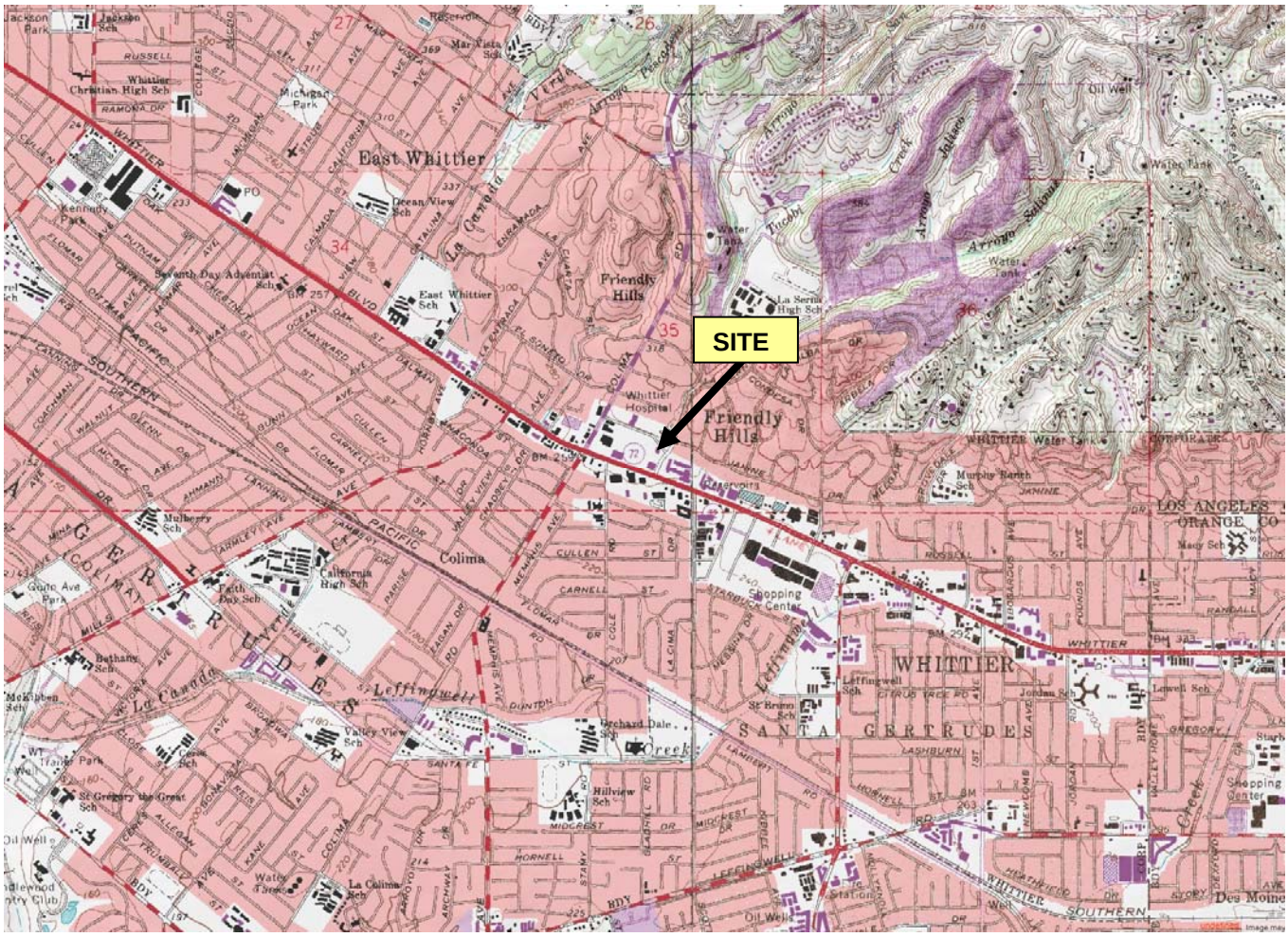
This assessment has revealed evidence of gas station use on the adjacent site to the south in 1961~1980 which in our opinion constitutes a Recognized Environmental Condition. The concern is related to the potential for subject site to be impacted in case of tank spills and/or leaks. SEG recommends further environmental investigation including subsurface soils and soil vapor investigation to determine if the subject site has been impacted Based on the age of the onsite structure, SEG recommends complete asbestos and lead based surveys prior to any significant renovations and/or demolition activities that would potentially disturb the existing building materials.

ILLUSTRATIONS

QUADRANGLE LOCATION

N

NOT TO SCALE



REFERENCE
U.S. GEOLOGICAL SURVEY
WHITTIER QUADRANGLE
LOS ANGELES COUNTY, CALIFORNIA

9829 LA SERNA DR.
WHITTIER, CALIFORNIA

VICINITY MAP

Smith-Emery GeoServices
FILE NO.: 46556-1

DWG BY I.R.
PLATE NO.: 1

LEGEND :

: SUBJECT SITE

NOT TO SCALE

9829 LA SERNA DR.
WHITTIER, CALIFORNIA

SITE SCHEMATIC

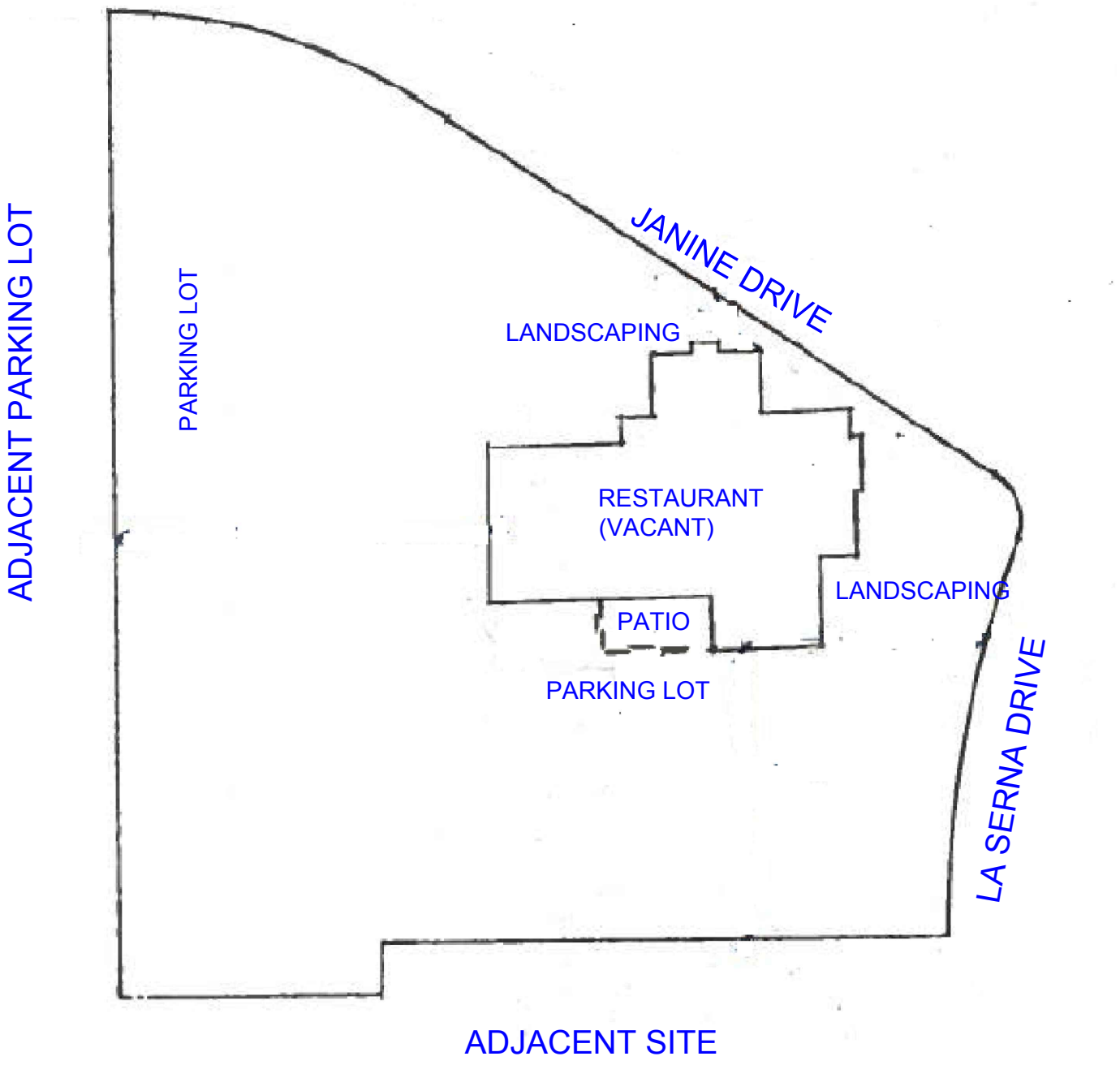
Smith-Emery GeoServices
FILE NO. : 46556-1

DRAWING BY: A.A.
PLATE NO.: 2

LEGEND:

——— - SITE BOUNDARY LINE

APPROX. SCALE : NO SCALE



9829 LA SERNA DR.
WHITTIER, CALIFORNIA

SUBJECT SITE DIAGRAM

Smith-Emery GeoServices
File No.: 46556-1

DRAWING BY: A.A.
PLATE NO.: 3

FRONT VIEW OF SUBJECT SITE FACING WEST-NORTHWEST

VIEW OF SUBJECT SITE FACING SOUTH-SOUTHWEST

REAR VIEW OF SUBJECT SITE FACING EAST-SOUTHEAST

9829 LA SERNA DR.
WHITTIER, CALIFORNIA

PHOTO PLATE

Smith-Emery GeoServices
FILE NO.: 46556-1

DWG BY: A.A.
PLATE NO.: 4A

VIEW OF SUBJECT SITE FACING NORTH-NORTHEAST

VIEW OF ENTRANCE AND WAITING AREA

VIEW OF RECEPTION AND DISPLAY AREA

9829 LA SERNA DR.
WHITTIER, CALIFORNIA

PHOTO PLATE

Smith-Emery GeoServices
FILE NO.: 46556-1

DWG BY: A.A.
PLATE NO.: 4B

VIEW OF TYPICAL DINING AREA

VIEW OF PATIO AREA

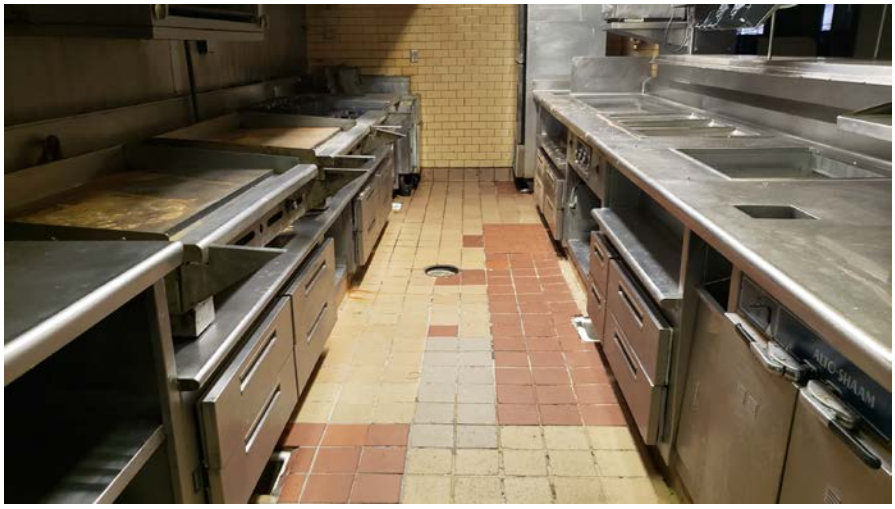
VIEW OF BAR AREA

9829 LA SERNA DR.
WHITTIER, CALIFORNIA

PHOTO PLATE

Smith-Emery GeoServices
FILE NO.: 46556-1

DWG BY: A.A.
PLATE NO.: 4C



VIEW OF GRILL/FRYER AREA

VIEW OF EMPLOYEE ROOM

VIEW OF TYPICAL KITCHEN AREA

9829 LA SERNA DR.
WHITTIER, CALIFORNIA

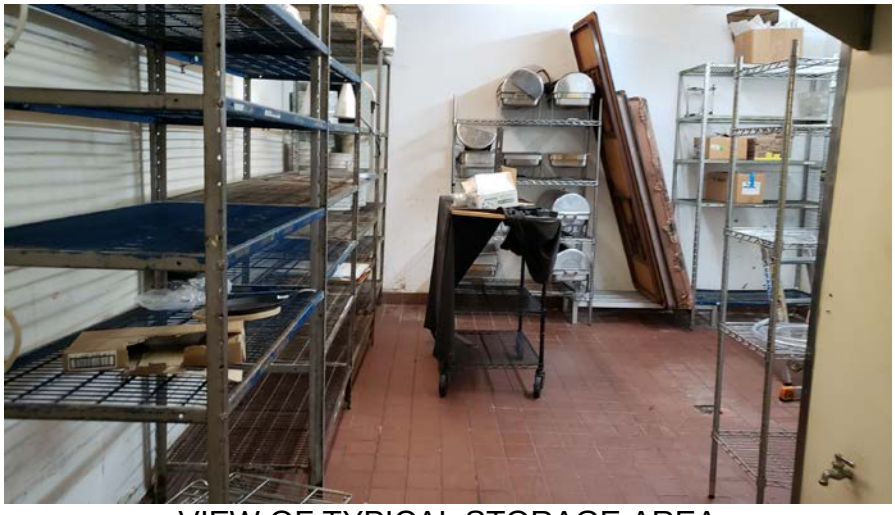
PHOTO PLATE

Smith-Emery GeoServices
FILE NO.: 46556-1

DWG BY: A.A.
PLATE NO.: 4D

VIEW OF WALK-IN COOLER

VIEW OF OVEN AREA



VIEW OF TYPICAL STORAGE AREA

9829 LA SERNA DR.
WHITTIER, CALIFORNIA

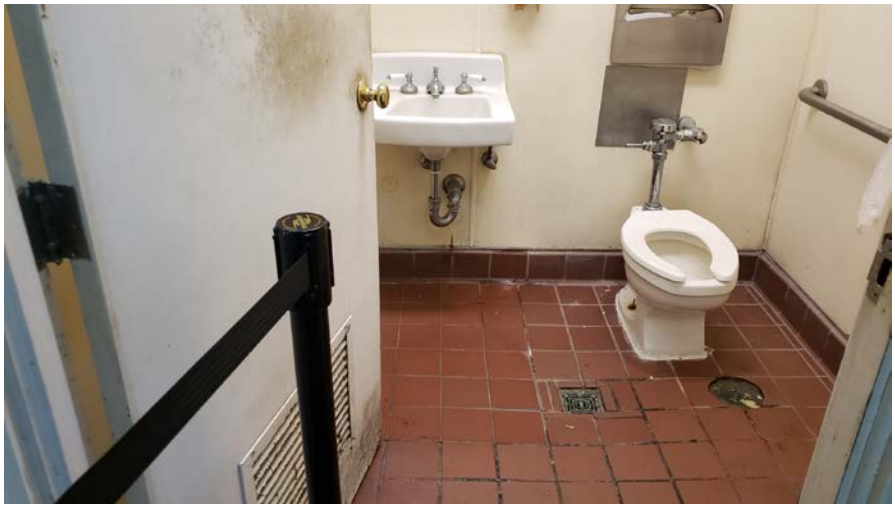
PHOTO PLATE

Smith-Emery GeoServices
FILE NO.: 46556-1

DWG BY: A.A.
PLATE NO.: 4E

VIEW OF GREASE TRAP CONTAINER NEAR DUMPSTER ENCLOSURE

VIEW OF TYPICAL PARKING LOT



VIEW OF TYPICAL RESTROOM

9829 LA SERNA DR.
WHITTIER, CALIFORNIA

PHOTO PLATE

Smith-Emery GeoServices
FILE NO.: 46556-1

DWG BY: A.A.
PLATE NO.: 4F

APPENDIX A

SUBJECT SITE DOCUMENTATION

APPENDIX A

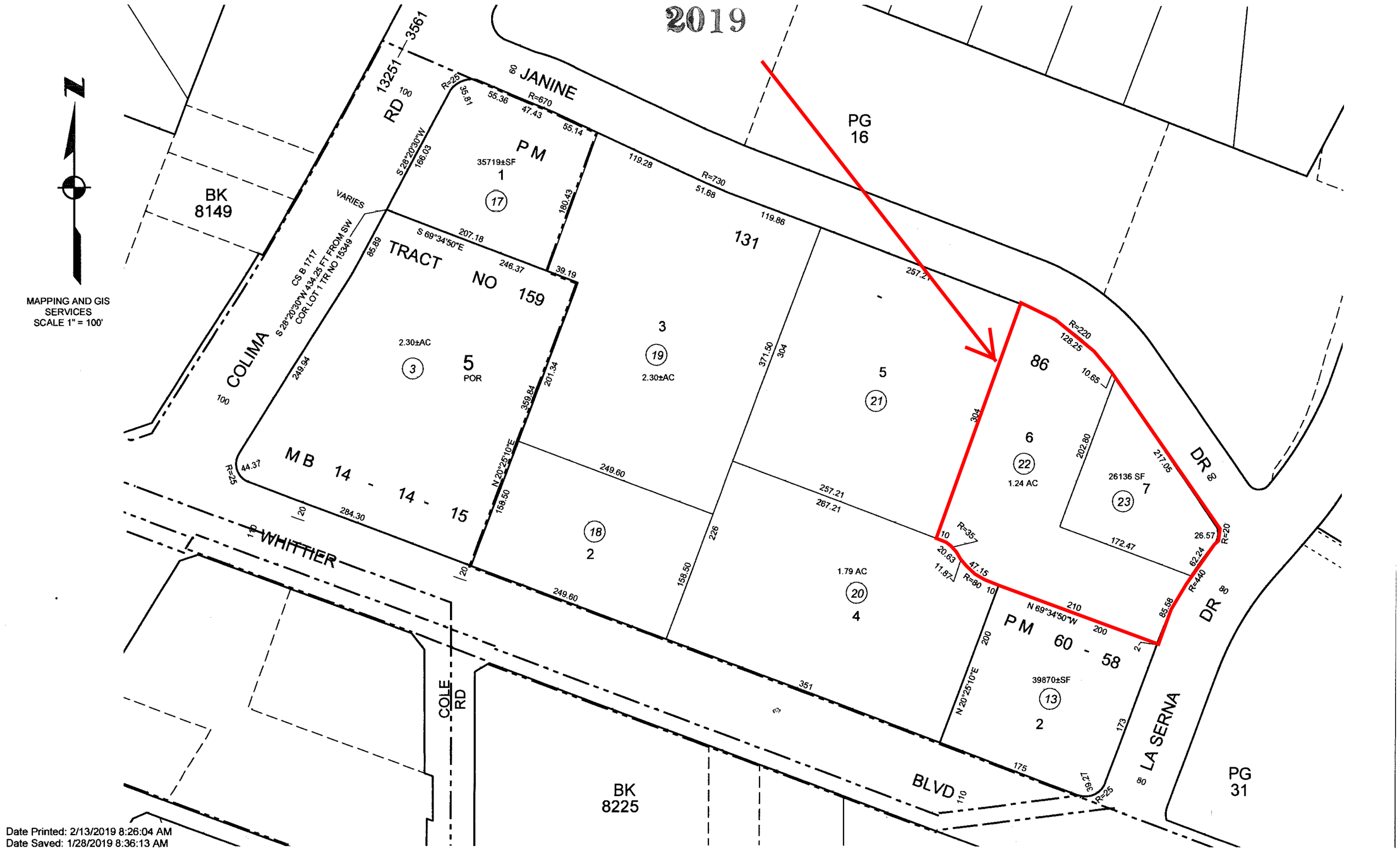
Items included in this Appendix are:

Maps
- County Assessors Map
- City Maps
- Site Maps
- Zoning and Land Use Maps/Records
- Oil & Gas Map

Historical Documents
- Historical USGS Topographic Maps
- Sanborn Maps
- Historical Aerial Photographs
- Local City Directories
- Building Permits
- UST Records
- HAZMAT Records
- Property Tax Files
- Recorded Land Title Records

Questionnaires
- User Questionnaire
- Key Site Manager Questionnaire
- Tenant Records of Conversation
- Local Officials Records of Conversation

8224	17 SHEET	P. A. 116-219	TRA 3561 13251	REVISED 801201801 20021104	2019021302-27				SEARCH NO		OFFICE OF THE ASSESSOR COUNTY OF LOS ANGELES COPYRIGHT © 2002



Date Printed: 2/13/2019 8:26:04 AM
Date Saved: 1/28/2019 8:36:13 AM

Summary

AIN: 8224-017-023 0

Situs Address:
9829 LA SERNA DR
WHITTIER CA 90605-1807

Use Type:	Commercial
Parcel Type:	Regular Fee Parcel
Tax Rate Area:	03561
Parcel Status:	**ACTIVE**
Create Date:	
Delete Date:	
Tax Status:	**CURRENT**
Year Defaulted:	
Exemption:	None

Building (0101) & Land Overview

Use Code:	2100
Design Type:	2100
Quality Class:	DX
# of Units:	0
Beds/Baths:	0/0
Building SqFt:	9,244
Year Built:	1978
Effective Year:	1978
Land SqFt:	22,341

(http://assessormap.co.la.ca.us/Geocortex/Essentials/REST/sites/PAIS/VirtualDirectory/AssessorMaps/ViewMap.html?val=8224-017)

Parcel Map (http://assessormap.co.la.ca.us/Geocortex/Essentials/REST/sites/PAIS/VirtualDirectory/AssessorMaps/ViewMap.html?val=8224-017) / Map Index (http://maps.assessor.lacounty.gov/Geocortex/Essentials/REST/sites/PAIS/VirtualDirectory/AssessorMaps/ViewMap.html?val=8224-NDX)

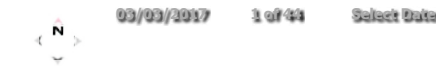
	2020 Roll Preparation		2019 Current Roll	RC	Year		1995 Base Value
$	353,246	$	346,320	T	1995	$	230,000
$	615,861	$	603,786	T	1995	$	400,987
$	969,107	$	950,106			$	630,987

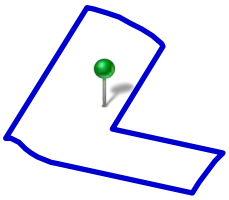
Assessor's Responsible Division

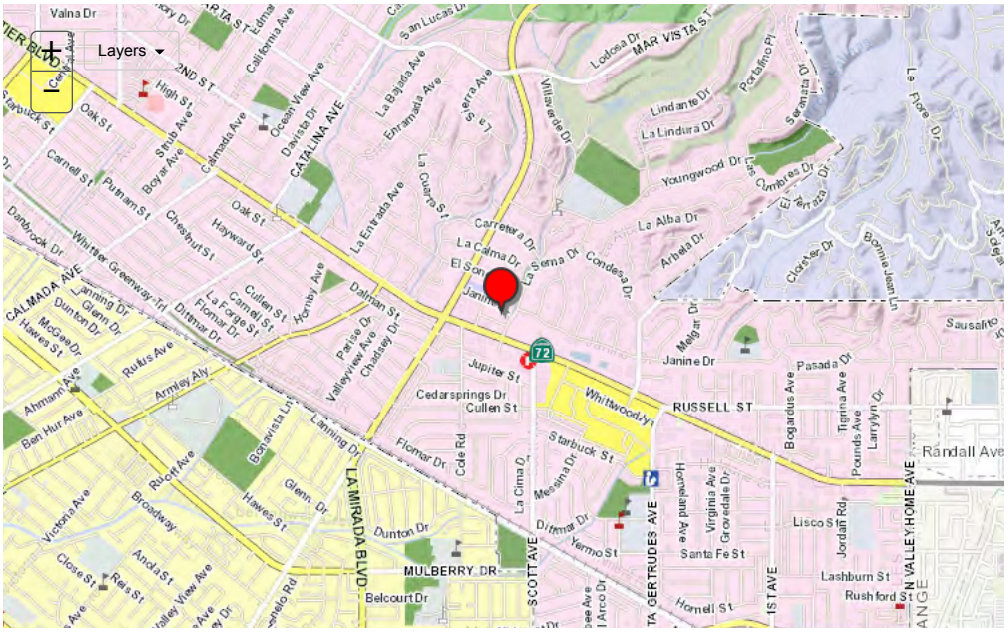
District:	East District Office
Region:	27
Cluster:	27606 WHITTIER

East District Office (https://maps.google.com/?q=1190+Durfee+Ave.+South+El+Monte%2C+CA+91733)
1190 Durfee Ave.
South El Monte, CA 91733

Phone: (626) 258-6001
Toll Free: 1 (888) 807-2111
M-F 7:30 am to 5:00 pm







Building and Land Characteristics

Land Information

Use Code = 2100 (Commercial)

Total SqFt (GIS):	22,341
Total SqFt (PDB):	
Usable SqFt:	26,136
Acres:	
Land W' x D':	0 x 0
Sewers:	Yes
Flight Path:	No
X-Traffic:	No
Freeway:	No
Corner Lot:	Yes
Golf Front:	No
Horse Lot:	No
View:	None
Zoning:	(Refer Issuing Agency)

Code Split: No
Impairment: None

Situs Address:
9829 LA SERNA DR WHITTIER CA 90605-1807

Legal Description *(for assessment purposes)*:
*TR=PARCEL MAP AS PER BK 131 P 86 OF P M LOT 7

Use Code: 2100 (Commercial)
2 = Commercial
1 = Restaurant, Cocktail Lounge
0 = Restaurant, Cocktail Lounge, Tavern
0 = One Story

Building Information

SUBPART: ***0101***
Design Type: 2100
Quality Class: DX

# of Units: 0
Beds/Baths: 0/0
Building SqFt: 9,244

Year Built: 1978
Effective Year: 1978
Depreciation: UC35 / / 0

RCN Other: $ 0
RCN Other Trended: $ 0
Year Change: 1979

Design Type: 2100
2 = Commercial
1 = Restaurant, Cocktail Lounge, Drive-In, Coffee Shop, etc.
0 = Unused or Unknown Code (No Meaning)
0 = Unused or Unknown Code (No Meaning)

SUMMARY: ***Total***

# of Units: 0
Beds/Baths: 0/0
Building SqFt: 9,244
Avg SqFt/Unit:

Events History

Ownership () Parcel Change ()

Show Re-Assessable Only:

Recording Date	Seq. #	Re-Assessed	# Parcels	%	Ver. Code	DTT Sale Price	Assessed Value
12/18/2003	50	No	2	00%-0	2	$ 0	$ 745,449
05/15/1995	50	Yes	2+	00%-0	M	$ 0	$ 630,987
03/31/1994	50	Yes	7	00%-0	7	$ 9	$ 1,261,781
05/07/1993	50	Yes	2+	00%-0	M	$ 0	$ 1,237,041
08/07/1973	50	Yes		00%-0		$ 0	$ 0

Assessment History

Show All: **Hide Inactive Rolls:**

Showing 1 to 10 of 50 entries.

Bill Number	Bill Type	Bill Status	Date to Auditor	Recording Date	Total Value	Land Value	Improvement Value
220-PSEG				12/18/2003	$ 969,107	$ 353,246	$ 615,861
2190000	R	A	07/01/2019	12/18/2003	$ 950,106	$ 346,320	$ 603,786
2180000	R	A	07/19/2018	12/18/2003	$ 931,478	$ 339,530	$ 591,948

Bill Number	Bill Type	Bill Status	Date to Auditor	Recording Date	Total Value	Land Value	Improvement Value
2170000	R	A	06/26/2017	12/18/2003	$ 913,215	$ 332,873	$ 580,342
2160000	R	A	07/05/2016	12/18/2003	$ 895,310	$ 326,347	$ 568,963
2150000	R	A	06/23/2015	12/18/2003	$ 881,862	$ 321,445	$ 560,417
2140000	R	A	06/24/2014	12/18/2003	$ 864,589	$ 315,149	$ 549,440
2130000	R	A	06/25/2013	12/18/2003	$ 860,682	$ 313,725	$ 546,957
2120000	R	A	06/27/2012	12/18/2003	$ 843,807	$ 307,574	$ 536,233
2110000	R	A	07/06/2011	12/18/2003	$ 827,263	$ 301,544	$ 525,719

« 1 2 3 4 5 »

© 2017- Los Angeles County Assessor
Contact Us (https://assessor.lacounty.gov/contact-us/) | Disclaimer (disclaimer) | FAQ (faq)
PDB Effective Date: 02/09/2020
(https://facebook.com/LACAssessor) (https://www.twitter.com/LACASSESSOR) (https://www.linkedin.com/company/los-angeles-county-office-of-the-assessor) (https://youtube.com/u

Los Angeles County Office of the Assessor
Valuing People and Property

Property Assessment Information System

Parcel Details

- Property records are kept at the East District Office
- How frequently is this site updated? (and other FAQs)

Property Information

Assessor's ID No:	8224-017-023
Address:	9829 LA SERNA DR WHITTIER CA 90605
Property Type:	Commercial / Industrial
Region / Cluster:	27 / 27606
Tax Rate Area (TRA):	03561

- View Assessor Map
- View Index map

Recent Sales Information

Latest Sale Date:
Indicated Sale Price:

Search for Recent Sales

2019 Roll Values

Recording Date:	12/18/2003
Land:	$346,320
Improvements:	$603,786
Personal Property:	$0
Fixtures:	$0
Homeowners' Exemption:	$0
Real Estate Exemption:	$0
Personal Property Exemption:	$0
Fixture Exemptions:	$0

- 2019 Annual taxes
- Property tax payment FAQs
- Estimate supplemental taxes

Property Boundary Description

*TR=PARCEL MAP AS PER BK 131 P 86 OF P M LOT 7

Building Description

Building Improvement 1

Square Footage:	9,244
Year Build / Effective Year Built:	1978 / 1978
Bedrooms / Bathrooms	0 / 0
Units	0

I want to...

Summary

AIN: 8224-017-022 1

Situs Address:
9829 LA SERNA DR
WHITTIER CA 90605-1807

Use Type: Commercial
Parcel Type: Regular Fee Parcel
Tax Rate Area: 03561

Parcel Status: **ACTIVE**
Create Date:
Delete Date:
Tax Status: **CURRENT**
Year Defaulted:
Exemption: None

Building & Land Overview
Use Code: 2700
Design Type:
Quality Class:

# of Units:
Beds/Baths: /
Building SqFt: 0

Year Built:
Effective Year:
Land SqFt: 55,494

(http://assessormap.co.la.ca.us/Geocortex/Essentials/REST/sites/PAIS/VirtualDirectory/AssessorMaps/ViewMap.html?val=8224-017)

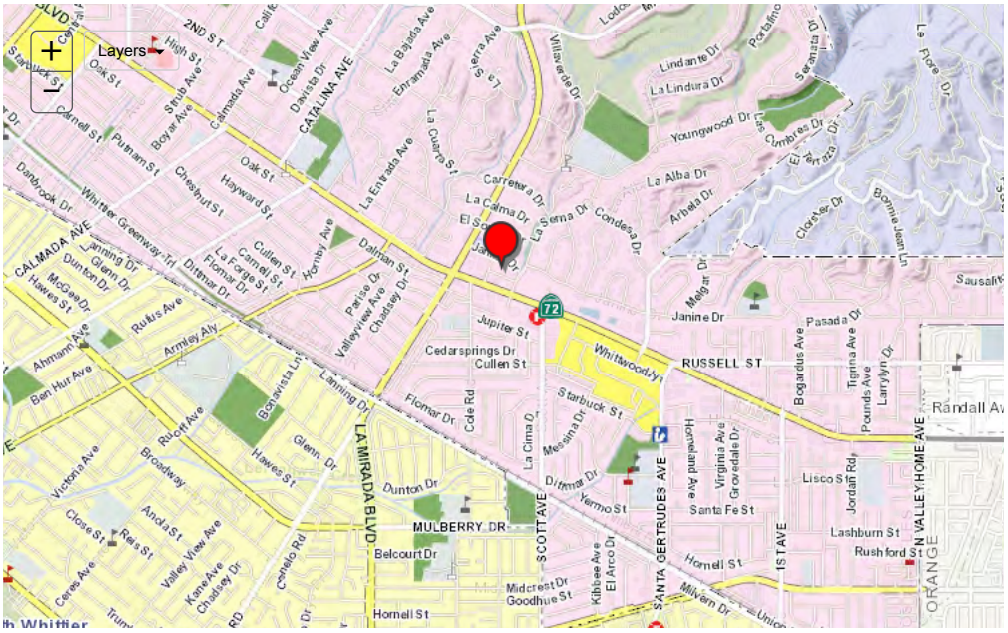
Parcel Map (http://assessormap.co.la.ca.us/Geocortex/Essentials/REST/sites/PAIS/VirtualDirectory/AssessorMaps/ViewMap.html?val=8224-017) / Map Index (http://maps.assessor.lacounty.gov/Geocortex/Essentials/REST/sites/PAIS/VirtualDirectory/AssessorMaps/ViewMap.html?val=8224-NDX)

	2020 Roll Preparation		2019 Current Roll	RC	Year		1995 Base Value
$	787,903	$	772,454	T	1995	$	513,000
$	86,013	$	84,327	T	1995	$	56,013
$	873,916	$	856,781			$	569,013

Assessor's Responsible Division
District: East District Office
Region: 27
Cluster: 27606 WHITTIER

East District Office (https://maps.google.com/?q=1190+Durfee+Ave.+South+El+Monte%2C+CA+91733)
1190 Durfee Ave.
South El Monte, CA 91733

Phone: (626) 258-6001
Toll Free: 1 (888) 807-2111
M-F 7:30 am to 5:00 pm



Building and Land Characteristics

Land Information

Use Code = 2700 (Commercial)

Total SqFt (GIS):	55,494
Total SqFt (PDB):	
Usable SqFt:	54,020
Acres:	
Land W' x D':	0 x 0
Sewers:	Yes
Flight Path:	No
X-Traffic:	No
Freeway:	No
Corner Lot:	No
Golf Front:	No
Horse Lot:	No
View:	None
Zoning:	(Refer Issuing Agency)

Code Split: No
Impairment: None

Situs Address:
9829 LA SERNA DR WHITTIER CA 90605-1807

Legal Description *(for assessment purposes)*:
*TR=PARCEL MAP AS PER BK 131 P 86 OF P M LOT 6

Use Code: 2700 (Commercial)
2 = Commercial
7 = Parking Lot (Commercial Use Property)
0 = Lots - Patron or Employee
0 = One Story

Building Information

SUBPART:
Design Type:
Quality Class:

# of Units:
Beds/Baths: /
Building SqFt: 0

Year Built:
Effective Year:
Depreciation: / /

RCN Other: $ 0
RCN Other Trended: $ 0
Year Change:

Design Type:
=
=
=
=

SUMMARY: ***Total***

# of Units: 0
Beds/Baths: 0/0
Building SqFt: 0
Avg SqFt/Unit:

Events History

Ownership () Parcel Change ()

Show Re-Assessable Only:

Recording Date	Seq. #	Re-Assessed	# Parcels	%	Ver. Code	DTT Sale Price	Assessed Value
12/18/2003	50	No	2	00%-0	2	$ 0	$ 672,229
05/15/1995	50	Yes	2+	00%-0	M	$ 0	$ 569,013
03/31/1994	50	Yes	7	00%-0	7	$ 9	$ 286,428
05/07/1993	50	Yes	2+	00%-0	M	$ 0	$ 280,813
08/07/1973	50	Yes		00%-0		$ 0	$ 0

Assessment History

Show All: **Hide Inactive Rolls:**

Showing 1 to 10 of 46 entries.

Bill Number	Bill Type	Bill Status	Date to Auditor	Recording Date	Total Value	Land Value	Improvement Value
220-PSEG				12/18/2003	$ 873,916	$ 787,903	$ 86,013
2190000	R	A	07/01/2019	12/18/2003	$ 856,781	$ 772,454	$ 84,327
2180000	R	A	07/19/2018	12/18/2003	$ 839,982	$ 757,308	$ 82,674

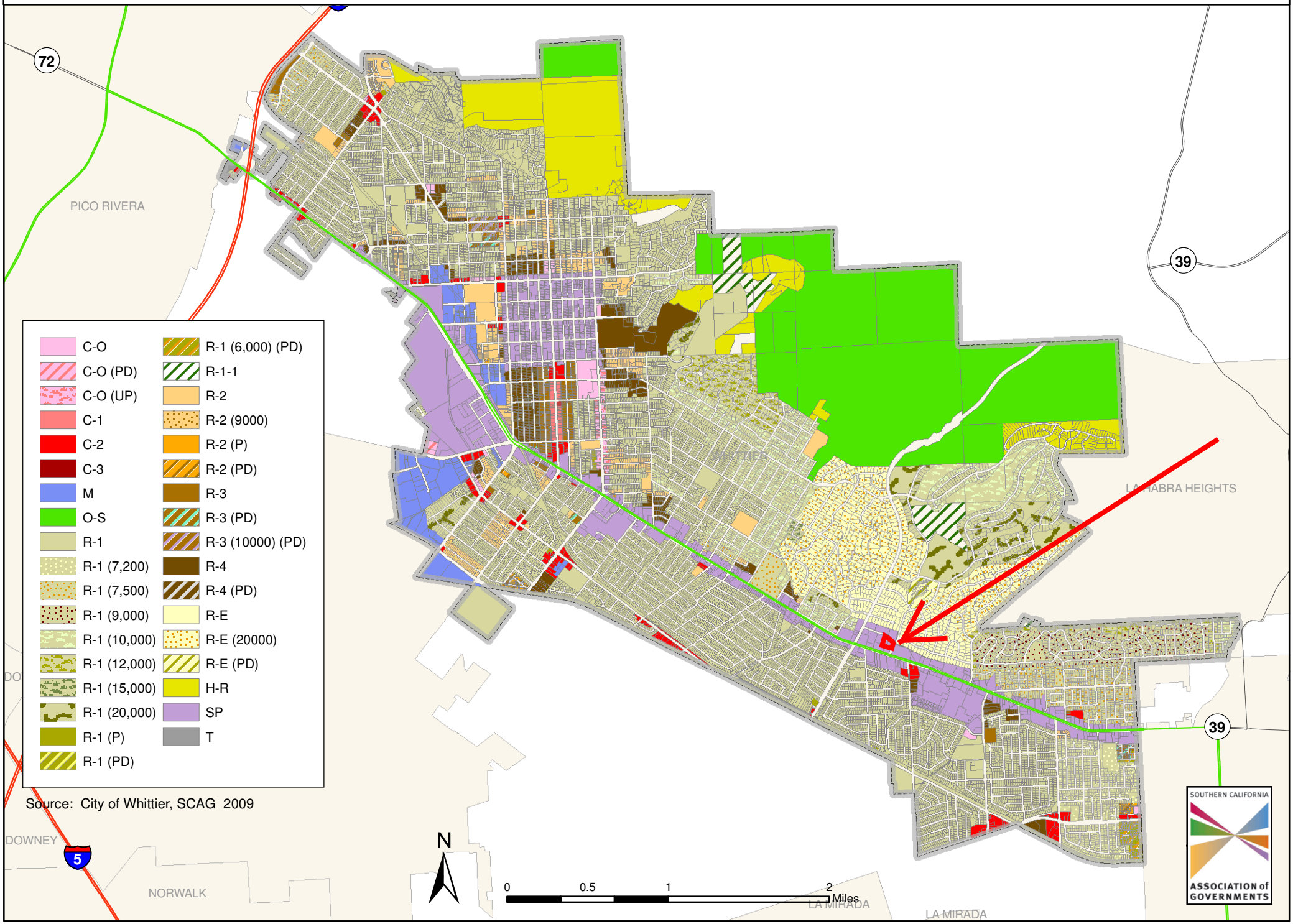
Bill Number	Bill Type	Bill Status	Date to Auditor	Recording Date	Total Value	Land Value	Improvement Value
2170000	R	A	06/26/2017	12/18/2003	$ 823,512	$ 742,459	$ 81,053
2160000	R	A	07/05/2016	12/18/2003	$ 807,365	$ 727,901	$ 79,464
2150000	R	A	06/23/2015	12/18/2003	$ 795,239	$ 716,968	$ 78,271
2140000	R	A	06/24/2014	12/18/2003	$ 779,662	$ 702,924	$ 76,738
2130000	R	A	06/25/2013	12/18/2003	$ 776,140	$ 699,748	$ 76,392
2120000	R	A	06/27/2012	12/18/2003	$ 760,923	$ 686,028	$ 74,895
2110000	R	A	07/06/2011	12/18/2003	$ 746,004	$ 672,577	$ 73,427

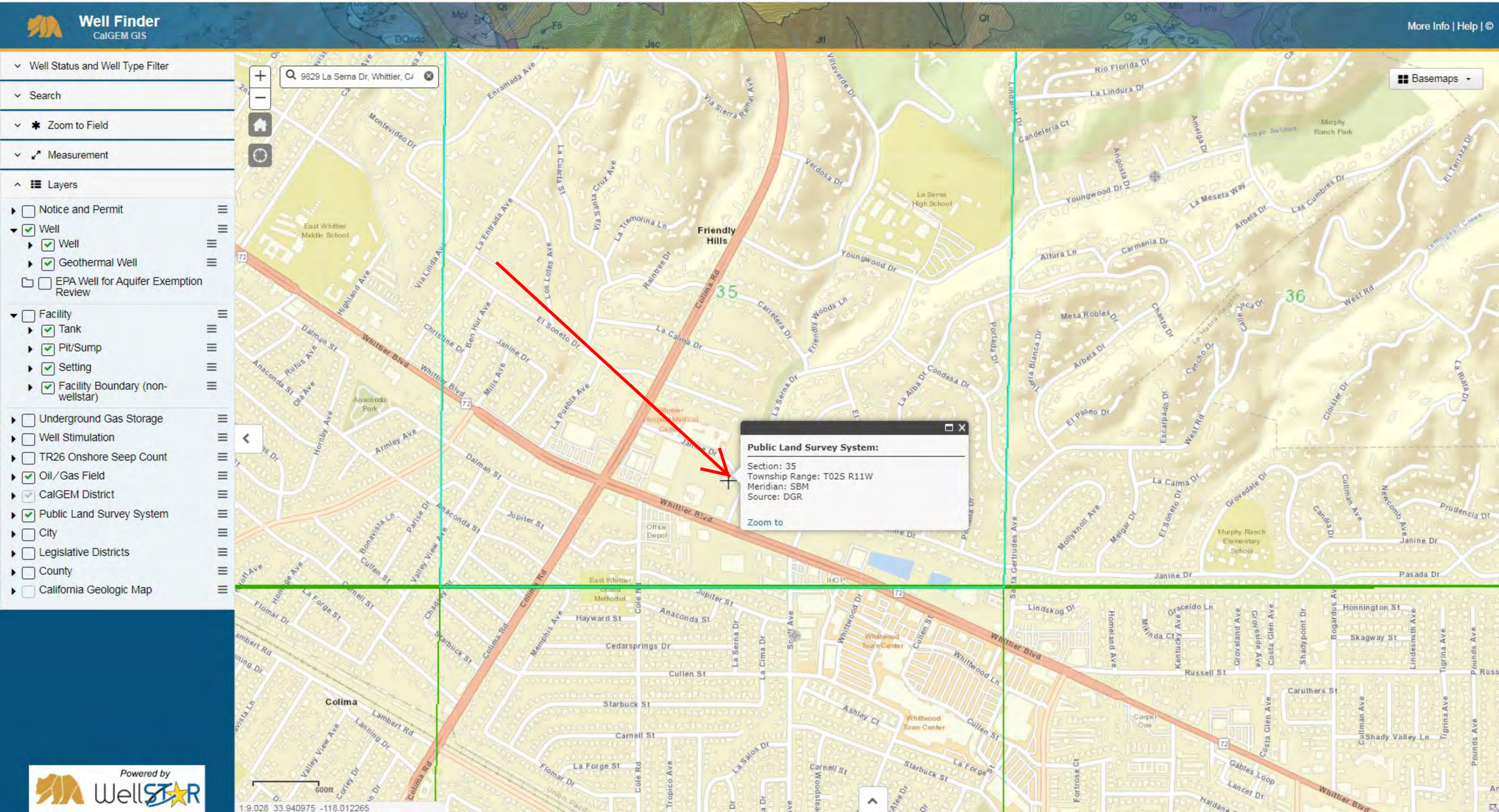
« 1 2 3 4 5 »

© 2017- Los Angeles County Assessor
Contact Us (https://assessor.lacounty.gov/contact-us/) | Disclaimer (disclaimer) | FAQ (faq)
PDB Effective Date: 02/09/2020

(https://facebook.com/LACAssessor) (https://www.twitter.com/LACASSESSOR) (https://www.linkedin.com/company/los-angeles-county-office-of-the-assessor) (https://youtube.com/u

Zoning Map for City of Whittier




Well Finder
CalGEM GIS
More Info | Help | ©
Well Status and Well Type Filter
Search
Zoom to Field
Measurement
Layers
Notice and Permit
Well
Well
Geothermal Well
EPA Well for Aquifer Exemption Review
Facility
Tank
Pit/Sump
Setting
Facility Boundary (non-wellstar)
Underground Gas Storage
Well Stimulation
TR26 Onshore Seep Count
Oil/Gas Field
CalGEM District
Public Land Survey System
City
Legislative Districts
County
California Geologic Map
9829 La Serna Dr, Whittier, CA
Basemaps
Public Land Survey System:
Section: 35
Township Range: T02S R11W
Meridian: SBM
Source: DGR
Zoom to
Friendly Hills
Colima
Whittier Blvd
Colima Rd
35
36
Powered by WellSTAR
600ft
1:9,028 33.940975 -118.012265

WellSTAR Mapping
Quick Reference Card

WellSTAR Mapping Tool

Layers	Select data layers to display on the map.
Zoom to Field	Select from a list of Oil and Gas fields in California.
Search	Search a data layer by attribute or by shape. Make record selections for export
Measurement	Measure an area or distance. Find GIS coordinates.
Print	Print the map that is currently displayed.

Layers
- Displays and hides data layers.
- Some layers only display when the map is scaled appropriately.
- Check boxes are used to turn data on and off.
- Additional info about that layer is available, including the ability to manage sub-levels of the data layer.
- Provides additional options about the data layer and displays the symbol legend for the associated data layer.
- Change the draw order of the data layers.
- Turns off or on all data sub-layers
- Zooms to Layer
- Set data layer display transparency by dragging slider left or right
- View the Metadata for the data layer

Measurement
Measure area:
- Choose a unit of measurement.
- Click on the map to select an area.
- Double click to complete the area selection.

Measure distance:
- Choose a unit of measurement.
- Click on the map to select a starting point. Add as many way points as desired.
- Double click to complete the area selection.

GIS location of a point:
- Click location to view coordinates.

Zoom to Field
- Select from a list of all Oil and Gas fields in California, including abandoned fields.
- Map zooms to selected field

Search
By Attribute:
- Select a layer to search with. Then, refine your search in the box below to search. (Ex. When searching the Well layer, API number is required).
- A spatial filter can be user to limit the search to a specific area of the map.
- The results of the search can be added to the selected objects grid at the bottom of the page.

By Shape:
- Select a layer to search. Then choose a tool to draw a selection area on the map.
- If desired, set a buffer around the selected area to find all objects within a set distance.
- The results of the search can be added to the selected objects grid at the bottom of the page.
- Click “Search” to update search results.
- Click “Stop Drawing” to end selection.

Print
- Print the current map view.
- Select layout and format.

Basic Well Symbols

Well Status or Type	Symbol
Active	
New	
Idle	
Plugged	
Unknown	
Canceled	
Oil, Gas	
Dry Gas	
Injector	
Cyclic Steam	
Gas Storage	
Observation	O
Water Source	W
Multi	M
Unknown	?

Export
Selected Wells, facilities and projects can be exported to Excel or to a CSV file containing comma separated values.

Zoom
- Zoom to selected records, or to a specific record in the table.

Clear
- Clears the selected values from the selection table.

Tip: a new selection table will be created for each type of feature selected for example one for wells, and one for projects. Navigate between these tables by clicking on the table above the table.

9829 La Serna Drive

9829 La Serna Drive

Whittier, CA 90605

Inquiry Number: 5947854.3

January 24, 2020

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

01/24/20

Site Name:

9829 La Serna Drive
9829 La Serna Drive
Whittier, CA 90605
EDR Inquiry # 5947854.3

Client Name:

Smith Emery GeoServices
781/791 East Washington Blvd
Los Angeles, CA 90021
Contact: Ayesha Syeda

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Smith Emery GeoServices were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 9064-4E2C-B460

PO # NA

Project NA

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 9064-4E2C-B460

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

Smith Emery GeoServices (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT. Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2020 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

9829 La Serna Drive

9829 La Serna Drive

Whittier, CA 90605

Inquiry Number: 5947854.5

January 24, 2020

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

01/24/20

Site Name:

9829 La Serna Drive
9829 La Serna Drive
Whittier, CA 90605
EDR Inquiry # 5947854.5

Client Name:

Smith Emery GeoServices
781/791 East Washington Blvd
Los Angeles, CA 90021
Contact: Ayesha Syeda

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.

Search Results:

Year	Scale	Details	Source
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
2002	1"=500'	Flight Date: June 11, 2002	USDA
1994	1"=500'	Acquisition Date: June 01, 1994	USGS/DOQQ
1990	1"=500'	Flight Date: September 06, 1990	USDA
1989	1"=500'	Flight Date: August 22, 1989	USDA
1981	1"=500'	Flight Date: February 21, 1981	EDR Proprietary Brewster Pacific
1972	1"=500'	Flight Date: November 24, 1972	EDR Proprietary Brewster Pacific
1970	1"=500'	Flight Date: February 18, 1970	EDR Proprietary Brewster Pacific
1963	1"=500'	Flight Date: February 28, 1963	USGS
1954	1"=500'	Flight Date: August 31, 1954	USDA
1952	1"=500'	Flight Date: November 18, 1952	USDA
1947	1"=500'	Flight Date: June 18, 1947	FAIR
1938	1"=500'	Flight Date: May 23, 1938	USDA
1928	1"=500'	Flight Date: January 01, 1928	FAIR

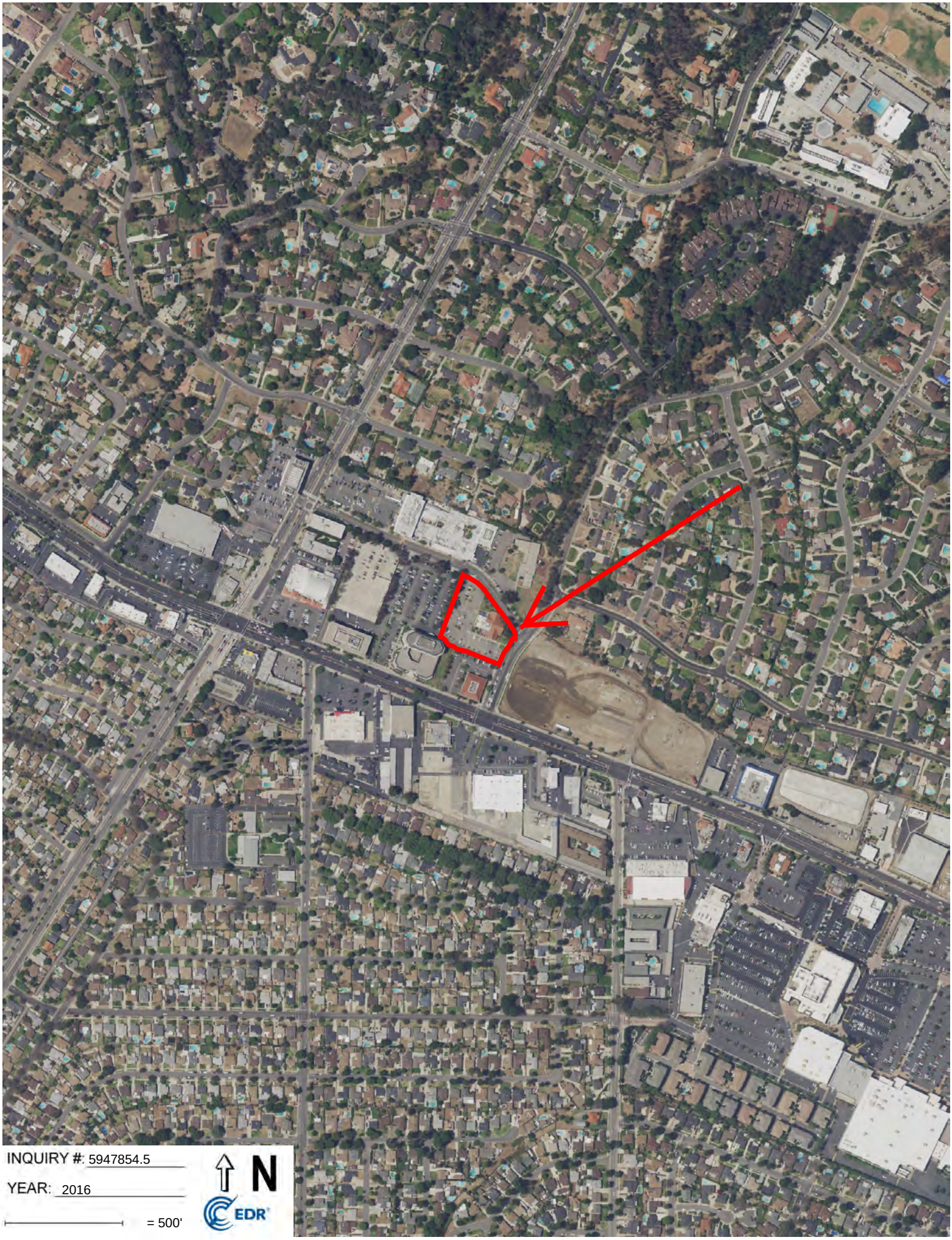
When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT. Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

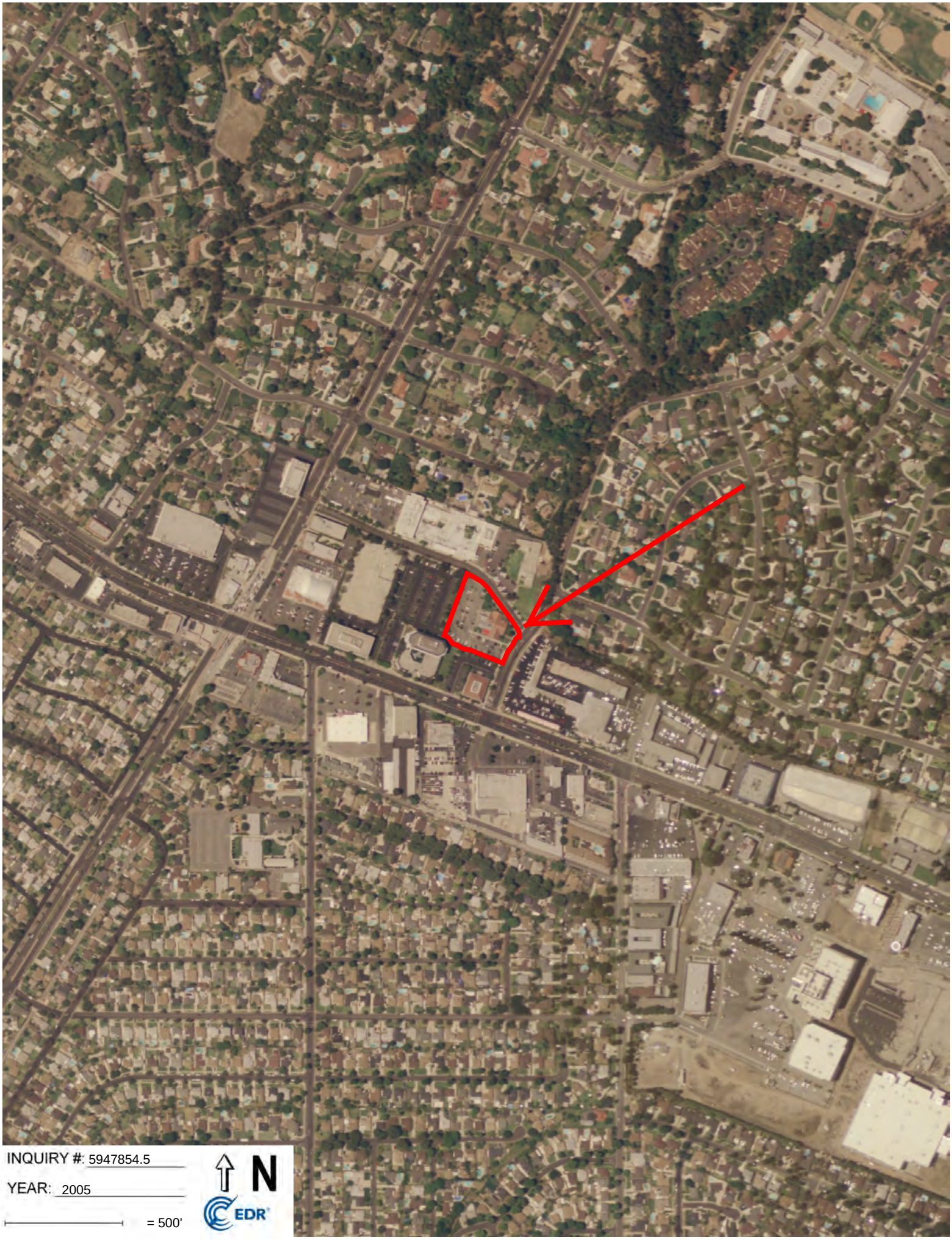
Copyright 2020 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.


INQUIRY #: 5947854.5
YEAR: 2016
= 500'
N
EDR

INQUIRY #: 5947854.5
YEAR: 2012
= 500'
N
EDR

INQUIRY #: 5947854.5
YEAR: 2009
= 500'
N
EDR

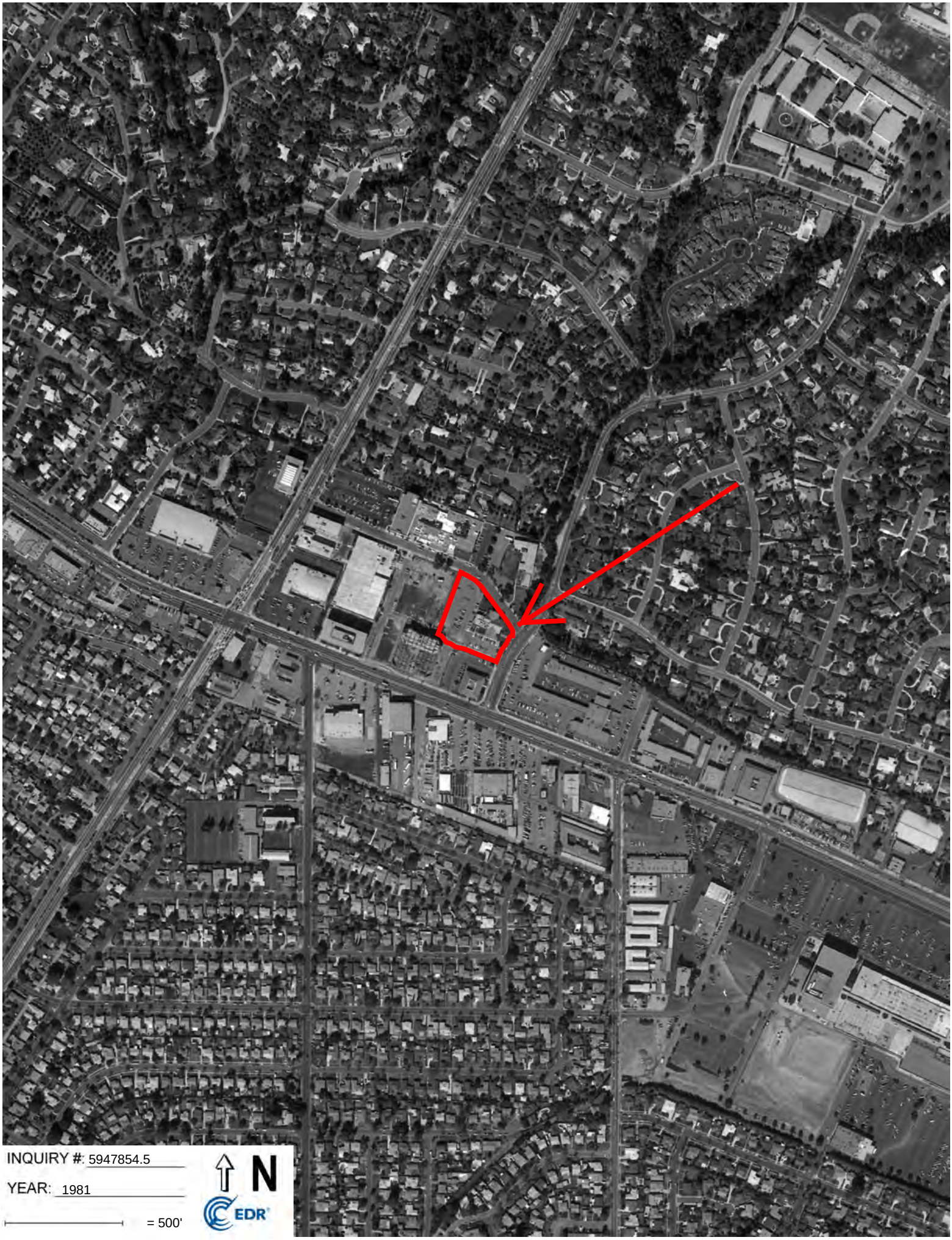

INQUIRY #: 5947854.5
YEAR: 2005
= 500'
N
EDR

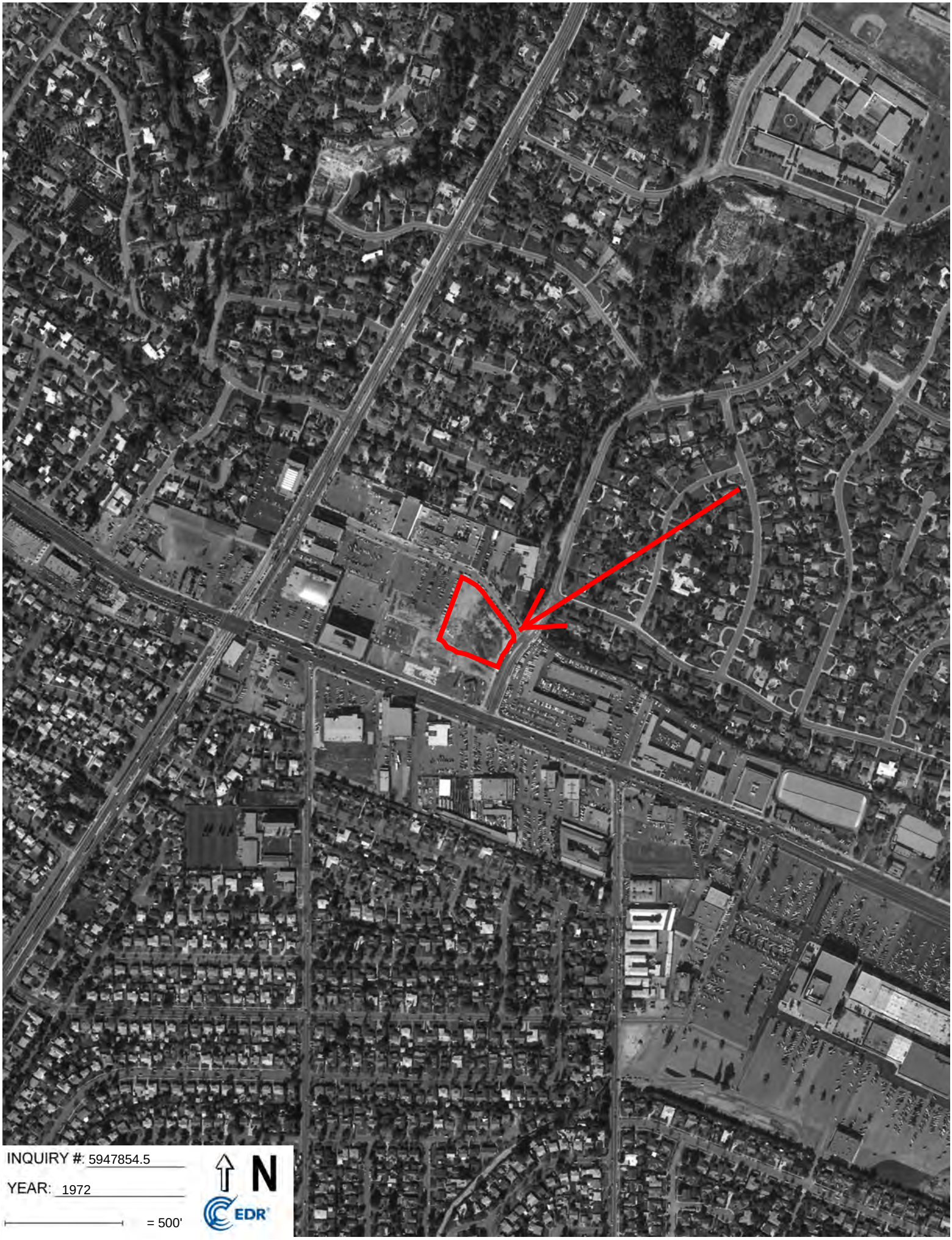
INQUIRY #: 5947854.5
YEAR: 2002
= 500'
N
EDR

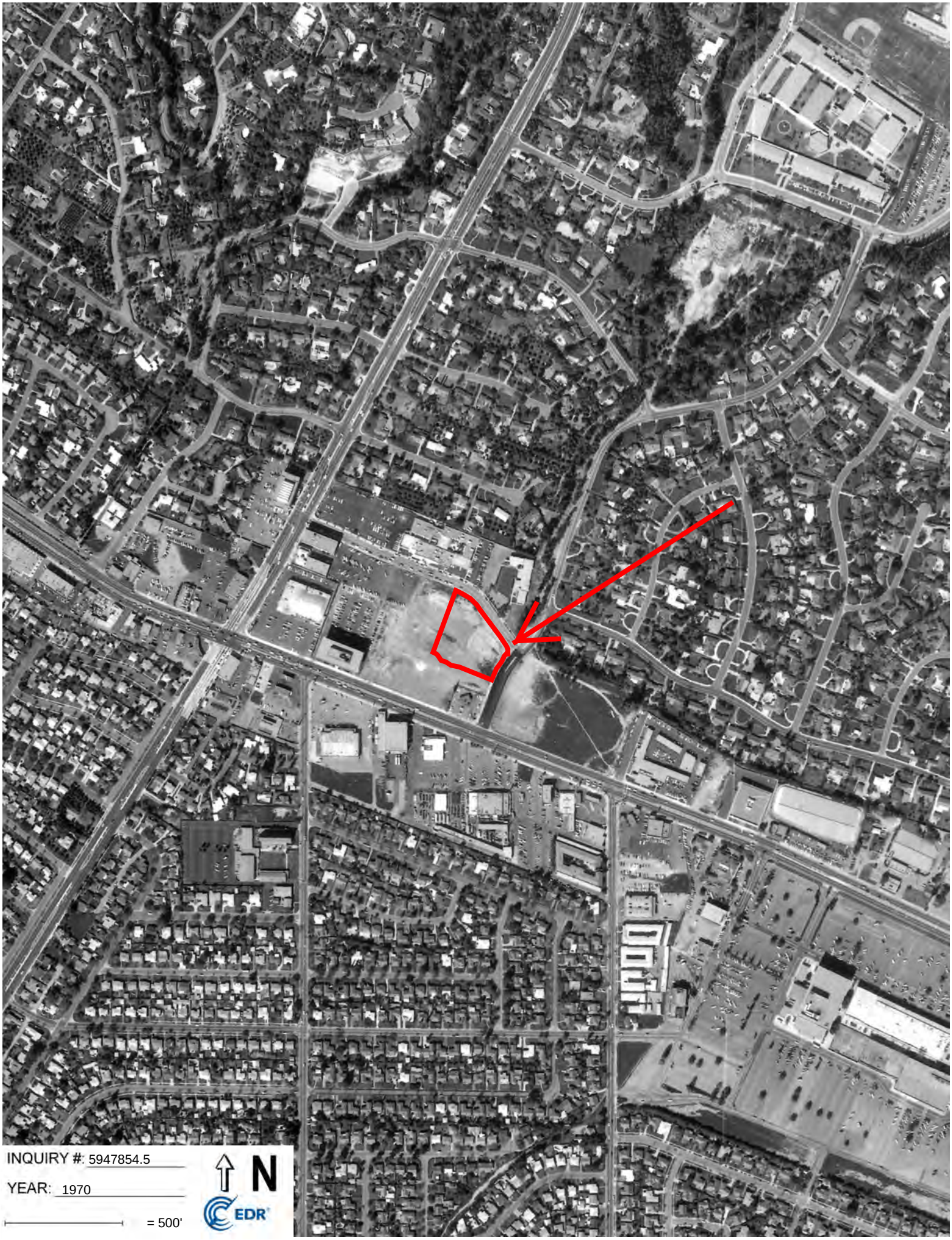
INQUIRY #: 5947854.5
YEAR: 1994
= 500'
N
EDR

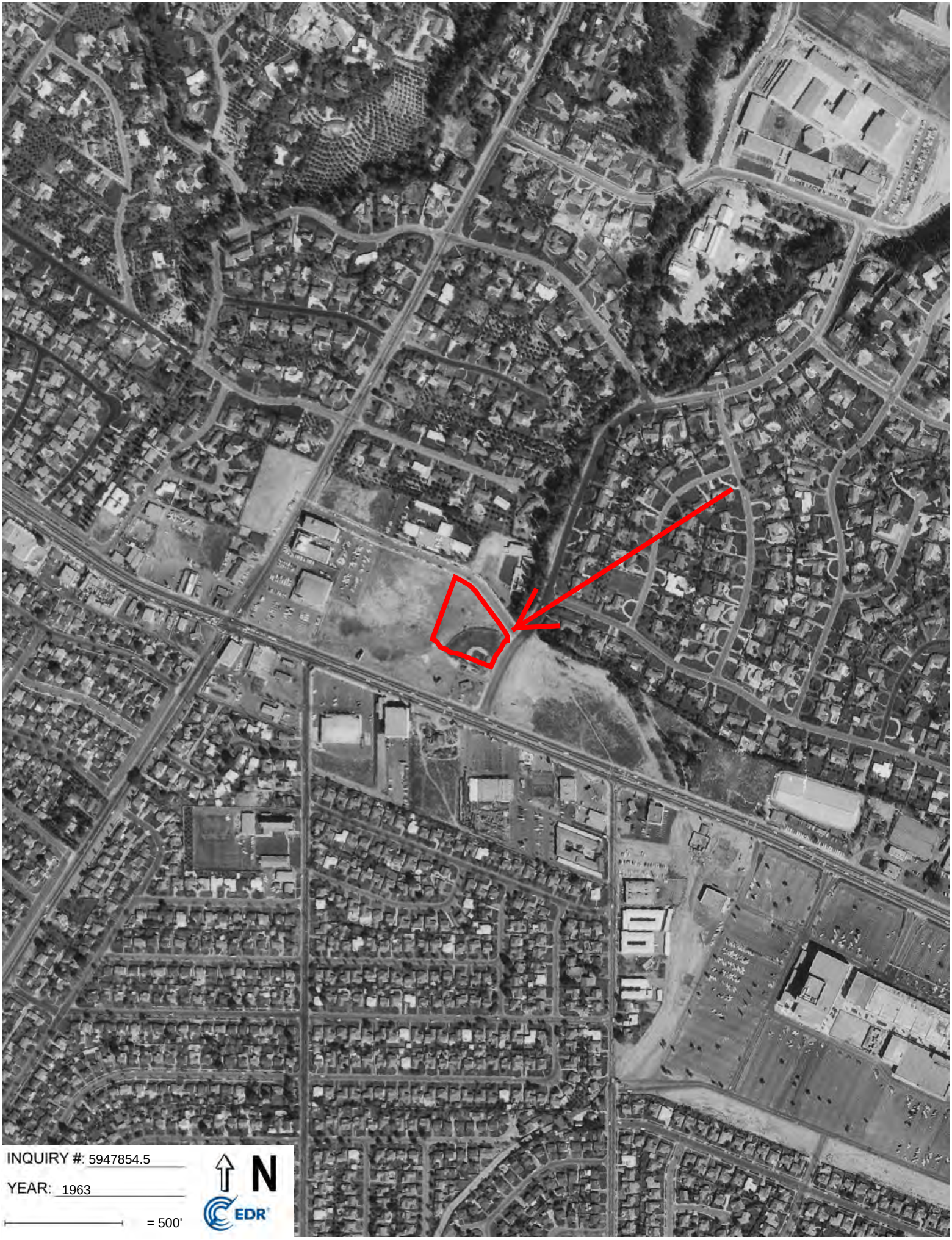
INQUIRY #: 5947854.5
YEAR: 1990
= 500'
N
EDR

INQUIRY #: 5947854.5
YEAR: 1989
= 500'
N
EDR

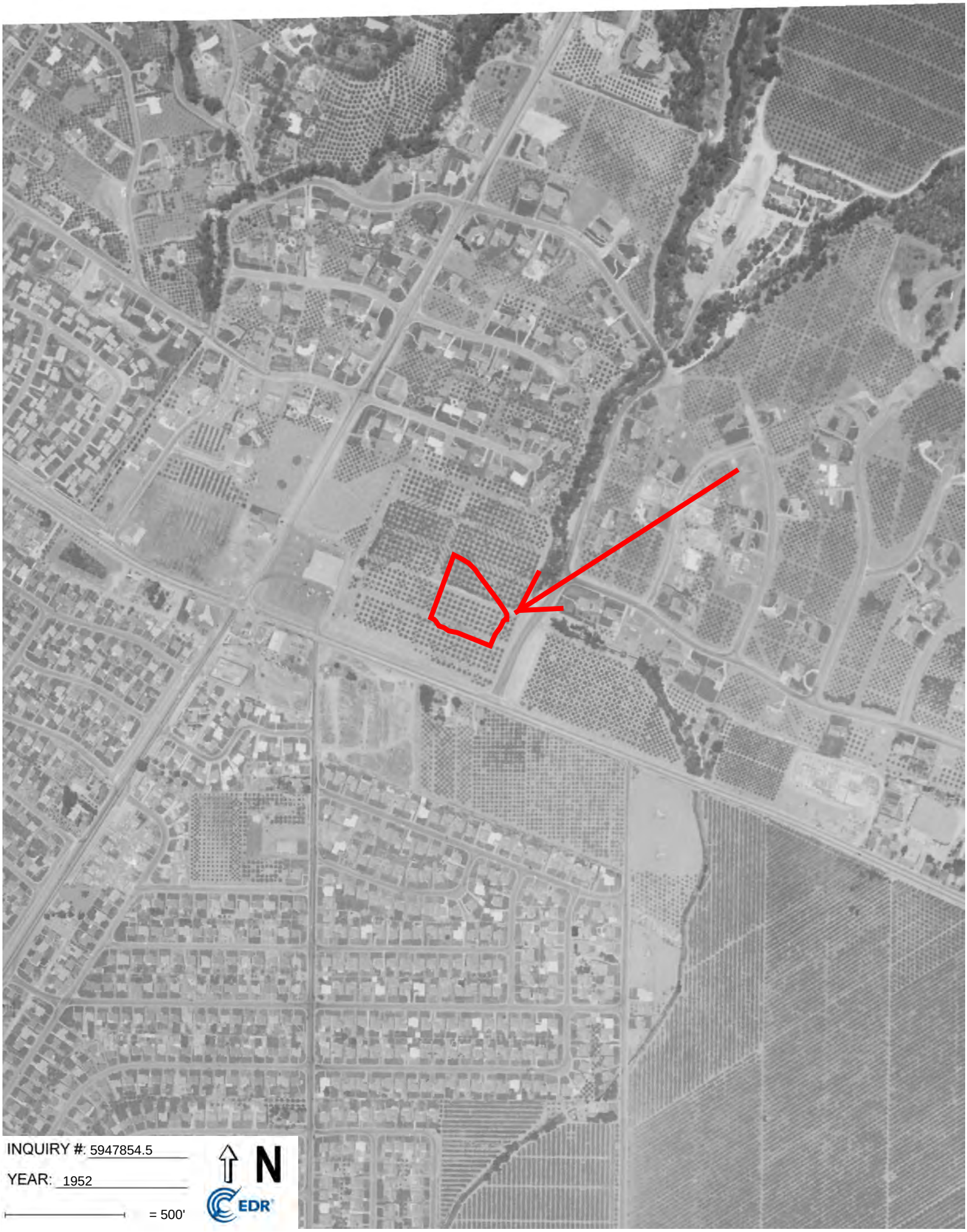

INQUIRY #: 5947854.5
YEAR: 1981
= 500'
N
EDR

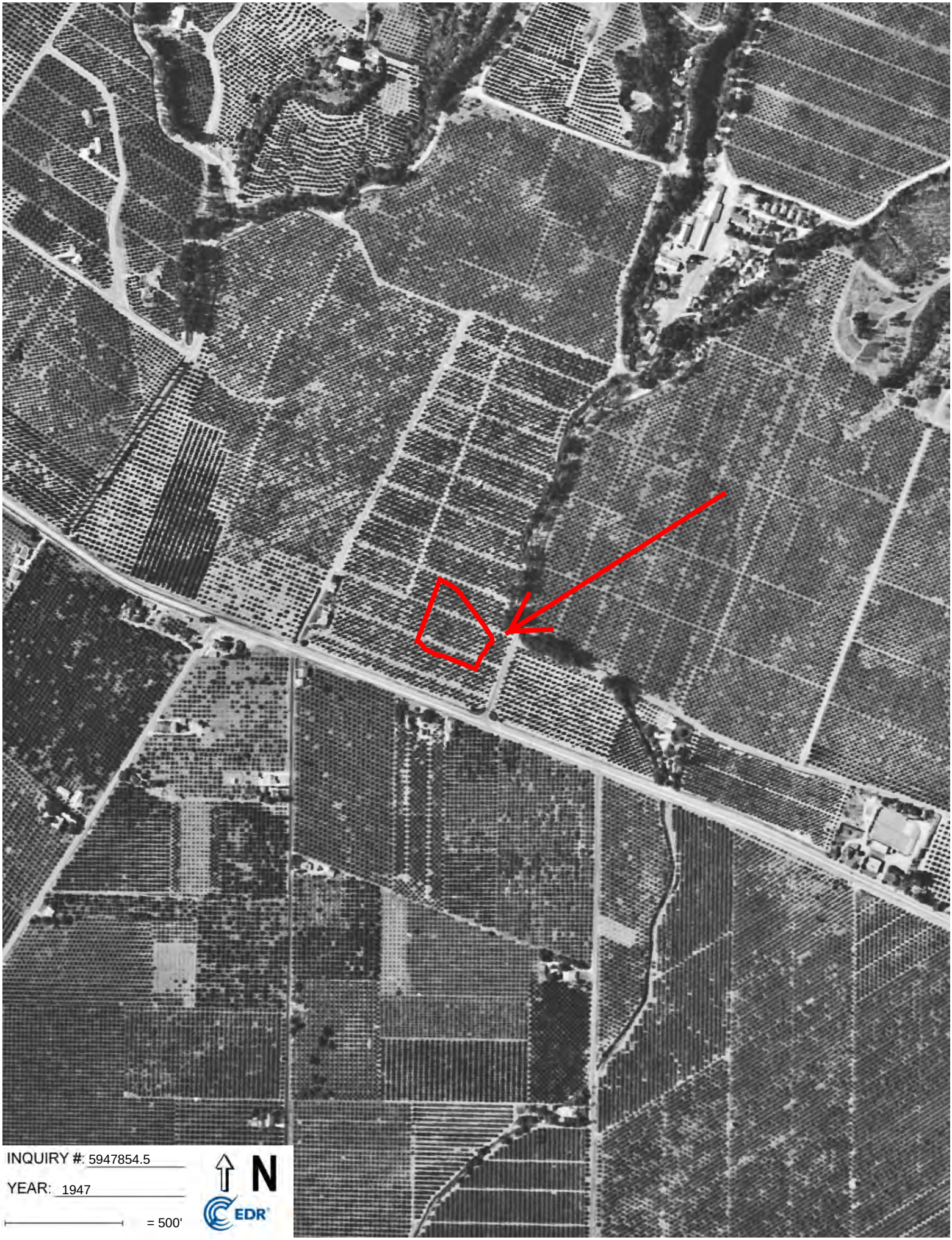

INQUIRY #: 5947854.5
YEAR: 1972
= 500'
N
EDR

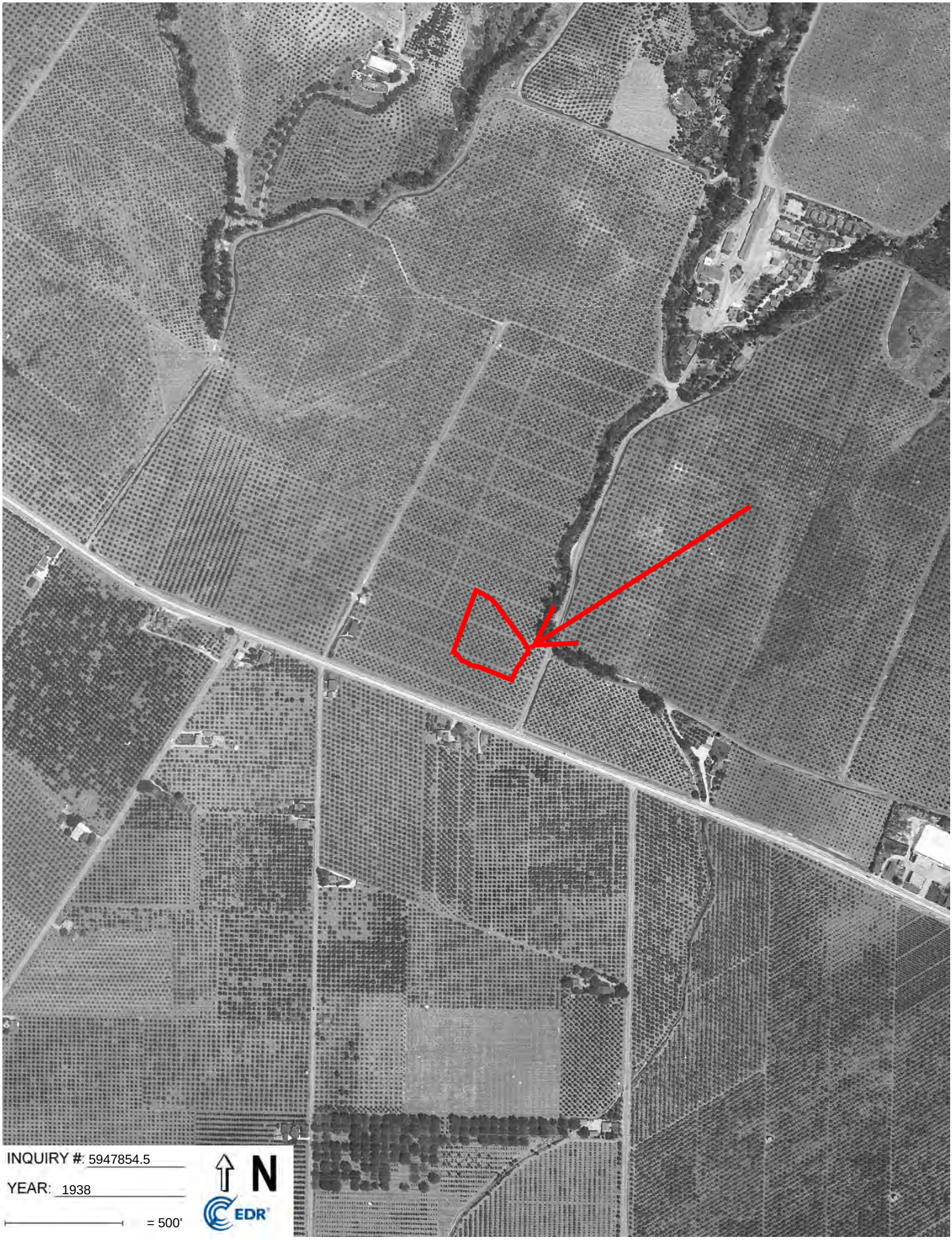

INQUIRY #: 5947854.5
YEAR: 1970
= 500'
N
EDR

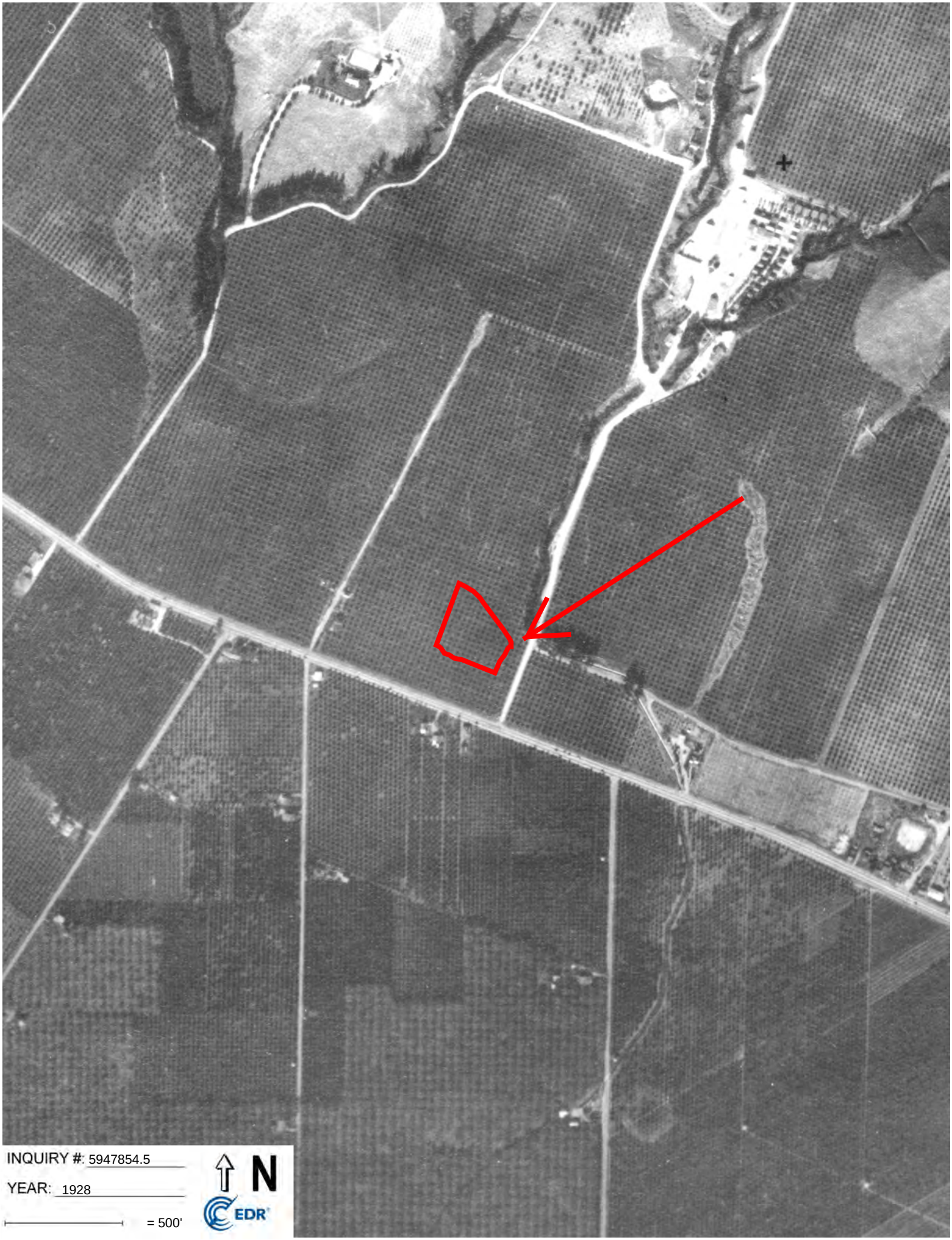

INQUIRY #: 5947854.5
YEAR: 1963
= 500'
N
EDR

INQUIRY #: 5947854.5
YEAR: 1954
= 500'
N
EDR


INQUIRY #: 5947854.5
YEAR: 1952
= 500'
N
EDR


INQUIRY #: 5947854.5
YEAR: 1947
= 500'
N
EDR


INQUIRY #: 5947854.5
YEAR: 1938
= 500'
N
EDR



INQUIRY #: 5947854.5

YEAR: 1928

= 500'

N

EDR

9829 La Serna Drive
9829 La Serna Drive
Whittier, CA 90605

Inquiry Number: 5947854.6
January 29, 2020

The EDR-City Directory Abstract

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OR DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction orforecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2017 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc. or its affiliates is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

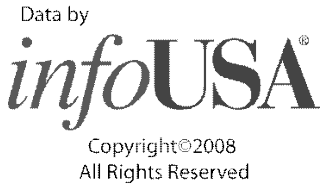
DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

EDR is licensed to reproduce certain City Directory works by the copyright holders of those works. The purchaser of this EDR City Directory Report may include it in report(s) delivered to a customer. Reproduction of City Directories without permission of the publisher or licensed vendor may be a violation of copyright.



RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2011	Haines Criss-Cross Directory	X	X	X	-
2006	Haines Criss-Cross Directory	-	X	X	-
2000	Haines Criss-Cross Directory	X	X	X	-
1995	Haines Criss-Cross Directory	X	X	X	-
1991	Haines Criss-Cross Directory	X	X	X	-
1986	Haines Criss-Cross Directory	X	X	X	-
1980	Haines Criss-Cross Directory	X	X	X	-
1975	Haines Criss-Cross Directory	-	X	X	-
1972	Luskey City Directory	-	X	X	-
1966	Luskey City Directory	-	X	X	-
1962	Polk's City Directory	-	X	X	-

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

9829 La Serna Drive
Whittier, CA 90605

FINDINGS DETAIL

Target Property research detail.

La Serna Drive

9829 La Serna Drive

Year	*Uses*	*Source*
2011	Marie Cllndrs Rstrnts & Bkrs	Haines Criss-Cross Directory
2000	Marie Callenders	Haines Criss-Cross Directory
1995	Marie Callenders	Haines Criss-Cross Directory
1991	Marie Callenders	Haines Criss-Cross Directory
1986	Marie Callenders Pie	Haines Criss-Cross Directory
1980	Marie Callenders Fh	Haines Criss-Cross Directory

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

Janine Drive

15151 Janine Drive

Year	Uses	Source
2011	No Return	Haines Criss-Cross Directory
2000	Cytology Services Group	Haines Criss-Cross Directory
	Tel Med Whittr Hosp	Haines Criss-Cross Directory
1995	Commercial Building (5 occupants)	Haines Criss-Cross Directory
1991	Commercial Building (7 occupants)	Haines Criss-Cross Directory
1986	Commercial Building (6 occupants)	Haines Criss-Cross Directory
1980	Commercial Building (6 occupants)	Haines Criss-Cross Directory
1975	Commercial Building (5 occupants)	Haines Criss-Cross Directory
1972	Whittier Hospital	Luskey City Directory
1966	Whittier Hospital	Luskey City Directory
1962	Whit Hosp	Polk's City Directory

15215 Janine Drive

Year	Uses	Source
2011	Luthrn Chrchs Shphrd Of The	Haines Criss-Cross Directory
	Luthrn Churches Shepherd Cntr	Haines Criss-Cross Directory
	Shepherd Center Preschool	Haines Criss-Cross Directory
2006	Shepherd Center Preschool	Haines Criss-Cross Directory
	Shepherd Of The Hills Lutheran	Haines Criss-Cross Directory
2000	Lutheran Church Shepherd	Haines Criss-Cross Directory
	Shepherd Center Preschool	Haines Criss-Cross Directory
	Shepherd Of The Hills Lutheran	Haines Criss-Cross Directory
1995	Lutheran Church Shepherd	Haines Criss-Cross Directory
	Shepherd Center	Haines Criss-Cross Directory
	Shepherd Hills Lutheran	Haines Criss-Cross Directory
1991	Lutheran Church Shepherd	Haines Criss-Cross Directory
	Shepherd Center	Haines Criss-Cross Directory
	Shepherd Lutheran	Haines Criss-Cross Directory
1986	Lutheran Church Shepherd	Haines Criss-Cross Directory
	Shepherd Center	Haines Criss-Cross Directory
	Shepherd Lutheran	Haines Criss-Cross Directory

FINDINGS

Year	Uses	Source
1980	Lutheran Ch Whittr	Haines Criss-Cross Directory
	Shepherd Of Hl Luth	Haines Criss-Cross Directory
1975	Luth Ch Shphrd Hlls	Haines Criss-Cross Directory
1972	Garden Nursery Schl	Luskey City Directory
	Shephrd & Hl Luthrn Ch	Luskey City Directory
1966	Garden Nursery Schl	Luskey City Directory
	Shephrd Hl Luthrn Ch	Luskey City Directory
1962	Shepherd Of THe Hills Luth Ch	Polk's City Directory

La Serna Drive

10113 La Serna Drive

Year	Uses	Source
2011	No Return	Haines Criss-Cross Directory
2006	Residential	Haines Criss-Cross Directory
2000	Residential	Haines Criss-Cross Directory
1995	Residential	Haines Criss-Cross Directory
1991	No Return	Haines Criss-Cross Directory
1986	No Return	Haines Criss-Cross Directory
1980	No Return	Haines Criss-Cross Directory
1975	No Return	Haines Criss-Cross Directory
1972	Residential	Luskey City Directory
1962	Residential	Polk's City Directory

9804 La Serna Drive

Year	Uses	Source
2011	Residential	Haines Criss-Cross Directory
2006	Residential	Haines Criss-Cross Directory
2000	Residential	Haines Criss-Cross Directory
1995	Residential	Haines Criss-Cross Directory
1991	Residential	Haines Criss-Cross Directory
1986	Promocomm Communc	Haines Criss-Cross Directory
	Residential	Haines Criss-Cross Directory
1980	Promocomm Communc	Haines Criss-Cross Directory
	Residential	Haines Criss-Cross Directory
1975	Residential	Haines Criss-Cross Directory
1972	Residential	Luskey City Directory
1966	Residential	Luskey City Directory
1962	Residential	Polk's City Directory

FINDINGS

Whittier Boulevard

15141 Whittier Boulevard

Year	*Uses*	*Source*
2011	Commercial Building (28 occupants)	Haines Criss-Cross Directory
2006	Commercial Building (40 occupants)	Haines Criss-Cross Directory
2000	Commercial Building (40 occupants)	Haines Criss-Cross Directory
1995	Commercial Building (33 occupants)	Haines Criss-Cross Directory
1991	Commercial Building (36 occupants)	Haines Criss-Cross Directory
1986	Commercial Building (11 occupants)	Haines Criss-Cross Directory

15175 Whittier Boulevard

Year	*Uses*	*Source*
2011	Banco Popular	Haines Criss-Cross Directory
	Starbucks	Haines Criss-Cross Directory
2006	Quaker Cty Fdrl Svngs Loan Asn	Haines Criss-Cross Directory
	Starbucks	Haines Criss-Cross Directory
2000	Quaker City Federal Savings & Loan	Haines Criss-Cross Directory
1995	Great Western Bank Svg	Haines Criss-Cross Directory
1991	Great Western Bank Svg	Haines Criss-Cross Directory
1986	Great Western Saving	Haines Criss-Cross Directory
1980	Great Western Saving	Haines Criss-Cross Directory
1975	No Return	Haines Criss-Cross Directory
1972	Friendly Hills Shell	Luskey City Directory
1966	Friendly Hills Shell	Luskey City Directory
1962	Friendly Shell Serv	Polk's City Directory

FINDINGS

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
10113 La Serna Drive	1966
15130 Janine Drive	2011, 2006, 2000, 1995, 1991, 1986, 1980, 1975, 1972, 1966, 1962
15141 Whittier Boulevard	1980, 1975, 1972, 1966, 1962
15151 Janine Drive	2006
15175 Whittier Boulevard	No Years Found
15215 Janine Drive	No Years Found
9804 La Serna Drive	No Years Found

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
9829 La Serna Drive	2006, 1975, 1972, 1966, 1962

BUILDING AND PLANNING USE ONLY

Use Zone	Fire Zone	Total Req'd Parking	Req'd Yards Front	Rear	Sides
C-2	2	*139	E 40'	W 5'	40'

Type Const.	Group	Stories	Occ. Load	Ex. Use
V-N	B-3	1	298	—

# Var. or P.P.	Valuation of Job	Plan No.
CUP 77-03	$352,000.00	8101

RESTAURANT = 8973 #
PATIO = 864 #
9837 #

Remarks

9-13-77 FORMS & FOOTINGS - PERIMETER OF BUILDING & INTERIOR FOOTINGS. SB
9-21-77 OK TO GROUT SB
10-21-77 MESH & MEMBRANE OK SB
11-29-77 SHEAR WALL NAILING @ 2 & 3 TYPE SB
12-14-77 SHEATHING @ FLAT ROOF ONLY
OK TO WRAP WEST WING ONLY SB
1-20-78 REMAINDER SHEATHING OK SB
1-24-78 STEEL @ PATIO COLUMNS SB
1-27-78 Conc. SB
2-14-78 Drywall Nailing SB
2-22-78 - NEED LATH PT SB

Rough	Final
1-30-78 SB	6-20-78 SB

Plan	No.
Check Fee 432.25	86415
Plan	No.
Check Fee	

Job Address: × 9829 LA SERNA DR

DEPT. OF BUILDING **BUILDING** WHITTIER, CALIF.

Lot Blk. 1 & 2 Tract 7696

Description of Work
NEW RESTAURANT
SINGLE STORY - B-3
OCCUPANCY TYPE II N
FIRE SPRINKLERED.

Property Owner JOHN D. LUSK & SON
Owner's Address PO BOX 2140
NEWPORT BCH Phone 213-726-6841
Lender
Address
Architect PHILIP S. TILDEN
State Lic. No. C7441 Phone 714-547-0694
Engineer —
State Lic. No. — Phone
Contractor OWNER
Contractor's Address
Phone
City Lic. No. — State Lic. No. —

I hereby acknowledge that I have read this application and state the above is correct and agree to comply with all ordinances and State laws. I hereby certify that I am properly registered and/or licensed as required by the City of Whittier and/or State of California, or that I am the legal owner of the above described property, and I certify that in the performance of the work for which this permit is issued I shall not employ any person in violation of the workmen's compensation laws of California.

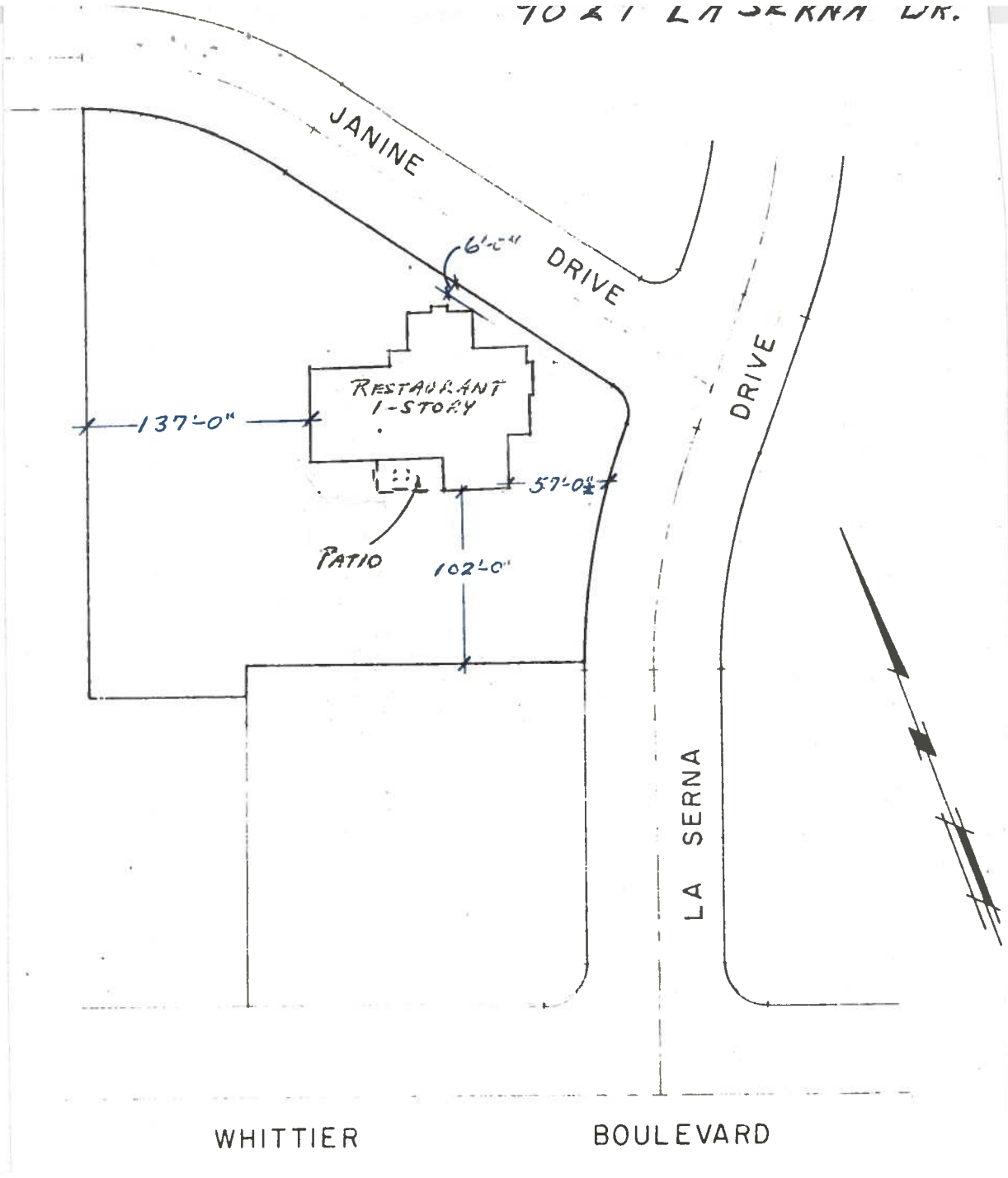
Signature of Permittee × Philip S. Tilden

Permit Fee	WHEN VALIDATED THIS IS YOUR PERMIT
665.00	+ 24.64 State Tax

FEB-28-77 9433 CK 86415 B — 1 432.25
89066 9/12/77 665.00 BF
1000204 9/12/77 24.64 MG

No. 89066

7021 LA SERNA DR.



DO NOT SEPARATE

DECLARATIONS

The Declarations below are mandated by the State of California under Section 19825 of The Health and Safety Code.

– APPLICANT –

CONTRACTOR: FILL IN DECLARATION 1, 3, 4 AND 5

OWNER: FILL IN DECLARATION 2, 4 AND 5

1. LICENSED CONTRACTOR'S DECLARATION

I hereby affirm that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

License Class C-45 License No. 457406

Date 7.15.02 Contractor Signtech

6/30/04

2. OWNER-BUILDER DECLARATION

I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5, California Business and Professions Code: Any City which requires a permit to construct, alter, improve, demolish or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is a licensed contractor pursuant to the provisions of the Contractor's License Law (Ch. 9 (Commencing with Sec. 7000) of Div. 3 of the B. & P. C.) or that he is exempt therefrom and the basis for the alleged exemption. Any violations of Sec 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500.00).):

❒ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, B. & P. C.: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale.).

❒ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, B. & P. C.: The Contractors License Law does not apply to an owner of contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License Law.).

❒ I am exempt under Sec. _____, B. & P. C. for this reason:

Date _____ Owner _____

3. WORKER'S COMPENSATION DECLARATION

I hereby affirm under penalty of perjury one of the following declarations:

____ I have and will maintain a certificate to self-insure for workers' compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

✓ I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier State Comp

Policy Number 478-00 Unit 21

(The following section need not be completed if permit valuation is $100 or less)

____ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the worker's compensation laws of California, and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Date: 7.15.02 Applicant: J. H. Symons

WARNING: FAILURE TO SECURE WORKERS' COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS ($100,000), IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

4. CONSTRUCTION LENDING AGENCY

I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued. (Section 3097, Civil Code).

Lender's Name _____

Lender's Address _____

5. I certify that I have read this application and state that the above information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this city to enter upon the above-mentioned property for inspection purposes.

J. H. Symons — Signature of Applicant or Agent — 7.15.02 — Date

IMPORTANT

Application is hereby made to the Director of Building and Safety for a permit subject to the conditions and restrictions hereon.

1. Each person upon whose behalf this application is made and each person at whose request for whose benefit work is performed under or pursuant to any permit issued as a result of this application agrees to and shall, indemnify and hold harmless the City of Whittier, its officers, agents and employees.
2. Any permit issued as a result of this application becomes null and void if work is not commenced within ONE HUNDRED EIGHTY - (180) DAYS from date of issuance of such permit.

BUILDING AND PLANNING USE ONLY

Var. or C.U.P.	Total Req'd Parking	Req'd Yards Front	Rear	Sides

Use Zone	Type Const.	Group	Stories	Occ. Load	Ex. Use
C-2	Sign				

Valuation of Job: $6,000.00 — Plan No.:

7-6-02 Need Planning Dept approval for Fire ⊘

7-7-02 Planning Dept Letter to Contr.

WILL THE APPLICANT OR FUTURE BUILDING OCCUPANT HANDLE A HAZARDOUS MATERIAL OR A MIXTURE CONTAINING A HAZARDOUS MATERIAL EQUAL TO OR GREATER THAN THE AMOUNTS SPECIFIED ON THE HAZARDOUS MATERIALS INFORMATION GUIDE.

YES [ ] NO [ ]

WILL THE INTENDED USE OF THE BUILDING BY THE APPLICANT OR FUTURE BUILDING OCCUPANT REQUIRE A PERMIT FOR CONSTRUCTION OR MODIFICATION FROM THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD) SEE PERMITTING CHECKLIST FOR GUIDELINES

YES [ ] NO [ ]

I HAVE READ THE HAZARDOUS MATERIALS INFORMATION GUIDE AND THE SCAQMD PERMITTING CHECKLIST. I UNDERSTAND MY REQUIREMENTS UNDER THE LOS ANGELES COUNTY CODE. TITLE 2. CHAPTER 2.28. SECTIONS 2.20.100 THROUGH 2.20.140 CONCERNING HAZARDOUS MATERIALS REPORTING AND FOR OBTAINING A PERMIT FROM THE SCAQMD

OWNER OR AGENT

Plan Check Fee 57.92	No. 094549
Plan Check Fee	No.
Permit Fee 104.10	No. 094550
+State Tax 1.20	I or (II)
G. P. Update Fee 12.00	1000-341

Job Address: 9829 La Serna

CITY OF WHITTIER BUILDING PERMIT

Lot Block Tract

Description of Work: Install one internally illum. monument sign.

Property Owner: Marie Calenders

Owner's Address: Same as above City

Owner's Phone: 945.3471

Architect's Name

Address

Phone Regist. No.

Engineer's Name Regist. No.

CK AMT $ 242.78 CT000103810

Contractor's Name: Signtech

Address: 4444 Federal Blvd.

Phone: 619.527.6100

State Lic. No. 457406 City Lic. No. 00536

WHEN VALIDATED THIS IS YOUR PERMIT

ELECTRICAL PERMIT $32.50

TOTAL PAID $242.78

CHECK PAID: $242.78

TRANSACTION DATE 07/15/2002

Set Backs	Date	Foundation	Date
	7-5-02 ⊘		
Rough OK	Date	Final OK	Date
		7-4-02 ⊘	

DECLARATIONS

ne Declarations below are mandated by the State of California under Section 19825 of The Health and Safety Code.

— APPLICANT —
CONTRACTOR: FILL IN DECLARATION 1, 3, 4 AND 5
OWNER: FILL IN DECLARATION 2, 4 AND 5

LICENSED CONTRACTOR'S DECLARATION

hereby affirm that I am licensed under provisions of Chapter 9 ommencing with Section 7000) of Division 3 of the Business and ofessions Code, and my license is in full force and effect.

ense Class _____ License No. _____

te _____ Contractor _____

OWNER-BUILDER DECLARATION

hereby affirm that I am exempt from the Contractor's License Law r the following reason (Sec. 7031.5, California Business and Pro- sions Code: Any City which requires a permit to construct, alter, prove, demolish or repair any structure, prior to its issuance, also quires the applicant for such permit to file a signed statement that is a licensed contractor pursuant to the provisions of the Contractor's ense Law (Ch. 9 (Commencing with Sec. 7000) of Div. 3 of the & P. C.) or that he is exempt therefrom and the basis for the eged exemption. Any violations of Sec. 7031.5 by any applicant r a permit subjects the applicant to a civil penalty of not more than e hundred dollars ($500.00).):

☐ I, as owner of the property, or my employees with wages as ir sole compensation, will do the work, and the structure is not ended or offered for sale (Sec. 7044, B. & P. C.: The Contractor's ense Law does not apply to an owner of property who builds or proves thereon, and who does such work himself or through his rn employees, provided that such improvements are not intended or ered for sale. If, however, the building or improvement is sold hin one year of completion, the owner-builder will have the rden of proving that he did not build or improve for the purpose sale.).

☐ I, as owner of the property, am exclusively contracting with nsed contractors to construct the project (Sec. 7044, B. & P. C.: e Contractor's License Law does not apply to an owner of contracts r such projects with a contractor(s) licensed pursuant to the Con- ctor's License Law.).

☐ I am exempt under Sec._____, B. & P. C. for this reason:

te _____ Owner _____

2. WORKER'S COMPENSATION DECLARATION

I hereby affirm that I have a certificate of consent to self-insure or a certificate of worker's Compensation Insurance or a certified copy thereof. (Sec. 3800, Lab. C.).

Policy No. _____ Company _____

☐ Certified copy is hereby furnished.

☐ Certified copy is filed with the Department of Building & Safety.

Date _____ Applicant _____

CERTIFICATE OF EXEMPTION FROM WORKER'S COMPENSATION INSURANCE

I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California.

Date _____ Applicant _____

NOTICE TO APPLICANT: If, after making this Certificate of Exemption, you should become subject to the Work's Comp. provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked.

4. CONSTRUCTION LENDING AGENCY

I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3907, Civ. C.).

Lender's Name _____

Lender's Address _____

5.

I certify that I have read this application and state that the above information is correct. I agree to comply with all City, and State laws relating to the building construction, and hereby authorize representatives of this City to enter upon the above-mentioned property for inspection purposes.

Signature of Owner or Contractor ONLY Date

— IMPORTANT —

pplication is hereby made to the Superintendent of Building and Safety for a permit subject to the conditions and restrictions set forth on the nt and rear faces of this application.

1. Each person upon whose behalf this application is made and each person at whose request and for whose benefit work is performed under or pursuant to any permit issued as a result of this application agrees to and shall, indemnify and hold harmless the City of Whittier, its officers, agents and employees.

2. Any permit issued as a result of this application becomes null and void if work is not commenced within ONE HUNDRED EIGHTY (180) DAYS from date of issuance of such permit.

BUILDING AND PLANNING USE ONLY

Ver. or C.U.P.	Total Req'd Parking	Req'd Yards Front	Rear	Sides
C-77-03	144	40'-0"	5'-0	40'-0"

Use Zone	Type Const.	Group	Stories	Occ. Load	Ex. Use
C-2	V-N	A-2.1	1		

Valuation of Job	Plan No.
100,000.00	1109

ADDITION OF 898 SQ. FT.

1-20-83 QP

Energy Check Fee	No.	(5100 Fund) 61249
Plan Check Fee 281.45	No. CK	10965
Plan Check Fee	No.	
Permit Fee 433.00	No.	
+ State Tax $ 7.00		

Job Address:
+ MARIE CALLENDERS PIE SHOP #12
9829 LA SERNA DR.
WHITTIER, CA

DEPT. OF BUILDING **BUILDING** WHITTIER, CALIF.

Lot Block Tract

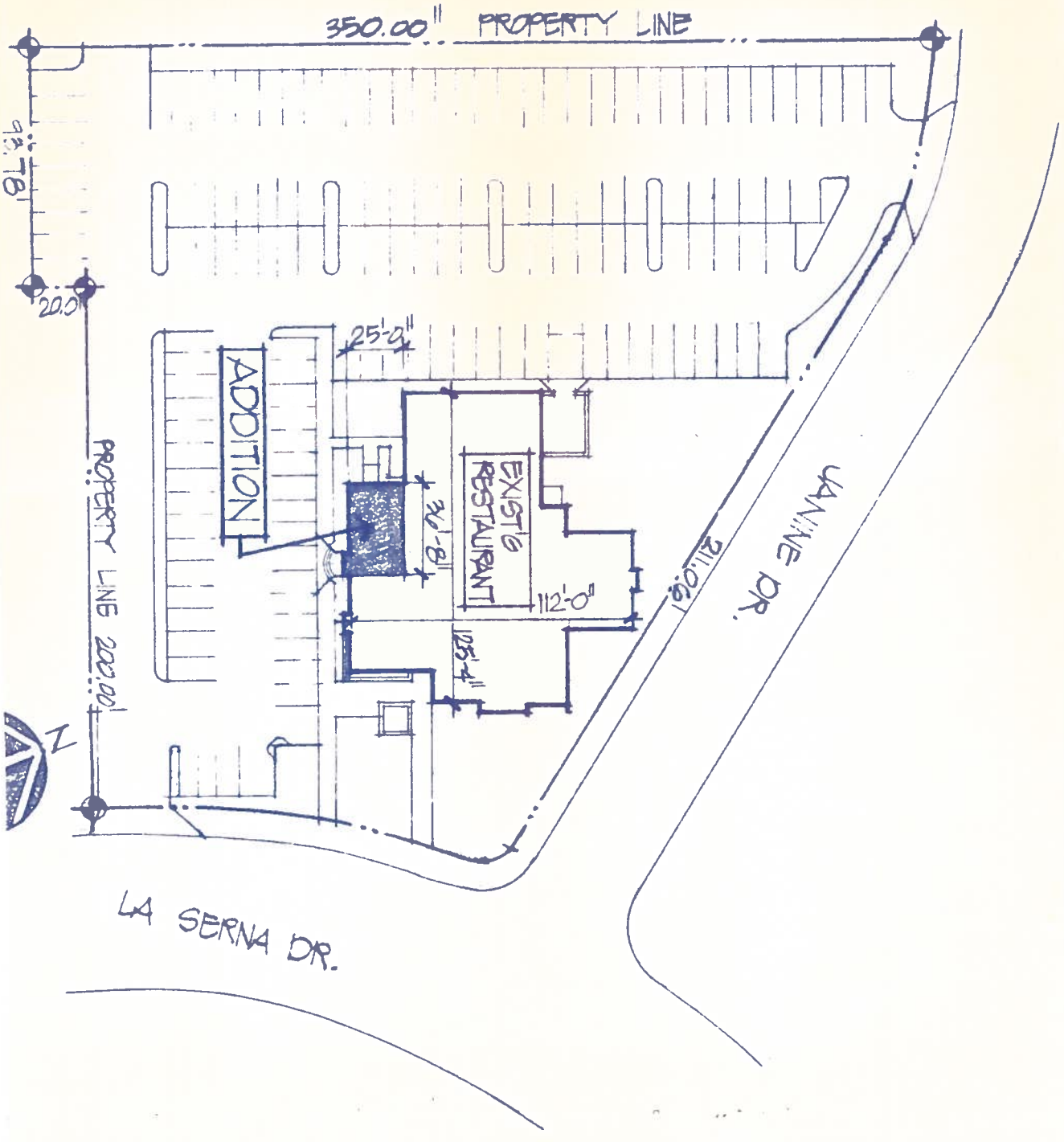
Description of Work:
ENCLOSE EXISTING PATIO TO CREATE ADDITIONAL INTERIOR DINING & PASTA BAR.

Property Owner
*MR. DON CALLENDER / MARIE CALLENDERS PIE SHOPS, INC.
Owner's Address
*1406 OBISPO AVE.
Owner's Phone (213) 597-1378 City LONG BEACH
Architect's Name
*THIRTIETH STREET ARCHITECTS
Address
*2821 NEWPORT BLVD.
Phone (714) 673-2643 Regist. No.
Engineer's Name Regist. No.
Contractor's Name Call
Address
Phone
State Lic. No. City Lic. No.

WHEN VALIDATED THIS IS YOUR PERMIT

10965 12/21/83 281.45

Set Backs	Date	Foundation	Date
Rough OK	Date	Final OK	Date


350.00" PROPERTY LINE
78'
20.0'
PROPERTY LINE 200.00'
25'-0"
ADDITION
EXIST'G RESTAURANT
32'-8"
112'-0"
125'-4"
211.0.0'
VANNE DR.
LA SERNA DR.

DECLARATIONS

ıe Declarations below are mandated by the State of California under Section 19825 of The Health and Safety Code.

— APPLICANT —
CONTRACTOR: FILL IN DECLARATION 1, 3, 4 AND 5
OWNER: FILL IN DECLARATION 2, 4 AND 5

LICENSED CONTRACTOR'S DECLARATION

hereby affirm that I am licensed under provisions of Chapter 9 ommencing with Section 7000) of Division 3 of the Business and ofessions Code, and my license is in full force and effect.

ense Class _____ License No. _____

te _____ Contractor _____

OWNER-BUILDER DECLARATION

hereby affirm that I am exempt from the Contractor's License Law r the following reason (Sec. 7031.5, California Business and Pro- sions Code: Any City which requires a permit to construct, alter, prove, demolish or repair any structure, prior to its issuance, also quires the applicant for such permit to file a signed statement that is a licensed contractor pursuant to the provisions of the Contractor's ense Law (Ch. 9 (Commencing with Sec. 7000) of Div. 3 of the & P. C.) or that he is exempt therefrom and the basis for the eged exemption. Any violations of Sec. 7031.5 by any applicant r a permit subjects the applicant to a civil penalty of not more than hundred dollars ($500.00).):

☒ I, as owner of the property, or my employees with wages as ir sole compensation, will do the work, and the structure is not ended or offered for sale (Sec. 7044, B. & P. C.: The Contractor's ense Law does not apply to an owner of property who builds or proves thereon, and who does such work himself or through his rn employees, provided that such improvements are not intended or ered for sale. If, however, the building or improvement is sold thin one year of completion, the owner-builder will have the rden of proving that he did not build or improve for the purpose sale.).

☐ I, as owner of the property, am exclusively contracting with ensed contractors to construct the project (Sec. 7044, B. & P. C.: e Contractor's License Law does not apply to an owner of contracts r such projects with a contractor(s) licensed pursuant to the Con- ctor's License Law.).

☐ I am exempt under Sec._____, B. & P. C. for this reason:

te 5/7/84 Owner Gordon Courtak

3. WORKER'S COMPENSATION DECLARATION

I hereby affirm that I have a certificate of consent to self-insure or a certificate of worker's Compensation Insurance or a certified copy thereof. (Sec. 3800, Lab. C.).

Policy No. _____ Company _____

☐ Certified copy is hereby furnished.

☐ Certified copy is filed with the Department of Building & Safety.

Date _____ Applicant _____

CERTIFICATE OF EXEMPTION FROM WORKER'S COMPENSATION INSURANCE

I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California.

Date _____ Applicant _____

NOTICE TO APPLICANT: If, after making this Certificate of Exemption, you should become subject to the Work's Comp. provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked.

4. CONSTRUCTION LENDING AGENCY

I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3907, Civ. C.).

Lender's Name _____

Lender's Address _____

5.

I certify that I have read this application and state that the above information is correct. I agree to comply with all City, and State laws relating to the building construction, and hereby authorize representatives of this City to enter upon the above-mentioned property for inspection purposes.

Gordon Courtak 5/7/84
Signature of Owner or Contractor ONLY Date

— IMPORTANT —

pplication is hereby made to the Superintendent of Building and Safety for a permit subject to the conditions and restrictions set forth on the ont and rear faces of this application.

1. Each person upon whose behalf this application is made and each person at whose request and for whose benefit work is performed under or pursuant to any permit issued as a result of this application agrees to and shall, indemnify and hold harmless the City of Whittier, its officers, agents and employees.

2. Any permit issued as a result of this application becomes null and void if work is not commenced within ONE HUNDRED EIGHTY (180) DAYS from date of issuance of such permit.

BUILDING AND PLANNING USE ONLY

Var. or C.U.P.	Total Req'd Parking	Req'd Yards Front	Rear	Sides

Use Zone	Type Const.	Group	Stories	Occ. Load	Ex. Use
C-2	wall sign				

Valuation of Job	Plan No.
200 00	

Energy Check Fee		No. (5100 Fund) 61249
Plan Check Fee		No.
Plan Check Fee		No.
Permit Fee	10 00	No. 12587
+ State Tax	.50	
	QV	

Job Address: 9829 CA SERNA DR.

DEPT. OF BUILDING **BUILDING** WHITTIER, CALIF.

Lot 7 Block Tract M 12737

Description of Work: INSTALLATION OF WALL SIGN, 4'X5' (wooden).

Property Owner MARIE CALLENDER

Owner's Address SAME AS ABOVE

Owner's Phone (213) 945-3471 City

Architect's Name

Address

Phone Regist. No.

Engineer's Name Regist. No.

Contractor's Name OWNER

Address SAME AS ABOVE

Phone

State Lic. No. City Lic. No.

WHEN VALIDATED THIS IS YOUR PERMIT

12587 5/07/84 10.00 B

1000204 5/07/84 .50 P

Set Backs	Date	Foundation	Date
—		—	
Rough OK	**Date**	**Final OK**	**Date**
5-8-84 R.C.		5-8-84 R.C.	

DECLARATIONS

he Declarations below are mandated by the State of California under Section 19825 of The Health and Safety Code.

— APPLICANT —

CONTRACTOR: FILL IN DECLARATION 1, 3, 4 AND 5

OWNER: FILL IN DECLARATION 2, 4 AND 5

. LICENSED CONTRACTOR'S DECLARATION

hereby affirm that I am licensed under provisions of Chapter 9 commencing with Section 7000) of Division 3 of the Business and rofessions Code, and my license is in full force and effect.

cense Class C-39 License No. 416797

ate 10-15-86 Contractor DICK MADSEN

. OWNER-BUILDER DECLARATION

hereby affirm that I am exempt from the Contractor's License Law or the following reason (Sec. 7031.5, California Business and Professions Code: Any City which requires a permit to construct, alter, nprove, demolish or repair any structure, prior to its issuance, also equires the applicant for such permit to file a signed statement that e is a licensed contractor pursuant to the provisions of the Contractor's cense Law (Ch. 9 (Commencing with Sec. 7000) of Div. 3 of the . & P. C.) or that he is exempt therefrom and the basis for the leged exemption. Any violations of Sec. 7031.5 by any applicant or a permit subjects the applicant to a civil penalty of not more than ve hundred dollars ($500.00).):

☐ I, as owner of the property, or my employees with wages as heir sole compensation, will do the work, and the structure is not ntended or offered for sale (Sec. 7044, B. & P. C.: The Contractor's icense Law does not apply to an owner of property who builds or nproves thereon, and who does such work himself or through his wn employees, provided that such improvements are not intended or ffered for sale. If, however, the building or improvement is sold ithin one year of completion, the owner-builder will have the urden of proving that he did not build or improve for the purpose f sale.).

☐ I, as owner of the property, am exclusively contracting with censed contractors to construct the project (Sec. 7044, B. & P. C.: he Contractor's License Law does not apply to an owner of contracts or such projects with a contractor(s) licensed pursuant to the Contractor's License Law.).

☐ I am exempt under Sec._____, B. & P. C. for this reason:

ate _____ Owner _____

3. WORKER'S COMPENSATION DECLARATION

I hereby affirm that I have a certificate of consent to self-insure or a certificate of worker's Compensation Insurance or a certified copy thereof. (Sec. 3800, Lab. C.).

Policy No. _____ Company STATE FUND

☐ Certified copy is hereby furnished.

☑ Certified copy is filed with the Department of Building & Safety.

Date 10-15-86 Applicant Dick Madsen

CERTIFICATE OF EXEMPTION FROM WORKER'S COMPENSATION INSURANCE

I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California.

Date _____ Applicant _____

NOTICE TO APPLICANT: If, after making this Certificate of Exemption, you should become subject to the Work's Comp. provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked.

4. CONSTRUCTION LENDING AGENCY

I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3907, Civ. C.).

Lender's Name _____

Lender's Address _____

5.

I certify that I have read this application and state that the above information is correct. I agree to comply with all City, and State laws relating to the building construction, and hereby authorize representatives of this City to enter upon the above-mentioned property for inspection purposes.

Dick Madsen 10-15-86

Signature of Owner or Contractor ONLY Date

— IMPORTANT —

pplication is hereby made to the Superintendent of Building and Safety for a permit subject to the conditions and restrictions set forth on the ront and rear faces of this application.

1. Each person upon whose behalf this application is made and each person at whose request and for whose benefit work is performed under or pursuant to any permit issued as a result of this application agrees to and shall, indemnify and hold harmless the City of Whittier, its officers, agents and employees.

2. Any permit issued as a result of this application becomes null and void if work is not commenced within ONE HUNDRED EIGHTY (180) DAYS from date of issuance of such permit.

BUILDING AND PLANNING USE ONLY

Var. or C.U.P.	Total Req'd Parking	Req'd Yards Front	Req'd Yards Rear	Req'd Yards Sides

Use Zone	Type Const.	Group	Stories	Occ. Load	Ex. Use
C-2	Revoof				

Valuation of Job	Plan No.
9800	

30 sq.

10-16-86 Base sheet called for nothing done RA

10-24-86 Base Sheet RA

Energy Check Fee	No. (5100 Fund) 61249
Plan Check Fee	No.
Plan Check Fee	No.
Permit Fee $ 80.50	No. 23010
+ State Tax -.69	
P.H.	

Job Address 9829 La Serna (Marie Callenders)

DEPT. OF BUILDING **BUILDING** WHITTIER, CALIF.

Lot 7 Block Tract PM 12737

Description of Work: tearoff old Roof to deck & Apply NEW 25 Lb Base with 3 Layer 11 Lb ply & Capsheet (20 year Roof Sy

Property Owner Marie Callenders Res

Owner's Address 9829 La Serna

Owner's Phone 945-3471 City

Architect's Name

Address

Phone Regist. No.

Engineer's Name Regist. No.

Contractor's Name Dick Madsen Roofing Co

Address 8108 Sorensen Ave S.F.S

Phone 213-943-7939

State Lic. No. 416797 City Lic. No. 28619

WHEN VALIDATED THIS IS YOUR PERMIT

2301010/15/86 80.50 B

10002041 0/15/86 .69 P

Set Backs	Date	Foundation	Date
Rough OK	Date	Final OK	Date
		1-23-87	RA

DO NOT SEPARATE

DECLARATIONS

The Declarations below are mandated by the State of California under Section 19825 of The Health and Safety Code.

– APPLICANT –

CONTRACTOR: FILL IN DECLARATION 1, 3, 4 AND 5

OWNER: FILL IN DECLARATION 2, 4 AND 5

1. LICENSED CONTRACTOR'S DECLARATION

I hereby affirm that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

License Class C-39 License No. 531906

Date 4/27/98 Contractor CASSADY ROOFING

2. OWNER-BUILDER DECLARATION

6-30-98

I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5, California Business and Professions Code: Any City which requires a permit to construct, alter, improve, demolish or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is a licensed contractor pursuant to the provisions of the Contractor's License Law (Ch. 9 (Commencing with Sec. 7000) of Div. 3 of the B. & P. C.) or that he is exempt therefrom and the basis for the alleged exemption. Any violations of Sec 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500.00).):

☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, B. & P. C.: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale.).

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, B. & P. C.: The Contractors License Law does not apply to an owner of contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License Law.).

☐ I am exempt under Sec. _____, B. & P. C. for this reason:

Date _____ Owner _____

3. WORKER'S COMPENSATION DECLARATION

I hereby affirm under penalty of perjury one of the following declarations:

___ I have and will maintain a certificate to self-insure for workers' compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

X I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier GOLDEN EAGLE

Policy Number WWC 422921-01

(The following section need not be completed if permit valuation is $100 or less)

___ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the worker's compensation laws of California, and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Date: 4/27/98 Applicant: [signature]

WARNING: FAILURE TO SECURE WORKERS' COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS ($100,000), IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

4. CONSTRUCTION LENDING AGENCY

I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued. (Section 3097, Civil Code).

Lender's Name _____

Lender's Address _____

5. I certify that I have read this application and state that the above information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this city to enter upon the above-mentioned property for inspection purposes.

[signature] 4/27/98

Signature of Applicant or Agent — Date

IMPORTANT

Application is hereby made to the Director of Building and Safety for a permit subject to the conditions and restrictions hereon.

1. Each person upon whose behalf this application is made and each person at whose request for whose benefit work is performed under or pursuant to any permit issued as a result of this application agrees to and shall, indemnify and hold harmless the City of Whittier, its officers, agents and employees.
2. Any permit issued as a result of this application becomes null and void if work is not commenced within ONE HUNDRED EIGHTY - (180) DAYS from date of issuance of such permit.

BUILDING AND PLANNING USE ONLY

Var. or C.U.P.	Total Req'd Parking	Req'd Yards Front	Rear	Sides

Use Zone	Type Const.	Group	Stories	Occ. Load	Ex. Use
C-2	Wood				

Valuation of Job: 7,600.00 — Plan No.

30 squares

4-28-98 inspection ✓

WILL THE APPLICANT OR FUTURE BUILDING OCCUPANT HANDLE A HAZARDOUS MATERIAL OR A MIXTURE CONTAINING A HAZARDOUS MATERIAL EQUAL TO OR GREATER THAN THE AMOUNTS SPECIFIED ON THE HAZARDOUS MATERIALS INFORMATION GUIDE

YES ! NO X

WILL THE INTENDED USE OF THE BUILDING BY THE APPLICANT OR FUTURE BUILDING OCCUPANT REQUIRE A PERMIT FOR CONSTRUCTION OR MODIFICATION FROM THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD) SEE PERMITTING CHECKLIST FOR GUIDELINES

YES . NO X

I HAVE READ THE HAZARDOUS MATERIALS INFORMATION GUIDE AND THE SCAQMD PERMITTING CHECKLIST. I UNDERSTAND MY REQUIREMENTS UNDER THE LOS ANGELES COUNTY CODE, TITLE 2 CHAPTER 2.68, SECTIONS 2.20.100 THROUGH 2.20.140 CONCERNING HAZARDOUS MATERIALS REPORTING AND FOR OBTAINING A PERMIT FROM THE SCAQMD

[signature]
OWNER OR AGENT

Energy Check Fee		No.
Plan Check Fee		No.
Plan Check Fee		No.
Permit Fee	$ 123.90	No.
+ State Tax	$ 1.60	I or II
G. P. Update Fee	$ 15.20	1000-341

Job Address: 9829 La Serna Dr.

DEPT. OF BUILDING **BUILDING** WHITTIER, CAL

Lot 7 Block Tract 12737

Description of Work: MARIE CALLENDER REST

TAKE OFF TILE 2 SIDES
APPLY (2) LAYERS 30#lb. FELT NAILED
REAPPLY TILE

Property Owner: MARIE CALLENDERS REST #78

Owner's Address: 9829 La Serna Dr.

Owner's Phone: (714) 941-3355 City: WHITTIER

Architect's Name

Address

Phone Regist. No.

Engineer's Name Regist. No.

Contractor's Name: CASSADY ROOFING INC.

Address: 13021 LAKELAND RD

Phone: (562) 944-5817

State Lic. No.: 531906 City Lic. No.: 27444

WHEN VALIDATED THIS IS YOUR PERMIT

04/27/98 10:26AM 000001#7737 XX02
1000-342 $123.90
04/27/98 10:26AM 000001#7737 XX02
1000-204 $1.60
04/27/98 10:26AM 000001#7737 XX02
1000-341 $15.20

Set Backs	Date	Foundation	Date
Rough OK	Date	Final OK	9-15-98 Date

Information Management
Public Records Unit

Direct Dial (909) 396-3700
Fax:(909) 396-3330

COMPLETION LETTER

January 30, 2020

BRANDO RESURRECCION
SMITH EMERY GEOSERVICES
791E. WASHINGTON BLVD.
LOS ANGELES, CA 90021

Ref.: CONTROL NO. 1400183
Received 1/28/2020

Re: P/O'S, EQL'S, & NOV'S FOR 9829 LA SERNA DR, WHITTIER, CA.

After a thorough search of this agency's records, the following records were found:

YOUR REQUESTED RECORDS WERE PROVIDED ELECTRONICALLY ON 01/30/2020

If you have any questions, please do not hesitate to contact me, Tuesday through Friday, **8:00 a.m**. to **4:30 p.m.**

Sincerely,

LORA TRAPP x2854
For COLLEEN PAINE
Public Records Coordinator

:lt

SCAQMD Facility Equipment List Report

Facility: 64302 MARIE CALLENDERS
Status: Active
MR: 1307 SIC: 5812 Team: L1
Last Inspection: 01/09/1989 On Hold: N Suspended: N TS: TS-31 Area Sources: Rule 222 Equipment
Quarter: 1000 - inspect in 1st quarter, every year
Contact: RAMOND NOPPER (000) 0000000 RECLAIM: N TITLE V: N AIRS ID:
Assignment:
Location Address: 9829 LA SERNA DR, WHITTIER 90605-1807 Sector:CJ
Inspector:
Mailing Address: 6075 POPLAR AVE, MEMPHIS 38119
Inspection Date:
Instruction:
Disposition:

Application No.	Permit No.	Permit Issue Date	Permit Status	Equipment Category	BCAT/CCAT Description	Application Date	Application Status
187335				020000 BCAT	CHARBROILER - NATURAL GAS	03/23/1989	APPLICATION CANCELLED, REFUND ALL FEES

Inspector: _____ Date: _____ Reviewed By: _____ Date: _____

From: David Coscia <DCOSCIA@dpw.lacounty.gov>
To: Afnan Asghar
Cc:
Subject: RE: Records request: 9829 La Serna Drive, Whittier, CA
Sent: Tue 1/28/2020 12:56 P

Hello Afnan

Per your request, County of Los Angeles Public Works has the following response:

No files for this address.

Regards,

Mr. David Coscia
Program Manager II
Los Angeles County Public Works
(626) 458-3519

From: Afnan Asghar <afnan@smithemerylabs.com>
Sent: Tuesday, January 28, 2020 12:23 PM
To: David Coscia <DCOSCIA@dpw.lacounty.gov>
Subject: Records request: 9829 La Serna Drive, Whittier, CA

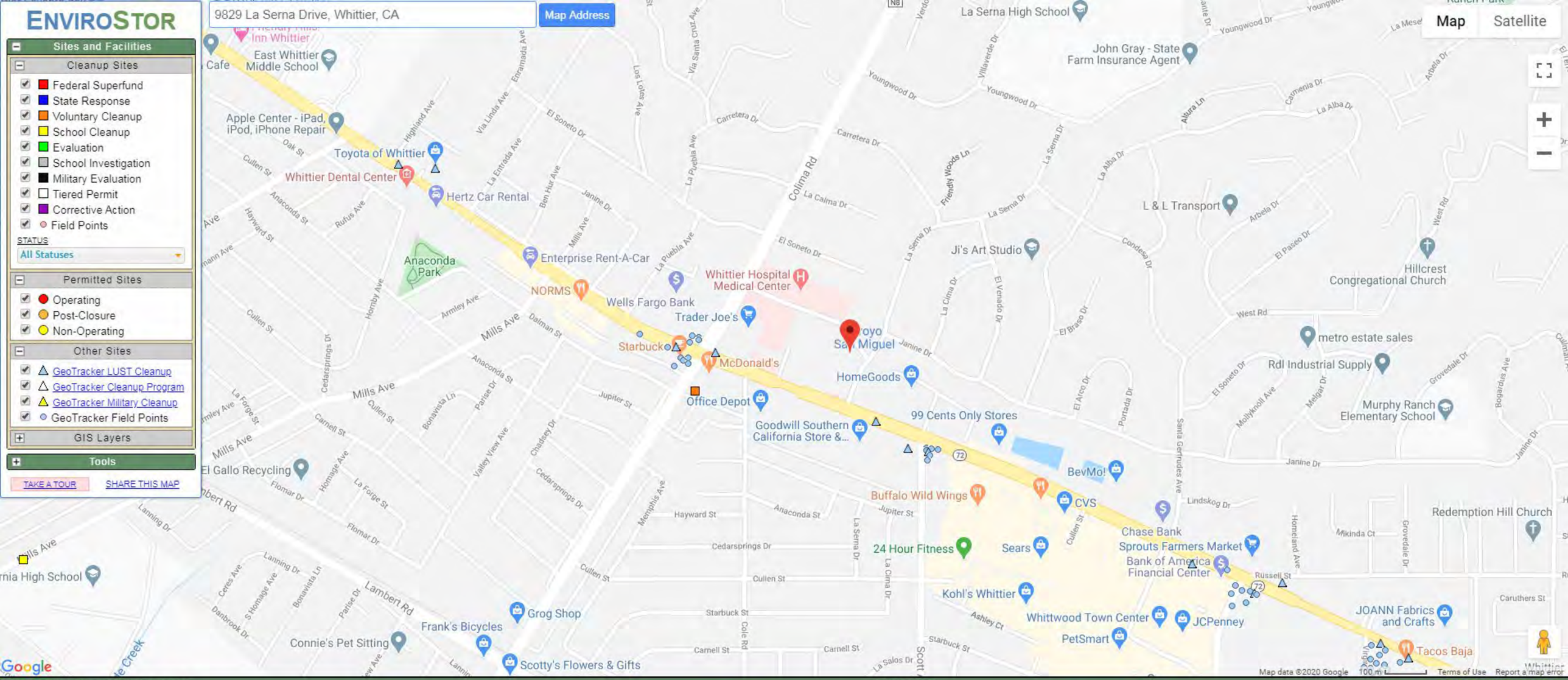
CAUTION: External Email. Proceed Responsibly.

Hello David,

Attached are records request for the purpose of Phase I environmental research.

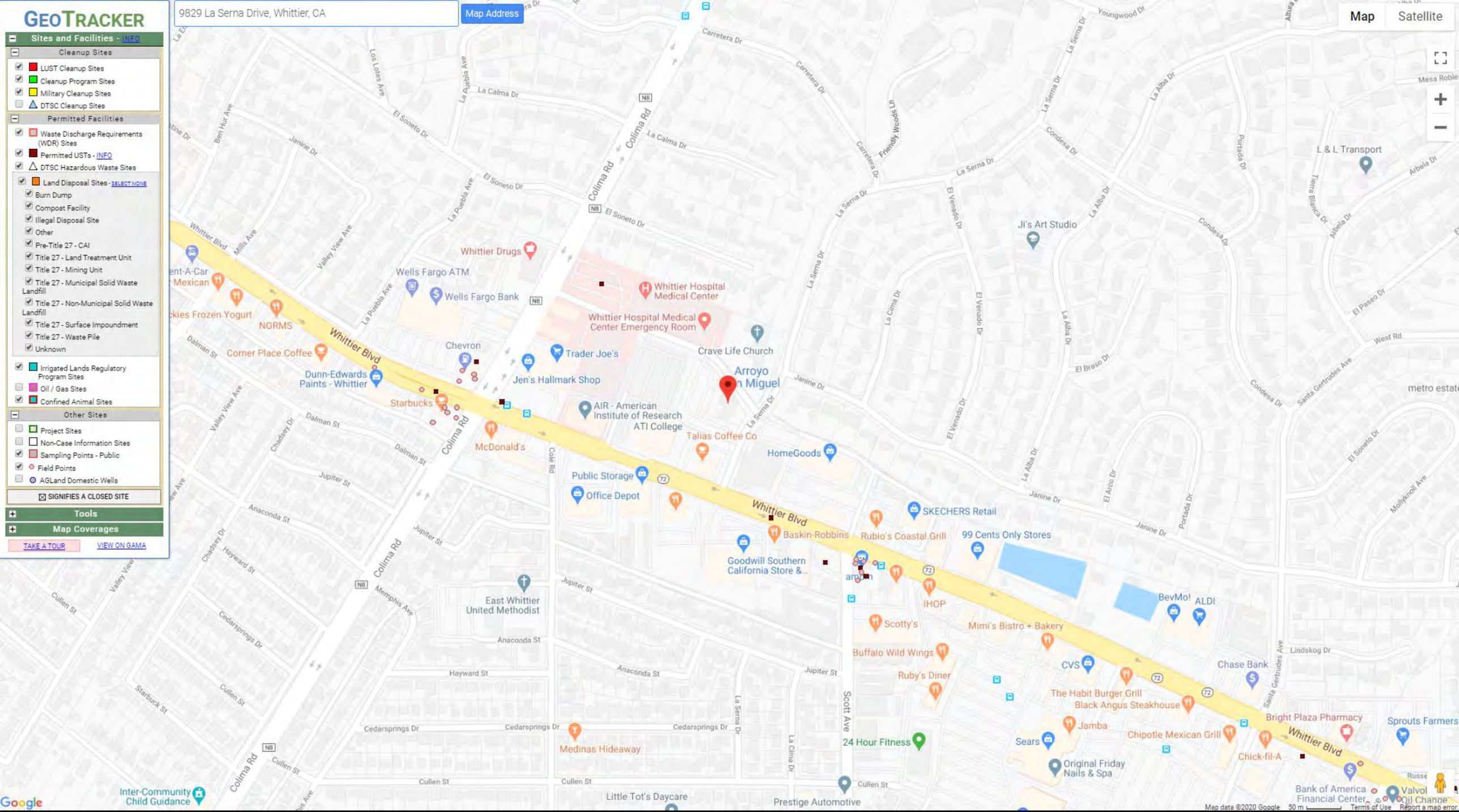
Thank you for your assistance,

Afnan Asghar
Project Manager



SITES CURRENTLY VISIBLE ON MAP — 2 SITES LISTED — EXPORT THIS LIST TO EXCEL

PROJECT NAME	STATUS	PROJECT TYPE	ADDRESS	CITY
CALIFORNIA HIGH SCHOOL STADIUM MODERNIZATION	CERTIFIED	SCHOOL CLEANUP	9800 SOUTH MILLS AVENUE	WHITTIER
SCE - FRIENDLY HILLS	ACTIVE	VOLUNTARY CLEANUP	9826 COLIMA ROAD	WHITTIER


GeoTracker
9829 La Serna Drive, Whittier, CA
Map Address
Map
Satellite
Sites and Facilities - INFO
Cleanup Sites
LUST Cleanup Sites
Cleanup Program Sites
Military Cleanup Sites
DTSC Cleanup Sites
Permitted Facilities
Waste Discharge Requirements (WDR) Sites
Permitted USTs - INFO
DTSC Hazardous Waste Sites
Land Disposal Sites - SELECT NONE
Burn Dump
Compost Facility
Illegal Disposal Site
Other
Pre-Title 27 - CAI
Title 27 - Land Treatment Unit
Title 27 - Mining Unit
Title 27 - Municipal Solid Waste Landfill
Title 27 - Non-Municipal Solid Waste Landfill
Title 27 - Surface Impoundment
Title 27 - Waste Pile
Unknown
Irrigated Lands Regulatory Program Sites
Oil / Gas Sites
Confined Animal Sites
Other Sites
Project Sites
Non-Case Information Sites
Sampling Points - Public
Field Points
AGLand Domestic Wells
SIGNIFIES A CLOSED SITE
Tools
Map Coverages
TAKE A TOUR
VIEW ON GAMA
Whittier Blvd
Colima Rd
La Serna Dr
Carretera Dr
La Calma Dr
El Soneto Dr
Janine Dr
Dalman St
Jupiter St
Anaconda St
Hayward St
Cedarsprings Dr
Cullen St
Memphis Ave
Lindskog Dr
West Rd
Whittier Drugs
Wells Fargo ATM
Wells Fargo Bank
Whittier Hospital Medical Center
Whittier Hospital Medical Center Emergency Room
Crave Life Church
Chevron
Trader Joe's
Jen's Hallmark Shop
Corner Place Coffee
Dunn-Edwards Paints - Whittier
Starbucks
McDonald's
NORMS
AIR - American Institute of Research ATI College
Talias Coffee Co
HomeGoods
Public Storage
Office Depot
Goodwill Southern California Store &...
Baskin-Robbins
Rubio's Coastal Grill
SKECHERS Retail
99 Cents Only Stores
IHOP
Scotty's
Mimi's Bistro + Bakery
Buffalo Wild Wings
Ruby's Diner
CVS
Chase Bank
The Habit Burger Grill
Black Angus Steakhouse
Jamba
Chipotle Mexican Grill
Chick-fil-A
Bright Plaza Pharmacy
Sprouts Farmers
Sears
24 Hour Fitness
Original Friday Nails & Spa
Bank of America Financial Center
Valvoline Oil Change
BevMo!
ALDI
East Whittier United Methodist
Medinas Hideaway
Little Tot's Daycare
Prestige Automotive
Inter-Community Child Guidance
Ji's Art Studio
L & L Transport
Arroyo
Google
Map data ©2020 Google
50 m
Terms of Use
Report a map error

PUBLIC RECORDS REQUEST FORM

ATTENTION REQUESTOR: To fulfill your request for records, please fill out this form completely, and identify specifically the type of records you are requesting. Requests must reasonably describe identifiable records prepared, owned, used, or retained by the Sanitation Districts.

REQUESTOR INFORMATION

Name: Ildebrando Resurreccion		Date:	01-27-2020
Company: Smith-Emery Geoservices			
Mailing Address: 791 E. Washinfton Blvd.			
City: Los Angeles	State: CA	Zip Code:	90021
Phone Number: 213-699-7810	Fax Number (optional):		213-741-8621
Email Address (recommended): iresurreccion@smithemerylabs.com			

REQUESTED RECORDS

*Please clearly describe each requested record or document (use additional copies of this form, as necessary)**

I would like to know if your department has any records for the following address:
9829 La Serna Drive, Whittier, CA 90605 NO RECORD FOUND

Time Period of Document Requested	From: 1800	To: Present

Time Period of Document Requested	From:	To:

Time Period of Document Requested	From:	To:

* *Requests that are not specific and focused will be returned for more information. If requested, the Sanitation Districts will assist you in making focused and effective requests for identifiable records. The Sanitation Districts will not create new documents or records in response to a request.*

Signature of Requestor

Submit requests by mail, email or fax to:

Records Administrator
County Sanitation Districts of Los Angeles County
P.O. Box 4998
Whittier, CA 90607-4998
records_administrator@lacsd.org
Fax (562) 699-5422

Office Use Only:
Date request received:
Date initial response issued:
Date request was closed:

DOC # 1503368

JAN 27 '20 AM 10:59

DOC #

Smith L

County of Los Angeles Fire Department

Public Records Menu

- Home
- FAQs
- Submit a Request
- My Request Center

FAQs

See All FAQs

What is a public record?

Request Type: HHMD Records Request
Reference No: H019694-012720
Contact E-Mail: iresurreccion@smithemerylabs.com
Message:*

Send Cancel

Messages 2

On 1/27/2020 10:02:37 AM, LACoFD wrote:

Subject: HHMD No File Responsive :: H019694-012720
Body:
RE: PRA of January 27, 2020, Reference # H019694-012720.

Dear Brando Resurreccion,

The Los Angeles County Fire Department, Health Hazardous Materials Division, being the custodian or keeper of records, certify that a thorough search for the records you requested has been carried out.

Re: 9829 La Serna Drive
Whittier CA 90605

The search revealed that your noted address did not match our database.

It should be understood that this does not mean that the records you requested do not exist. It is possible that such records may be misfiled; exist under another spelling, another name, or may have been destroyed based on this Department's Record Retention Policy. However, with the information furnished to our office, and to the best of our knowledge, no records were located.

For businesses in Burbank, Culver City, Downey, City of LA, La Habra, Monrovia, Pasadena, Santa Monica, Torrance& Underground Storage Tanks in Los Angeles County jurisdiction click here.

Los Angeles County Fire Department

Health Hazardous Materials Division

Site Administrator

County of Los Angeles Fire Department

On 1/27/2020 10:02:35 AM, Brando Resurreccion wrote:

Request was created by customer

Powered by GovQA

SMITH-EMERY GEOSERVICES

Please Return Questionnaire to
ayesha@smithemerylabs.com
or Fax at 213-741-8621

SITE INFORMATION QUESTIONNAIRE

(To be completed by Client)

The following questionnaire is required by the new ASTM Standard E-1527-05, which adheres to the new All Appropriate Inquiries Rule. In order to qualify for one of the Landowner Liability Protections (LLPS) by the Brownfield's Revitalization Act Amendments of 2002, the User must provide the information requested in the AAI questionnaire (if available) to the Environmental Professional. Failure to provide this information could result in a determination that All Appropriate Inquiry is not complete (ASTM 1527-05, 2005)

Name of Facility: Former Marie Callender's (vacant) Phone # N/A

Address: 9829 La Serna Dr. City: Whittier Email N/A.

Owner of Facility: Lafranchi Trust Years Owned: 25

Site Manager/Contact: N/A Years With Facility: N/A

Phone # of Manager/Contact: N/A email N/A.

1. Purpose of this Phase I Environmental Site Assessment
   - A. Qualify for CERCLA protection
   - B. Satisfy lending requirements
   - C. Business risk evaluation purposes
   - (D) Other Due diligence for purchase.
2. The type of property Restaurant building. To be demolished.
3. Type of property transaction (i.e. sale, purchase, refinance, exchange, etc)
   - A. Sale
   - (B.) Purchasing
   - C. Refinance
   - D. Other
4. List of parties that will rely on the Phase I Environmental Site Assessment
   Mission Pacific Investors or assigns.
5. Does the purchase price being paid for the property reasonably reflect the fair market value of the property? (Yes) No
   If No, is it due to environmental concerns?
   Please explain
6. Is there a chain of title available for the site? Yes (No) (If yes, please provide a copy)
7. Are you aware of any Environmental cleanup liens against the property or of any activity or land use restrictions or any deed restrictions? (including but not limited to engineering controls/institutional controls/land use restrictions)? [This research is the user's responsibility-However, SEG can provide you with the Environmental Liens Search for an added fee]
   No

8. Do you have any actual or specialized knowledge or experience of the subject site or nearby sites (i.e. you are involved in a similar line of business as the current or previous occupants sot that you would know the type of chemicals or processes used by this type of business)

   No.

9. Are you aware of any commonly known or reasonably ascertainable information about the property (i.e. previous usage, landfill, burned debris, etc)

   Building was constructed in the 1970's

10. Based on your knowledge, are there any obvious indicators that point to the presence or likely presence of contamination at the property?

    No.

11. Do you have knowledge of specific chemicals previously or currently used/stored onsite?

    No.

12. Do you have any knowledge or experience of chemical spills or releases at the site?

    No.

13. Do you know if the site was historically used as a gas station, a dry cleaner, or for industrial purposes?

    No.

14. Please list all known previous owners of the property.

    Lafranchi Trust, Theodore S. and Katherine, Co-trustees. / HRBF Whittier No. 2. LP prior to may 15, 1995

15. Please list all known previous occupants of the site. Occupant/Approximate time frame

    A: Marie Callender's Restaurant.
    B:
    C:
    D:
    E:
    F:

16. Is the site currently occupied? Yes (No)

    Business name(s)_____

    Operating onsite since (approx. year)_____

17. What are the current site operations?

    N/a

18. What is the total square footage of the property? 9,244 square feet

SMITH-EMERY GEOSERVICES

19. Do you have a plot plan of the site? (Yes) No (If yes, please provide)

20. How many buildings are located on site? 1

21. What year was the facility built? 1997+- Does the facility have any additions? Yes No (NA)

22. What year was the addition # 1 built? _____ Addition # 2 _____ Addition # 3 _____

23. Does the facility have a basement? Yes No (NA)

24. What is the total square footage of the onsite building(s)? 9,240 square feet per public records

25. Does this site have an underground storage fuel tank(s)? Yes No unknown

26. Has the site ever had any previous underground storage tanks? Yes No unknown.

27. If yes, how many? _____ How large? _____ Location? _____

28. What type of fuel? Gasoline Diesel Heating Oil Ethanol Other _____

29. Are these tanks currently permitted? Yes No NA (If yes, provide a copy)

30. Does the site have an emergency power generator(s)? Yes No Type/Make unknown.

31. How is the unit fueled? Gasoline Diesel Propane Other _____

32. Do you have a Fire Department permit for the generator? Yes No NA unknown.

33. Do you store/use any hazardous materials onsite? Yes (No)

If yes, what type(s) and what quantities?

A: D:
B: E:
C: F:

34. Does the site generate hazardous waste? Yes No (NA) un

If yes, how much hazardous waste per month?

Disposal is handled by _____

35. Does the site have a hazardous materials permit for storage? Yes No (NA)

36. Does this facility have a grease trap(s) or clarifier(s)? Yes No unknown.

37. Has the site ever had an asbestos survey? Yes No (If yes, provide a copy of the report) unknown.

38. Has the site ever had a radon gas survey? Yes No unknown.

39. If yes, do you have a copy of the report from the survey? Yes No

40. Company that supplies the potable water to the facility City of Whittier

41. Sewage disposal by

(A) Municipal connection
B Leach field septic tank cesspool
C Other_____

42. Is this facility connected to municipal storm water drainage? (Yes) No

43. Does this facility have or require a storm water drainage permit? Yes No unknown

44. Does the site have a business/maintenance operations plan (BOP)? (This is for regularly scheduled maintenance of items at facility) Yes No (NA)

45. Are copies of this BOP on file at the site? Yes No (NA)

46. What is the power or fuel source(s) for heating _____ and cooling systems_____Company that supplies electricity_____

47. What is the legal address of the property?

9829 LaSerna Drive, Whittier California 90605

48. Please give all addresses that you are aware of, that are currently or historically associated with the property

N/A

49. What is the nearest cross street? La Serna Drive / Janine Drive.

50. Please list all of the known environmental assessments conducted at the site.

Phase I by Smith-Emery Company dated November 2, 1993
Phase I by Targhee Inc dated January 11, 1993.

51. Are you aware of any pending, threatened, or past litigation and/or administrative proceedings, relevant to hazardous substances or petroleum products in, on or from the property? If yes, please specify.

No.

52. 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? If yes, please specify.

No

I certify that the above responses were made to the best of my knowledge.

Name: Mark Rael

Address 4100 Newport Pl, Suite 480 Newport Beach, CA 92660

Relationship to the Subject Property: Buyer

Signature:

Date: 1/28/20

Email address: mrael@missionpacific.com

Please fax or email the completed questionnaire to Ms. Ayesha Syeda. If you have any questions please call 213-745-5333 ext 360.

ayesha@smithemerylabs.com

or fax 213-741-8621

APPENDIX B

REGULATORY DATABASE REPORT

9829 La Serna Drive
9829 La Serna Drive
Whittier, CA 90605

Inquiry Number: 5947854.2s
January 24, 2020

EDR Summary Radius Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	9
Orphan Summary	231
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting Source Map	A-7
Physical Setting Source Map Findings	A-8
Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2020 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

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), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

9829 LA SERNA DRIVE
WHITTIER, CA 90605

COORDINATES

Latitude (North):	33.9488370 - 33° 56' 55.81''
Longitude (West):	118.0030530 - 118° 0' 10.99''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	407310.8
UTM Y (Meters):	3756742.0
Elevation:	276 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	TP
Source:	U.S. Geological Survey

Target Property:	E
Source:	U.S. Geological Survey

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140513
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
9829 LA SERNA DRIVE
WHITTIER, CA 90605

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	FRIENDLY HILLS SHELL	15175 E WHITTIER BLV	EDR Hist Auto	Lower	159, 0.030, South
B2	WHITTIER HOSPITAL ME	15151 E JANINE DR	RCRA-SQG, FINDS, ECHO, EMI	Higher	171, 0.032, NNW
B3	WHITTIER HOSPITAL ME	15151 JANINE DR	UST	Higher	171, 0.032, NNW
A4	QUEST DIAGNOSTICS WH	15141 E WHITTIER BLV	RCRA-SQG	Lower	201, 0.038, SW
C5	ORCHARD SUPPLY COMPA	15225 EAST WHITTIER	RCRA NonGen / NLR	Lower	286, 0.054, SSE
C6	ULTA BEAUTY #1249 (W	15235 WHITTIER BLVD	CERS HAZ WASTE	Lower	329, 0.062, SSE
A7	ALLSIZE SELF STORAGE	15146 WHITTIER BLVD	SWEEPS UST, LOS ANGELES CO. HMS	Lower	348, 0.066, SW
A8	HARBOR FREIGHT TOOLS	15214 WHITTIER BLVD	RCRA-VSQG	Lower	359, 0.068, SSE
A9	HARBOR FREIGHT TOOLS	15214 WHITTIER BLVD	CERS HAZ WASTE	Lower	359, 0.068, SSE
A10	SACKETT AND PETERS	15214 E WHITTIER BLV	RCRA-SQG, FINDS, ECHO	Lower	359, 0.068, SSE
D11	TORQUE AUTOMOTIVE IN	15132 WHITTIER BLVD	CERS HAZ WASTE	Lower	366, 0.069, SW
D12	TORQUE AUTOMOTIVE IN	15132 WHITTIER BLVD	RCRA NonGen / NLR	Lower	366, 0.069, SW
D13	MIDAS AUTO SERVICE	15130 E WHITTIER BLV	CERS HAZ WASTE, HAZNET, CERS	Lower	376, 0.071, SW
D14	MIDAS AUTO SERVICE-B	15130 WHITTIER BLVD	RCRA NonGen / NLR	Lower	376, 0.071, SW
C15	HOMEGOODS 0797	15245 WHITTIER BLVD	RCRA NonGen / NLR	Lower	392, 0.074, SE
C16	ULTA BEAUTY #1249	15245 WHITTIER BLVD	RCRA NonGen / NLR	Lower	392, 0.074, SE
C17	BOARD FORD	15265 E WHITTIER BLV	RCRA-SQG, SWEEPS UST, HIST UST, FINDS, ECHO, EMI,...	Lower	477, 0.090, SE
C18	MC ALLISTER CADILLAC	15311 E WHITTIER BLV	RCRA-SQG, HIST UST, FINDS, ECHO, HAZNET, LOS...	Lower	487, 0.092, SE
D19	OFFICE DEPOT 895	15100 WHITTIER BOULE	RCRA NonGen / NLR	Lower	550, 0.104, SW
D20	SAFEWAY STORES INC (	15100 WHITTIER BLVD	CERS HAZ WASTE, HAZNET, LOS ANGELES CO. HMS	Lower	550, 0.104, SW
E21	WHITTIER HOSPITAL ME	9080 COLIMA RD	UST	Higher	556, 0.105, NW
E22	WHITTIER HOSPITAL ME	9080 COLIMA RD	RCRA NonGen / NLR	Higher	556, 0.105, NW
E23	WHITTIER HOSPITAL ME	9080 COLIMA RD	CERS HAZ WASTE, CERS TANKS, LOS ANGELES CO. HMS,..	Higher	556, 0.105, NW
F24	TRADER JOE'S #48	15025 E WHITTIER BLV	CERS HAZ WASTE, CERS	Lower	643, 0.122, West
F25	TRADER JOES 048	15025 E WHITTIER BLV	RCRA NonGen / NLR	Lower	643, 0.122, West
G26	BOARD FORD	15265 WHITTIER BLVD	HIST UST	Lower	697, 0.132, ESE
G27	BOARD FORD	15265 WHITTIER BLVD	LUST, CERS	Lower	697, 0.132, ESE
G28	MCALLISTER CADILLAC	15311 E WHITTIER BLV	HIST UST, EMI	Lower	714, 0.135, SE
H29	THE CLEANING STORE	15030 WHITTIER BLVD	RCRA NonGen / NLR	Lower	720, 0.136, WSW
H30	CLEANING STORE	15030 WHITTIER BLVD	EDR Hist Cleaner	Lower	720, 0.136, WSW
H31	THE CLEANING STORE	15030 E WHITTIER BLV	DRYCLEANERS	Lower	720, 0.136, WSW
H32	THE CLEANING STORE,	15030 E WHITTIER BLV	CERS HAZ WASTE, EMI, CERS	Lower	720, 0.136, WSW
H33	THE CLEANING STORE,	15030 WHITTIER BLVD	DRYCLEANERS	Lower	720, 0.136, WSW
H34	THE CLEANING STORE	15030 E WHITTIER BLV	DRYCLEANERS	Lower	720, 0.136, WSW
H35	THE CLEANING STORE	15030 WHITTIER BLVD	DRYCLEANERS	Lower	720, 0.136, WSW
H36	CLEANING STORE THE	15030 WHITTIER BLVD	RCRA-SQG, FINDS, ECHO, DRYCLEANERS, HAZNET	Lower	720, 0.136, WSW
H37	THE CLEANING STORE	15030 WHITTIER BLVD	DRYCLEANERS	Lower	720, 0.136, WSW
H38	THE CLEANING STORE,	15030 WHITTIER BLVD	DRYCLEANERS	Lower	720, 0.136, WSW
I39	URICH OIL CO	15266 E WHITTIER BLV	EDR Hist Auto	Lower	723, 0.137, SE

MAPPED SITES SUMMARY

Target Property Address:
9829 LA SERNA DRIVE
WHITTIER, CA 90605

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
I40	USA GASOLINE CORP FA	15266 WHITTIER BLVD	RCRA-SQG	Lower	723, 0.137, SE
I41	USA GASOLINE #230	15266 WHITTIER BLVD	LUST, HIST CORTESE, CERS	Lower	723, 0.137, SE
I42	SHAH ROKH BAHRAMI	15266 E WHITTIER BLV	SWEEPS UST, HIST UST, CA FID UST	Lower	723, 0.137, SE
I43	SHAH ROKH BAHRAMI	15266 WHITTIER BLVD	HIST UST	Lower	723, 0.137, SE
J44	FRIENDLY HILLS CLEAN	9302 S COLIMA RD	EDR Hist Cleaner	Higher	743, 0.141, WNW
I45	LA CO FD FIRE STA #0	10021 SCOTT AVE	CERS HAZ WASTE, LOS ANGELES CO. HMS, CERS	Lower	816, 0.155, SE
I46	LOS ANGELES COUNTY F	10021 SCOTT AVE- STA	RCRA NonGen / NLR	Lower	816, 0.155, SE
I47	FIRE STATION 59	10021 SCOTT AVE	SWEEPS UST, HIST UST	Lower	816, 0.155, SE
J48	WALT'S CLEANERS	9307 COLIMA RD	EDR Hist Cleaner	Higher	839, 0.159, WNW
H49	MCDONALD'S WHITTIER	15000 WHITTIER BLVD	SWEEPS UST, CERS	Lower	850, 0.161, West
H50	DICK'S TEXACO	15020 E WHITTIER BLV	EDR Hist Auto	Lower	865, 0.164, West
I51	ARCO SELF SERVICE	15306 E WHITTIER BLV	EDR Hist Auto	Lower	901, 0.171, SE
I52	ARCO 42005	15306 E WHITTIER BLV	UST	Lower	901, 0.171, SE
I53	TESORO ARCO 42005	15306 WHITTIER BLVD	RCRA NonGen / NLR	Lower	901, 0.171, SE
I54	ARCO #0133	15306 WHITTIER BLVD	LUST, HIST CORTESE, CERS	Lower	901, 0.171, SE
I55	ARCO PRODUCTS CO	15306 WHITTIER BLVD	SWEEPS UST, LOS ANGELES CO. HMS	Lower	901, 0.171, SE
I56	ARCO PRODUCTS #00133	15306 WHITTIER BLVD	UST	Lower	901, 0.171, SE
I57	RONALD LENTZNER/STEL	15306 E WHITTIER BLV	CERS HAZ WASTE, HIST UST, CERS TANKS, HAZNET, CERS	Lower	901, 0.171, SE
I58	RONALD LENTZNER/STEL	15306 WHITTIER BLVD	HIST UST	Lower	901, 0.171, SE
J59	DAVID A WARNER, DDS,	9209 COLIMA RD, #400	RCRA NonGen / NLR	Higher	916, 0.173, NW
J60	WHITTIER ORTHOPEDIC	9209 COLIMA RD UNIT	RCRA-SQG, FINDS, ECHO	Higher	916, 0.173, NW
J61	THOMAS E GAFFANEY DD	9209 COLIMA RD, #250	RCRA NonGen / NLR	Higher	916, 0.173, NW
H62	SOUTHERN CALIFORNIA	9826 COLIMA RD	ENVIROSTOR, VCP, HAZNET	Lower	983, 0.186, West
H63	FRIENDLY HILLS SUBST	9826 COLIMA ROAD	RCRA NonGen / NLR	Lower	983, 0.186, West
K64	H&S 9	14941 E WHITTIER	RCRA NonGen / NLR	Lower	984, 0.186, West
K65	H&S #9	14941 WHITTIER BLVD	CERS HAZ WASTE, CERS TANKS, LOS ANGELES CO. HMS,..	Lower	984, 0.186, West
K66	H&S #9	14941 WHITTIER BLVD	UST	Lower	984, 0.186, West
K67	CHEVRON STATION 9 52	14941 E WHITTIER	RCRA-SQG, HIST UST, FINDS, ECHO, HAZNET	Lower	984, 0.186, West
K68	95269	14941 WHITTIER BLVD	HIST UST	Lower	984, 0.186, West
K69	CHEVRON #9-5269	14941 WHITTIER BLVD	LUST, HIST CORTESE, CERS	Lower	984, 0.186, West
K70	STANDARD STATIONS IN	14941 E WHITTIER BLV	EDR Hist Auto	Lower	984, 0.186, West
K71	FRIENDLY HILLS CHEVR	14941 WHITTIER BLVD	SWEEPS UST, LOS ANGELES CO. HMS	Lower	984, 0.186, West
K72	UNOCAL CORP SS 3495	14949 E WHITTIER BLV	SWEEPS UST	Lower	986, 0.187, West
K73	SERVICE STATION 3495	14949 WHITTIER BLVD	HIST UST	Lower	986, 0.187, West
K74	TOSCO - 76 STATION #	14940 WHITTIER BLVD	LUST, HIST CORTESE, CERS	Lower	1096, 0.208, West
K75	UNOCAL SERVICE STATI	14940 E WHITTIER BLV	HIST UST, HAZNET	Lower	1096, 0.208, West
K76	TOSCO/UNOCAL #30505	14940 WHITTIER BLVD	UST	Lower	1096, 0.208, West
K77	FOAM RUBBER CITY	14912 E WHITTIER B	EDR Hist Cleaner	Lower	1096, 0.208, West
K78	UNION OIL SERVICE ST	14940 WHITTIER BLVD	HIST UST	Lower	1096, 0.208, West

MAPPED SITES SUMMARY

Target Property Address:
9829 LA SERNA DRIVE
WHITTIER, CA 90605

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
K79	COX'S UNION SERVICE	14940 E WHITTIER BLV	EDR Hist Auto	Lower	1096, 0.208, West
L80	RALPHS GROCERY CO #6	14919 WHITTIER BLVD	RCRA NonGen / NLR	Lower	1239, 0.235, WNW
L81	RALPHS GROCERY CO #6	14919 WHITTIER BLVD	CERS HAZ WASTE, HAZNET, CERS	Lower	1239, 0.235, WNW
M82	99 CENTS ONLY STORES	15345 WHITTIER BLVD	RCRA NonGen / NLR	Lower	1252, 0.237, ESE
M83	99 CENTS ONLY STORES	15345 WHITTIER BLVD	CERS HAZ WASTE, HAZNET, CERS	Lower	1252, 0.237, ESE
N84	GARZA FAMILY INC	14836 WHITTIER BLVD	DRYCLEANERS, EMI	Lower	1669, 0.316, West
N85	TONYS NORGE VILLAGE	14836 E WHITTIER BLV	EDR Hist Cleaner	Lower	1669, 0.316, West
N86	TONYS DRY CLEANERS	14836 E WHITTER BLVD	RCRA-SQG, FINDS, ECHO, DRYCLEANERS, HAZNET	Lower	1669, 0.316, West
87	FRENCHIES PAPER DISP	14888 EAST DALMAN	WMUDS/SWAT	Lower	1862, 0.353, West
O88	UPRR SITE ADJACENT T	LEFFINGWELL CREEK CR	ENVIROSTOR, VCP	Lower	4628, 0.877, SSE
O89	WHITTIER GREENWAY TR	LEFFINGWELL CREEK CR	ENVIROSTOR, VCP	Lower	4699, 0.890, SSE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

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 RCRA generators list

RCRA-SQG: A review of the RCRA-SQG list, as provided by EDR, and dated 12/16/2019 has revealed that there are 9 RCRA-SQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WHITTIER HOSPITAL ME EPA ID:: CAD981392053	***15151 E JANINE DR***	***NNW 0 - 1/8 (0.032 mi.)***	***B2***	***9***
WHITTIER ORTHOPEDIC EPA ID:: CAD983663337	***9209 COLIMA RD UNIT***	***NW 1/8 - 1/4 (0.173 mi.)***	***J60***	***22***

Lower Elevation	Address	Direction / Distance	Map ID	Page
QUEST DIAGNOSTICS WH EPA ID:: CAR000184242	15141 E WHITTIER BLV	SW 0 - 1/8 (0.038 mi.)	A4	9
SACKETT AND PETERS EPA ID:: CAD982323073	***15214 E WHITTIER BLV***	***SSE 0 - 1/8 (0.068 mi.)***	***A10***	***11***
BOARD FORD EPA ID:: CAD066649625	***15265 E WHITTIER BLV***	***SE 0 - 1/8 (0.090 mi.)***	***C17***	***12***
MC ALLISTER CADILLAC EPA ID:: CAD029646536	***15311 E WHITTIER BLV***	***SE 0 - 1/8 (0.092 mi.)***	***C18***	***13***
CLEANING STORE THE EPA ID:: CAD981614373	***15030 WHITTIER BLVD***	***WSW 1/8 - 1/4 (0.136 mi.)***	***H36***	***17***
USA GASOLINE CORP FA EPA ID:: CAR000161141	15266 WHITTIER BLVD	SE 1/8 - 1/4 (0.137 mi.)	I40	18
CHEVRON STATION 9 52 EPA ID:: CAD983645938	***14941 E WHITTIER***	***W 1/8 - 1/4 (0.186 mi.)***	***K67***	***24***

RCRA-VSQG: A review of the RCRA-VSQG list, as provided by EDR, and dated 12/16/2019 has revealed that there is 1 RCRA-VSQG site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HARBOR FREIGHT TOOLS EPA ID:: CAR000287482	15214 WHITTIER BLVD	SSE 0 - 1/8 (0.068 mi.)	A8	10

State- and tribal - equivalent CERCLIS

ENVIROSTOR: A review of the ENVIROSTOR list, as provided by EDR, and dated 10/28/2019 has revealed that there are 3 ENVIROSTOR sites within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SOUTHERN CALIFORNIA Facility Id: 60002813 Status: Active	***9826 COLIMA RD***	***W 1/8 - 1/4 (0.186 mi.)***	***H62***	***23***
UPRR SITE ADJACENT T Facility Id: 60002182 Status: Active	***LEFFINGWELL CREEK CR***	***SSE 1/2 - 1 (0.877 mi.)***	***O88***	***29***
WHITTIER GREENWAY TR Facility Id: 60002222 Status: Active	***LEFFINGWELL CREEK CR***	***SSE 1/2 - 1 (0.890 mi.)***	***O89***	***29***

State and tribal leaking storage tank lists

LUST: A review of the LUST list, as provided by EDR, has revealed that there are 5 LUST sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
BOARD FORD Database: LUST REG 4, Date of Government Version: 09/07/2004 Database: LUST, Date of Government Version: 09/09/2019 Status: Completed - Case Closed Facility Id: I-11839 Status: Preliminary site assessment workplan submitted Global Id: T0603703858 Global ID: T0603703858	***15265 WHITTIER BLVD***	***ESE 1/8 - 1/4 (0.132 mi.)***	***G27***	***15***
USA GASOLINE #230 Database: LUST REG 4, Date of Government Version: 09/07/2004 Database: LUST, Date of Government Version: 09/09/2019 Status: Completed - Case Closed Facility Id: R-03633 Status: Case Closed Global Id: T0603704621 Global ID: T0603704621	***15266 WHITTIER BLVD***	***SE 1/8 - 1/4 (0.137 mi.)***	***I41***	***18***
ARCO #0133 Database: LUST REG 4, Date of Government Version: 09/07/2004 Database: LUST, Date of Government Version: 09/09/2019	***15306 WHITTIER BLVD***	***SE 1/8 - 1/4 (0.171 mi.)***	***I54***	***21***

Status: Completed - Case Closed
Facility Id: I-03089
Status: Remedial action (cleanup) Underway
Global Id: T0603702890
Global ID: T0603702890

CHEVRON #9-5269 ***14941 WHITTIER BLVD*** ***W 1/8 - 1/4 (0.186 mi.)*** ***K69*** ***25***
Database: LUST REG 4, Date of Government Version: 09/07/2004
Database: LUST, Date of Government Version: 09/09/2019
Status: Completed - Case Closed
Facility Id: R-09900
Status: Pollution Characterization
Global Id: T0603704876
Global ID: T0603704876

TOSCO - 76 STATION # ***14940 WHITTIER BLVD*** ***W 1/8 - 1/4 (0.208 mi.)*** ***K74*** ***26***
Database: LUST REG 4, Date of Government Version: 09/07/2004
Database: LUST, Date of Government Version: 09/09/2019
Status: Completed - Case Closed
Facility Id: R-11001
Status: Remedial action (cleanup) Underway
Global Id: T0603704995
Global ID: T0603704995

State and tribal registered storage tank lists

UST: A review of the UST list, as provided by EDR, has revealed that there are 6 UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WHITTIER HOSPITAL ME Database: UST, Date of Government Version: 09/09/2019 Facility Id: 20012	15151 JANINE DR	NNW 0 - 1/8 (0.032 mi.)	B3	9
WHITTIER HOSPITAL ME Database: UST, Date of Government Version: 09/09/2019 Facility Id: LACoFA0007741	9080 COLIMA RD	NW 0 - 1/8 (0.105 mi.)	E21	14

Lower Elevation	Address	Direction / Distance	Map ID	Page
ARCO 42005 Database: UST, Date of Government Version: 09/09/2019 Facility Id: LACoFA0029761	15306 E WHITTIER BLV	SE 1/8 - 1/4 (0.171 mi.)	I52	21
ARCO PRODUCTS #00133 Database: UST, Date of Government Version: 09/09/2019 Facility Id: 3089	15306 WHITTIER BLVD	SE 1/8 - 1/4 (0.171 mi.)	I56	22
H&S #9 Database: UST, Date of Government Version: 09/09/2019 Facility Id: LACoFA0029729	14941 WHITTIER BLVD	W 1/8 - 1/4 (0.186 mi.)	K66	24
TOSCO/UNOCAL #30505 Database: UST, Date of Government Version: 09/09/2019 Facility Id: 24678	14940 WHITTIER BLVD	W 1/8 - 1/4 (0.208 mi.)	K76	26

State and tribal voluntary cleanup sites

VCP: A review of the VCP list, as provided by EDR, and dated 10/28/2019 has revealed that there is 1 VCP site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SOUTHERN CALIFORNIA	***9826 COLIMA RD***	***W 1/8 - 1/4 (0.186 mi.)***	***H62***	***23***
Status: Active				
Facility Id: 60002813				

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: A review of the WMUDS/SWAT list, as provided by EDR, and dated 04/01/2000 has revealed that there is 1 WMUDS/SWAT site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
FRENCHIES PAPER DISP	14888 EAST DALMAN	W 1/4 - 1/2 (0.353 mi.)	87	29

Local Lists of Hazardous waste / Contaminated Sites

CERS HAZ WASTE: A review of the CERS HAZ WASTE list, as provided by EDR, and dated 10/21/2019 has revealed that there are 13 CERS HAZ WASTE sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WHITTIER HOSPITAL ME	***9080 COLIMA RD***	***NW 0 - 1/8 (0.105 mi.)***	***E23***	***14***

Lower Elevation	Address	Direction / Distance	Map ID	Page
ULTA BEAUTY #1249 (W	15235 WHITTIER BLVD	SSE 0 - 1/8 (0.062 mi.)	C6	10
HARBOR FREIGHT TOOLS	15214 WHITTIER BLVD	SSE 0 - 1/8 (0.068 mi.)	A9	10
TORQUE AUTOMOTIVE IN	15132 WHITTIER BLVD	SW 0 - 1/8 (0.069 mi.)	D11	11
MIDAS AUTO SERVICE	***15130 E WHITTIER BLV***	***SW 0 - 1/8 (0.071 mi.)***	***D13***	***11***
SAFEWAY STORES INC (	***15100 WHITTIER BLVD***	***SW 0 - 1/8 (0.104 mi.)***	***D20***	***14***
TRADER JOE'S #48	***15025 E WHITTIER BLV***	***W 0 - 1/8 (0.122 mi.)***	***F24***	***15***
THE CLEANING STORE,	***15030 E WHITTIER BLV***	***WSW 1/8 - 1/4 (0.136 mi.)***	***H32***	***16***
LA CO FD FIRE STA #0	***10021 SCOTT AVE***	***SE 1/8 - 1/4 (0.155 mi.)***	***I45***	***19***
RONALD LENTZNER/STEL	***15306 E WHITTIER BLV***	***SE 1/8 - 1/4 (0.171 mi.)***	***I57***	***22***
H&S #9	***14941 WHITTIER BLVD***	***W 1/8 - 1/4 (0.186 mi.)***	***K65***	***24***
RALPHS GROCERY CO #6	***14919 WHITTIER BLVD***	***WNW 1/8 - 1/4 (0.235 mi.)***	***L81***	***27***
99 CENTS ONLY STORES	***15345 WHITTIER BLVD***	***ESE 1/8 - 1/4 (0.237 mi.)***	***M83***	***28***

Local Lists of Registered Storage Tanks

SWEEPS UST: A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there are 8 SWEEPS UST sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
ALLSIZE SELF STORAGE Status: A Comp Number: 13326	***15146 WHITTIER BLVD***	***SW 0 - 1/8 (0.066 mi.)***	***A7***	***10***
BOARD FORD Comp Number: 11839	***15265 E WHITTIER BLV***	***SE 0 - 1/8 (0.090 mi.)***	***C17***	***12***
SHAH ROKH BAHRAMI Status: A Tank Status: A Comp Number: 3633	***15266 E WHITTIER BLV***	***SE 1/8 - 1/4 (0.137 mi.)***	***I42***	***19***
FIRE STATION 59 Status: A Tank Status: A Comp Number: 12488	***10021 SCOTT AVE***	***SE 1/8 - 1/4 (0.155 mi.)***	***I47***	***20***
MCDONALD'S WHITTIER Status: A Comp Number: 12117	***15000 WHITTIER BLVD***	***W 1/8 - 1/4 (0.161 mi.)***	***H49***	***20***
ARCO PRODUCTS CO Status: A Tank Status: A Comp Number: 3089	***15306 WHITTIER BLVD***	***SE 1/8 - 1/4 (0.171 mi.)***	***I55***	***21***
FRIENDLY HILLS CHEVR Status: A Tank Status: A Comp Number: 9900	***14941 WHITTIER BLVD***	***W 1/8 - 1/4 (0.186 mi.)***	***K71***	***25***
UNOCAL CORP SS 3495 Status: A Tank Status: A Comp Number: 11001	14949 E WHITTIER BLV	W 1/8 - 1/4 (0.187 mi.)	K72	25

HIST UST: A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 14 HIST UST sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
BOARD FORD Facility Id: 00000067787	***15265 E WHITTIER BLV***	***SE 0 - 1/8 (0.090 mi.)***	***C17***	***12***
MC ALLISTER CADILLAC Facility Id: 00000007788	***15311 E WHITTIER BLV***	***SE 0 - 1/8 (0.092 mi.)***	***C18***	***13***
BOARD FORD Facility Id: 00000020576	15265 WHITTIER BLVD	ESE 1/8 - 1/4 (0.132 mi.)	G26	15
MCALLISTER CADILLAC	***15311 E WHITTIER BLV***	***SE 1/8 - 1/4 (0.135 mi.)***	***G28***	***16***
SHAH ROKH BAHRAMI	***15266 E WHITTIER BLV***	***SE 1/8 - 1/4 (0.137 mi.)***	***I42***	***19***
SHAH ROKH BAHRAMI	15266 WHITTIER BLVD	SE 1/8 - 1/4 (0.137 mi.)	I43	19

Facility Id: 00000041589				
FIRE STATION 59	***10021 SCOTT AVE***	***SE 1/8 - 1/4 (0.155 mi.)***	***I47***	***20***
Facility Id: 00000020808				
RONALD LENTZNER/STEL	***15306 E WHITTIER BLV***	***SE 1/8 - 1/4 (0.171 mi.)***	***I57***	***22***
RONALD LENTZNER/STEL	15306 WHITTIER BLVD	SE 1/8 - 1/4 (0.171 mi.)	I58	22
Facility Id: 00000026494				
CHEVRON STATION 9 52	***14941 E WHITTIER***	***W 1/8 - 1/4 (0.186 mi.)***	***K67***	***24***
95269	14941 WHITTIER BLVD	W 1/8 - 1/4 (0.186 mi.)	K68	24
Facility Id: 00000062730				
SERVICE STATION 3495	14949 WHITTIER BLVD	W 1/8 - 1/4 (0.187 mi.)	K73	26
Facility Id: 00000019088				
UNOCAL SERVICE STATI	***14940 E WHITTIER BLV***	***W 1/8 - 1/4 (0.208 mi.)***	***K75***	***26***
UNION OIL SERVICE ST	14940 WHITTIER BLVD	W 1/8 - 1/4 (0.208 mi.)	K78	27
Facility Id: 00000055970				

CERS TANKS: A review of the CERS TANKS list, as provided by EDR, and dated 10/21/2019 has revealed that there are 3 CERS TANKS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WHITTIER HOSPITAL ME	***9080 COLIMA RD***	***NW 0 - 1/8 (0.105 mi.)***	***E23***	***14***

Lower Elevation	Address	Direction / Distance	Map ID	Page
RONALD LENTZNER/STEL	***15306 E WHITTIER BLV***	***SE 1/8 - 1/4 (0.171 mi.)***	***I57***	***22***
H&S #9	***14941 WHITTIER BLVD***	***W 1/8 - 1/4 (0.186 mi.)***	***K65***	***24***

CA FID UST: A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there is 1 CA FID UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SHAH ROKH BAHRAMI	***15266 E WHITTIER BLV***	***SE 1/8 - 1/4 (0.137 mi.)***	***I42***	***19***
Facility Id: 19054758				
Status: A				

Other Ascertainable Records

RCRA NonGen / NLR: A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 12/16/2019 has revealed that there are 17 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WHITTIER HOSPITAL ME	9080 COLIMA RD	NW 0 - 1/8 (0.105 mi.)	E22	14
EPA ID:: CAL000288294				
DAVID A WARNER, DDS,	9209 COLIMA RD, #400	NW 1/8 - 1/4 (0.173 mi.)	J59	22

EPA ID:: CAL000173887				
THOMAS E GAFFANEY DD EPA ID:: CAL000174118	9209 COLIMA RD, #250	NW 1/8 - 1/4 (0.173 mi.)	J61	23

Lower Elevation	Address	Direction / Distance	Map ID	Page
ORCHARD SUPPLY COMPA EPA ID:: CAL000420183	15225 EAST WHITTIER	SSE 0 - 1/8 (0.054 mi.)	C5	10
TORQUE AUTOMOTIVE IN EPA ID:: CAL000433599	15132 WHITTIER BLVD	SW 0 - 1/8 (0.069 mi.)	D12	11
MIDAS AUTO SERVICE-B EPA ID:: CAL000330361	15130 WHITTIER BLVD	SW 0 - 1/8 (0.071 mi.)	D14	11
HOMEGOODS 0797 EPA ID:: CAL000426267	15245 WHITTIER BLVD	SE 0 - 1/8 (0.074 mi.)	C15	12
ULTA BEAUTY #1249 EPA ID:: CAL000425147	15245 WHITTIER BLVD	SE 0 - 1/8 (0.074 mi.)	C16	12
OFFICE DEPOT 895 EPA ID:: CAL000420799	15100 WHITTIER BOULE	SW 0 - 1/8 (0.104 mi.)	D19	14
TRADER JOES 048 EPA ID:: CAL000435380	15025 E WHITTIER BLV	W 0 - 1/8 (0.122 mi.)	F25	15
THE CLEANING STORE EPA ID:: CAL000301277	15030 WHITTIER BLVD	WSW 1/8 - 1/4 (0.136 mi.)	H29	16
LOS ANGELES COUNTY F EPA ID:: CAL931114937	10021 SCOTT AVE- STA	SE 1/8 - 1/4 (0.155 mi.)	I46	19
TESORO ARCO 42005 EPA ID:: CAL000387675	15306 WHITTIER BLVD	SE 1/8 - 1/4 (0.171 mi.)	I53	21
FRIENDLY HILLS SUBST EPA ID:: CAC002963925	9826 COLIMA ROAD	W 1/8 - 1/4 (0.186 mi.)	H63	23
H&S 9 EPA ID:: CAL000272761	14941 E WHITTIER	W 1/8 - 1/4 (0.186 mi.)	K64	23
RALPHS GROCERY CO #6 EPA ID:: CAD981580483	14919 WHITTIER BLVD	WNW 1/8 - 1/4 (0.235 mi.)	L80	27
99 CENTS ONLY STORES EPA ID:: CAL000369766	15345 WHITTIER BLVD	ESE 1/8 - 1/4 (0.237 mi.)	M82	28

DRYCLEANERS: A review of the DRYCLEANERS list, as provided by EDR, has revealed that there are 9 DRYCLEANERS sites within approximately 0.375 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
THE CLEANING STORE Database: DRYCLEAN SOUTH COAST, Date of Government Version: 09/27/2019	15030 E WHITTIER BLV	WSW 1/8 - 1/4 (0.136 mi.)	H31	16
THE CLEANING STORE, Database: DRYCLEANERS, Date of Government Version: 09/06/2019 Database: DRYCLEAN SOUTH COAST, Date of Government Version: 09/27/2019 EPA Id: CAC002957148	15030 WHITTIER BLVD	WSW 1/8 - 1/4 (0.136 mi.)	H33	17
THE CLEANING STORE Database: DRYCLEAN SOUTH COAST, Date of Government Version: 09/27/2019	15030 E WHITTIER BLV	WSW 1/8 - 1/4 (0.136 mi.)	H34	17

Lower Elevation	Address	Direction / Distance	Map ID	Page
THE CLEANING STORE	15030 WHITTIER BLVD	WSW 1/8 - 1/4 (0.136 mi.)	H35	17
Database: DRYCLEAN SOUTH COAST, Date of Government Version: 09/27/2019				
CLEANING STORE THE	***15030 WHITTIER BLVD***	***WSW 1/8 - 1/4 (0.136 mi.)***	***H36***	***17***
Database: DRYCLEANERS, Date of Government Version: 09/06/2019				
EPA Id: CAL000301277				
THE CLEANING STORE	15030 WHITTIER BLVD	WSW 1/8 - 1/4 (0.136 mi.)	H37	18
Database: DRYCLEAN SOUTH COAST, Date of Government Version: 09/27/2019				
THE CLEANING STORE,	15030 WHITTIER BLVD	WSW 1/8 - 1/4 (0.136 mi.)	H38	18
Database: DRYCLEAN SOUTH COAST, Date of Government Version: 09/27/2019				
GARZA FAMILY INC	***14836 WHITTIER BLVD***	***W 1/4 - 1/2 (0.316 mi.)***	***N84***	***28***
Database: DRYCLEAN SOUTH COAST, Date of Government Version: 09/27/2019				
TONYS DRY CLEANERS	***14836 E WHITTER BLVD***	***W 1/4 - 1/2 (0.316 mi.)***	***N86***	***28***
Database: DRYCLEANERS, Date of Government Version: 09/06/2019				
EPA Id: CAD981649999				

HIST CORTESE: A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 5 HIST CORTESE sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
BOARD FORD	***15265 E WHITTIER BLV***	***SE 0 - 1/8 (0.090 mi.)***	***C17***	***12***
Reg Id: I-11839				
USA GASOLINE #230	***15266 WHITTIER BLVD***	***SE 1/8 - 1/4 (0.137 mi.)***	***I41***	***18***
Reg Id: R-03633				
ARCO #0133	***15306 WHITTIER BLVD***	***SE 1/8 - 1/4 (0.171 mi.)***	***I54***	***21***
Reg Id: I-03089				
CHEVRON #9-5269	***14941 WHITTIER BLVD***	***W 1/8 - 1/4 (0.186 mi.)***	***K69***	***25***
Reg Id: R-09900				
TOSCO - 76 STATION #	***14940 WHITTIER BLVD***	***W 1/8 - 1/4 (0.208 mi.)***	***K74***	***26***
Reg Id: R-11001				

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: A review of the EDR Hist Auto list, as provided by EDR, has revealed that there are 6 EDR Hist Auto sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
FRIENDLY HILLS SHELL	15175 E WHITTIER BLV	S 0 - 1/8 (0.030 mi.)	A1	9
URICH OIL CO	15266 E WHITTIER BLV	SE 1/8 - 1/4 (0.137 mi.)	I39	18
DICK'S TEXACO	15020 E WHITTIER BLV	W 1/8 - 1/4 (0.164 mi.)	H50	20
ARCO SELF SERVICE	15306 E WHITTIER BLV	SE 1/8 - 1/4 (0.171 mi.)	I51	20
STANDARD STATIONS IN	14941 E WHITTIER BLV	W 1/8 - 1/4 (0.186 mi.)	K70	25

EXECUTIVE SUMMARY

Lower Elevation	Address	Direction / Distance	Map ID	Page
COX'S UNION SERVICE	14940 E WHITTIER BLV	W 1/8 - 1/4 (0.208 mi.)	K79	27

EDR Hist Cleaner: A review of the EDR Hist Cleaner list, as provided by EDR, has revealed that there are 5 EDR Hist Cleaner sites within approximately 0.375 miles of the target property.

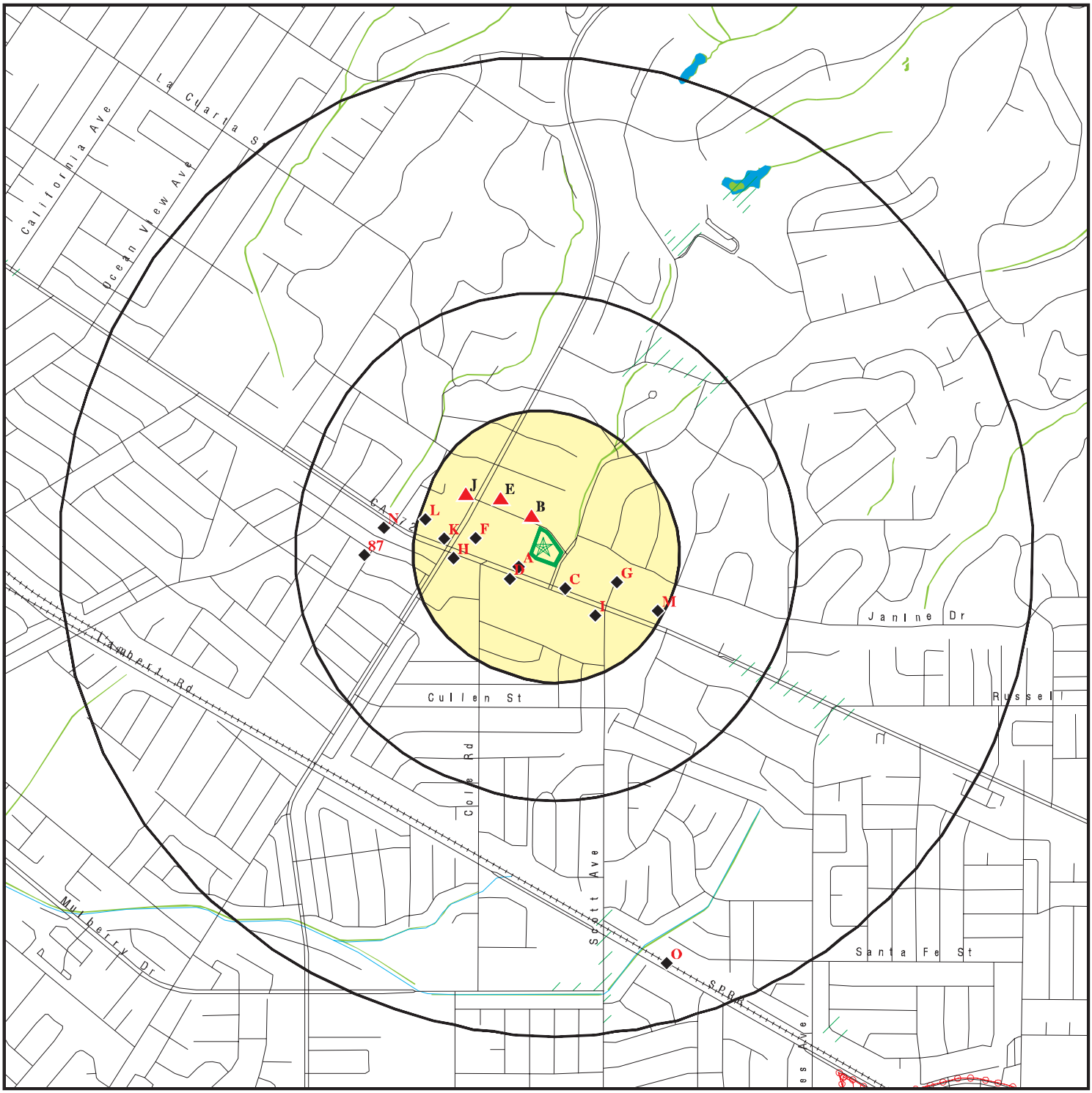
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FRIENDLY HILLS CLEAN	9302 S COLIMA RD	WNW 1/8 - 1/4 (0.141 mi.)	J44	19
WALT'S CLEANERS	9307 COLIMA RD	WNW 1/8 - 1/4 (0.159 mi.)	J48	20

Lower Elevation	Address	Direction / Distance	Map ID	Page
CLEANING STORE	15030 WHITTIER BLVD	WSW 1/8 - 1/4 (0.136 mi.)	H30	16
FOAM RUBBER CITY	14912 E WHITTIER B	W 1/8 - 1/4 (0.208 mi.)	K77	27
TONYS NORGE VILLAGE	14836 E WHITTIER BLV	W 1/4 - 1/2 (0.316 mi.)	N85	28

Count: 5 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
HUNTINGTON BEACH	S123430605	CHEVRON U.S.A. INC, DAMERON FEE	BEACH/MEMPHIS	90631	DRYCLEANERS
LA HABRA	S103878672	UNOCAL - MINERAL SPRINGS	COLIMA	90603	CPS-SLIC
LA HABRA	S103646226	WHITE AUTOMOTIVE	250 WHITTIER	90631	LUST, HIST CORTESE
LA HABRA HTS.	S103878688	UNOCAL - PLGS LEASE	WHITTIER	90631	CPS-SLIC
WHITTIER	S106665606	GREENWAY TRAIL PROJECT	RR RT OF WY(SAN GABRIEL RIV TO	90605	ENVIROSTOR

OVERVIEW MAP - 5947854.2S



0 1/4 1/2 1 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
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- 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: 9829 La Serna Drive ADDRESS: 9829 La Serna Drive Whittier CA 90605 LAT/LONG: 33.948837 / 118.003053	CLIENT: Smith Emery GeoServices CONTACT: Ayesha Syeda INQUIRY #: 5947854.2s DATE: January 24, 2020 7:15 pm

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

DETAIL MAP - 5947854.2S

- 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
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- 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: 9829 La Serna Drive	CLIENT: Smith Emery GeoServices
ADDRESS: 9829 La Serna Drive Whittier CA 90605	CONTACT: Ayesha Syeda
LAT/LONG: 33.948837 / 118.003053	INQUIRY #: 5947854.2s DATE: January 24, 2020 7:17 pm

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

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	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		5	4	NR	NR	NR	9
RCRA-VSQG	0.250		1	0	NR	NR	NR	1
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	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	1	0	2	NR	3
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		0	5	0	NR	NR	5

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
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		2	4	NR	NR	NR	6
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	1	0	NR	NR	1
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
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	1	NR	NR	1
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
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	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								
AOCONCERN	1.000		0	0	0	0	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		7	6	NR	NR	NR	13
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		2	6	NR	NR	NR	8
HIST UST	0.250		2	12	NR	NR	NR	14
CERS TANKS	0.250		1	2	NR	NR	NR	3
CA FID UST	0.250		0	1	NR	NR	NR	1
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0

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
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
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		8	9	NR	NR	NR	17
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.375		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	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0

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
DRYCLEANERS	0.375		0	7	2	NR	NR	9
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
HAZNET	TP		NR	NR	NR	NR	NR	0
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		1	4	0	NR	NR	5
LOS ANGELES CO. HMS	TP		NR	NR	NR	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
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		0	0	0	0	NR	0
LA Co. Site Mitigation	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
UIC GEO	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
MILITARY PRIV SITES	TP		NR	NR	NR	NR	NR	0
PROJECT	TP		NR	NR	NR	NR	NR	0
WDR	TP		NR	NR	NR	NR	NR	0
CIWQS	TP		NR	NR	NR	NR	NR	0
CERS	TP		NR	NR	NR	NR	NR	0
NON-CASE INFO	TP		NR	NR	NR	NR	NR	0
OTHER OIL GAS	TP		NR	NR	NR	NR	NR	0
PROD WATER PONDS	TP		NR	NR	NR	NR	NR	0
SAMPLING POINT	TP		NR	NR	NR	NR	NR	0
WELL STIM PROJ	TP		NR	NR	NR	NR	NR	0
MINES MRDS	TP		NR	NR	NR	NR	NR	0
LOS ANGELES CO LF METHANE	0.500		0	0	0	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.250		1	5	NR	NR	NR	6
EDR Hist Cleaner	0.375		0	4	1	NR	NR	5
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	30	71	4	2	0	107

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

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1
South
< 1/8
0.030 mi.
159 ft.

Relative:
Lower

FRIENDLY HILLS SHELL
15175 E WHITTIER BLVD
WHITTIER, CA 90601

EDR Hist Auto

1008995167
N/A

Click here for full text details

B2
NNW
< 1/8
0.032 mi.
171 ft.

Relative:
Higher

WHITTIER HOSPITAL MEDICAL CENT
15151 E JANINE DR
WHITTIER, CA 90605

RCRA-SQG
FINDS
ECHO
EMI

1000421820
CAD981392053

Click here for full text details

RCRA-SQG
EPA Id CAD981392053

FINDS
Registry ID: 110002691891

ECHO
Registry ID 110002691891

EMI
Facility Id 44814

B3
NNW
< 1/8
0.032 mi.
171 ft.

Relative:
Higher

WHITTIER HOSPITAL MEDICAL CTR
15151 JANINE DR
WHITTIER, CA 90605

UST

U003895680
N/A

Click here for full text details

UST
Facility Id 20012

A4
SW
< 1/8
0.038 mi.
201 ft.

Relative:
Lower

QUEST DIAGNOSTICS WHITTIER RRL
15141 E WHITTIER BLVD
WHITTIER, CA 90603

RCRA-SQG

1010314274
CAR000184242

Click here for full text details

RCRA-SQG
EPA Id CAR000184242

C5
SSE
< 1/8
0.054 mi.
286 ft.

Relative:
Lower

ORCHARD SUPPLY COMPANY, LLC #351 WHITTIER DBA ORCH
15225 EAST WHITTIER BLVD
WHITTIER, CA 90603

RCRA NonGen / NLR | **1024856340**
CAL000420183

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000420183

C6
SSE
< 1/8
0.062 mi.
329 ft.

Relative:
Lower

ULTA BEAUTY #1249 (WHITTIER, CA)
15235 WHITTIER BLVD
WHITTIER, CA 90603

CERS HAZ WASTE | **S123537755**
N/A

Click here for full text details

A7
SW
< 1/8
0.066 mi.
348 ft.

Relative:
Lower

ALLSIZE SELF STORAGE
15146 WHITTIER BLVD
WHITTIER, CA 90603

SWEEPS UST
LOS ANGELES CO. HMS | **S102063151**
N/A

Click here for full text details

SWEEPS UST
Status A
Comp Number 13326

LOS ANGELES CO. HMS
Facility ID 013059-013326
Facility Status OPEN

A8
SSE
< 1/8
0.068 mi.
359 ft.

Relative:
Lower

HARBOR FREIGHT TOOLS USA
15214 WHITTIER BLVD
WHITTIER, CA 90603

RCRA-VSQG | **1024877179**
CAR000287482

Click here for full text details

RCRA-VSQG
EPA Id CAR000287482

A9
SSE
< 1/8
0.068 mi.
359 ft.

Relative:
Lower

HARBOR FREIGHT TOOLS, STORE # 2936
15214 WHITTIER BLVD STE B
WHITTIER, CA 90603

CERS HAZ WASTE | **S123537997**
N/A

Click here for full text details

A10
SSE
< 1/8
0.068 mi.
359 ft.

Relative:
Lower

SACKETT AND PETERS
15214 E WHITTIER BLVD
WHITTIER, CA 90603

RCRA-SQG
FINDS
ECHO

1000269945
CAD982323073

Click here for full text details

RCRA-SQG
EPA Id CAD982323073

FINDS
Registry ID: 110002794183

ECHO
Registry ID 110002794183

D11
SW
< 1/8
0.069 mi.
366 ft.

Relative:
Lower

TORQUE AUTOMOTIVE INC
15132 WHITTIER BLVD
WHITTIER, CA 90603

CERS HAZ WASTE

S123537689
N/A

Click here for full text details

D12
SW
< 1/8
0.069 mi.
366 ft.

Relative:
Lower

TORQUE AUTOMOTIVE INC
15132 WHITTIER BLVD
WHITTIER, CA 90603

RCRA NonGen / NLR

1024865031
CAL000433599

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000433599

D13
SW
< 1/8
0.071 mi.
376 ft.

Relative:
Lower

MIDAS AUTO SERVICE
15130 E WHITTIER BLVD
WHITTIER, CA 90603

CERS HAZ WASTE
HAZNET
CERS

S113163574
N/A

Click here for full text details

HAZNET
GEPAID CAL912594810

D14
SW
< 1/8
0.071 mi.
376 ft.

Relative:
Lower

MIDAS AUTO SERVICE-BELL
15130 WHITTIER BLVD
WHITTIER, CA 90603

RCRA NonGen / NLR

1024819653
CAL000330361

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000330361

C15
SE
< 1/8
0.074 mi.
392 ft.

Relative:
Lower

HOMEGOODS 0797
15245 WHITTIER BLVD
WHITTIER, CA 90603

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000426267

RCRA NonGen / NLR | **1024859300**
CAL000426267

C16
SE
< 1/8
0.074 mi.
392 ft.

Relative:
Lower

ULTA BEAUTY #1249
15245 WHITTIER BLVD
WHITTIER, CA 90605

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000425147

RCRA NonGen / NLR | **1024858693**
CAL000425147

C17
SE
< 1/8
0.090 mi.
477 ft.

Relative:
Lower

BOARD FORD
15265 E WHITTIER BLVD
WHITTIER, CA 90603

Click here for full text details

RCRA-SQG
SWEEPS UST
HIST UST
FINDS
ECHO
EMI
HAZNET
HIST CORTESE
LOS ANGELES CO. HMS
LA Co. Site Mitigation
CERS

1000354618
CAD066649625

RCRA-SQG
EPA Id CAD066649625

SWEEPS UST
Comp Number 11839

HIST UST
Facility Id 00000067787

FINDS
Registry ID: 110002655029

ECHO
Registry ID 110002655029

EMI
Facility Id 17916

HAZNET

BOARD FORD (Continued) **1000354618**

GEPAID CAD066649625

HIST CORTESE
Reg Id I-11839

LOS ANGELES CO. HMS
Facility ID 011776-011839
Facility Status Removed

LA Co. Site Mitigation
Site ID SD0000339
Case ID RO0001340

C18 **MC ALLISTER CADILLAC, INC** **RCRA-SQG** **1000149163**
SE **15311 E WHITTIER BLVD** **HIST UST** **CAD029646536**
< 1/8 **WHITTIER, CA 90603** **FINDS**
0.092 mi. **ECHO**
487 ft. **HAZNET**
LOS ANGELES CO. HMS
Relative: Lower Click here for full text details **LA Co. Site Mitigation**
CERS

RCRA-SQG
EPA Id CAD029646536

HIST UST
Facility Id 00000007788

FINDS
Registry ID: 110002642533

ECHO
Registry ID 110002642533

HAZNET
GEPAID CAD029646536

LOS ANGELES CO. HMS
Facility ID 014489-015085
Facility Status Removed

LA Co. Site Mitigation
Site ID SD0000496
Case ID RO0001496

D19
SW
< 1/8
0.104 mi.
550 ft.

Relative:
Lower

OFFICE DEPOT 895
15100 WHITTIER BOULEVARD
WHITTIER, CA 90603

RCRA NonGen / NLR **1024856615**
CAL000420799

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000420799

D20
SW
< 1/8
0.104 mi.
550 ft.

Relative:
Lower

SAFEWAY STORES INC (DEST)
15100 WHITTIER BLVD
WHITTIER, CA 90603

CERS HAZ WASTE **U003060427**
HAZNET **N/A**
LOS ANGELES CO. HMS

Click here for full text details

HAZNET
GEPAID CAL000420799

LOS ANGELES CO. HMS
Facility ID 004218-I04371
Facility Status Closed

E21
NW
< 1/8
0.105 mi.
556 ft.

Relative:
Higher

WHITTIER HOSPITAL MED CENTER
9080 COLIMA RD
WHITTIER, CA 90605

UST **U004265249**
N/A

Click here for full text details

UST
Facility Id LACoFA0007741

E22
NW
< 1/8
0.105 mi.
556 ft.

Relative:
Higher

WHITTIER HOSPITAL MEDICAL CENTER
9080 COLIMA RD
WHITTIER, CA 90605

RCRA NonGen / NLR **1024810147**
CAL000288294

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000288294

E23
NW
< 1/8
0.105 mi.
556 ft.

Relative:
Higher

WHITTIER HOSPITAL MEDICAL CTR
9080 COLIMA RD
WHITTIER, CA 90605

CERS HAZ WASTE **S105792536**
CERS TANKS **N/A**
LOS ANGELES CO. HMS
CERS

Click here for full text details

LOS ANGELES CO. HMS
Facility ID 015613-020012
Facility ID 015613-045678
Facility Status Closed

WHITTIER HOSPITAL MEDICAL CTR (Continued) **S105792536**

Facility Status Permit

F24
West
< 1/8
0.122 mi.
643 ft.

Relative:
Lower

TRADER JOE'S #48
15025 E WHITTIER BLVD
WHITTIER, CA 90603

CERS HAZ WASTE **S123534526**
CERS **N/A**

Click here for full text details

F25
West
< 1/8
0.122 mi.
643 ft.

Relative:
Lower

TRADER JOES 048
15025 E WHITTIER BLVD
WHITTIER, CA 90603

RCRA NonGen / NLR **1024866789**
CAL000435380

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000435380

G26
ESE
1/8-1/4
0.132 mi.
697 ft.

Relative:
Lower

BOARD FORD
15265 WHITTIER BLVD
WHITTIER, CA 90603

HIST UST **U001564323**
N/A

Click here for full text details

HIST UST
Facility Id 00000020576

G27
ESE
1/8-1/4
0.132 mi.
697 ft.

Relative:
Lower

BOARD FORD
15265 WHITTIER BLVD E
WHITTIER, CA 90603

LUST **S105033987**
CERS **N/A**

Click here for full text details

LUST
Status Preliminary site assessment workplan submitted
Status Completed - Case Closed
Facility Id I-11839
Global Id T0603703858
Global ID T0603703858

G28
SE
1/8-1/4
0.135 mi.
714 ft.

Relative:
Lower

MCALLISTER CADILLAC
15311 E WHITTIER BLVD
WHITTIER, CA 90603

HIST UST **S106835326**
EMI **N/A**

Click here for full text details

EMI
Facility Id 6970

H29
WSW
1/8-1/4
0.136 mi.
720 ft.

Relative:
Lower

THE CLEANING STORE
15030 WHITTIER BLVD #2
WHITTIER, CA 90603

RCRA NonGen / NLR **1024812781**
CAL000301277

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000301277

H30
WSW
1/8-1/4
0.136 mi.
720 ft.

Relative:
Lower

CLEANING STORE
15030 WHITTIER BLVD
WHITTIER, CA 90603

EDR Hist Cleaner **1018538816**
N/A

Click here for full text details

H31
WSW
1/8-1/4
0.136 mi.
720 ft.

Relative:
Lower

THE CLEANING STORE
15030 E WHITTIER BLVD
WHITTIER, CA 90603

DRYCLEANERS **S121699116**
N/A

Click here for full text details

H32
WSW
1/8-1/4
0.136 mi.
720 ft.

Relative:
Lower

THE CLEANING STORE, YO P KIM D
15030 E WHITTIER BLVD
WHITTIER, CA 90603

CERS HAZ WASTE **S106840850**
EMI **N/A**
CERS

Click here for full text details

EMI
Facility Id 74692

H33
WSW
1/8-1/4
0.136 mi.
720 ft.

Relative:
Lower

THE CLEANING STORE, J S EAM, DBA
15030 WHITTIER BLVD #2
WHITTIER, CA 90603

DRYCLEANERS

S121694448
N/A

Click here for full text details

DRYCLEANERS
EPA Id CAC002957148

H34
WSW
1/8-1/4
0.136 mi.
720 ft.

Relative:
Lower

THE CLEANING STORE
15030 E WHITTIER BLVD
WHITTIER, CA 90603

DRYCLEANERS

S121699353
N/A

Click here for full text details

H35
WSW
1/8-1/4
0.136 mi.
720 ft.

Relative:
Lower

THE CLEANING STORE
15030 WHITTIER BLVD
WHITTIER, CA 90603

DRYCLEANERS

S121700106
N/A

Click here for full text details

H36
WSW
1/8-1/4
0.136 mi.
720 ft.

Relative:
Lower

CLEANING STORE THE
15030 WHITTIER BLVD #2
WHITTIER, CA 90603

RCRA-SQG
FINDS
ECHO
DRYCLEANERS
HAZNET

1000152624
CAD981614373

Click here for full text details

RCRA-SQG
EPA Id CAD981614373

FINDS
Registry ID: 110002724151

ECHO
Registry ID 110002724151

DRYCLEANERS
EPA Id CAL000301277

HAZNET
GEPAID CAD981614373

H37
WSW
1/8-1/4
0.136 mi.
720 ft.

Relative:
Lower

THE CLEANING STORE
15030 WHITTIER BLVD UNIT 2
WHITTIER, CA

DRYCLEANERS

S121697841
N/A

Click here for full text details

H38
WSW
1/8-1/4
0.136 mi.
720 ft.

Relative:
Lower

THE CLEANING STORE, JONG OK KONG
15030 WHITTIER BLVD #2
WHITTIER, CA 90603

DRYCLEANERS

S121695664
N/A

Click here for full text details

I39
SE
1/8-1/4
0.137 mi.
723 ft.

Relative:
Lower

URICH OIL CO
15266 E WHITTIER BLVD
WHITTIER, CA 90601

EDR Hist Auto

1008994706
N/A

Click here for full text details

I40
SE
1/8-1/4
0.137 mi.
723 ft.

Relative:
Lower

USA GASOLINE CORP FACILITY NO 0230
15266 WHITTIER BLVD
WHITTIER, CA 90603

RCRA-SQG

1008194798
CAR000161141

Click here for full text details

RCRA-SQG
EPA Id CAR000161141

I41
SE
1/8-1/4
0.137 mi.
723 ft.

Relative:
Lower

USA GASOLINE #230
15266 WHITTIER BLVD E
WHITTIER, CA 90603

LUST
HIST CORTESE
CERS

S102769628
N/A

Click here for full text details

LUST
Status Case Closed
Status Completed - Case Closed
Facility Id R-03633
Global Id T0603704621
Global ID T0603704621

HIST CORTESE
Reg Id R-03633

I42
SE
1/8-1/4
0.137 mi.
723 ft.

Relative:
Lower

SHAH ROKH BAHRAMI
15266 E WHITTIER BLVD
WHITTIER, CA 90602

SWEEPS UST
HIST UST
CA FID UST

S101617829
N/A

Click here for full text details

SWEEPS UST
Status A
Tank Status A
Comp Number 3633

CA FID UST
Facility Id 19054758
Status A

I43
SE
1/8-1/4
0.137 mi.
723 ft.

Relative:
Lower

SHAH ROKH BAHRAMI
15266 WHITTIER BLVD
WHITTIER, CA 90602

HIST UST

U001564314
N/A

Click here for full text details

HIST UST
Facility Id 00000041589

J44
WNW
1/8-1/4
0.141 mi.
743 ft.

Relative:
Higher

FRIENDLY HILLS CLEANERS
9302 S COLIMA RD
WHITTIER, CA 90601

EDR Hist Cleaner

1009126806
N/A

Click here for full text details

I45
SE
1/8-1/4
0.155 mi.
816 ft.

Relative:
Lower

LA CO FD FIRE STA #059
10021 SCOTT AVE
WHITTIER, CA 90603

CERS HAZ WASTE
LOS ANGELES CO. HMS
CERS

S102061722
N/A

Click here for full text details

LOS ANGELES CO. HMS
Facility ID 012357-012488
Facility Status Removed

I46
SE
1/8-1/4
0.155 mi.
816 ft.

Relative:
Lower

LOS ANGELES COUNTY FIRE DEPARTMENT - FS 059
10021 SCOTT AVE- STATION 059
WHITTIER, CA 90603

RCRA NonGen / NLR

1024876303
CAL931114937

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL931114937

I47
SE
1/8-1/4
0.155 mi.
816 ft.

Relative:
Lower

FIRE STATION 59
10021 SCOTT AVE
WHITTIER, CA 90063

SWEEPS UST HIST UST

U001562290
N/A

Click here for full text details

SWEEPS UST
Status A
Tank Status A
Comp Number 12488

HIST UST
Facility Id 00000020808

J48
WNW
1/8-1/4
0.159 mi.
839 ft.

Relative:
Higher

WALT'S CLEANERS
9307 COLIMA RD
WHITTIER, CA 90601

EDR Hist Cleaner

1009127049
N/A

Click here for full text details

H49
West
1/8-1/4
0.161 mi.
850 ft.

Relative:
Lower

MCDONALD'S WHITTIER BLVD.
15000 WHITTIER BLVD
WHITTIER, CA 90603

SWEEPS UST CERS

S106929235
N/A

Click here for full text details

SWEEPS UST
Status A
Comp Number 12117

H50
West
1/8-1/4
0.164 mi.
865 ft.

Relative:
Lower

DICK'S TEXACO
15020 E WHITTIER BLVD
WHITTIER, CA 90601

EDR Hist Auto

1008996347
N/A

Click here for full text details

I51
SE
1/8-1/4
0.171 mi.
901 ft.

Relative:
Lower

ARCO SELF SERVICE
15306 E WHITTIER BLVD
WHITTIER, CA 90601

EDR Hist Auto

1008996360
N/A

Click here for full text details

I52
SE
1/8-1/4
0.171 mi.
901 ft.

Relative:
Lower

ARCO 42005
15306 E WHITTIER BLVD
WHITTIER, CA 90603

UST **U004265678**
N/A

Click here for full text details

UST
Facility Id LACoFA0029761

I53
SE
1/8-1/4
0.171 mi.
901 ft.

Relative:
Lower

TESORO ARCO 42005
15306 WHITTIER BLVD
WHITTIER, CA 90603

RCRA NonGen / NLR **1024839552**
CAL000387675

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000387675

I54
SE
1/8-1/4
0.171 mi.
901 ft.

Relative:
Lower

ARCO #0133
15306 WHITTIER BLVD E
WHITTIER, CA 90603

LUST **S102424170**
HIST CORTESE **N/A**
CERS

Click here for full text details

LUST
Status Remedial action (cleanup) Underway
Status Completed - Case Closed
Facility Id I-03089
Global Id T0603702890
Global ID T0603702890

HIST CORTESE
Reg Id I-03089

I55
SE
1/8-1/4
0.171 mi.
901 ft.

Relative:
Lower

ARCO PRODUCTS CO
15306 WHITTIER BLVD
WHITTIER, CA 90603

SWEEPS UST **S104538793**
LOS ANGELES CO. HMS **N/A**

Click here for full text details

SWEEPS UST
Status A
Tank Status A
Comp Number 3089

LOS ANGELES CO. HMS
Facility ID 002985-I03089
Facility Status Closed

I56
SE
1/8-1/4
0.171 mi.
901 ft.

Relative:
Lower

ARCO PRODUCTS #00133
15306 WHITTIER BLVD
WHITTIER, CA 90603

UST **U003938027**
N/A

Click here for full text details

UST
Facility Id 3089

I57
SE
1/8-1/4
0.171 mi.
901 ft.

Relative:
Lower

RONALD LENTZNER/STELLA SAKYS
15306 E WHITTIER BLVD
WHITTIER, CA 90603

CERS HAZ WASTE **S113114021**
HIST UST **N/A**
CERS TANKS
HAZNET
CERS

Click here for full text details

HAZNET
GEPAID CAL000225645

I58
SE
1/8-1/4
0.171 mi.
901 ft.

Relative:
Lower

RONALD LENTZNER/STELLA SAKYS
15306 WHITTIER BLVD
WHITTIER, CA 90603

HIST UST **U001564328**
N/A

Click here for full text details

HIST UST
Facility Id 00000026494

J59
NW
1/8-1/4
0.173 mi.
916 ft.

Relative:
Higher

DAVID A WARNER, DDS, INC.
9209 COLIMA RD, #4000
WHITTIER, CA 90605

RCRA NonGen / NLR **1024796239**
CAL000173887

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000173887

J60
NW
1/8-1/4
0.173 mi.
916 ft.

Relative:
Higher

WHITTIER ORTHOPEDIC SURGERY
9209 COLIMA RD UNIT 1000
WHITTIER, CA 90605

RCRA-SQG **1000820299**
FINDS **CAD983663337**
ECHO

Click here for full text details

RCRA-SQG
EPA Id CAD983663337

FINDS
Registry ID: 110002895617

ECHO

WHITTIER ORTHOPEDIC SURGERY (Continued) **1000820299**

Registry ID 110002895617

J61
NW
1/8-1/4
0.173 mi.
916 ft.

Relative:
Higher

THOMAS E GAFFANEY DDS
9209 COLIMA RD, #2500
WHITTIER, CA 90605

RCRA NonGen / NLR **1024796262**
CAL000174118

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000174118

H62
West
1/8-1/4
0.186 mi.
983 ft.

Relative:
Lower

SOUTHERN CALIFORNIA EDISON, FRIENDLY HILL SUBSTATI
9826 COLIMA RD
WHITTIER, CA 90603

ENVIROSTOR **S112945767**
VCP **N/A**
HAZNET

Click here for full text details

ENVIROSTOR
Facility Id 60002813
Status Active

VCP
Facility Id 60002813
Status Active

HAZNET
GEPAID CAC002590832

H63
West
1/8-1/4
0.186 mi.
983 ft.

Relative:
Lower

FRIENDLY HILLS SUBSTATION
9826 COLIMA ROAD
WHITTIER, CA 90601

RCRA NonGen / NLR **1024744548**
CAC002963925

Click here for full text details

RCRA NonGen / NLR
EPA Id CAC002963925

K64
West
1/8-1/4
0.186 mi.
984 ft.

Relative:
Lower

H&S 9
14941 E WHITTIER
WHITTIER, CA 90605

RCRA NonGen / NLR **1024807093**
CAL000272761

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000272761

K65
West
1/8-1/4
0.186 mi.
984 ft.

Relative:
Lower

H&S #9
14941 WHITTIER BLVD
WHITTIER, CA 90605

CERS HAZ WASTE
CERS TANKS
LOS ANGELES CO. HMS
CERS

S118495716
N/A

Click here for full text details

LOS ANGELES CO. HMS
Facility ID 010041-061562
Facility Status Permit

K66
West
1/8-1/4
0.186 mi.
984 ft.

Relative:
Lower

H&S #9
14941 WHITTIER BLVD
WHITTIER, CA 90605

UST

U004265676
N/A

Click here for full text details

UST
Facility Id LACoFA0029729

K67
West
1/8-1/4
0.186 mi.
984 ft.

Relative:
Lower

CHEVRON STATION 9 5269
14941 E WHITTIER
WHITTIER, CA 90605

RCRA-SQG
HIST UST
FINDS
ECHO
HAZNET

1000818688
CAD983645938

Click here for full text details

RCRA-SQG
EPA Id CAD983645938

FINDS
Registry ID: 110002883023

ECHO
Registry ID 110002883023

HAZNET
GEPAID CAD983645938

K68
West
1/8-1/4
0.186 mi.
984 ft.

Relative:
Lower

95269
14941 WHITTIER BLVD
WHITTIER, CA 90605

HIST UST

U001564358
N/A

Click here for full text details

HIST UST
Facility Id 00000062730

K69
West
1/8-1/4
0.186 mi.
984 ft.

Relative:
Lower

CHEVRON #9-5269
14941 WHITTIER BLVD E
WHITTIER, CA 90605

LUST
HIST CORTESE
CERS

S103945728
N/A

Click here for full text details

LUST
Status Pollution Characterization
Status Completed - Case Closed
Facility Id R-09900
Global Id T0603704876
Global ID T0603704876

HIST CORTESE
Reg Id R-09900

K70
West
1/8-1/4
0.186 mi.
984 ft.

Relative:
Lower

STANDARD STATIONS INC
14941 E WHITTIER BLVD
WHITTIER, CA 90601

EDR Hist Auto

1008995173
N/A

Click here for full text details

K71
West
1/8-1/4
0.186 mi.
984 ft.

Relative:
Lower

FRIENDLY HILLS CHEVRON
14941 WHITTIER BLVD
WHITTIER, CA 90605

SWEEPS UST
LOS ANGELES CO. HMS

S105792738
N/A

Click here for full text details

SWEEPS UST
Status A
Tank Status A
Comp Number 9900

LOS ANGELES CO. HMS
Facility ID 010041-038150
Facility Status Closed

K72
West
1/8-1/4
0.187 mi.
986 ft.

Relative:
Lower

UNOCAL CORP SS 3495
14949 E WHITTIER BLVD
WHITTIER, CA

SWEEPS UST

S106933492
N/A

Click here for full text details

SWEEPS UST
Status A
Tank Status A
Comp Number 11001

K73
West
1/8-1/4
0.187 mi.
986 ft.

Relative:
Lower

SERVICE STATION 3495
14949 WHITTIER BLVD
WHITTIER, CA 90603

HIST UST **U001564329**
N/A

Click here for full text details

HIST UST
Facility Id 00000019088

K74
West
1/8-1/4
0.208 mi.
1096 ft.

Relative:
Lower

TOSCO - 76 STATION #3495
14940 WHITTIER BLVD E
WHITTIER, CA 90605

LUST **S102590744**
HIST CORTESE **N/A**
CERS

Click here for full text details

LUST
Status Remedial action (cleanup) Underway
Status Completed - Case Closed
Facility Id R-11001
Global Id T0603704995
Global ID T0603704995

HIST CORTESE
Reg Id R-11001

K75
West
1/8-1/4
0.208 mi.
1096 ft.

Relative:
Lower

UNOCAL SERVICE STATION #3495
14940 E WHITTIER BLVD
WHITTIER, CA 90605

HIST UST **S113009139**
HAZNET **N/A**

Click here for full text details

HAZNET
GEPAID CAD981649957

K76
West
1/8-1/4
0.208 mi.
1096 ft.

Relative:
Lower

TOSCO/UNOCAL #30505
14940 WHITTIER BLVD
WHITTIER, CA 90605

UST **U003942390**
N/A

Click here for full text details

UST
Facility Id 24678

K77
West
1/8-1/4
0.208 mi.
1096 ft.

Relative:
Lower

FOAM RUBBER CITY
14912 E WHITTIER BLVD
WHITTIER, CA

EDR Hist Cleaner

1009216070
N/A

Click here for full text details

K78
West
1/8-1/4
0.208 mi.
1096 ft.

Relative:
Lower

UNION OIL SERVICE STATION 3495
14940 WHITTIER BLVD
WHITTIER, CA 90605

HIST UST

1000166943
N/A

Click here for full text details

HIST UST
Facility Id 00000055970

K79
West
1/8-1/4
0.208 mi.
1096 ft.

Relative:
Lower

COX'S UNION SERVICE
14940 E WHITTIER BLVD
WHITTIER, CA 90601

EDR Hist Auto

1008995071
N/A

Click here for full text details

L80
WNW
1/8-1/4
0.235 mi.
1239 ft.

Relative:
Lower

RALPHS GROCERY CO #64
14919 WHITTIER BLVD
WHITTIER, CA 90605

RCRA NonGen / NLR

1024783118
CAD981580483

Click here for full text details

RCRA NonGen / NLR
EPA Id CAD981580483

L81
WNW
1/8-1/4
0.235 mi.
1239 ft.

Relative:
Lower

RALPHS GROCERY CO #64
14919 WHITTIER BLVD
WHITTIER, CA 90605

CERS HAZ WASTE
HAZNET
CERS

S113007697
N/A

Click here for full text details

HAZNET
GEPAID CAD981580483

M82
ESE
1/8-1/4
0.237 mi.
1252 ft.

Relative:
Lower

99 CENTS ONLY STORES
15345 WHITTIER BLVD
WHITTIER, CA 90603

RCRA NonGen / NLR | **1024832094**
CAL000369766

Click here for full text details

RCRA NonGen / NLR
EPA Id CAL000369766

M83
ESE
1/8-1/4
0.237 mi.
1252 ft.

Relative:
Lower

99 CENTS ONLY STORES
15345 WHITTIER BLVD
WHITTIER, CA 90603

CERS HAZ WASTE | **S113800590**
HAZNET | **N/A**
CERS

Click here for full text details

HAZNET
GEPAID CAL000369766

N84
West
1/4-1/2
0.316 mi.
1669 ft.

Relative:
Lower

GARZA FAMILY INC
14836 WHITTIER BLVD
WHITTIER, CA 90605

DRYCLEANERS | **S106831519**
EMI | **N/A**

Click here for full text details

EMI
Facility Id 16537

N85
West
1/4-1/2
0.316 mi.
1669 ft.

Relative:
Lower

TONYS NORGE VILLAGE CLEANERS
14836 E WHITTIER BLVD
WHITTIER, CA 90601

EDR Hist Cleaner | **1018421553**
N/A

Click here for full text details

N86
West
1/4-1/2
0.316 mi.
1669 ft.

Relative:
Lower

TONYS DRY CLEANERS
14836 E WHITTER BLVD
WHITTIER, CA 90605

RCRA-SQG | **1000442128**
FINDS | **CAD981649999**
ECHO
DRYCLEANERS
HAZNET

Click here for full text details

RCRA-SQG
EPA Id CAD981649999

FINDS
Registry ID: 110002737147

ECHO
Registry ID 110002737147

TONYS DRY CLEANERS (Continued) **1000442128**

DRYCLEANERS
EPA Id CAD981649999

HAZNET
GEPAID CAD981649999

87
West
1/4-1/2
0.353 mi.
1862 ft.

Relative:
Lower

FRENCHIES PAPER DISPOSAL **WMUDS/SWAT** **S104156344**
14888 EAST DALMAN **N/A**
WHITTER, CA

Click here for full text details

O88
SSE
1/2-1
0.877 mi.
4628 ft.

Relative:
Lower

UPRR SITE ADJACENT TO PROPOSED GREENWAY TRAIL EXTE **ENVIROSTOR** **S118098153**
LEFFINGWELL CREEK CROSSING, EAST OF SCOTT AVENUE **VCP** **N/A**
WHITTIER, CA 90604

Click here for full text details

ENVIROSTOR
Facility Id 60002182
Status Active

VCP
Facility Id 60002182
Status Active

O89
SSE
1/2-1
0.890 mi.
4699 ft.

Relative:
Lower

WHITTIER GREENWAY TRAIL EAST EXTENSION **ENVIROSTOR** **S118353715**
LEFFINGWELL CREEK CROSSING, EAST OF SCOTT AVENUE **VCP** **N/A**
WHITTIER, CA 90604

Click here for full text details

ENVIROSTOR
Facility Id 60002222
Status Active

VCP
Facility Id 60002222
Status Active

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	AST	Aboveground Petroleum Storage Tank Facilities	California Environmental Protection Agency	07/06/2016	07/12/2016	09/19/2016
CA	BROWNFIELDS	Considered Brownfieds Sites Listing	State Water Resources Control Board	09/23/2019	09/24/2019	11/06/2019
CA	CA BOND EXP. PLAN	Bond Expenditure Plan	Department of Health Services	01/01/1989	07/27/1994	08/02/1994
CA	CA FID UST	Facility Inventory Database	California Environmental Protection Agency	10/31/1994	09/05/1995	09/29/1995
CA	CDL	Clandestine Drug Labs	Department of Toxic Substances Control	06/30/2018	07/16/2019	09/24/2019
CA	CERS	CalEPA Regulated Site Portal Data	California Environmental Protection Agency	10/21/2019	10/22/2019	01/03/2020
CA	CERS HAZ WASTE	CERS HAZ WASTE	CalEPA	10/21/2019	10/22/2019	01/02/2020
CA	CERS TANKS	California Environmental Reporting System (CERS) Tanks	California Environmental Protection Agency	10/21/2019	10/22/2019	01/03/2020
CA	CHMIRS	California Hazardous Material Incident Report System	Office of Emergency Services	05/15/2019	06/24/2019	08/21/2019
CA	CIWQS	California Integrated Water Quality System	State Water Resources Control Board	09/03/2019	09/04/2019	11/05/2019
CA	CORTESE	"Cortese" Hazardous Waste & Substances Sites List	CAL EPA/Office of Emergency Information	09/23/2019	09/24/2019	11/06/2019
CA	CPS-SLIC	Statewide SLIC Cases (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/06/2019
CA	CUPA LIVERMORE-PLEASANTON	CUPA Facility Listing	Livermore-Pleasanton Fire Department	05/01/2019	05/14/2019	07/17/2019
CA	CUPA SAN FRANCISCO CO	CUPA Facility Listing	San Francisco County Department of Environmen	10/31/2019	11/01/2019	12/11/2019
CA	DEED	Deed Restriction Listing	DTSC and SWRCB	09/03/2019	09/04/2019	11/05/2019
CA	DRYCLEAN AVAQMD	Antelope Valley Air Quality Management District Drycleaner L	Antelope Valley Air Quality Management Distri	08/28/2019	08/30/2019	10/29/2019
CA	DRYCLEAN SOUTH COAST	South Coast Air Quality Management District Drycleaner Listi	South Coast Air Quality Management District	09/27/2019	10/01/2019	11/07/2019
CA	DRYCLEANERS	Cleaner Facilities	Department of Toxic Substance Control	09/06/2019	10/11/2019	12/12/2019
CA	EMI	Emissions Inventory Data	California Air Resources Board	12/31/2017	06/24/2019	08/22/2019
CA	ENF	Enforcement Action Listing	State Water Resoruces Control Board	07/19/2019	07/22/2019	09/26/2019
CA	ENVIROSTOR	EnviroStor Database	Department of Toxic Substances Control	10/28/2019	10/29/2019	01/07/2020
CA	Financial Assurance 1	Financial Assurance Information Listing	Department of Toxic Substances Control	10/17/2019	10/22/2019	01/02/2020
CA	Financial Assurance 2	Financial Assurance Information Listing	California Integrated Waste Management Board	11/08/2019	11/12/2019	01/08/2020
CA	HAULERS	Registered Waste Tire Haulers Listing	Integrated Waste Management Board	11/15/2019	11/15/2019	01/23/2020
CA	HAZNET	Facility and Manifest Data	California Environmental Protection Agency	12/31/2017	05/29/2019	07/22/2019
CA	HIST CAL-SITES	Calsites Database	Department of Toxic Substance Control	08/08/2005	08/03/2006	08/24/2006
CA	HIST CORTESE	Hazardous Waste & Substance Site List	Department of Toxic Substances Control	04/01/2001	01/22/2009	04/08/2009
CA	HIST UST	Hazardous Substance Storage Container Database	State Water Resources Control Board	10/15/1990	01/25/1991	02/12/1991
CA	HWP	EnviroStor Permitted Facilities Listing	Department of Toxic Substances Control	11/18/2019	11/19/2019	01/23/2020
CA	HWT	Registered Hazardous Waste Transporter Database	Department of Toxic Substances Control	10/07/2019	10/08/2019	11/07/2019
CA	ICE	ICE	Department of Toxic Subsances Control	11/18/2019	11/19/2019	01/23/2020
CA	LDS	Land Disposal Sites Listing (GEOTRACKER)	State Water Qualilty Control Board	09/09/2019	09/09/2019	11/05/2019
CA	LIENS	Environmental Liens Listing	Department of Toxic Substances Control	08/29/2019	08/30/2019	10/29/2019
CA	LUST	Leaking Underground Fuel Tank Report (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	10/31/2019
CA	LUST REG 1	Active Toxic Site Investigation	California Regional Water Quality Control Boa	02/01/2001	02/28/2001	03/29/2001
CA	LUST REG 2	Fuel Leak List	California Regional Water Quality Control Boa	09/30/2004	10/20/2004	11/19/2004
CA	LUST REG 3	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	05/19/2003	05/19/2003	06/02/2003
CA	LUST REG 4	Underground Storage Tank Leak List	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	LUST REG 5	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	07/01/2008	07/22/2008	07/31/2008
CA	LUST REG 6L	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	09/09/2003	09/10/2003	10/07/2003
CA	LUST REG 6V	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	06/07/2005	06/07/2005	06/29/2005
CA	LUST REG 7	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	02/26/2004	02/26/2004	03/24/2004
CA	LUST REG 8	Leaking Underground Storage Tanks	California Regional Water Quality Control Boa	02/14/2005	02/15/2005	03/28/2005
CA	LUST REG 9	Leaking Underground Storage Tank Report	California Regional Water Quality Control Boa	03/01/2001	04/23/2001	05/21/2001
CA	MCS	Military Cleanup Sites Listing (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/05/2019
CA	MILITARY PRIV SITES	Military Privatized Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	MILITARY UST SITES	Military UST Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	MINES	Mines Site Location Listing	Department of Conservation	09/09/2019	09/09/2019	11/05/2019
CA	MWMP	Medical Waste Management Program Listing	Department of Public Health	07/19/2019	09/04/2019	11/05/2019
CA	NON-CASE INFO	Non-Case Information Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	NOTIFY 65	Proposition 65 Records	State Water Resources Control Board	09/16/2019	09/18/2019	11/06/2019
CA	NPDES	NPDES Permits Listing	State Water Resources Control Board	11/11/2019	11/12/2019	01/08/2020
CA	OTHER OIL GAS	Other Oil & Gas Projects Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	PEST LIC	Pesticide Regulation Licenses Listing	Department of Pesticide Regulation	09/03/2019	09/04/2019	11/05/2019
CA	PFAS	PFAS Contamination Site Location Listing	State Water Resources Control Board	09/09/2019	09/09/2019	11/05/2019
CA	PROC	Certified Processors Database	Department of Conservation	09/09/2019	09/09/2019	11/05/2019
CA	PROD WATER PONDS	Produced Water Ponds Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	PROJECT	Project Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	RESPONSE	State Response Sites	Department of Toxic Substances Control	10/28/2019	10/29/2019	01/07/2020
CA	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Resources Recycling and Recover		07/01/2013	01/13/2014
CA	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	State Water Resources Control Board		07/01/2013	12/30/2013
CA	SAMPLING POINT	Sampling Point ? Public Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	SAN FRANCISCO AST	Aboveground Storage Tank Site Listing	San Francisco County Department of Public Hea	08/01/2019	08/02/2019	10/11/2019
CA	SCH	School Property Evaluation Program	Department of Toxic Substances Control	10/28/2019	10/29/2019	01/07/2020
CA	SLIC REG 1	Active Toxic Site Investigations	California Regional Water Quality Control Boa	04/03/2003	04/07/2003	04/25/2003
CA	SLIC REG 2	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board San Fran	09/30/2004	10/20/2004	11/19/2004
CA	SLIC REG 3	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	05/18/2006	05/18/2006	06/15/2006
CA	SLIC REG 4	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Region Water Quality Control Board Los Angele	11/17/2004	11/18/2004	01/04/2005
CA	SLIC REG 5	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board Central	04/01/2005	04/05/2005	04/21/2005
CA	SLIC REG 6L	SLIC Sites	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	SLIC REG 6V	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board, Victorv	05/24/2005	05/25/2005	06/16/2005
CA	SLIC REG 7	SLIC List	California Regional Quality Control Board, Co	11/24/2004	11/29/2004	01/04/2005
CA	SLIC REG 8	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Region Water Quality Control Board	04/03/2008	04/03/2008	04/14/2008
CA	SLIC REG 9	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	09/10/2007	09/11/2007	09/28/2007
CA	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	06/06/2012	01/03/2013	02/22/2013
CA	SWEEPS UST	SWEEPS UST Listing	State Water Resources Control Board	06/01/1994	07/07/2005	08/11/2005
CA	SWF/LF (SWIS)	Solid Waste Information System	Department of Resources Recycling and Recover	11/11/2019	11/12/2019	01/08/2020
CA	SWRCY	Recycler Database	Department of Conservation	09/09/2019	09/09/2019	11/07/2019
CA	TOXIC PITS	Toxic Pits Cleanup Act Sites	State Water Resources Control Board	07/01/1995	08/30/1995	09/26/1995
CA	UIC	UIC Listing	Deaprtment of Conservation	08/20/2019	08/20/2019	11/18/2019
CA	UIC GEO	Underground Injection Control Sites (GEOTRACKER)	State Water Resource Control Board	09/09/2019	09/09/2019	11/01/2019
CA	UST	Active UST Facilities	SWRCB	09/09/2019	09/09/2019	10/31/2019
CA	UST CLOSURE	Proposed Closure of Underground Storage Tank (UST) Cases	State Water Resources Control Board	09/06/2019	09/09/2019	10/31/2019
CA	UST MENDOCINO	Mendocino County UST Database	Department of Public Health	08/20/2019	09/09/2019	10/31/2019
CA	VCP	Voluntary Cleanup Program Properties	Department of Toxic Substances Control	10/28/2019	10/29/2019	01/07/2020
CA	WASTEWATER PITS	Oil Wastewater Pits Listing	RWQCB, Central Valley Region	05/08/2018	07/11/2018	09/13/2018
CA	WDR	Waste Discharge Requirements Listing	State Water Resources Control Board	09/09/2019	09/09/2019	11/06/2019
CA	WDS	Waste Discharge System	State Water Resources Control Board	06/19/2007	06/20/2007	06/29/2007
CA	WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	WIP	Well Investigation Program Case List	Los Angeles Water Quality Control Board	07/03/2009	07/21/2009	08/03/2009
CA	WMUDS/SWAT	Waste Management Unit Database	State Water Resources Control Board	04/01/2000	04/10/2000	05/10/2000
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	ABANDONED MINES	Abandoned Mines	Department of Interior	09/10/2019	09/10/2019	10/17/2019
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2015	02/22/2017	09/28/2017

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2018	12/04/2019	01/15/2020
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	01/12/2017	03/05/2019	11/11/2019
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	09/30/2019	10/09/2019	12/20/2019
US	CORRACTS	Corrective Action Report	EPA	12/16/2019	12/16/2019	12/20/2019
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	05/31/2018	07/26/2018	10/05/2018
US	DOD	Department of Defense Sites	USGS	12/31/2005	11/10/2006	01/11/2007
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	10/01/2019	10/29/2019	01/15/2020
US	Delisted NPL	National Priority List Deletions	EPA	10/25/2019	11/07/2019	11/20/2019
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	10/06/2019	10/08/2019	01/02/2020
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EPA WATCH LIST	EPA WATCH LIST	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	09/09/2019	09/09/2019	09/23/2019
US	FEDERAL FACILITY	Federal Facility Site Information listing	Environmental Protection Agency	04/03/2019	04/05/2019	05/14/2019
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	04/02/2018	04/11/2018	11/06/2019
US	FEMA UST	Underground Storage Tank Listing	FEMA	08/27/2019	08/28/2019	11/11/2019
US	FINDS	Facility Index System/Facility Registry System	EPA	08/12/2019	09/04/2019	12/03/2019
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	05/15/2019	05/21/2019	08/08/2019
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	08/19/2019	08/20/2019	11/11/2019
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	08/08/2017	09/11/2018	09/14/2018
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	06/24/2019	06/26/2019	09/23/2019
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	04/01/2014	08/06/2014	01/29/2015
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	04/11/2019	07/29/2019	10/17/2019
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	04/16/2019	07/29/2019	10/17/2019
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	04/12/2019	07/29/2019	10/17/2019
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	04/08/2019	07/30/2019	10/17/2019
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	05/01/2019	07/29/2019	10/17/2019
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	07/02/2019	10/16/2019	10/24/2019
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	05/02/2019	10/22/2019	11/11/2019
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	04/08/2019	07/29/2019	10/17/2019
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	04/11/2019	07/30/2019	10/17/2019
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	04/16/2019	07/30/2019	10/17/2019
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	04/12/2019	07/29/2019	10/17/2019
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	04/08/2019	07/29/2019	10/17/2019
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	05/01/2019	07/29/2019	10/17/2019
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	05/02/2019	07/29/2019	10/17/2019
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	05/02/2019	10/22/2019	11/11/2019
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	04/08/2019	07/29/2019	10/17/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	10/25/2019	11/07/2019	11/20/2019
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	10/25/2019	11/07/2019	11/20/2019
US	LUCIS	Land Use Control Information System	Department of the Navy	08/13/2019	08/20/2019	08/26/2019
US	MINES MRDS	Mineral Resources Data System	USGS	04/06/2018	10/21/2019	10/24/2019
US	MINES VIOLATIONS	MSHA Violation Assessment Data	DOL, Mine Safety & Health Admi	09/17/2019	09/18/2019	12/03/2019
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	10/25/2019	10/25/2019	01/15/2020
US	NPL	National Priority List	EPA	10/25/2019	11/07/2019	11/20/2019
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	PADS	PCB Activity Database System	EPA	10/09/2019	10/11/2019	12/20/2019
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	05/24/2017	11/30/2017	12/15/2017
US	PRP	Potentially Responsible Parties	EPA	10/25/2019	11/07/2019	11/21/2019
US	Proposed NPL	Proposed National Priority List Sites	EPA	10/25/2019	11/07/2019	11/20/2019
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RADINFO	Radiation Information Database	Environmental Protection Agency	07/01/2019	07/01/2019	09/23/2019
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RCRA-VSQG	RCRA - Very Small Quantity Generators (Formerly Conditionall	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RMP	Risk Management Plans	Environmental Protection Agency	04/25/2019	05/02/2019	05/23/2019
US	ROD	Records Of Decision	EPA	10/25/2019	11/07/2019	11/20/2019
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	01/01/2017	02/03/2017	04/07/2017
US	SEMS	Superfund Enterprise Management System	EPA	10/25/2019	11/07/2019	11/21/2019
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	10/25/2019	11/07/2019	11/21/2019
US	SSTS	Section 7 Tracking Systems	EPA	05/01/2019	10/23/2019	01/15/2020
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2017	11/16/2018	11/21/2019
US	TSCA	Toxic Substances Control Act	EPA	12/31/2016	06/21/2017	01/05/2018
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	08/01/2019	08/21/2019	11/11/2019
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	06/03/2019	06/04/2019	08/26/2019
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	06/11/2019	06/13/2019	09/03/2019
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	08/19/2019	08/20/2019	08/26/2019
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	09/23/2019	09/24/2019	12/20/2019
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	06/11/2019	06/13/2019	09/03/2019
US	US INST CONTROL	Sites with Institutional Controls	Environmental Protection Agency	08/19/2019	08/20/2019	08/26/2019
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	08/01/2019	08/27/2019	11/11/2019
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	12/05/2005	02/29/2008	04/18/2008
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	UXO	Unexploded Ordnance Sites	Department of Defense	12/31/2017	01/17/2019	04/01/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CT	CT MANIFEST	Hazardous Waste Manifest Data	Department of Energy & Environmental Protecti	05/14/2019	05/14/2019	08/05/2019
NJ	NJ MANIFEST	Manifest Information	Department of Environmental Protection	12/31/2018	04/10/2019	05/16/2019
NY	NY MANIFEST	Facility and Manifest Data	Department of Environmental Conservation	01/01/2019	05/01/2019	06/21/2019
PA	PA MANIFEST	Manifest Information	Department of Environmental Protection	06/30/2018	07/19/2019	09/10/2019
RI	RI MANIFEST	Manifest information	Department of Environmental Management	12/31/2018	10/02/2019	12/10/2019
WI	WI MANIFEST	Manifest Information	Department of Natural Resources	05/31/2018	06/19/2019	09/03/2019
US	AHA Hospitals	Sensitive Receptor: AHA Hospitals	American Hospital Association, Inc.			
US	Medical Centers	Sensitive Receptor: Medical Centers	Centers for Medicare & Medicaid Services			
US	Nursing Homes	Sensitive Receptor: Nursing Homes	National Institutes of Health			
US	Public Schools	Sensitive Receptor: Public Schools	National Center for Education Statistics			
US	Private Schools	Sensitive Receptor: Private Schools	National Center for Education Statistics			
CA	Daycare Centers	Sensitive Receptor: Licensed Facilities	Department of Social Services			
US	Flood Zones	100-year and 500-year flood zones	Emergency Management Agency (FEMA)			
US	NWI	National Wetlands Inventory	U.S. Fish and Wildlife Service			
CA	State Wetlands	Wetland Inventory	Department of Fish and Wildlife			
US	Topographic Map		U.S. Geological Survey			
US	Oil/Gas Pipelines		Endeavor Business Media			
US	Electric Power Transmission Line Data		Endeavor Business Media			

STREET AND ADDRESS INFORMATION

© 2015 TomTom North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

9829 LA SERNA DRIVE
9829 LA SERNA DRIVE
WHITTIER, CA 90605

TARGET PROPERTY COORDINATES

Latitude (North):	33.948837 - 33° 56' 55.81''
Longitude (West):	118.003053 - 118° 0' 10.99''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	407310.8
UTM Y (Meters):	3756742.0
Elevation:	276 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5633777 WHITTIER, CA
Version Date:	2012
East Map:	5640256 LA HABRA, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

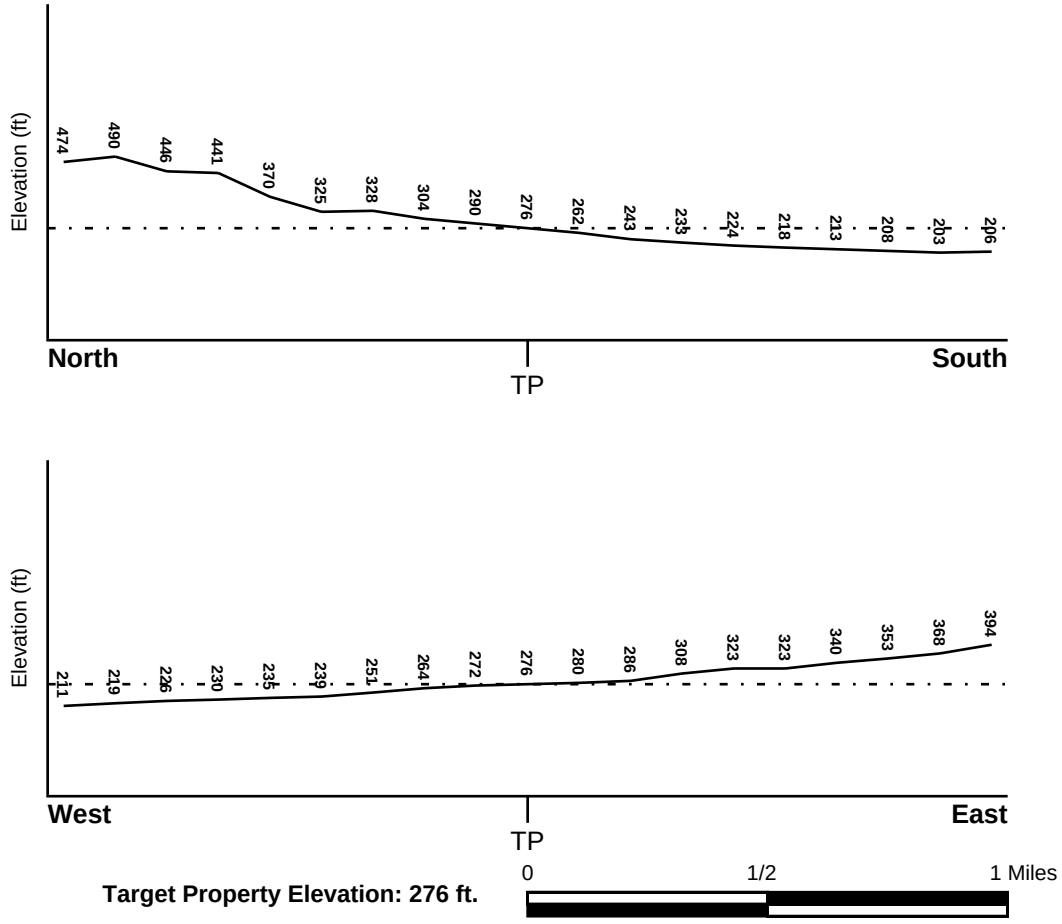
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SSW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' 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.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06037C1835F	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06037C1853F	FEMA FIRM Flood data
06037C1861F	FEMA FIRM Flood data
06037C1842F	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
WHITTIER	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era:	Cenozoic
System:	Tertiary
Series:	Pliocene
Code:	Tp *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name: URBAN LAND

Soil Surface Texture: variable

Hydrologic Group: Not reported

Soil Drainage Class: Not reported

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 10 inches

Depth to Bedrock Max: > 10 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	6 inches	variable	Not reported	Not reported	Max: 0.00 Min: 0.00	Max: 0.00 Min: 0.00

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures:
sandy loam
gravelly - sandy loam
silt loam
clay
fine sand
gravelly - sand
sand
fine sandy loam

Surficial Soil Types:
sandy loam
gravelly - sandy loam
silt loam
clay
fine sand
gravelly - sand
sand
fine sandy loam

Shallow Soil Types:
fine sandy loam
gravelly - loam
sandy clay
sandy clay loam
clay
silty clay
sand

Deeper Soil Types:
gravelly - sandy loam
sandy loam
very gravelly - sandy loam
stratified
very fine sandy loam
weathered bedrock
sand
gravelly - fine sandy loam
silty clay loam
clay loam

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
2	USGS40000139211	1/4 - 1/2 Mile ESE
A8	USGS40000139154	1/2 - 1 Mile South
A9	USGS40000139155	1/2 - 1 Mile South
A10	USGS40000139151	1/2 - 1 Mile South
A11	USGS40000139152	1/2 - 1 Mile South
A12	USGS40000139153	1/2 - 1 Mile South
A13	USGS40000139156	1/2 - 1 Mile South

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

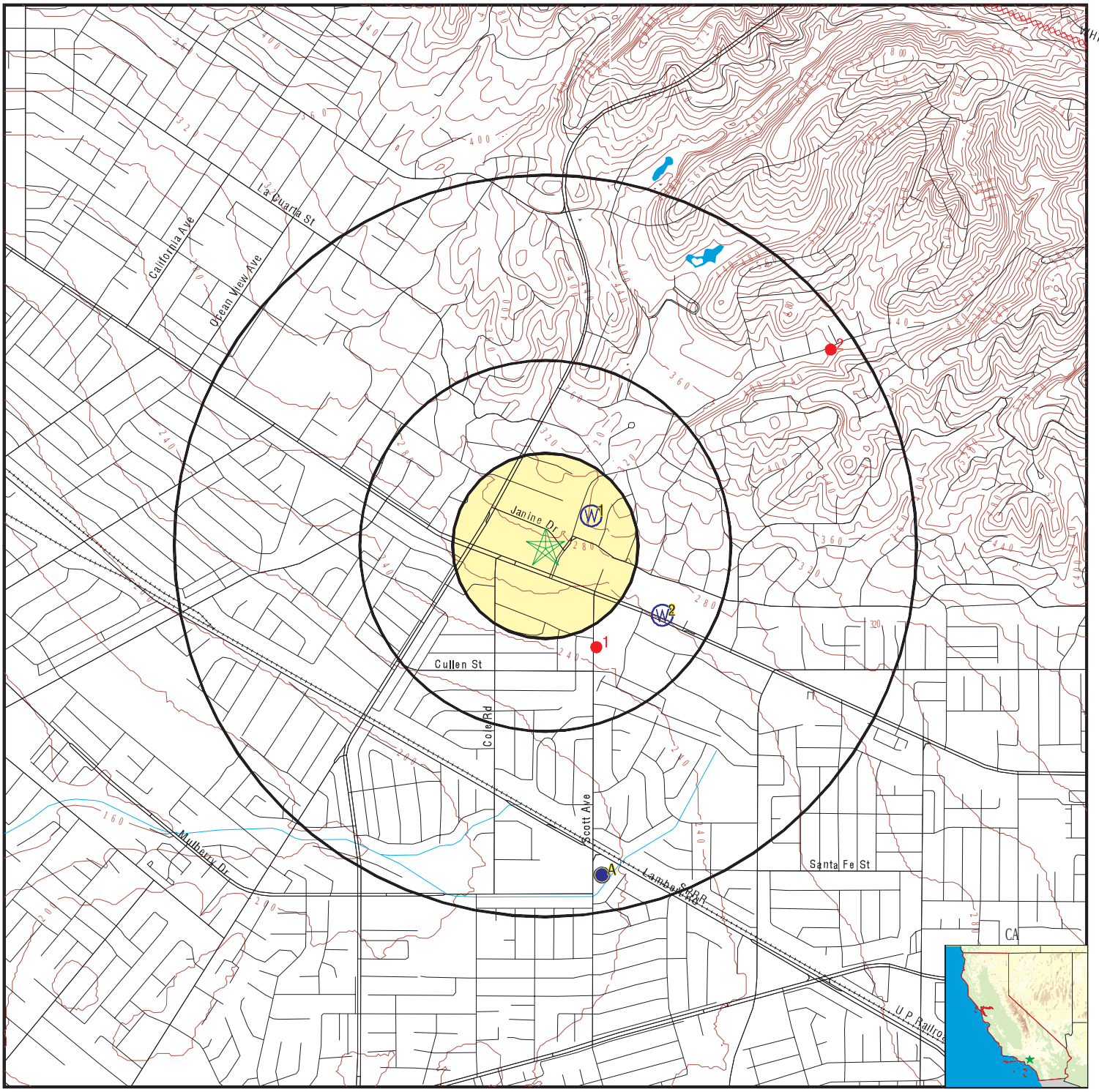
MAP ID	WELL ID	LOCATION FROM TP
1	2777	1/8 - 1/4 Mile ENE
A3	CADWR8000006172	1/2 - 1 Mile South
A4	CADWR8000006170	1/2 - 1 Mile South
A5	CADWR8000006171	1/2 - 1 Mile South
A6	CADWR8000006169	1/2 - 1 Mile South
A7	CADWR8000006168	1/2 - 1 Mile South

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CAOG13000005124	1/4 - 1/2 Mile SSE
2	CAOG13000005829	1/2 - 1 Mile NE

PHYSICAL SETTING SOURCE MAP - 5947854.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: 9829 La Serna Drive	CLIENT: Smith Emery GeoServices
ADDRESS: 9829 La Serna Drive Whittier CA 90605	CONTACT: Ayesha Syeda
LAT/LONG: 33.948837 / 118.003053	INQUIRY #: 5947854.2s DATE: January 24, 2020 7:18 pm

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
1 **SSE** **1/4 - 1/2 Mile**	**Click here for full text details**	**OIL_GAS**	**CAOG13000005124**
2 **NE** **1/2 - 1 Mile**	**Click here for full text details**	**OIL_GAS**	**CAOG13000005829**
1 **ENE** **1/8 - 1/4 Mile** **Higher**	**Click here for full text details**	**CA WELLS**	**2777**
2 **ESE** **1/4 - 1/2 Mile** **Lower**	**Click here for full text details**	**FED USGS**	**USGS40000139211**
A3 **South** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**CA WELLS**	**CADWR8000006172**
A4 **South** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**CA WELLS**	**CADWR8000006170**
A5 **South** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**CA WELLS**	**CADWR8000006171**
A6 **South** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**CA WELLS**	**CADWR8000006169**
A7 **South** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**CA WELLS**	**CADWR8000006168**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
A8 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000139154**
A9 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000139155**
A10 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000139151**
A11 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000139152**
A12 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000139153**
A13 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000139156**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
90605	10	2

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for LOS ANGELES COUNTY, CA

Number of sites tested: 63

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.711 pCi/L	98%	2%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	0.933 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

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 and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

© 2015 TomTom North America, Inc. All rights reserved. This material is proprietary and the subject of copyright protection and other intellectual property rights owned by or licensed to Tele Atlas North America, Inc. The use of this material is subject to the terms of a license agreement. You will be held liable for any unauthorized copying or disclosure of this material.

APPENDIX C

RESUMES / CONTRACT / REFERENCES

Ayesha S. Syeda

Title: **Manager of GeoServices**

Summary of Qualifications: Experienced in conducting and managing Phase I/Phase II Environmental Assessments, Soil Vapor Surveys, and site characterizations in California, Arizona, mid-west states, and Washington. Other experience includes overseeing and supervising work activities at commercial and industrial facilities including sampling of groundwater monitoring wells, oversight and sampling of underground storage tank (UST) removals and abandonment's, drilling of soil borings and collection of soil samples for laboratory analysis, excavation and transportation of hazardous and non-hazardous soils.

Academic Background:

M.S. Environmental Engineering, Cal. State Univ. Long Beach (1993)
B.S. Civil Engineering, Osmania University, India (1988)
Certificate -Industrial Hygiene Technician, Cal. State University, Long Beach
OSHA 29 CFR 1910.120 - 40 hour training.
AHERA Certified Building Inspector/ Certified Asbestos Contractor/Supervisor

Professional Experience:

March 2007 to present: Manager of GeoServices
Smith-Emery GeoServices - Los Angeles, California
Manage personnel associated with Smith-Emery Los Angeles County's office's Environmental/Geotechnical Departments and soils laboratory. Other responsibilities include review and sign off of final reports and documents.

December 1993 to March 2007: Engineer/Phase I Manager
Smith-Emery GeoServices - Los Angeles, California
Responsible for field research and analysis of Phase I Environmental Assessments, report preparation, and project supervision. Assists with Phase II Assessment fieldwork and report preparation.

June 1993 - September 1993: Environmental Engineer
BCM Engineers- Ontario, California
Project manager for Phase I and Phase II Environmental Assessments, asbestos sampling, and supervising abatement.

June 1992-March 1993: Engineer
Epics International Engineers-Long Beach, California
Duties included Phase I Site Assessments, including research for federal and state requirements. Performed building inspections for asbestos potential.

October 1991 to May 1992: Volunteer Student Intern
Public Works Department-San Bernardino County, California
Assisted civil engineers in their duties, including surveying and drafting, research and collecting data for specialized engineering functions. Reviewing geologic and hydrologic information and estimating for quantities of materials.

SMITH-EMERY GEOSERVICES

January 13, 2020

Proposal No. LA-8341r

Mr. Mark Rael
4100 Newport Place #480
Newport Beach, CA 92660

Proposal: Phase I Environmental Site Assessment
9829 La Serna Drive Whittier, CA

INTRODUCTION

In accordance with your request, Smith-Emery GeoServices is pleased to present this proposal for a Phase I Environmental Site Assessment at the above mentioned address. The purpose of the study will be to assess the site with regard to potential onsite and/or offsite sources of contamination. A report will be prepared which will include our findings, conclusions and recommendations. The Phase I Report will be in conformance with the scope and limitations of the ASTM E 1527-13 Standard which is AAI compliant.

SCOPE OF SERVICES

Our scope of services will include the following:

Site Reconnaissance:

A reconnaissance of the subject property will be conducted to attempt to obtain information indicating the likelihood of identifying recognized environmental conditions in connection with the property. Items such as current and past uses of the property and adjoining properties; property boundaries; structures or other improvements; roads; source and location of potable water; wells; surface water; potential hazardous substances and/or petroleum products; storage tanks; abnormal odors; pools of liquid; drums and containers; suspected fill materials; stained soil or pavement; stressed vegetation; solid waste; waste water discharges; floor drains, sumps or clarifiers; septic systems shall be noted as reasonably and visibly observed. The adjacent sites will be viewed from publicly accessible roads to attempt to determine land usage and/or any potential concerns. A site schematic referencing the subject site and photographs showing current site conditions will be included in the report.

Site Interviews:

SEG will make a reasonable attempt to interview the current owner, tenant(s), and key site manager per the ASTM standard.

791 EAST WASHINGTON BOULEVARD
LOS ANGELES, CALIFORNIA 90021
PHONE 213/699-7812
FAX 213/741-8621

Copyright © 2020 by Smith-Emery GeoServices
All Rights Reserved.

1195 NORTH TUSTIN AVENUE
ANAHEIM, CALIFORNIA 92807
PHONE 714/238-6133
FAX 714/238-6144

Historic Site and Surrounding Land Use:

A review of the following reasonably available information sources will be performed to attempt to determine previous site usage and historic surrounding land use back to its first development. Current and historical site addresses identified during the course of our research will be researched as practically reviewable under the ASTM standard and time provided by the client.

- Aerial Photographs
- Building Permits
- Historical City Directories
- Historical Directory Listings
- Sanborn Fire Insurance Maps
- U.S. Geological Survey (Topographic Map)

A reasonable attempt will be made to interview past owners and tenants of the subject site in order to determine historical negative environmental conditions, if they can be identified and can provide new information as per the ASTM standard.

Evaluation of Site Hydrogeology:

A summary and discussion of the reasonably ascertainable published information on site geology, groundwater occurrence, and direction of regional groundwater flow will be included. The potential impact of regional groundwater contamination problems will be discussed if applicable.

Regulatory List Review:

Search of local, state, tribal and federal databases in accordance with current ASTM and All Appropriate Inquiries (AAI) standard search distances. – (source-EDR Radius report).

Hazardous Materials Search:

The appropriate local and/or state agencies will be contacted to obtain reasonably ascertainable information regarding hazardous materials usage, underground storage tanks, emergency release response reports, contaminated sites. A street address is typically required to review files at the agencies. SEG will contact local and state agencies, such as environmental health departments, fire prevention bureaus, and building and planning departments to identify any current or previous reports of hazardous materials use, storage, and/or unauthorized releases that may have impacted the subject property.

Oil & Gas Map Review:

Applicable and reasonably ascertainable Division of Oil, Gas & Geothermal Resources Oil and Gas maps will be reviewed to attempt to assess potential concerns due to historic or current oil and/or gas wells on or in the vicinity of the site.

Review of Additional Documentation

SEG will conduct a review of previous environmental and geotechnical reports, regulatory permits, tenant lists, and site plans pertaining to the subject property as provided by the client in a timely manner.

Report Preparation

SEG will prepare draft and final assessment reports for each complex site. The report will include all ASTM required sections including but not limited to: executive summary/summary conclusions, site history/setting, regional geology, hazardous materials section, regulatory database records research, vapor encroachment condition section, a general opinion as to the non-scope items of additional risks including asbestos, lead, PCBs, petroleum exploration (oil well drilling), mold, and radon gas will be included in the report. Attachments to the report will included all site research documentation/regulatory database report and site illustrations (vicinity/site schematic/subjects site diagram) / captioned site photographs. One (1) electronic copy will be submitted for all Phase I reports.

Additional Documents requested to be provided by the Client

SEG requests the following site information be provided (if available) to facilitate research:

- Plot plan or facility design drawing;
- Previous environmental or geotechnical studies;
- Current title report including environmental liens and AULs;
- List of past and present owners and tenants, and contact information, if available;
- Name and number of site personnel or contact available for site walk-through of the facility
- Any environmental or regulatory permits.

Not included in the scope of this proposal for the subject site are: subsurface investigation, chemical analysis of soil, groundwater, air, asbestos, or lead-based paint, testing for radon or methane gas or for mold, mildew or other biohazards, handling and/or disposal of hazardous materials, and any responses to agency comments or inaccuracies.

"No environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with the property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with a property, and this practice recognizes reasonable limits of time and cost." ASTM E 1527-13.

"No environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with the property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with a property, and this practice recognizes reasonable limits of time and cost." ASTM E 1527-13.

FEE

The fee for this project is $ and we will not exceed this figure without your notification. A signed faxed copy of the attached Terms and Conditions will initiate the work. **The rates quoted in this proposal are valid for 7 days.** The estimated cost breakdown is as follows:

Phase I Assessment	**=$**	
Optional Extra Items (If Requested)		
RUSH Turnaround fees (includes overnight delivery fee)	= $	550.00
Paper Copy of Report	= $	75.00
Overnight report delivery fee	= $	35.00
Environmental Lien and AUL Research	= $	Site Specific

Note: Please check the box(s) for optional extra items on the signature page (last page).

SCHEDULE

We are prepared to start research immediately upon receipt a faxed signed copy of our terms and conditions. The project total is requested upon initiation of the project. In case we do not receive the fee prior to project initiation, the entire project amount is due at the time of report delivery. Smith-Emery GeoServices will complete the report within 10-15 working days for normal turnaround time and 7-10 days for rush turnaround time. This time frame is occasionally subject to constraints imposed by regulatory and public agencies on accessibility of information required to complete the report (some agencies require written requests for file review and have been known to take longer than 15 working days to respond). If this occurs we will provide verbal results after the file review has been granted. If a written report of the agency delayed file review is required, it will be provided as an addendum to the Phase I at additional cost.

We appreciate the opportunity to submit this proposal and look forward to working with you. If you have any questions regarding this proposal, please do not hesitate to contact us.

Respectfully submitted,
SMITH - EMERY GEOSERVICES

AYESHA SYEDA
Manager of GeoServices

BID QUALIFIERS

- Phase II recommendations may be included in the report if any Recognized Environmental Conditions are found unless requested in writing to not include Phase II recommendations prior to completion of the report.
- Assumes that the site has one address for each building not exceeding a total of three addresses.
- Any addendum(s) required in association with the Phase I report or consultations needed by the client, lending institutions, or agencies after the report has been issued will be charged to the client on time and materials basis.
- The client will provide all available information on the subject site(s) to SEG prior to initiating the fieldwork.
- Report will be prepared in standard Smith-Emery GeoServices format.
- Assumes no work is necessary outside SEG's scope of services as outlined in this proposal. If conditions indicate that a change in the scope of services is required, the client will be notified and a change order will be issued to the client for the approval of the associated cost.
- If the record research fee at agencies exceeds $100 per project, the additional fee will be billed directly to the client.
- The records researched may be limited by SEG pending the various regulatory agencies' policies and requirements, and may be limited to "reasonably ascertainable" and "practically reviewable" records as defined under the ASTM standard E1527-13.
- Report will be shipped via US mail unless overnight or rush charges are requested.
- No property addresses will be investigated as subject site other then those addresses specified by this proposal.

TERMS AND CONDITIONS:

The following Terms and Conditions are incorporated in full as part of this agreement. The client's signature at the end of this document is required for the work to proceed and indicates that the client is aware of the Risk Allocation Section of this document.

SECTION 1: THE AGREEMENT

1.1 Smith Emery GeoServices (hereinafter known as SEG) agrees to perform its services, which are intended solely for the use of the client, in a manner consistent with the current standards of professional practice in the community. Client agrees to pay for and to look to SEG for only such services as set forth in this work order and/or the attached proposal. Submittals to governmental agencies are the responsibility of the Client.

1.2 The agreement between the parties consists of these terms, the attached proposal, if any, and any exhibits or attachments noted in the proposal. Together these elements will constitute the entire agreement superseding any and all prior negotiations, correspondence, or agreements either written or oral. Any changes to this agreement must be mutually agreed to in writing.

1.3 If the Client is a corporation or public entity, the individuals who sign this agreement on behalf of the Client warrant that they are duly authorized agents of the Client and guarantee that the Client will perform its duties under this agreement. The client binds itself, its partners, successors, executors, administrators and assigns to this agreement in respect to all its terms and conditions.

SECTION 2: STANDARD OF CARE

2.1 The client recognizes that subsurface conditions may vary from those observed at locations where borings, surveys, or explorations are made, and that site conditions may change with time. Data interpretations and recommendations by SEG will be based solely on information available to SEG. SEG is responsible for those data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed.

2.2 Services performed by SEG under this agreement will be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of this profession currently practicing under similar conditions and in the same locality of the project. No warranty, expressed or implied, is made.

SECTION 3: SITE ACCESS AND SITE CONDITIONS

3.1 Client will grant or obtain free access to the site for all equipment and personnel necessary for SEG to perform the work set forth in this agreement. Client will grant or obtain permission for SEG personnel to photograph the site. The client will notify any and all possessors of the project site that client has granted SEG free access to the site. SEG will take reasonable precautions to minimize damage to the site, but it is understood by client that, in the normal course of work, some damage may occur and the correction of such damage is not part of this agreement unless so specified in the proposal.

3.2 The client is responsible for the accuracy of locations for all subterranean structures and utilities. SEG will take reasonable precautions to avoid known subterranean structures, and the client waives any claim against SEG, and agrees to defend, indemnify, and hold SEG harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located. In addition, client agrees to compensate SEG for any time spent or expenses incurred by SEG in defense of any such claim with compensation to be based on SEG's prevailing fee schedule and expense reimbursement policy.

SECTION 4: COOPERATION AND PROJECT UNDERSTANDING

4.1 Client will make available to SEG all information regarding existing and proposed conditions of the site. The information shall include, but not be limited to plot plans, topographic surveys, hydrographic data and previous soil data including borings, field and laboratory tests, and written reports. Client will immediately transmit to SEG any new information which becomes available or any change in plans.

4.2 Client agrees to provide a representative at the job site to supervise and coordinate the job when required by SEG and upon 24 hours notice. SEG shall not be liable for any incorrect advice, judgment or decision based on any inaccurate information furnished by client, and client will indemnify SEG against claims, demands, or liability arising out of or contributed to by such information.

SECTION 5: SAMPLE DISPOSAL

5.1 SEG will dispose of all remaining soil, rock and materials samples at the time of report completion. Further storage or transfer of samples can be made at client's expense upon client's prior written request.

5.2 Contaminated drill cuttings, sample spoils, and wash water may be produced as a result of encountering hazardous materials at the site. Such materials will be properly contained, labeled, and stored on-site by SEG. It is the client's responsibility for the proper transportation and disposal of such hazardous materials. SEG can arrange for the transportation and disposal of hazardous materials at the client's request.

SECTION 6: CONSTRUCTION MONITORING

6.1 If SEG is retained by the client to provide a site representative for the purpose of monitoring specific portions of the construction work as set forth in the proposal, then this section applies. For the specified assignment, SEG will report observations and professional opinions to the client. No action of SEG or SEG's site representative can be construed as altering any agreement between the client and others. SEG will report any observed work to the client which, in SEG's professional opinion, does not conform with plans and specification. SEG has no right to reject or stop work of any agent of the client. Such rights are reserved solely for the client. Furthermore SEG's presence on site does not in any way guarantee the completion or quality of the performance of the work of any party retained by the client to provide construction related services.

6.2 Neither the professional activities of SEG, nor the presence of SEG or its employees and subcontractors, shall be construed to imply that SEG has any responsibility for methods of work performances, supervision, sequencing of construction, or safety in, on , or about the job site. Client agrees that the General Contractor is solely responsible for job site safety, and warrants that this intent shall be made evident in the Owner's agreement with the General Contractor. This requirement shall be made to apply continuously and not be limited to normal working hours. Client also warrants that SEG shall be made an additional insured under the General Contractor's general liability insurance policy.

6.3 In the event that SEG expressly assumes health and safety responsibilities for toxic or other concerns specified, the acceptance of such responsibility does not and shall not be deemed an acceptance of responsibility for any other health and safety requirements, such as but not limited to those relating to excavating, trenching, drilling or backfilling.

SECTION 7: BILLING AND PAYMENT

7.1 Client will pay SEG the fee indicated in the proposal or, if no fee is indicated, in accordance with the schedule of personnel and equipment charges, as shown in the proposal and its attachments. Backup data on billing will not be available unless prior arrangements have been made. Prior to initiation of field work, a retainer as specified in the proposal, is required. Invoices for the balance will be submitted to client by SEG, and will be due and payable upon presentation. If client objects to all or any portion of any invoice, client will so notify SEG in writing within fourteen (14) calendar days of the invoice date, identify the cause of disagreement, and pay when due that portion of the invoice not in dispute. The parties will immediately make every effort to settle the disputed portion of the invoice. In the absence of written notification described above, the balance as stated on the invoice will be paid.

7.2 Invoices are delinquent if payment has not been received within thirty (30) days from date of invoice. Client will pay an additional charge of 1 1/2 (1.5) percent per month (or the maximum percentage allowed by law, whichever is lower) on any delinquent amount, excepting any portion of the invoiced amount in dispute and resolved in favor of client. Payment thereafter will first be applied to accrued interest and then to the principal unpaid amount. All time spent and expenses incurred (including any attorney's fees) in connection with collection of any delinquent amount will be paid by the client to SEG per SEG's current fee schedule. In the event client fails to pay SEG within sixty (60) days after invoices are rendered, client agrees that SEG will have the right to consider the failure to pay SEG's invoice as a breach of this agreement. (See Section 11, Termination.)

7.3 Fee schedules are periodically revised. Unless otherwise agreed, new rates apply to ongoing work as the rates are issued.

7.4 If client or SEG should become bankrupt or make an assignment for the benefit of creditors, SEG, or trustee in bankruptcy, shall be paid the reasonable value of all work theretofore performed, and the obligations of all parties under the agreement shall thereupon terminate. In determining reasonable value under this paragraph, the agreement shall be deemed reasonable.

SECTION 8: OWNERSHIP OF DOCUMENTS

8.1 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by SEG as instruments of service, shall remain the property of SEG.

8.2 Client agrees that all reports and other work furnished to the client or his agents, which are not paid for, will be returned upon demand and will not be used by the client or others for any purpose whatsoever.

8.3 SEG will retain pertinent records relating to the services performed for a period not exceeding three years following submission of the report, during which period the records will be made available to the client at reasonable times.

SECTION 9: CLIENT CHANGES

9.1 In the event any changes are made in the plans and specifications by the client, or persons other than SEG, client agrees to hold SEG harmless from any liability arising out of such changes and the client assumes full responsibility unless the client has given SEG prior notice and has received SEG's written consent for such changes.

SECTION 10: INSURANCE

10.1 SEG and its agents, staff, and consultants employed by it are protected by Worker's compensation insurance and maintain coverage under public liability and property damage insurance policies which SEG deems to be adequate. Certificates for all such policies of insurance shall be provided to client upon request in writing. SEG shall not be responsible for any loss, damage or liability beyond the amounts, limits, and conditions of such insurance. SEG shall not be responsible for any loss, damage, or liability arising from any acts by clients, its agents, staff, and other consultants employed by it. Provided however such insurance coverage should be for not less than one million dollars.

SECTION 11: TERMINATION

11.1 This agreement may be terminated by either party upon written notification, or seven (7) days after written notice in the event of nonpayment (see Section 7), any breach of any provision of this agreement, in the event of substantial failure of performance by the other party, or if the client suspends the work for more than three (3) months. In the event of termination, SEG will be paid for services performed prior to the date of termination plus reasonable termination expenses, including the cost of completing analyses, records, and reports necessary to document job status at the time of termination.

SECTION 12: RISK ALLOCATION

12.1 There are a variety of risks which potentially affect SEG by virtue of entering into an agreement to perform professional engineering services on the client's behalf. In order for the client to obtain the benefit of a fee which includes a lesser allowance for dealing with SEG's risks, the client agrees to limit SEG's liability to the client and to all other parties for claims arising out of SEG's performance of the services described in this agreement. The

total aggregate liability of SEG will not exceed $50,000 for negligent professional acts, errors or omissions, and the client agrees to indemnify SEG for all liabilities in excess of the monetary limits established above.

12.2 Client agrees that in no instance shall SEG be responsible, in total or in part, for the errors or omissions of any other Design Professional, Contractor, Subcontractor or any other party. Client also agrees that SEG shall not be responsible for the means, methods, procedures, performance or safety of the construction contractors or subcontractors or for their errors or omissions. Client agrees to indemnify, hold harmless and defend SEG from and against any and all loss, expenses, including attorney fees, injury, damage, liability or cost claims arising out of the services performed by SEG or work by Client or other parties upon the real property described above, except where such loss, injury, damage, liability, cost, expenses or claims are the result of the negligence or willful misconduct of SEG, its agents, employees, or officers. Liability resulting from design defects (as defined in California Civil Code Section 2782.5) shall be the sole responsibility of the Client.

SECTION 13: DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS

13.1 Client warrants that a reasonable effort to inform SEG of known or suspected hazardous materials on or near the project site has been made.

13.2 Hazardous materials may exist at a site when there is no reason to believe they could or should be present. SEG and client agree that the discovery of unanticipated hazardous materials constitutes a changed condition mandating a re-negotiation of the scope of work or termination of services. The client recognizes that the discovery of hazardous materials may necessitate immediate protective measures to safeguard the public health and safety and agrees to compensate SEG for measures that in our professional opinion are justified to preserve and protect the health and safety of site personnel and the public.

13.3 SEG agrees to notify client as soon as practically possible should hazardous materials be encountered at the site that pose a threat to human health, safety, or the environment. Client agrees that the discovery of hazardous materials at the site must legally be reported to the proper authorities as required by Federal, State, and local regulations. Client agrees to make the required report at the recommendation of SEG or, if unable to do so, authorizes SEG to make this report. Client also agrees to inform the property owner in the event that hazardous materials are encountered at the site.

13.4 Notwithstanding any other provision of the agreement, client waives any claim against SEG, and to the maximum extent permitted by law agrees to defend, indemnify, and save SEG harmless from any claim, liability, and/or defense costs for injury or loss arising from SEG's discovery of unanticipated hazardous materials or suspected hazardous materials including any costs created by delay of the project and any cost associated with possible reduction of the property's value. Client will be responsible for ultimate disposal of any samples secured by SEG which are found to be contaminated.

SECTION 14: AQUIFER CONTAMINATION

14.1 The client recognizes that it is impossible for SEG to know the exact composition of a site's subsurface even after conducting a comprehensive exploratory program. As a result, there is a risk that drilling and sampling may result in contamination of certain subsurface areas, as when a boring passes through a contaminated zone, connecting it to one or more aquifers not previously contaminated and capable of spreading contamination.

14.2 Although SEG will take all reasonable precautions to avoid such an occurrence, client waives any claim against, and agrees to defend, indemnify and save SEG harmless from any claim or liability for injury or loss which may arise as a result of cross-contamination caused by drilling, sampling, or monitoring well installation. Client also agrees to adequately compensate SEG for any time spent and expenses incurred in defense of any such claim.

SECTION 15: DISPUTES RESOLUTION

15.1 All claims, disputes, and other matters in controversy between SEG and client arising out of or in any way related to this agreement will be submitted to "Alternative Dispute Resolution" (ADR) such as mediation and/or arbitration, before and as a condition precedent to other remedies provided by law. If and to the extent client and SEG have agreed on methods for resolving such disputes, then such methods will be set forth in the "Alternative Dispute Resolution Agreement" which, if attached, is incorporated and made a part of this agreement.

15.2 If a dispute at law related to the services provided under this agreement arises and that dispute requires litigation instead of ADR as provided above, then:

(1) the claim will be brought and tried in judicial jurisdiction of the court of the county where SEG's principal place of business is located and client waives the right to remove the action to any other county or judicial jurisdiction; and

(2) the prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorney's fees, and other claim related expenses.

SECTION 16: ASSIGNS

16.1 Neither the client nor SEG may delegate, assign, sublet or transfer his duties or interest in this Agreement without the written consent of the other party.

16.2 The contractual agreement between the client and SEG shall pertain only to the benefit of the parties hereto, and no third party shall have any rights hereunder.

SECTION 17: GOVERNING LAW AND SURVIVAL

17.1 The laws of the State of California will govern the validity of these terms, their interpretation and performance.

17.2 If any of the provisions contained in this agreement are held illegal, invalid, or unenforceable, the enforceability of the remaining provision will not be impaired. Limitations of liability and indemnities will survive termination of this agreement for any cause.

SMITH-EMERY GEOSERVICES

Manager of GeoServices

January 13, 2020
Date

AGREED TO AND ACCEPTED:
(By party responsible for payment)

Mission Pacific Investors, LLC
Client Name (please print)

Signature and Title

1/22/2020
Date

Smith-Emery GeoServices Job Name:
Phase I Environmental Site Assessment
9829 La Serna Drive Whittier, CA

SEG Proposal LA-8341r

Site Contact: Mark Rael

Phone: 951-453-4147

Email: mrael@missionpacific.com

Ms. Ayesha Syeda, Manager of GeoServices Ph:
213-699-7812
Fax: 213-741-8621
Ayesha@smithemerylabs.com

Please Check the Appropriate Box(s) if optional item(s) are requested:

- ☐ Environmental Lien and AUL Research ($350.00/parcel)
- ☐ RUSH Turnaround Requested.
- ☐ Paper Copy of Report Requested
- ☐ Overnight Report Delivery Requested

Please return a signed copy to Smith-Emery GeoServices

Note: Only the signing party or parties of this proposal will be listed in SEG's report. Any other parties that want reliance on this report may rely on the report only if designated as an assignee by the signing party, and are bound by the terms and conditions of this proposal.

REFERENCES

1. AAI 2013, *40 CFR Part 312: Standards and Practices for All Appropriate Inquiries*, Prepared by United States of America Environmental Protection Agency, November 2013.

2. ASTM 2013, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Prepared by ASTM International, November 2013.

3. The US Geological Survey Whittier Quadrangle, Los Angeles County, California.

4. Geotracker, web site (www.geotracker.swrcb.ca.gov) maintained by the Regional Water Quality Control Board.

5. State of California, Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR), DOMS 2.0, Online Mapping System Website (http://maps.conservation.ca.gov/doms/index.html).

6. EDR Radius Map Report, State Oil/Gas Well Information, for 9829 La Serna Drive, January 24, 2020.

SMITH-EMERY GEOSERVICES

A MEMBER OF THE SMITH-EMERY COMPANIES, ESTABLISHED 1904

LIMITED PHASE II ESA REPORT

March 9, 2020

9829 LA SERNA DRIVE
WHITTIER, CA 90605

Prepared For:

Mission Pacific Investors, LLC
4100 Newport Place, Suite 480
Newport Beach, California 92660

Prepared By:

Smith-Emery GeoServices
791 East Washington Boulevard
Los Angeles, CA 90021

SEG Project No.: 46556-2
SEG Report No.: G-20-1978

Environmental Engineers · Geologists · Scientists · Geotechnical Engineers

SMITH-EMERY GEOSERVICES
A MEMBER OF THE SMITH-EMERY COMPANIES, ESTABLISHED 1904

March 9, 2020

SEG File No.: 46556-2
SEG Report No.:G-20-1978

Mission Pacific Investors, LLC
4100 Newport Place, Suite 480
Newport Beach, California 92660

Attention: Mr. Mark Rael

Dear Mr. Rael,

Smith-Emery GeoServices herewith submits our "Limited Phase II Environmental Site Assessment, for 9829 La Serna Drive, Whittier, California," SEG Report No. G-20-1936 prepared for Mission Pacific Investors, LLC. If you have any questions regarding this report, please contact us at (213) 699-7812.

Respectfully submitted,

SMITH - EMERY GEOSERVICES

AYESHA SYEDA
Manager of GeoServices

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1

1.0 INTRODUCTION / PURPOSE 2

1.1 SITE DESCRIPTION 2
1.2 SITE OWNERSHIP 2
1.3 SITE HISTORY 3

2.0 SCOPE OF SERVICES 4

3.0 FIELD EXPLORATION 5

3.1 SUBSURFACE SOIL VAPOR SAMPLING 5
3.2 SOIL VAPOR INSTALLATION METHODS 5
3.3 SURFACE SEALS 6
3.4 EQUILIBRATION TIME 6
3.5 LEAK TESTING THE SAMPLE TRAIN AND PROBES 6
3.6 SAMPLE CONTAINERS (SOIL GAS) 7
3.7 PROBE PURGING 7
3.8 FIELD RECORDS 7
3.9 SUBSURFACE SOIL SAMPLING 8
3.10 SOIL BORING ADVANCEMENT 8
3.11 BORINGS, SAMPLING INTERVALS, AND DEPTHS 8
3.12 SAMPLE CONTAINERS (SOIL SAMPLES) 8
3.13 SAMPLE SCREENING WITH A PID 9
3.14 BORING BACKFILL 9
3.15 GROUNDWATER SAMPLING 9
3.16 DECONTAMINATION PROCEDURES 9
3.17 WASTE MANAGEMENT 10
3.18 SAMPLE HANDLING AND TRANSPORTATION 10
3.19 ANALYTICAL LABORATORY AND QUALITY CONTROL 10
3.20 ANALYTICAL METHODS 11
3.21 SITE ANALYTICAL ACTION LEVEL SOURCES 11
3.22 SITE RESTORATION 12
3.23 CHAIN OF CUSTODY FORMS 12

4.0 HYDROGEOLOGIC SETTING 13

5.0 ANALYTICAL RESULTS 14

6.0 CONCLUSIONS AND RECOMMENDATIONS 19

7.0 LIMITS OF LIABILITY 20

ILLUSTRATIONS AND APPENDICES

PLATE NO. 1 - VICINITY MAP
PLATE NO. 2 – SUBJECT SITE DIAGRAM
PLATE NO. 3 - SOIL CLASSIFICATION CHART
PLATE NO. 4 - KEY TO LOG OF BORINGS
PLATE NO. 5 THROUGH 6- BORING LOGS

APPENDIX A – LABORATORY ANALYTICAL REPORTS & CHAIN OF CUSTODY
APPENDIX B – REFERENCES

EXECUTIVE SUMMARY

Smith-Emery GeoServices (SEG) has conducted a Limited Phase II Environmental Site Assessment (ESA) at 9829 La Serna Drive in the City of Whittier, County of Los Angeles, and State of California. The scope of work was based on SEG Phase I ESA report (February 21, 2020) recommendations and on a proposal (SEG Proposal No. LA-8375r).

The SEG Phase I ESA report concluded that there was evidence of gas station use at the adjacent site to the south for approximately 19 years in an era prior to regulatory oversight and times when single-walled steel USTs were used that generally developed holes within 10 years. The SEG report stated that there is potential for the subject site to be impacted in case of tank leaks at the adjacent gas station which in their opinion constitutes a Recognized Environmental Condition (REC). SEG recommended further environmental investigation including subsurface soils and soil vapor investigation to determine if the subject site has been impacted.

SEG conducted subsurface soils investigations at two locations along southern boundary to 20 feet bgs and subsurface soil vapor at two locations inside of the onsite building to attempt to determine if any potential leaks at the adjacent site to the south (historical gas station).

Based upon the results of the soil and soil vapor data collected in this program, there is evidence of fuel additives MEK, MIBK, and MTBE to be present in the soil vapors. However, the concentrations of these vapors are below the regulatory screening levels. The VOCs were not detected in any of the subsurface soil samples. Trace levels of petroleum hydrocarbons as diesel were found in all subsurface soils which were significantly below the regulatory action levels. CAM 17 Total Metals were found in soils samples to be present at concentrations below levels which require hazardous waste characterization. Based on results of our investigation, it is SEG's opinion that no further site investigation is warranted for the subject site at this time. However, in case of future site development, if impacted resources are discovered, it is SEG's opinion that they should be handled appropriately at that time.

1.0 INTRODUCTION / PURPOSE

This report summarizes the results of the Soil and Soil Vapor Sampling conducted at 9829 La Serna Drive, Whittier, California on March 2, 2020. The survey consisted of subsurface soil and soil vapor survey, which was conducted at select locations to attempt to determine if subsurface soil vapor at the site have been impacted as a result of gas station operation at the adjacent site to the south for approximately 19 years (SEG Phase I ESA February 21, 2020).

The scope of work was based on a Phase II ESA proposal (SEG Proposal No. LA-8375r). The location of the site is shown on the Vicinity Map, Plate No. 1. The subsurface soil vapor sample locations are shown on the Site Diagram, Plate No. 2. Copies of the laboratory analytical reports for the soil and soil vapor samples are included in Appendix A. The literature referenced is listed in Appendix B.

1.1 SITE DESCRIPTION

The site is located at the southwest corner of the intersection of La Serna Drive and Janine Drive. The San Gabriel River Freeway (605) is located approximately 5.0 miles west of the site. The site is approximately 78,000 square feet in size and is occupied by a single-story commercial structure. The site is described as Assessors Parcel Numbers 8224-017-022 and 8224-017-023. The site is located in an area zoned “SP” for specific plan usage.

1.2 SITE OWNERSHIP

The site is reportedly owned by Lafranchi Trust.

1.3 SITE HISTORY

According to a Phase I Environmental Site Assessment Report completed by SEG dated February 21, 2020, from before 1928 the site was used for agricultural purposes. In 1963, the southeastern portion of the site was used as a baseball field. In the 1970s, the site was vacant land. The existing onsite structure was built in 1978 and used for restaurant and bakery purposes through 2019 by Marie Callender's Restaurant. The existing onsite structure is presently vacant.

2.0 SCOPE OF SERVICES

The scope of work consisted of the following: project management, pre-marking of proposed sampling locations, notification of underground service alert (USA) for utility clearance of public utilities, preparation of a site-specific health and safety plan, collection of two soil vapor samples to sub slab, collection of subsurface soil samples from two boring locations at selected depths of approximately 5, 10, 15, and 20 feet below ground surface (bgs), observation and documentation of the field work, sample submission to a State Certified Laboratory, and the preparation of this report presenting our findings and conclusions.

3.0 FIELD EXPLORATION

3.1 SUBSURFACE SOIL VAPOR SAMPLING

On March 2, 2020 soil vapor probe installation and sampling was conducted by SEG personnel. A total of two soil vapor probes (SV1-Sub Slab and SV2-Sub Slab) were located at northern and southern portions of the onsite building. Soil vapor probe SV1-Sub Slab is located at northern portion of the building. Soil vapor probe SV2-Sub Slab is located at southern portion of the building. Soil vapor samples were collected in an attempt to determine if subsurface soils had been impacted as a result of gas station operation at the adjacent site to the south.

The subsurface soil vapor sampling locations relative to onsite features are shown on the Site Diagram, Plate No. 2. The procedures used to install each soil vapor probe, test for leaks during sample collection, and collect soil vapor samples are described in the following sections:

3.2 SOIL VAPOR INSTALLATION METHODS

Temporary soil vapor probes, also known as soil vapor implants, were installed at selected locations (SV1 and SV2) using hand probe equipment. Each soil vapor implant was installed following direct push method which involves advancement of approximate 5/8-inch diameter stainless steel probe rod. Soil vapor probes were advanced and installed immediately beneath the slab. The next step was to insert a 1/8-inch diameter “Nylaflow” tubing attached to a sampling filter implant into the open borehole to an excavated depth. The borehole was then filled with 1-inch of sand pack (~40% Porosity), 1-inch of dry bentonite, and 4-inch of hydrated bentonite.

3.3 SURFACE SEALS

The top of the installation was sealed with hydrated bentonite to create an appropriate air tight seal.

3.4 EQUILIBRATION TIME

Upon completion, the probe was allowed to set for two hours prior to sampling to allow the hydrated bentonite time to properly seal, and the subsurface soil gas to equilibrate.

3.5 LEAK TESTING THE SAMPLE TRAIN AND PROBES

Prior to purging or sampling, a shut-in leak test was conducted by SEG to check for leaks in the above-ground sampling system. This test consisted of assembling the above-ground valves, lines, and fittings downstream from the top of the probe, evacuating the system (to a minimum measured vacuum of 100 inches of water), and observing the vacuum gauge for at least one minute to identify any system leaks.

A leak check compound (LCC) was used to check the integrity of the bentonite seal and to quantify ambient air leakage into the soil vapor sample. A tracer compound, difluoroethane (DFA) was used by SEG personnel to test for leaks around the probe and along the sampling system. The tracer was placed around the probe rod at the surface and along the sampling train during each sample collection event. Although the tracer analyte does not impact analytical results, it is an indicator of a leak in the system. If the tracer is detected at values > 10 µg/L, another sample is typically collected.

Minor amounts of Difluoroethane (DFA) were detected in the soil vapor samples SV1-Sub Slab of 0.177 µg/L, indicating that an airtight seal was not obtained. In our opinion, the

minor leaks indicated by trace amounts of leak detection compound do not significantly impact the results.

3.6 SAMPLE CONTAINERS (SOIL GAS)

Soil vapor sampling was performed by SEG personnel. Soil vapor was withdrawn from the end of the inert nylaflow tubing that extends from the sampling tip to the surface using a syringe to complete the purge and to collect the sample in a Tedlar bag.

3.7 PROBE PURGING

A minimum of three (3) purge volumes were removed from each boring prior to sampling by SEG. For a 1-foot deep driven probe, the total purge volume was ~12 cc (cubic centimeters). A minimum volume of 36 cc was purged from each sample point location prior to obtaining a soil vapor sample. For a 5-foot deep driven probe, the total purge volume was ~25 cc (cubic centimeters). A minimum of 75 cc were purged from each sample point location prior to obtaining a soil vapor sample. Purge rate never exceeded the DTSC maximum of 200 milliliters per minute, nor did vacuum exceeded 100 inches of water, during soil vapor sampling procedures.

3.8 FIELD RECORDS

The SEG personnel maintained a log sheet summarizing:

Sample identification	Weather conditions
Probe location	Soil gas purge volumes
Date and time of sample collection	Volume of soil gas extracted
Sampling depth	Apparent moisture content (dry, moist or saturated etc.) of the sampling zone
Identity of samplers	

Chain of custody protocols and records used to track samples from sampling point to analysis.

3.9 SUBSURFACE SOIL SAMPLING

On March 2, 2020, three soil borings (B1 and B2) were advanced at the site Geoprobe rig (direct push). The borings are located at southern portion and southeast corner of the property to address concerns due to former gas station operations at the adjacent site to the south. The general layout of the site and the boring locations are shown on the Subject Site Diagram, Plate No. 2.

3.10 SOIL BORING ADVANCEMENT

The asphalt floor surfaces were cored at selected boring locations utilizing water cooled diamond drill barrels (eight inches in diameter) to allow for boring access. Drilling was conducted utilizing hand auger equipment to five feet followed with a Geoprobe rig to the proposed depth. Once each boring was advanced to the desired sampling depth, a steel sampler lined with acetate soil sampling tubes was advanced 12 inches into undisturbed soil using a direct push system. Samples are then collected in acetate tubes which were then sealed with Teflon sheeting and tight fitting plastic end caps.

3.11 BORINGS, SAMPLING INTERVALS, AND DEPTHS

Advance a total of two (2) soil borings at the following areas:

Location	Number of Borings	Sampling Depth in Feet
Southeast corner of the property	1	5, 10, 15, 20, and 24
Southern portion of the property	1	5, 10, 15, and 20

3.12 SAMPLE CONTAINERS (SOIL SAMPLES)

Soil samples were obtained in acetate tubes from sample location.

3.13 SAMPLE SCREENING WITH A PID

A photoionization detector (PID) was utilized to screen soil samples for elevated volatile organic substances. To obtain a PID reading, a soil sample was placed in a capped tube or plastic Ziploc type bag, and allowed to volatilize for approximately one minute, at which time the probe tip of the PID was placed into the container, and the peak reading recorded. No elevated VOC reading was noted during our investigation.

3.14 BORING BACKFILL

Care was taken to assure that the borings were compacted and sealed, and that the potential cross contamination or future water migration is minimized. Once the soil and soil vapor sampling was completed, the borings were backfilled with hydrated bentonite and soil cuttings, compacted and completed at the surface with concrete as appropriate.

3.15 GROUNDWATER SAMPLING

No groundwater sampling was conducted as part of this investigation. No groundwater was encountered at the depths explored.

3.16 DECONTAMINATION PROCEDURES

Decontamination procedures are outlined in the field operations sections of this report, specific to the equipment being utilized. General procedures were to use new field supplies. Staff wore new latex gloves when handling sampling equipment or samples. Reusable field equipment and samplers were washed in a mixture of water and non-phosphate soap, followed by a triple rinse in distilled water. Decontamination procedures followed best environmental industry standards, and thoroughly washed all reusable equipment prior to use.

3.17 WASTE MANAGEMENT

All disposable field supplies were collected on site, bagged, transported offsite, and disposed of appropriately.

3.18 SAMPLE HANDLING AND TRANSPORTATION

Sample container type and procedures for each sampling media are outlined in the Field Operations sections of this report. Once sealed, samples were labeled with sample point identification (to include date, time, location, project identification, boring number, and sample depth).

Soil samples were placed in an insulated chilled cooler (containing blue ice), and transported to the state certified analytical laboratory (Positive Lab Service) in Los Angeles, California. Soil vapor samples collected were placed in a dark bag at room temperature and transported to the state certified analytical laboratory (Positive Lab Service) in Los Angeles, California. Collected samples were transported in a timely fashion, as soon as the sampling and fieldwork had been completed for each phase of work.

All samples were logged on a chain-of-custody form and signed by SEG and Positive Lab Service personnel. A copy of the chain of custody for each sample set is included with the analytical report.

3.19 ANALYTICAL LABORATORY AND QUALITY CONTROL

The soil and soil vapor samples were obtained by SEG personnel and analyzed at Positive Lab Service, a State of California Certified laboratory. The selected soil and soil vapor samples were tested by the laboratories in conformance with EPA Method 5035/8260B (VOCs), EPA Method 8015B (TPHs), and EPA Method 6010B/7471 (METALS). Quality

control data was provided as part of the laboratory report(s) and included as part of the final report. Positive Lab Service performed the analysis and conducted its own internal QA/QC procedures. These procedures include method blanks, surrogates, matrix spike and matrix spike duplicates, laboratory duplicates and initial and continuing calibration checks as appropriate. Copies of the analytical reports are included in Appendix A.

3.20 ANALYTICAL METHODS

Soil vapor samples were tested for a range of Volatile Organic Compounds (VOCs) by EPA Method 8260B modified for soil vapor.

Selected soil samples were tested for a range of for Volatile Organic Compounds (VOCs) including Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX), MTBE, TAME, ETBE, TBA, DIPE and Fuel Oxygenates by EPA Method 5035/8260B, Total Petroleum Hydrocarbons range (TPHs C_4-C_{36}) by EPA Method 8015B, and for 17 Total Metals by EPA Method 6010B/7471.

3.21 SITE ANALYTICAL ACTION LEVEL SOURCES

Environmental Protection Agency (EPA) Region 9 Regional Screening Levels (RSLs) Composite Worker Ambient Air and California Department of Toxic Substances Control (DTSC) were utilized for actionable levels for soil gas. California Regional Water Quality Control Board (RWQCB) Los Angeles May 1996 Guidebook for Maximum Soil Screening Levels, and Regional Screening Levels (RSL) Composite Worker Soil November 2019 were utilized for actionable levels for soil.

3.22 SITE RESTORATION

Once the borings were completed, and samples obtained, each boring was backfilled with hydrated bentonite and soil cuttings. Care was taken to assure that the borings were compacted, sealed, and that the potential cross contamination or future water migration is minimized. Each boring was then compacted and surfaced with concrete as appropriate.

3.23 CHAIN OF CUSTODY FORMS

All samples were logged on chain-of-custody forms, signed by the laboratory personnel completing the sampling. Sample point identification is included on the chain-of-custody form and included the date, time, location, project identification, boring number, and sample depth. A copy of the chain of custody documentation is included in the analytical reports (see Appendix A).

4.0 HYDROGEOLOGIC SETTING

The property is located approximately 1.0 mile north of the Leffingwell Creek, 1.4 miles northeast of the La Canada Verde Creek, and approximately 3.0 miles northwest of Coyote Creek at an elevation of approximately 276 feet above mean sea level (MSL). Topography in the vicinity of the site slopes generally to the south-southwest.

Surficial soil consists of urban land with variable soil surface textures. The underlying hydrogeologic unit is comprised of Cenozoic – Tertiary-Pliocene that was deposited into stratified sequence.

Based on GeoTracker (RWQCB website), the groundwater in monitoring wells located approximately 1,000 feet southeast is approximately ranged from 14 to 52 feet below ground surface; however, the actual depth to the water table may vary depending on extraction activities, and manual or artificial recharge rates. Based on the direction of surface water, the groundwater flow direction is inferred to be towards the south-southwest. Note that the actual groundwater flow direction is often locally influenced by factors such as underground structures, seasonal fluctuations, soil and bedrock geology, production wells, an other factors beyond the scope of this study. The actual groundwater flow direction under the site can only be accurately determined by installing groundwater monitoring wells which was beyond the scope of this project.

5.0 ANALYTICAL RESULTS

The subsurface soil vapor samples were obtained and analyzed onsite for Volatile Organic Compounds (VOCs) by EPA method 8260B modified for soil vapor. A copy of the Positive Laboratories analytical report is included in Appendix A. Analytical results for the subsurface soil vapor samples are shown in Tables 1.

TABLE 1 – SOIL VAPOR SAMPLE – ANALYTICAL RESULTS

Sample ID (Depth)	Volatile Organic Compounds (in µg/L)	Department Of Toxic Substances Control (DTSC) – Modified Industrial Air Cancer Screening Level or EPA Region 9 Regional Screening Levels (RSL) Composite Worker Ambient Air (in µg/L) (Attenuation Factor = 0.05 for sub slab)
SV1- Sub slab	1,1 Difluoroethane (DFA) – 0.177 Acetone – 1.16 2-Butanone (MEK) – 0.335 4-Methyl-2-pentanone (MIBK) – 0.112 Methyl tert-butyl ether (MTBE) – 0.144 Tert-butyl alcohol (TBA)– 6.18 Ethyl tert-butyl ether (ETBE) – 1.38 Tert-amyl methyl ether (TAME) – 0.0384	Acetone – 280 RSL (HI) 2-Butanone (MEK) – 44 RSL (HI) 4-Methyl-2-pentanone (MIBK) – 26 RSL (HI) Methyl tert-butyl ether (MTBE) – 0.94 RSL (TR) TBA, ETBE, & TAME – not published 1,1 Difluoroethane (DFA) – Tracer compound
SV2- Sub Slab	2-Butanone (MEK) – 0.249 4-Methyl-2-pentanone (MIBK) – 0.0675 Methyl tert-butyl ether (MTBE) – 0.0993 Tert-butyl alcohol (TBA)– 4.54 Ethyl tert-butyl ether (ETBE) – 0.939 Tert-amyl methyl ether (TAME) – 0.0268	2-Butanone (MEK) – 44 RSL (HI) 4-Methyl-2-pentanone (MIBK) – 26 RSL (HI) Methyl tert-butyl ether (MTBE) – 0.94 RSL (TR) TBA, ETBE, & TAME – not published

µg/L -micrograms per liter.
ND -not detected at or above method detection limits.
HI -RSL Non-Cancer Hazard Index (HI)
TR -RSL Carcinogenic Target Risk (TR)
HHRA Human Health Risk Assessment (HHRA)
HERO Human And Ecological Risk Office (HERO)

Soil gas screening levels established by EPA – RSLs Composite Worker Ambient Air (TR=1E-06, HQ=0.1) dated November 2019.
HERO HHRA Note Number 3, DTSC-Modified Screening Levels
The RSL and DTSC units microgram per cubic meter (µg/m3) was converted to micrograms per liter (µg/L).

DISUSSION OF SOIL VAPOR ANALYTICAL RESULTS

One soil vapor sample location (SV-Sub Slab) contained detectable concentration of Acetone at 1.16 µg/L. This concentration is below the RSL of 280 µg/L.

All soil vapor sample locations (SV1-Sub Slab and SV2-Sub Slab) contained detectable concentrations of 2-Butanone (MEK) at 0.335 µg/L and 0.249 µg/L respectively. These concentrations are below the RSL of 44 µg/L.

All soil vapor sample locations (SV1-Sub Slab and SV2-Sub Slab) contained detectable concentrations of 4-Methyl-2-pentanone (MIBK) at 0.112 µg/L and 0.0675 µg/L respectively. These concentrations are below the RSL of 26 µg/L.

All soil vapor sample locations (SV1-Sub Slab and SV2-Sub Slab) contained detectable concentrations of Methyl tert-butyl ether (MTBE) at 0.144 µg/L and 0.0993 µg/L respectively. These concentrations are below the RSL of 0.94 µg/L.

All soil vapor sample locations (SV1-Sub Slab and SV2-Sub Slab) reported trace levels of Tert-butyl alcohol (TBA), Ethyl Tert Butyl Ether (ETBE), and Tert-amyl methyl ether (TAME). The DTSC and USEPA Region 9 RSLs presently have no established actionable levels for TBA, ETBE and/or TAME.

All remaining VOCs were below detection levels and/or well below the regulatory action levels. The detection of DFA at concentrations of 0.177 µg/L in soil vapor sample location SV1-Sub Slab is well below the RSL of 360 µg/L (HI) and is not a concern at the subject site as it is a leak test compound and not related to any onsite materials.

ANALYTICAL RESULTS – SUBSURFACE SOIL SAMPLES

The laboratory was instructed to analyze selected soil samples for Volatile Organic Compounds (VOCs) by EPA Method 8260B/5035, Total Petroleum Hydrocarbon (TPH) by EPA Method 8015B, and 17 Total Metal (CAM) by EPA Method 6010B/7471. Routine

laboratory quality assurance/quality control (QA/QC) procedures which include matrix spikes, matrix spike duplicates, equipment blanks, and surrogate recoveries are presented with the signed laboratory analytical data, included in Appendix A. The analytical results for the subsurface soil samples are shown on Table 2 and 2A.

The laboratory analytical reports for VOCs are listed in units of micrograms per kilogram (µg/kg), however, those units have been converted within the following tables to units of milligrams per kilogram (mg/kg).

TABLE 2
SOIL SAMPLE – ANALYTICAL RESULTS

Sample ID (Boring No. - Sample No. – Depth in Feet)	Total Petroleum Hydrocarbon (EPA 8015B) (in mg/kg)	Volatile Organic Compounds (EPA 5035/8260B) (in mg/kg)	California Regional Water Quality Control Board- (RWQCB) Los Angeles May 1996 Guidebook for Maximum Soil Screening Levels /Regional Screening Levels Region 9 (RSL) (mg/kg)
B1-3-15'	ND	ND	Various level by analyses
B1-4-20'	C4-C12 – ND C13-C22 – 3.46 C23-C32 – ND C33-C36 – ND	ND	C4-C12 – 500 C13-C22 – 1,000 C23-C32 – 10,000
B2-2-10'	C4-C12 – ND C13-C22 – 2.91 C23-C32 – ND C33-C36 – ND	ND	C4-C12 – 500 C13-C22 – 1,000 C23-C32 – 10,000
B2-4-20'	ND	ND	Various level by analyses

mg/kg milligrams per kilogram or parts per million (ppm)
ND not detected at or above method detection limits
" - " sample not analyzed by this method.
HI RSL Non-Cancer Hazard Index (HI)

Soil screening levels established by EPA – RSLs Composite Worker Soil Table (TR=1E-06, HQ=0.1) dated November 2019
The RSL unit (ug /kg) was converted to mg/kg
TR RSL Carcinogenic Target Risk (TR)

SMITH-EMERY GEOSERVICES

TABLE 2A
SOIL SAMPLE TTLC METALS ANALYTICAL RESULTS

Sample No.	17 Total Metals EPA 6010B/7471A (mg/kg)																
	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	V	Zn	Hg
B1-3-15'	ND	4.13	62.2	ND	ND	18.8	8.70	10.8	5.10	ND	13.4	ND	ND	ND	34.0	36.5	ND
B2-4-20'	ND	5.14	102	ND	ND	20.0	8.78	13.5	4.54	ND	15.6	ND	ND	ND	39.4	47.4	ND
TTLC (Regulated Value)	500	500	10,000	75	100	2,500	8,000	2,500	1,000	3,500	2,000	100	500	700	2,400	5,000	20
STLC (Trigger Value)	150	50	1,000	7.5	10	50	800	250	50	3,500	200	10	50	70	240	2,500	2
TCLP (Trigger Value)	NA	100	2,000	NA	20	100	NA	NA	100	NA	NA	20	100	NA	NA	NA	4

mg/kg - milligrams per kilogram, or parts per million (ppm)
mg/L - milligrams per liter, or parts per million (ppm)
"– " - Sample not analyzed by this method
TTLC - Total Threshold Limit Concentration
STLC - Soluble Threshold Limit Concentrations
TCLP - Toxicity Characteristic Leaching Procedure
ND - non-detect at or above method detection limits

Total Threshold Limit Concentration (TTLC) and Soluble Threshold Limit Concentration (STLC), are intended to simulate the conditions that may be present in a landfill where water may pass through the landfill waste and travel into the groundwater, carrying the soluble materials with it. The TTLC analysis determines the total concentration of each target analyte in a sample, and is generally performed first. When any target analyte exceeds the TTLC limits, the waste is classified as hazardous, and further testing is not required. If the TTLC limits are not exceeded, the results are used to determine whether the STLC (or Waste Extraction Test, WET) procedure is necessary.

Toxicity Characteristic Leaching Procedure (TCLP) is designed to determine the mobility of both organic and inorganic analytes present in liquid, solid, and multiphase wastes (under Subtitle C of RCRA) and mandated in the Hazardous and Solid Waste Amendments of 1984 (HSWA).

Used for California regulated hazardous waste. Source is California Code of Regulations, Title 22, Chapter 11, Article 3.

Sb - Antimony
As - Arsenic
Ba - Barium
Be - Beryllium
Cd - Cadmium
Cr - Chromium
Co - Cobalt
Cu - Copper
Pb - Lead
Mo - Molybdenum
Ni - Nickel
Se - Selenium
Ag - Silver
Tl - Thallium
V - Vanadium
Zn - Zinc
Hg - Mercury

DISCUSSION OF SOIL ANALYTICAL RESULTS

Analytical results indicated that volatile organic compound (VOCs) were not detected in any of the soil analyzed. Hydrocarbons in the C4-C12 range were not detected in any of the soil samples analyzed. Detectable TPH (C13-C22) concentrations of 3.46 mg/kg and of 2.91 mg/kg were identified in soil samples B1-4-20' and B2-2-10' respectively. These concentrations are below the 10,000 mg/kg acceptable levels for TPH (C13-C22) published by the California Regional Water Quality Control Board (RWQCB) Los Angeles May 1996 Guidebook for Maximum Soil Screening Levels (see References). Hydrocarbons in the C23-C32 range were not detected in any of the soil samples analyzed. Hydrocarbons in the C33-C36 range were not detected in any of the soil samples analyzed. 17 Total Metals were found to be present at concentrations below levels which require hazardous waste characterization in any of the soil analyzed.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This report presents the findings of the Limited Phase II Environmental Site Assessment conducted at 9829 La Serna Drive, Whittier, California. The program consisted of soil and soil vapor sampling to address former gas station operations at the adjacent site to the south.

The soil samples were collected at two locations at approximate depths of 5, 10, 15, 20, and 24 feet bgs at southern portion of the property and analyzed for VOCs by EPA Method 8260B, TPH by EPA 8015B, and 17 Total Metals by EPA 6010B/7471.

Soil vapor samples were collected immediately beneath the slab at two locations inside the building. Soil vapor samples were analyzed by for VOCs by EPA Method 8260B modified for soil vapor.

Based upon the results of the soil and soil vapor data collected in this program, there is evidence of fuel additives MEK, MIBK, and MTBE to be present in the soil vapors. However, the concentrations of these vapors are below the regulatory screening levels. The VOCs were not detected in all subsurface soils. Trace levels of petroleum hydrocarbons as diesel were found in all subsurface soils which were significantly below the regulatory action levels. CAM 17 Total Metals were found in soils samples to be present at concentrations below levels which require hazardous waste characterization. Based on results of our investigation, it is SEG's opinion that no further site investigation is warranted for the subject site at this time. However, in case of future site development, if impacted resources are discovered, it is SEG's opinion that they should be handled appropriately at that time.

7.0 LIMITS OF LIABILITY

The findings, conclusions, and recommendations contained in this report are based on site conditions as they existed at the time of our investigation. We further assume the explorations to be representative of subsurface conditions throughout the areas of the site which were addressed. This report was prepared solely for the use of Mission Pacific Investors, LLC. The factual data and interpretations pertain to the specific project described in this report and any reliance on this document by any other person or entity shall be at that party's sole risk.

Our investigation was performed using the standard of care and level of skill ordinarily exercised under similar circumstances by reputable Environmental Assessors, Engineers, and Geologists currently practicing in these or similar localities. No other warranty, express or implied, is made as to the conclusions and professional advice included in this report.

Respectfully Submitted,
SMITH - EMERY GEOSERVICES

ILDEBRANDO RESURRECCION
Project Manager

Reviewed and approved by,

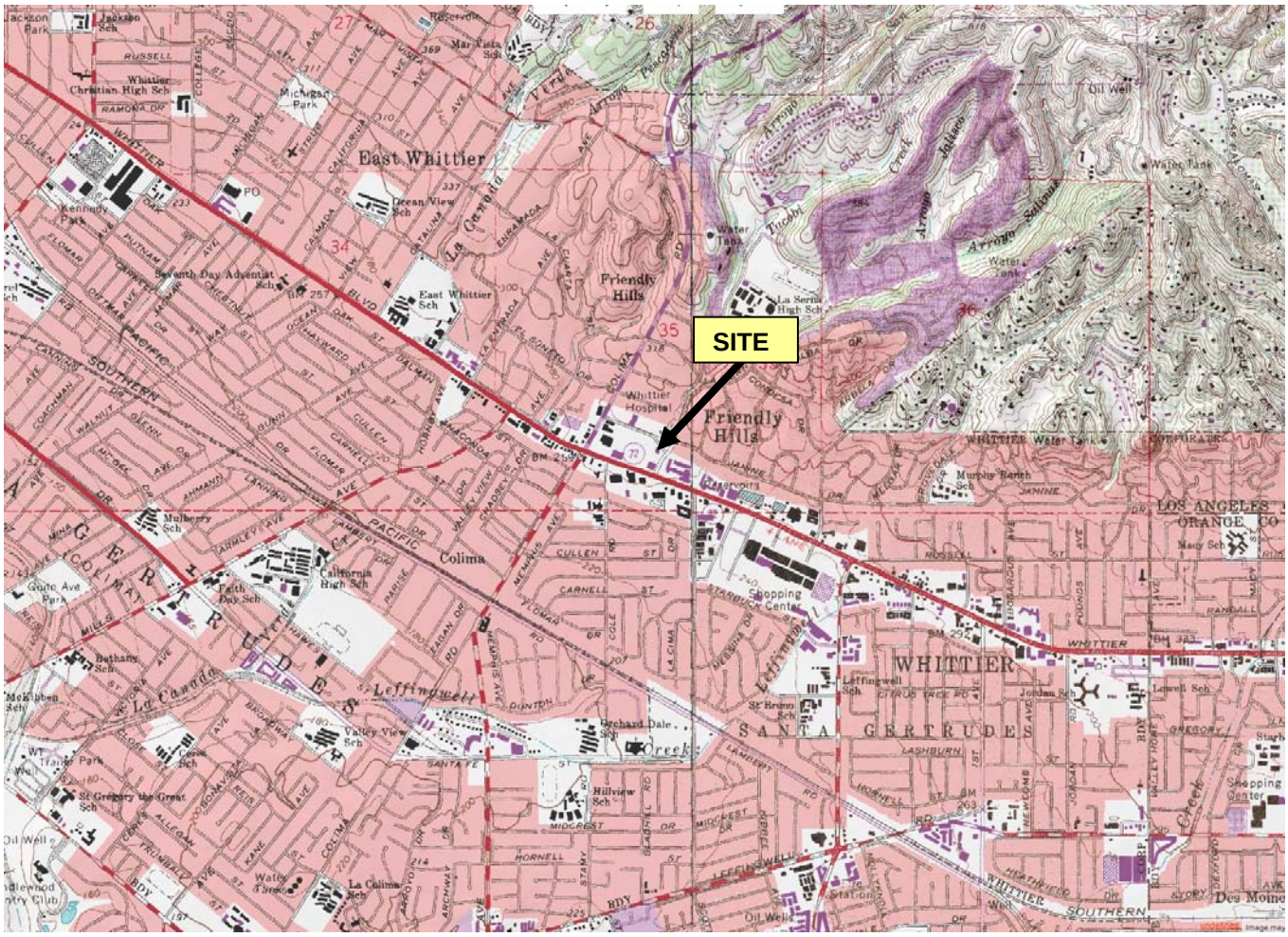
AYESHA SYEDA M.S.
Manager of GeoServices

ILLUSTRATIONS

QUADRANGLE LOCATION

N

NOT TO SCALE



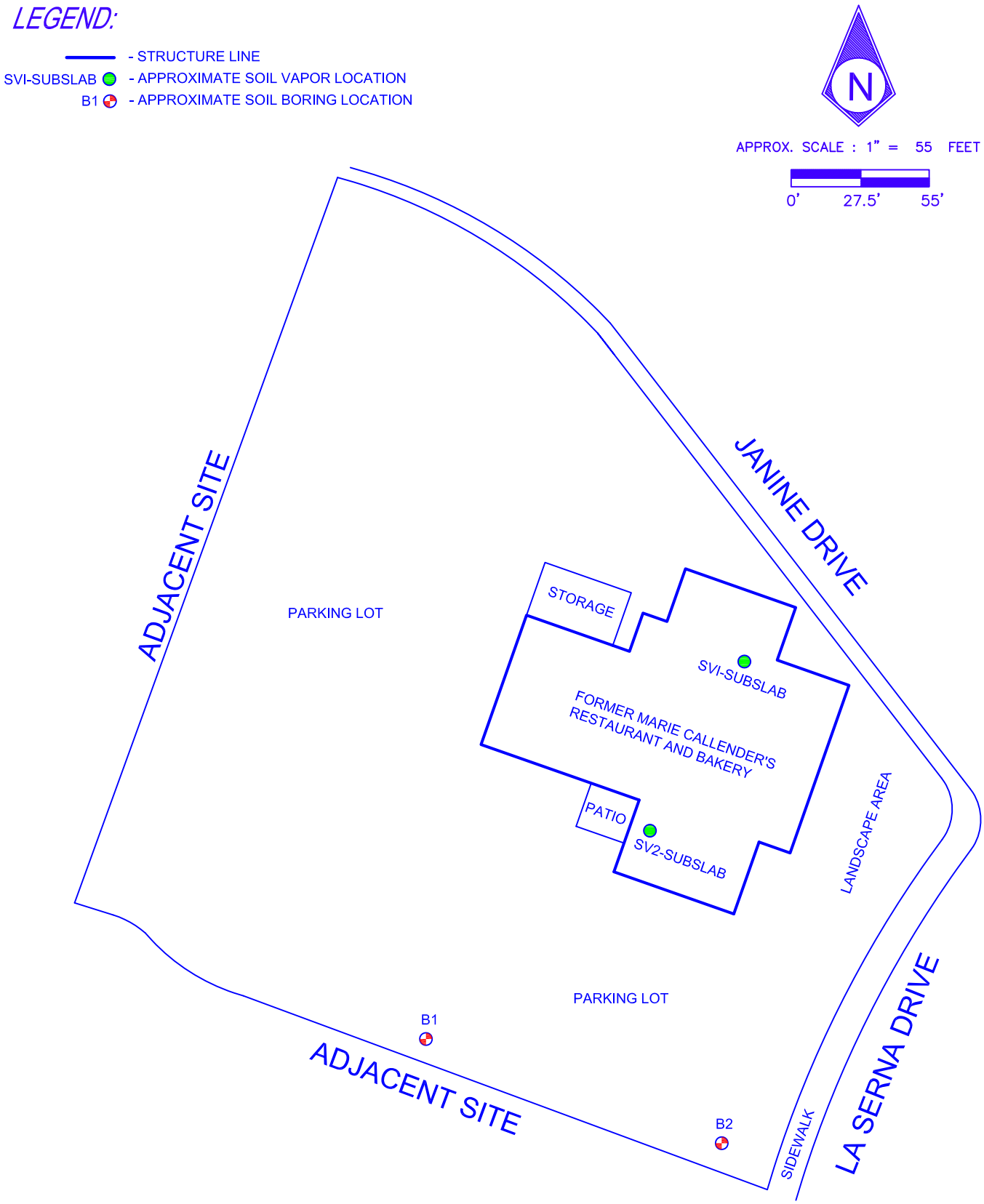
REFERENCE
U.S. GEOLOGICAL SURVEY
WHITTIER QUADRANGLE
LOS ANGELES COUNTY, CALIFORNIA

9829 LA SERNA DRIVE
WHITTIER, CALIFORNIA

VICINITY MAP

Smith-Emery GeoServices
FILE NO.: 46556-2

DWG BY I.R.
PLATE NO.: 1

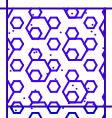
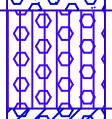
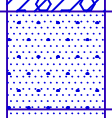
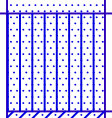
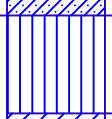
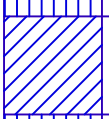
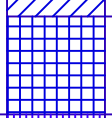
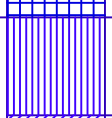
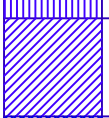
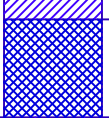
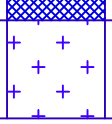


9829 LA SERNA DRIVE
WHITTIER, CALIFORNIA

SUBJECT SITE DIAGRAM

Smith-Emery GeoServices
File No.: 46556-2

DRAWING BY: I.R.
PLATE NO.: 2

MAJOR SUBDIVISIONS			GROUP SYMBOL		MAJOR SUBDIVISIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED FRACTION ON A NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL GRADED GRAVELS, GRAVEL–SAND MIXTURES, LITTLE OR NO FINES.
				GP	POORLY GRADED GRAVELS, OR GRAVEL–SAND MIXTURES, LITTLE OR NO FINES.
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL–SAND–SILT MIXTURES.
				GC	CLAYEY GRAVELS, GRAVEL–SAND–CLAY MIXTURES.
	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
				SP	POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES.
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE FRACTION PASSING A NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND–SILT MIXTURES.
				SC	CLAYEY SANDS, SAND–CLAY MIXTURES.
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50.		ML	INORGANIC SILTS, SANDY SILTS, AND CLAYEY SILTS OF LOW PLASTICITY.
				CL	INORGANIC CLAYS OF LOW TO MED. PLASTICITY; GRAVELLY, SANDY OR SILTY CLAYS, LEAN CLAYS.
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50.		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS. PLASTIC SILTS.
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.
				OH	ORGANIC CLAYS AND SILTY CLAYS OF MEDIUM TO HIGH PLASTICITY.
HIGHLY ORGANIC SOILS				PT	PEAT AND OTHER HIGHLY ORGANIC SOILS.

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE CLASSIFICATIONS

9829 LA SERNA DRIVE
WHITTIER, CALIFORNIA

UNIFIED SOIL CLASSIFICATION SYSTEM

Smith-Emery GeoServices
FILE NO.: 46556–2

DWG BY I. R.
PLATE NO.: 3

KEY TO SAMPLES

■ INDICATES DEPTH OF UNDISTURBED SAMPLE

□ INDICATES DEPTH OF SAMPLING ATTEMPT WITH NO RECOVERY

NOTE ON SAMPLERS:

Truck-mounted hollow-stem auger

Undisturbed samples were obtained with a "California" sampler having an O.D. of 3.0 inches and an I.D. of 2.4 inches. The SPT sampler is 2 inches O.D.; the bit has an I.D. of 1.4 inches and the split barrel has an I.D. of 1.5 inches. Unless practical refusal was encountered, the samplers were driven 18 inches into the soil using a 140 pound weight falling 30 inches. The blow count for the final 12 inches is recorded on the boring logs.

Truck-mounted Geoprobe drill rig (direct push)

Undisturbed samples were obtained with a 5 feet long barrel sampler. The barrel sampler has an O.D. of 2 inches and an I.D. of 1.5 inches. Unless practical refusal was encountered, the barrel sampler was driven into the soil using Geoprobe with direct push method.

Hand-auger

Undisturbed samples were obtained by manually driving a steel sampler having an I.D. of 1.5 inches. Unless practical refusal was encountered, the sampler was driven 6 inches into the soil using a 10 pound slide hammer falling 20 inches.

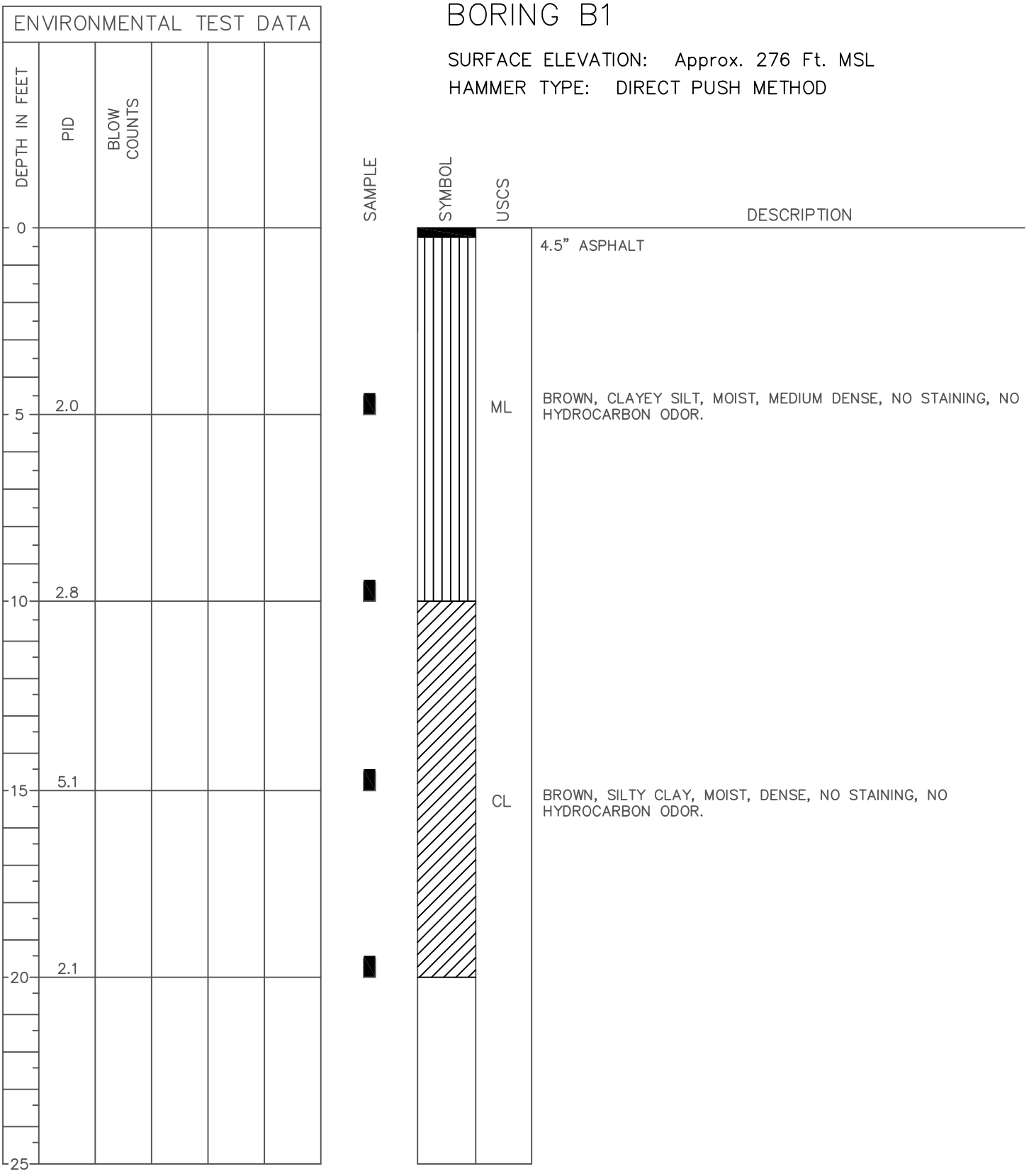
NOTES:

The descriptions on the boring logs apply only at the specific boring locations and at the time the borings were made. They are not warranted to be representative of subsurface conditions. Soil and rock descriptions are based on commonly accepted geotechnical methods of indentification and classification and are based on our professional judgment and experience. The stratification of soil layers is represented with approximate boundaries and the transition between soil types may be gradual.
Groundwater depths indicated on boring logs are specific to the time of drilling. The term "encountered" refers to the level at which free water was first noticed in the boring. The term "stabilized" refers to the level of the water after a lapse of at least one hour.

9829 LA SERNA DRIVE WHITTIER, CALIFORNIA	KEY TO LOG OF BORINGS
	Smith-Emery GeoServices DWG. BY I. R.
	FILE NO.: 46556-2 PLATE NO.: 4

BORING B1

SURFACE ELEVATION: Approx. 276 Ft. MSL
HAMMER TYPE: DIRECT PUSH METHOD



BORING TERMINATED AT A DEPTH OF 20 FEET ON 03-02-20.
NO GROUNDWATER ENCOUNTERED.
BACKFILLED WITH BENTONITE.
LOGGED BY BRANDO RESURRECCION.

9828 LA SERNA DRIVE
WHITTIER, CALIFORNIA

BORING LOG

Smith-Emery GeoServices

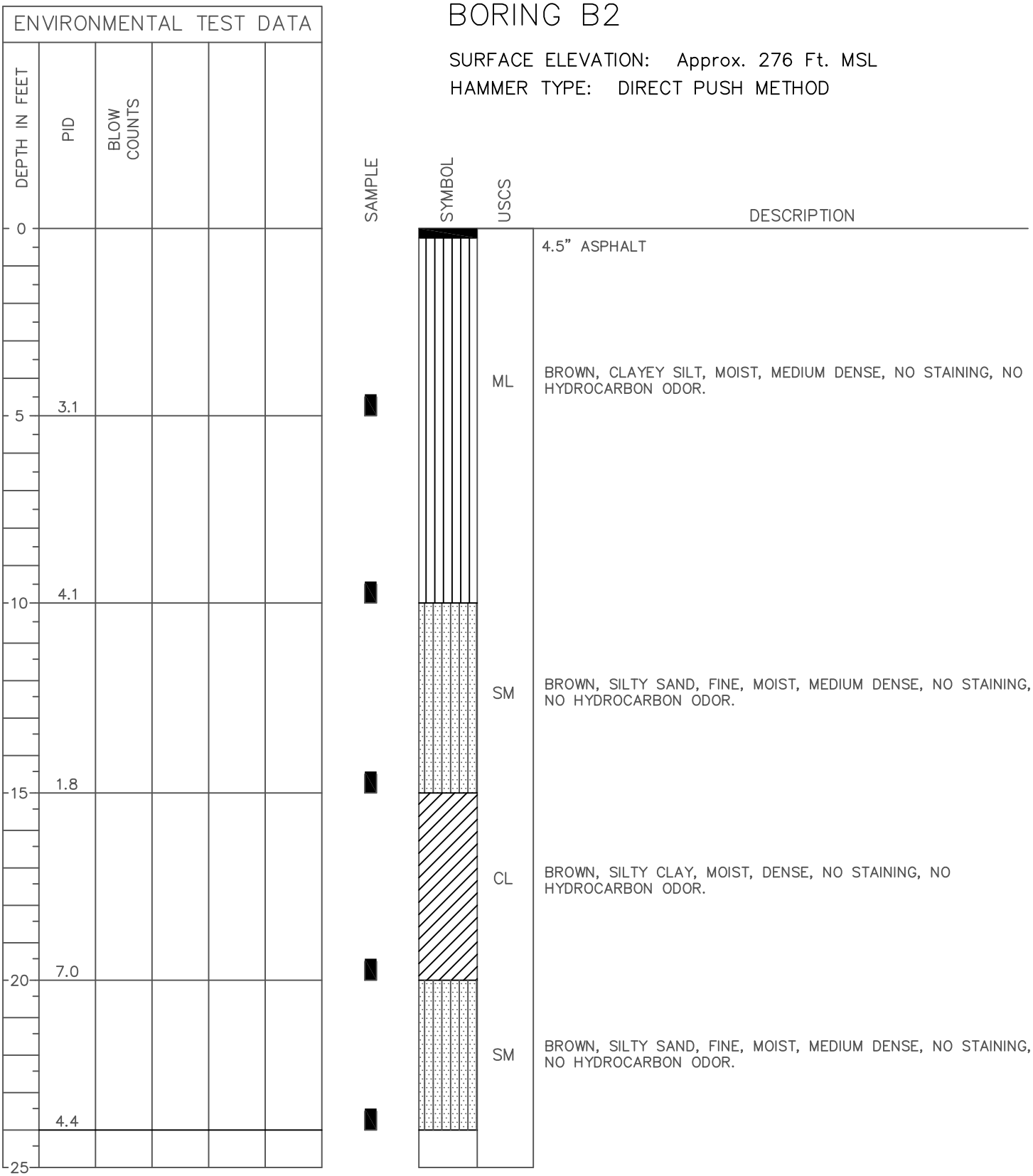
DWG BY I.R.

FILE NO.: 46556-2

PLATE NO.: 5

BORING B2

SURFACE ELEVATION: Approx. 276 Ft. MSL
HAMMER TYPE: DIRECT PUSH METHOD



BORING TERMINATED AT A DEPTH OF 24 FEET ON 03-02-20.
NO GROUNDWATER ENCOUNTERED.
BACKFILLED WITH BENTONITE.
LOGGED BY BRANDO RESURRECCION.

9828 LA SERNA DRIVE
WHITTIER, CALIFORNIA

BORING LOG

Smith-Emery GeoServices

DWG BY I.R.

FILE NO.: 46556-2

PLATE NO.: 6

APPENDIX A

LABORATORY ANALYTICAL REPORT

AND

CHAIN-OF-CUSTODY DOCUMENTATION

POSITIVE
LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

March 05, 2020

Ms. Ayesha Syeda
Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Report No.: 2003008
Project Name: 9829 La Serna Drive, Whittier, CA / 46556-2

Dear Ms. Ayesha Syeda,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on March 02, 2020.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

Project Manager

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Sample ID: B1-3-15' Soil (2003008-01) Sampled: 03/02/20 10:55 Received: 03/02/20 13:33

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C4 - C12	ND		1	mg/kg	0.500	EPA 5030B	EPA 8015B	03/04/20	03/04/20	lk	BC00340
Surrogate: a,a,a-Trifluorotoluene	*109 %*			*70-148*		*EPA 5030B*	*EPA 8015B*	*03/04/20*	*03/04/20*	*lk*	*BC00340*
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C13 - C22	ND		1	mg/kg	2.50	EPA 3550C	EPA 8015B	03/04/20	03/04/20	lk	BC00439
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/04/20	03/04/20	lk	BC00439
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/04/20	03/04/20	lk	BC00439
Surrogate: n-Tetracosane	*84.4 %*			*64-139*		*EPA 3550C*	*EPA 8015B*	*03/04/20*	*03/04/20*	*lk*	*BC00439*
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Dichlorodifluoromethane (FC-12)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chloromethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Vinyl chloride (Chloroethylene)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromomethane (Methyl bromide)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Trichlorofluoromethane (FC-11)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Acetone	ND		1	ug/kg	80.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Carbon disulfide	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1-Dichloroethene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Methylene chloride (Dichloromethane)	ND		1	ug/kg	20.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Tert-butyl alcohol	ND		1	ug/kg	20.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
trans-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Methyl tert-butyl ether (MTBE)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1-Dichloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Di-isopropyl ether	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Vinyl acetate	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Ethyl tert-butyl ether	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
cis-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Butanone (MEK)	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromochloromethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chloroform	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,1-Trichloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Tert-amyl methyl ether	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Carbon tetrachloride	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1-Dichloropropene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Benzene	ND		1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dichloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Trichloroethene (TCE)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Dibromomethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,4-Dioxane	ND		1	ug/kg	80.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromodichloromethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Chloroethyl vinyl ether	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
cis-1,3-Dichloropropene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
4-Methyl-2-pentanone (MIBK)	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Toluene	ND		1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
trans-1,3-Dichloropropene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,2-Trichloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Sample ID: B1-3-15' Soil (2003008-01) Sampled: 03/02/20 10:55 Received: 03/02/20 13:33

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Tetrachloroethene (PCE)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,3-Dichloropropane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Hexanone (MBK)	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Dibromochloromethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dibromoethane (EDB)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chlorobenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,1,2-Tetrachloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Ethylbenzene	ND		1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
m,p-Xylene	ND		1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
o-Xylene	ND		1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Styrene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromoform (Tribromomethane)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Isopropylbenzene (Cumene)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromobenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,2,2-Tetrachloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,3-Trichloropropane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
n-Propylbenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Chlorotoluene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
4-Chlorotoluene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,3,5-Trimethylbenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
tert-Butylbenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,4-Trimethylbenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
sec-Butylbenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,3-Dichlorobenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
4-Isopropyltoluene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,4-Dichlorobenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dichlorobenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
n-Butylbenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,4-Trichlorobenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Hexachlorobutadiene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Naphthalene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,3-Trichlorobenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Surrogate: Dibromofluoromethane	*109 %*			*70-138*		*EPA 5035*	*EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00527*
Surrogate: Toluene-d8	*103 %*			*80-121*		*EPA 5035*	*EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00527*
Surrogate: 4-Bromofluorobenzene	*88.9 %*			*70-122*		*EPA 5035*	*EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00527*
Antimony	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Arsenic	**4.13**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Barium	**62.2**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Cadmium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Chromium	**18.8**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Cobalt	**8.70**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Copper	**10.8**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Lead	**5.10**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Molybdenum	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Nickel	**13.4**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Selenium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Sample ID: B1-3-15' Soil (2003008-01) Sampled: 03/02/20 10:55 Received: 03/02/20 13:33											
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Vanadium	**34.0**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Zinc	**36.5**		1	mg/kg	5.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Mercury	ND		1	mg/kg	0.100	EPA 7471A	EPA 7471A	03/03/20	03/03/20	cg	BC00433
Sample ID: B1-4-20' Soil (2003008-02) Sampled: 03/02/20 11:00 Received: 03/02/20 13:33											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C4 - C12	ND		1	mg/kg	0.500	EPA 5030B	EPA 8015B	03/04/20	03/04/20	lk	BC00340
Surrogate: a,a,a-Trifluorotoluene	*112 %*			*70-148*		*EPA 5030B*	*EPA 8015B*	*03/04/20*	*03/04/20*	*lk*	*BC00340*
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C13 - C22	**3.46**		1	mg/kg	2.50	EPA 3550C	EPA 8015B	03/04/20	03/04/20	lk	BC00439
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/04/20	03/04/20	lk	BC00439
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/04/20	03/04/20	lk	BC00439
Surrogate: n-Tetracosane	*112 %*			*64-139*		*EPA 3550C*	*EPA 8015B*	*03/04/20*	*03/04/20*	*lk*	*BC00439*
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Dichlorodifluoromethane (FC-12)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chloromethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Vinyl chloride (Chloroethylene)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromomethane (Methyl bromide)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Trichlorofluoromethane (FC-11)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Acetone	ND		1	ug/kg	80.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Carbon disulfide	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1-Dichloroethene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Methylene chloride (Dichloromethane)	ND		1	ug/kg	20.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Tert-butyl alcohol	ND		1	ug/kg	20.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
trans-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Methyl tert-butyl ether (MTBE)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1-Dichloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Di-isopropyl ether	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Vinyl acetate	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Ethyl tert-butyl ether	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
cis-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Butanone (MEK)	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromochloromethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chloroform	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,1-Trichloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Tert-amyl methyl ether	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Carbon tetrachloride	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1-Dichloropropene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Benzene	ND		1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dichloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Trichloroethene (TCE)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Dibromomethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Sample ID: B1-4-20' Soil (2003008-02) Sampled: 03/02/20 11:00 Received: 03/02/20 13:33

1,4-Dioxane	ND	1	ug/kg	80.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromodichloromethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Chloroethyl vinyl ether	ND	1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
cis-1,3-Dichloropropene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
4-Methyl-2-pentanone (MIBK)	ND	1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Toluene	ND	1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
trans-1,3-Dichloropropene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,2-Trichloroethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Tetrachloroethene (PCE)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,3-Dichloropropane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Hexanone (MBK)	ND	1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Dibromochloromethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dibromoethane (EDB)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chlorobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,1,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Ethylbenzene	ND	1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
m,p-Xylene	ND	1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
o-Xylene	ND	1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Styrene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromoform (Tribromomethane)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Isopropylbenzene (Cumene)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,2,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,3-Trichloropropane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
n-Propylbenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
4-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,3,5-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
tert-Butylbenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,4-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
sec-Butylbenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,3-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
4-Isopropyltoluene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,4-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
n-Butylbenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dibromo-3-chloropropane (DBCP)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,4-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Hexachlorobutadiene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Naphthalene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,3-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Surrogate: Dibromofluoromethane	*106 %*		*70-138*		*EPA 5035*	*EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00527*
Surrogate: Toluene-d8	*98.8 %*		*80-121*		*EPA 5035*	*EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00527*
Surrogate: 4-Bromofluorobenzene	*84.5 %*		*70-122*		*EPA 5035*	*EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00527*

Sample ID: B2-2-10' Soil (2003008-03) Sampled: 03/02/20 09:35 Received: 03/02/20 13:33

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C4 - C12	ND		1	mg/kg	0.500	EPA 5030B	EPA 8015B	03/04/20	03/04/20	lk	BC00340
Surrogate: a,a,a-Trifluorotoluene	*111 %*			*70-148*		*EPA 5030B*	*EPA 8015B*	*03/04/20*	*03/04/20*	*lk*	*BC00340*

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Sample ID: B2-2-10' Soil (2003008-03) Sampled: 03/02/20 09:35 Received: 03/02/20 13:33

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C13 - C22	**2.91**		1	mg/kg	2.50	EPA 3550C	EPA 8015B	03/04/20	03/04/20	lk	BC00439
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/04/20	03/04/20	lk	BC00439
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/04/20	03/04/20	lk	BC00439
Surrogate: n-Tetracosane	*85.8 %*			*64-139*		*EPA 3550C*	*EPA 8015B*	*03/04/20*	*03/04/20*	*lk*	*BC00439*

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Dichlorodifluoromethane (FC-12)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chloromethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Vinyl chloride (Chloroethylene)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromomethane (Methyl bromide)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Trichlorofluoromethane (FC-11)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Acetone	ND		1	ug/kg	80.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Carbon disulfide	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1-Dichloroethene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Methylene chloride (Dichloromethane)	ND		1	ug/kg	20.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Tert-butyl alcohol	ND		1	ug/kg	20.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
trans-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Methyl tert-butyl ether (MTBE)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1-Dichloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Di-isopropyl ether	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Vinyl acetate	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Ethyl tert-butyl ether	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
cis-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Butanone (MEK)	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromochloromethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chloroform	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,1-Trichloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Tert-amyl methyl ether	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Carbon tetrachloride	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1-Dichloropropene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Benzene	ND		1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dichloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Trichloroethene (TCE)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Dibromomethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,4-Dioxane	ND		1	ug/kg	80.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromodichloromethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Chloroethyl vinyl ether	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
cis-1,3-Dichloropropene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
4-Methyl-2-pentanone (MIBK)	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Toluene	ND		1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
trans-1,3-Dichloropropene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,2-Trichloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Tetrachloroethene (PCE)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,3-Dichloropropane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Hexanone (MBK)	ND		1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Dibromochloromethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Sample ID: B2-2-10' Soil (2003008-03) Sampled: 03/02/20 09:35 Received: 03/02/20 13:33

1,2-Dibromoethane (EDB)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chlorobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,1,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Ethylbenzene	ND	1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
m,p-Xylene	ND	1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
o-Xylene	ND	1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Styrene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromoform (Tribromomethane)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Isopropylbenzene (Cumene)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,2,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,3-Trichloropropane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
n-Propylbenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
4-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,3,5-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
tert-Butylbenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,4-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
sec-Butylbenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,3-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
4-Isopropyltoluene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,4-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
n-Butylbenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dibromo-3-chloropropane (DBCP)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,4-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Hexachlorobutadiene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Naphthalene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,3-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Surrogate: Dibromofluoromethane	*106 %*		*70-138*		*EPA 5035*	*EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00527*
Surrogate: Toluene-d8	*98.5 %*		*80-121*		*EPA 5035*	*EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00527*
Surrogate: 4-Bromofluorobenzene	*93.5 %*		*70-122*		*EPA 5035*	*EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00527*

Sample ID: B2-4-20' Soil (2003008-04) Sampled: 03/02/20 09:45 Received: 03/02/20 13:33

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C4 - C12	ND		1	mg/kg	0.500	EPA 5030B	EPA 8015B	03/04/20	03/04/20	lk	BC00340
Surrogate: a,a,a-Trifluorotoluene	*96.9 %*			*70-148*		*EPA 5030B*	*EPA 8015B*	*03/04/20*	*03/04/20*	*lk*	*BC00340*
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C13 - C22	ND		1	mg/kg	2.50	EPA 3550C	EPA 8015B	03/04/20	03/04/20	lk	BC00439
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/04/20	03/04/20	lk	BC00439
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/04/20	03/04/20	lk	BC00439
Surrogate: n-Tetracosane	*97.8 %*			*64-139*		*EPA 3550C*	*EPA 8015B*	*03/04/20*	*03/04/20*	*lk*	*BC00439*
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Dichlorodifluoromethane (FC-12)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chloromethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Vinyl chloride (Chloroethylene)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromomethane (Methyl bromide)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chloroethane	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Sample ID: B2-4-20' Soil (2003008-04) Sampled: 03/02/20 09:45 Received: 03/02/20 13:33

Trichlorofluoromethane (FC-11)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Acetone	ND	1	ug/kg	80.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Carbon disulfide	ND	1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1-Dichloroethene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Methylene chloride (Dichloromethane)	ND	1	ug/kg	20.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Tert-butyl alcohol	ND	1	ug/kg	20.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
trans-1,2-Dichloroethene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Methyl tert-butyl ether (MTBE)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1-Dichloroethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Di-isopropyl ether	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Vinyl acetate	ND	1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Ethyl tert-butyl ether	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2,2-Dichloropropane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
cis-1,2-Dichloroethene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Butanone (MEK)	ND	1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromochloromethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chloroform	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,1-Trichloroethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Tert-amyl methyl ether	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Carbon tetrachloride	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1-Dichloropropene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Benzene	ND	1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dichloroethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Trichloroethene (TCE)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dichloropropane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Dibromomethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,4-Dioxane	ND	1	ug/kg	80.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromodichloromethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Chloroethyl vinyl ether	ND	1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
cis-1,3-Dichloropropene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
4-Methyl-2-pentanone (MIBK)	ND	1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Toluene	ND	1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
trans-1,3-Dichloropropene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,2-Trichloroethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Tetrachloroethene (PCE)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,3-Dichloropropane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Hexanone (MBK)	ND	1	ug/kg	40.0	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Dibromochloromethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dibromoethane (EDB)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Chlorobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,1,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Ethylbenzene	ND	1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
m,p-Xylene	ND	1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
o-Xylene	ND	1	ug/kg	2.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Styrene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromoform (Tribromomethane)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Isopropylbenzene (Cumene)	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Bromobenzene	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,1,2,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,3-Trichloropropane	ND	1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Sample ID: B2-4-20' Soil (2003008-04) Sampled: 03/02/20 09:45 Received: 03/02/20 13:33

n-Propylbenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
2-Chlorotoluene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
4-Chlorotoluene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,3,5-Trimethylbenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
tert-Butylbenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,4-Trimethylbenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
sec-Butylbenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,3-Dichlorobenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
4-Isopropyltoluene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,4-Dichlorobenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dichlorobenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
n-Butylbenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,4-Trichlorobenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Hexachlorobutadiene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Naphthalene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
1,2,3-Trichlorobenzene	ND		1	ug/kg	4.00	EPA 5035	EPA 8260B	03/02/20	03/02/20	mb	BC00527
Surrogate: Dibromofluoromethane	*109 %*			*70-138*		*EPA 5035*	*EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00527*
Surrogate: Toluene-d8	*104 %*			*80-121*		*EPA 5035*	*EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00527*
Surrogate: 4-Bromofluorobenzene	*95.4 %*			*70-122*		*EPA 5035*	*EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00527*

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Antimony	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Arsenic	**5.14**		1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Barium	**102**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Cadmium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Chromium	**20.0**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Cobalt	**8.78**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Copper	**13.5**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Lead	**4.54**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Molybdenum	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Nickel	**15.6**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Selenium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Vanadium	**39.4**		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434
Zinc	**47.4**		1	mg/kg	5.00	EPA 3050B	EPA 6010B	03/03/20	03/03/20	CG	BC00434

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Mercury	ND		1	mg/kg	0.100	EPA 7471A	EPA 7471A	03/03/20	03/03/20	cg	BC00433

Sample ID: SV1-SUB SLAB Air (2003008-05) Sampled: 03/02/20 11:50 Received: 03/02/20 13:33

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
1,1-Difluoroethane (DFA)	**0.177**		1	ug/l	0.150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Dichlorodifluoromethane (FC-12)	ND		1	ug/l	0.0300	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Vinyl chloride (Chloroethylene)	ND		1	ug/l	0.0130	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Chloroethane	ND		1	ug/l	0.0300	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Trichlorofluoromethane (FC-11)	ND		1	ug/l	0.0150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Acetone	**1.16**		1	ug/l	1.00	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,1-Dichloroethene	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Sample ID: SV1-SUB SLAB Air (2003008-05) Sampled: 03/02/20 11:50 Received: 03/02/20 13:33

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Methylene chloride (Dichloromethane)	ND		1	ug/l	1.00	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
trans-1,2-Dichloroethene	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,1-Dichloroethane	ND		1	ug/l	0.0150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
2,2-Dichloropropane	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
cis-1,2-Dichloroethene	ND		1	ug/l	0.0150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
2-Butanone (MEK)	**0.335**		1	ug/l	0.200	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Chloroform	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,1,1-Trichloroethane	ND		1	ug/l	0.0150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Carbon tetrachloride	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,1-Dichloropropene	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Benzene	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,2-Dichloroethane	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Trichloroethene (TCE)	ND		1	ug/l	0.0150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,2-Dichloropropane	ND		1	ug/l	0.0150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
cis-1,3-Dichloropropene	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
4-Methyl-2-pentanone (MIBK)	**0.112**		1	ug/l	0.0500	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Toluene	ND		1	ug/l	0.200	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
trans-1,3-Dichloropropene	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,1,2-Trichloroethane	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Tetrachloroethene (PCE)	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,3-Dichloropropane	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Dibromochloromethane	ND		1	ug/l	0.0500	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Chlorobenzene	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,1,1,2-Tetrachloroethane	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Ethylbenzene	ND		1	ug/l	0.150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
m,p-Xylene	ND		1	ug/l	0.200	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
o-Xylene	ND		1	ug/l	0.150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,1,2,2-Tetrachloroethane	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,2,3-Trichloropropane	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Methyl tert-butyl ether (MTBE)	**0.144**		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,4-Dioxane	ND		1	ug/l	0.250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Tert-butyl alcohol	**6.18**		1	ug/l	0.150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Di-isopropyl ether	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Ethyl tert-butyl ether	**1.38**		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Tert-amyl methyl ether	**0.0384**		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Cyclohexane	ND		1	ug/l	0.100	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Freon 113	ND		1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Surrogate: Dibromofluoromethane	*104 %*			*70-130*		*EPA 5030B*	*M EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00451*
Surrogate: Toluene-d8	*107 %*			*70-130*		*EPA 5030B*	*M EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00451*
Surrogate: 4-Bromofluorobenzene	*94.1 %*			*70-130*		*EPA 5030B*	*M EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00451*

Sample ID: SV2-SUB SLAB Air (2003008-06) Sampled: 03/02/20 11:30 Received: 03/02/20 13:33

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
1,1-Difluoroethane (DFA)	ND		1	ug/l	0.150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Dichlorodifluoromethane (FC-12)	ND		1	ug/l	0.0300	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Vinyl chloride (Chloroethylene)	ND		1	ug/l	0.0130	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Chloroethane	ND		1	ug/l	0.0300	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Trichlorofluoromethane (FC-11)	ND		1	ug/l	0.0150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Acetone	ND		1	ug/l	1.00	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Sample ID: SV2-SUB SLAB Air (2003008-06) Sampled: 03/02/20 11:30 Received: 03/02/20 13:33

1,1-Dichloroethene	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Methylene chloride (Dichloromethane)	ND	1	ug/l	1.00	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
trans-1,2-Dichloroethene	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,1-Dichloroethane	ND	1	ug/l	0.0150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
2,2-Dichloropropane	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
cis-1,2-Dichloroethene	ND	1	ug/l	0.0150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
2-Butanone (MEK)	**0.249**	1	ug/l	0.200	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Chloroform	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,1,1-Trichloroethane	ND	1	ug/l	0.0150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Carbon tetrachloride	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,1-Dichloropropene	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Benzene	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,2-Dichloroethane	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Trichloroethene (TCE)	ND	1	ug/l	0.0150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,2-Dichloropropane	ND	1	ug/l	0.0150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
cis-1,3-Dichloropropene	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
4-Methyl-2-pentanone (MIBK)	**0.0675**	1	ug/l	0.0500	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Toluene	ND	1	ug/l	0.200	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
trans-1,3-Dichloropropene	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,1,2-Trichloroethane	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Tetrachloroethene (PCE)	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,3-Dichloropropane	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Dibromochloromethane	ND	1	ug/l	0.0500	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Chlorobenzene	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,1,1,2-Tetrachloroethane	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Ethylbenzene	ND	1	ug/l	0.150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
m,p-Xylene	ND	1	ug/l	0.200	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
o-Xylene	ND	1	ug/l	0.150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,1,2,2-Tetrachloroethane	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,2,3-Trichloropropane	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Methyl tert-butyl ether (MTBE)	**0.0993**	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
1,4-Dioxane	ND	1	ug/l	0.250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Tert-butyl alcohol	**4.54**	1	ug/l	0.150	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Di-isopropyl ether	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Ethyl tert-butyl ether	**0.939**	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Tert-amyl methyl ether	**0.0268**	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Cyclohexane	ND	1	ug/l	0.100	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Freon 113	ND	1	ug/l	0.0250	EPA 5030B	M EPA 8260B	03/02/20	03/02/20	mb	BC00451
Surrogate: Dibromofluoromethane	*104 %*		*70-130*		*EPA 5030B*	*M EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00451*
Surrogate: Toluene-d8	*106 %*		*70-130*		*EPA 5030B*	*M EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00451*
Surrogate: 4-Bromofluorobenzene	*97.8 %*		*70-130*		*EPA 5030B*	*M EPA 8260B*	*03/02/20*	*03/02/20*	*mb*	*BC00451*

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BC00340 - EPA 5030B										
Blank	**Prepared & Analyzed: 03/04/20**									
TPH C4 - C12	ND	0.500	mg/kg							
Surrogate: a,a,a-Trifluorotoluene	*0.0316*		mg/kg	*0.03000*		*105*	*70-148*			
LCS	**Prepared & Analyzed: 03/04/20**									
Gasoline	0.659	0.500	mg/kg	0.9096		72.4	69-120			
Matrix Spike **Source: 2003012-26**	**Prepared & Analyzed: 03/04/20**									
Gasoline	1.87	0.500	mg/kg	1.819	ND	103	60-132			
Matrix Spike Dup **Source: 2003012-26**	**Prepared & Analyzed: 03/04/20**									
Gasoline	2.01	0.500	mg/kg	1.819	ND	111	60-132	7.28	30	
Batch BC00439 - EPA 3550C										
Blank	**Prepared & Analyzed: 03/04/20**									
TPH C13 - C22	ND	2.50	mg/kg							
TPH C23 - C32	ND	100	mg/kg							
TPH C33 - C36	ND	100	mg/kg							
Surrogate: n-Tetracosane	*18.7*		mg/kg	*20.83*		*89.6*	*64-139*			
LCS	**Prepared & Analyzed: 03/04/20**									
Diesel	621	12.5	mg/kg	554.7		112	74-154			
Surrogate: n-Tetracosane	*22.4*		mg/kg	*20.83*		*108*	*64-140*			
Matrix Spike **Source: 2003008-01**	**Prepared & Analyzed: 03/04/20**									
Diesel	132	2.50	mg/kg	110.9	4.12	115	53-138			
Surrogate: n-Tetracosane	*24.6*		mg/kg	*20.83*		*118*	*64-139*			
Matrix Spike Dup **Source: 2003008-01**	**Prepared & Analyzed: 03/04/20**									
Diesel	147	2.50	mg/kg	110.9	4.12	129	53-138	11.5	30	
Surrogate: n-Tetracosane	*24.8*		mg/kg	*20.83*		*119*	*64-139*			
Batch BC00527 - EPA 5035										
Blank	**Prepared & Analyzed: 03/02/20**									
Dichlorodifluoromethane (FC-12)	ND	4.00	ug/kg							
Chloromethane	ND	4.00	ug/kg							
Vinyl chloride (Chloroethylene)	ND	4.00	ug/kg							
Bromomethane (Methyl bromide)	ND	4.00	ug/kg							
Chloroethane	ND	4.00	ug/kg							
Trichlorofluoromethane (FC-11)	ND	4.00	ug/kg							
Acetone	ND	80.0	ug/kg							
Carbon disulfide	ND	40.0	ug/kg							
1,1-Dichloroethene	ND	4.00	ug/kg							
Methylene chloride (Dichloromethane)	ND	20.0	ug/kg							
Tert-butyl alcohol	ND	20.0	ug/kg							

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BC00527 - EPA 5035										
trans-1,2-Dichloroethene	ND	4.00	ug/kg							
Methyl tert-butyl ether (MTBE)	ND	4.00	ug/kg							
1,1-Dichloroethane	ND	4.00	ug/kg							
Di-isopropyl ether	ND	4.00	ug/kg							
Vinyl acetate	ND	40.0	ug/kg							
Ethyl tert-butyl ether	ND	4.00	ug/kg							
2,2-Dichloropropane	ND	4.00	ug/kg							
cis-1,2-Dichloroethene	ND	4.00	ug/kg							
2-Butanone (MEK)	ND	40.0	ug/kg							
Bromochloromethane	ND	4.00	ug/kg							
Chloroform	ND	4.00	ug/kg							
1,1,1-Trichloroethane	ND	4.00	ug/kg							
Tert-amyl methyl ether	ND	4.00	ug/kg							
Carbon tetrachloride	ND	4.00	ug/kg							
1,1-Dichloropropene	ND	4.00	ug/kg							
Benzene	ND	2.00	ug/kg							
1,2-Dichloroethane	ND	4.00	ug/kg							
Trichloroethene (TCE)	ND	4.00	ug/kg							
1,2-Dichloropropane	ND	4.00	ug/kg							
Dibromomethane	ND	4.00	ug/kg							
1,4-Dioxane	ND	80.0	ug/kg							
Bromodichloromethane	ND	4.00	ug/kg							
2-Chloroethyl vinyl ether	ND	40.0	ug/kg							
cis-1,3-Dichloropropene	ND	4.00	ug/kg							
4-Methyl-2-pentanone (MIBK)	ND	40.0	ug/kg							
Toluene	ND	2.00	ug/kg							
trans-1,3-Dichloropropene	ND	4.00	ug/kg							
1,1,2-Trichloroethane	ND	4.00	ug/kg							
Tetrachloroethene (PCE)	ND	4.00	ug/kg							
1,3-Dichloropropane	ND	4.00	ug/kg							
2-Hexanone (MBK)	ND	40.0	ug/kg							
Dibromochloromethane	ND	4.00	ug/kg							
1,2-Dibromoethane (EDB)	ND	4.00	ug/kg							
Chlorobenzene	ND	4.00	ug/kg							
1,1,1,2-Tetrachloroethane	ND	4.00	ug/kg							
Ethylbenzene	ND	2.00	ug/kg							
m,p-Xylene	ND	2.00	ug/kg							
o-Xylene	ND	2.00	ug/kg							
Styrene	ND	4.00	ug/kg							
Bromoform (Tribromomethane)	ND	4.00	ug/kg							
Isopropylbenzene (Cumene)	ND	4.00	ug/kg							

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BC00527 - EPA 5035										
Bromobenzene	ND	4.00	ug/kg							
1,1,2,2-Tetrachloroethane	ND	4.00	ug/kg							
1,2,3-Trichloropropane	ND	4.00	ug/kg							
n-Propylbenzene	ND	4.00	ug/kg							
2-Chlorotoluene	ND	4.00	ug/kg							
4-Chlorotoluene	ND	4.00	ug/kg							
1,3,5-Trimethylbenzene	ND	4.00	ug/kg							
tert-Butylbenzene	ND	4.00	ug/kg							
1,2,4-Trimethylbenzene	ND	4.00	ug/kg							
sec-Butylbenzene	ND	4.00	ug/kg							
1,3-Dichlorobenzene	ND	4.00	ug/kg							
4-Isopropyltoluene	ND	4.00	ug/kg							
1,4-Dichlorobenzene	ND	4.00	ug/kg							
1,2-Dichlorobenzene	ND	4.00	ug/kg							
n-Butylbenzene	ND	4.00	ug/kg							
1,2-Dibromo-3-chloropropane (DBCP)	ND	4.00	ug/kg							
1,2,4-Trichlorobenzene	ND	4.00	ug/kg							
Hexachlorobutadiene	ND	4.00	ug/kg							
Naphthalene	ND	4.00	ug/kg							
1,2,3-Trichlorobenzene	ND	4.00	ug/kg							
Surrogate: Dibromofluoromethane	*15.9*		ug/kg	*15.00*		*106*	*70-138*			
Surrogate: Toluene-d8	*14.7*		ug/kg	*15.00*		*97.9*	*80-121*			
Surrogate: 4-Bromofluorobenzene	*16.6*		ug/kg	*15.00*		*111*	*70-122*			
LCS	**Prepared & Analyzed: 03/02/20**									
1,1-Dichloroethene	23.2	4.00	ug/kg	20.00		116	63-137			
Methyl tert-butyl ether (MTBE)	20.2	4.00	ug/kg	20.00		101	70-127			
Benzene	18.7	2.00	ug/kg	20.00		93.7	71-120			
Trichloroethene (TCE)	20.1	4.00	ug/kg	20.00		101	72-120			
Toluene	19.4	2.00	ug/kg	20.00		96.8	66-122			
Chlorobenzene	19.1	4.00	ug/kg	20.00		95.6	72-120			
Surrogate: Dibromofluoromethane	*15.6*		ug/kg	*15.00*		*104*	*80-120*			
Surrogate: Toluene-d8	*14.9*		ug/kg	*15.00*		*99.1*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*19.7*		ug/kg	*15.00*		*131*	*80-120*			
Matrix Spike **Source: 2003008-01**	**Prepared & Analyzed: 03/04/20**									
1,1-Dichloroethene	28.2	4.00	ug/kg	20.00	ND	141	61-136			
Benzene	16.4	2.00	ug/kg	20.00	ND	82.0	65-123			
Trichloroethene (TCE)	20.0	4.00	ug/kg	20.00	ND	100	65-120			
Toluene	16.2	2.00	ug/kg	20.00	ND	81.1	59-120			
Chlorobenzene	18.2	4.00	ug/kg	20.00	ND	91.2	56-123			
Surrogate: Dibromofluoromethane	*15.0*		ug/kg	*15.00*		*100*	*80-126*			
Surrogate: Toluene-d8	*13.5*		ug/kg	*15.00*		*89.9*	*80-120*			

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BC00451 - EPA 5030B										
1,3-Dichloropropane	ND	0.0250	ug/l							
Dibromochloromethane	ND	0.0500	ug/l							
Chlorobenzene	ND	0.0250	ug/l							
1,1,1,2-Tetrachloroethane	ND	0.0250	ug/l							
Ethylbenzene	ND	0.150	ug/l							
m,p-Xylene	ND	0.200	ug/l							
o-Xylene	ND	0.150	ug/l							
1,1,2,2-Tetrachloroethane	ND	0.0250	ug/l							
1,2,3-Trichloropropane	ND	0.0250	ug/l							
Methyl tert-butyl ether (MTBE)	ND	0.0250	ug/l							
1,4-Dioxane	ND	0.250	ug/l							
Tert-butyl alcohol	ND	0.150	ug/l							
Di-isopropyl ether	ND	0.0250	ug/l							
Ethyl tert-butyl ether	ND	0.0250	ug/l							
Tert-amyl methyl ether	ND	0.0250	ug/l							
Cyclohexane	ND	0.100	ug/l							
Freon 113	ND	0.0250	ug/l							
Surrogate: Dibromofluoromethane	*10.9*		ug/l	*10.00*		*109*	*70-130*			
Surrogate: Toluene-d8	*9.77*		ug/l	*10.00*		*97.7*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*9.50*		ug/l	*10.00*		*95.0*	*70-130*			
LCS	**Prepared & Analyzed: 03/02/20**									
1,1-Dichloroethene	9.09	0.0250	ug/l	10.00		90.9	70-130			
Benzene	9.25	0.0250	ug/l	10.00		92.5	70-130			
Trichloroethene (TCE)	9.96	0.0150	ug/l	10.00		99.6	70-130			
Toluene	9.55	0.200	ug/l	10.00		95.5	70-130			
Chlorobenzene	10.4	0.0250	ug/l	10.00		104	70-130			
Methyl tert-butyl ether (MTBE)	10.3	0.0250	ug/l	10.00		103	70-130			
Surrogate: Dibromofluoromethane	*9.97*		ug/l	*10.00*		*99.7*	*70-130*			
Surrogate: Toluene-d8	*10.2*		ug/l	*10.00*		*102*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*9.37*		ug/l	*10.00*		*93.7*	*70-130*			
Duplicate **Source: 2003008-05**	**Prepared & Analyzed: 03/02/20**									
1,1-Difluoroethane (DFA)	0.211	0.150	ug/l		0.177			17.4	25	
Dichlorodifluoromethane (FC-12)	ND	0.0300	ug/l		ND				25	
Vinyl chloride (Chloroethylene)	ND	0.0130	ug/l		ND				25	
Chloroethane	ND	0.0300	ug/l		ND				25	
Trichlorofluoromethane (FC-11)	ND	0.0150	ug/l		ND				25	
Acetone	1.24	1.00	ug/l		1.16			6.75	25	
1,1-Dichloroethene	ND	0.0250	ug/l		ND				25	
Methylene chloride (Dichloromethane)	ND	1.00	ug/l		ND				25	
trans-1,2-Dichloroethene	ND	0.0250	ug/l		ND				25	
1,1-Dichloroethane	ND	0.0150	ug/l		ND				25	

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BC00451 - EPA 5030B										
2,2-Dichloropropane	ND	0.0250	ug/l		ND				25	
cis-1,2-Dichloroethene	ND	0.0150	ug/l		ND				25	
2-Butanone (MEK)	0.420	0.200	ug/l		0.335			22.6	25	
Chloroform	ND	0.0250	ug/l		ND				25	
1,1,1-Trichloroethane	ND	0.0150	ug/l		ND				25	
Carbon tetrachloride	ND	0.0250	ug/l		ND				25	
1,1-Dichloropropene	ND	0.0250	ug/l		ND				25	
Benzene	ND	0.0250	ug/l		ND				25	
1,2-Dichloroethane	ND	0.0250	ug/l		ND				25	
Trichloroethene (TCE)	ND	0.0150	ug/l		ND				25	
1,2-Dichloropropane	ND	0.0150	ug/l		ND				25	
cis-1,3-Dichloropropene	ND	0.0250	ug/l		ND				25	
4-Methyl-2-pentanone (MIBK)	0.120	0.0500	ug/l		0.112			6.94	25	
Toluene	ND	0.200	ug/l		ND				25	
trans-1,3-Dichloropropene	ND	0.0250	ug/l		ND				25	
1,1,2-Trichloroethane	ND	0.0250	ug/l		ND				25	
Tetrachloroethene (PCE)	ND	0.0250	ug/l		ND				25	
1,3-Dichloropropane	ND	0.0250	ug/l		ND				25	
Dibromochloromethane	ND	0.0500	ug/l		ND				25	
Chlorobenzene	ND	0.0250	ug/l		ND				25	
1,1,1,2-Tetrachloroethane	ND	0.0250	ug/l		ND				25	
Ethylbenzene	ND	0.150	ug/l		ND				25	
m,p-Xylene	ND	0.200	ug/l		ND				25	
o-Xylene	ND	0.150	ug/l		ND				25	
1,1,2,2-Tetrachloroethane	ND	0.0250	ug/l		ND				25	
1,2,3-Trichloropropane	ND	0.0250	ug/l		ND				25	
Styrene	ND	1.00	ug/l		ND				20	
Methyl tert-butyl ether (MTBE)	0.164	0.0250	ug/l		0.144			12.7	25	
1,4-Dioxane	ND	0.250	ug/l		ND				25	
Tert-butyl alcohol	7.54	0.150	ug/l		6.18			19.9	25	
Di-isopropyl ether	ND	0.0250	ug/l		ND				25	
Ethyl tert-butyl ether	1.54	0.0250	ug/l		1.38			10.5	25	
Tert-amyl methyl ether	0.0451	0.0250	ug/l		0.0384			16.1	25	
Cyclohexane	ND	0.100	ug/l		ND				25	
Freon 113	ND	0.0250	ug/l		ND				25	
Surrogate: Dibromofluoromethane	*10.5*		ug/l	*10.00*		*105*	*70-130*			
Surrogate: Toluene-d8	*10.6*		ug/l	*10.00*		*106*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*9.59*		ug/l	*10.00*		*95.9*	*70-130*			
Batch BC00434 - EPA 3050B										
Blank	**Prepared & Analyzed: 03/03/20**									

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BC00434 - EPA 3050B										
Antimony	ND	2.00	mg/kg							
Arsenic	ND	2.00	mg/kg							
Barium	ND	1.00	mg/kg							
Beryllium	ND	1.00	mg/kg							
Cadmium	ND	1.00	mg/kg							
Chromium	ND	1.00	mg/kg							
Cobalt	ND	1.00	mg/kg							
Copper	ND	1.00	mg/kg							
Lead	ND	1.00	mg/kg							
Molybdenum	ND	1.00	mg/kg							
Nickel	ND	1.00	mg/kg							
Selenium	ND	2.00	mg/kg							
Silver	ND	1.00	mg/kg							
Thallium	ND	2.00	mg/kg							
Vanadium	ND	1.00	mg/kg							
Zinc	ND	5.00	mg/kg							
LCS	**Prepared & Analyzed: 03/03/20**									
Antimony	49.3	2.00	mg/kg	49.98		98.7	60-140			
Arsenic	49.3	2.00	mg/kg	49.97		98.7	80-120			
Barium	206	1.00	mg/kg	199.3		103	80-120			
Beryllium	4.91	1.00	mg/kg	4.940		99.4	80-120			
Cadmium	5.21	1.00	mg/kg	5.000		104	80-120			
Chromium	20.4	1.00	mg/kg	19.93		103	80-120			
Cobalt	52.6	1.00	mg/kg	49.93		105	80-120			
Copper	24.8	1.00	mg/kg	25.13		98.7	80-120			
Lead	52.8	1.00	mg/kg	49.98		106	80-120			
Molybdenum	47.0	1.00	mg/kg	50.00		94.0	80-120			
Nickel	53.3	1.00	mg/kg	50.20		106	80-120			
Selenium	48.3	2.00	mg/kg	50.00		96.5	80-120			
Silver	4.97	1.00	mg/kg	5.010		99.3	80-120			
Thallium	50.8	2.00	mg/kg	50.00		102	80-120			
Vanadium	48.5	1.00	mg/kg	50.10		96.8	80-120			
Zinc	51.0	5.00	mg/kg	50.00		102	80-120			
Matrix Spike **Source: 2003001-01**	**Prepared & Analyzed: 03/03/20**									
Antimony	47.1	2.00	mg/kg	49.98	ND	94.2	60-140			
Arsenic	50.6	2.00	mg/kg	49.97	1.62	98.0	75-125			
Barium	251	1.00	mg/kg	199.3	51.2	100	75-125			
Beryllium	5.23	1.00	mg/kg	4.940	0.372	98.4	75-125			
Cadmium	5.05	1.00	mg/kg	5.000	ND	101	75-125			
Chromium	33.6	1.00	mg/kg	19.93	12.5	106	75-125			

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BC00527 - EPA 5035										
Surrogate: 4-Bromofluorobenzene	*15.4*		ug/kg	*15.00*		*103*	*80-120*			
Matrix Spike Dup Source: 2003008-01	**Prepared & Analyzed: 03/05/20**									
1,1-Dichloroethene	25.3	4.00	ug/kg	20.00	ND	126	61-136	10.8	30	
Benzene	18.4	2.00	ug/kg	20.00	ND	92.2	65-123	11.7	30	
Trichloroethene (TCE)	20.3	4.00	ug/kg	20.00	ND	102	65-120	1.74	30	
Toluene	18.8	2.00	ug/kg	20.00	ND	94.2	59-120	14.9	30	
Chlorobenzene	19.4	4.00	ug/kg	20.00	ND	96.8	56-123	6.01	30	
Surrogate: Dibromofluoromethane	*16.0*		ug/kg	*15.00*		*107*	*80-126*			
Surrogate: Toluene-d8	*15.1*		ug/kg	*15.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*15.4*		ug/kg	*15.00*		*103*	*80-120*			
Batch BC00451 - EPA 5030B										
Blank	**Prepared & Analyzed: 03/02/20**									
1,1-Difluoroethane (DFA)	ND	0.150	ug/l							
Dichlorodifluoromethane (FC-12)	ND	0.0300	ug/l							
Vinyl chloride (Chloroethylene)	ND	0.0130	ug/l							
Chloroethane	ND	0.0300	ug/l							
Trichlorofluoromethane (FC-11)	ND	0.0150	ug/l							
Acetone	ND	1.00	ug/l							
1,1-Dichloroethene	ND	0.0250	ug/l							
Methylene chloride (Dichloromethane)	ND	1.00	ug/l							
trans-1,2-Dichloroethene	ND	0.0250	ug/l							
1,1-Dichloroethane	ND	0.0150	ug/l							
2,2-Dichloropropane	ND	0.0250	ug/l							
cis-1,2-Dichloroethene	ND	0.0150	ug/l							
2-Butanone (MEK)	ND	0.200	ug/l							
Chloroform	ND	0.0250	ug/l							
1,1,1-Trichloroethane	ND	0.0150	ug/l							
Carbon tetrachloride	ND	0.0250	ug/l							
1,1-Dichloropropene	ND	0.0250	ug/l							
Benzene	ND	0.0250	ug/l							
1,2-Dichloroethane	ND	0.0250	ug/l							
Trichloroethene (TCE)	ND	0.0150	ug/l							
1,2-Dichloropropane	ND	0.0150	ug/l							
cis-1,3-Dichloropropene	ND	0.0250	ug/l							
4-Methyl-2-pentanone (MIBK)	ND	0.0500	ug/l							
Toluene	ND	0.200	ug/l							
trans-1,3-Dichloropropene	ND	0.0250	ug/l							
1,1,2-Trichloroethane	ND	0.0250	ug/l							
Tetrachloroethene (PCE)	ND	0.0250	ug/l							

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BC00434 - EPA 3050B										
Cobalt	57.0	1.00	mg/kg	49.93	7.68	98.7	75-125			
Copper	35.1	1.00	mg/kg	25.13	11.4	94.4	75-125			
Lead	57.5	1.00	mg/kg	49.98	9.02	97.0	75-125			
Molybdenum	46.3	1.00	mg/kg	50.00	0.342	91.8	75-125			
Nickel	58.0	1.00	mg/kg	50.20	8.05	99.5	75-125			
Selenium	50.0	2.00	mg/kg	50.00	ND	100	75-125			
Silver	4.93	1.00	mg/kg	5.010	ND	98.4	75-125			
Thallium	44.7	2.00	mg/kg	50.00	ND	89.5	75-125			
Vanadium	82.2	1.00	mg/kg	50.10	35.0	94.2	75-125			
Zinc	88.7	5.00	mg/kg	50.00	38.7	99.9	75-125			
Matrix Spike Dup **Source: 2003001-01**	**Prepared & Analyzed: 03/03/20**									
Antimony	49.5	2.00	mg/kg	49.98	ND	99.1	60-140	5.14	30	
Arsenic	51.6	2.00	mg/kg	49.97	1.62	100	75-125	2.07	30	
Barium	245	1.00	mg/kg	199.3	51.2	97.0	75-125	3.16	30	
Beryllium	5.22	1.00	mg/kg	4.940	0.372	98.2	75-125	0.207	30	
Cadmium	5.14	1.00	mg/kg	5.000	ND	103	75-125	1.68	30	
Chromium	32.8	1.00	mg/kg	19.93	12.5	102	75-125	3.86	30	
Cobalt	58.2	1.00	mg/kg	49.93	7.68	101	75-125	2.38	30	
Copper	35.4	1.00	mg/kg	25.13	11.4	95.3	75-125	0.905	30	
Lead	58.1	1.00	mg/kg	49.98	9.02	98.1	75-125	1.13	30	
Molybdenum	47.6	1.00	mg/kg	50.00	0.342	94.5	75-125	2.91	30	
Nickel	58.8	1.00	mg/kg	50.20	8.05	101	75-125	1.61	30	
Selenium	51.3	2.00	mg/kg	50.00	ND	103	75-125	2.49	30	
Silver	4.95	1.00	mg/kg	5.010	ND	98.7	75-125	0.356	30	
Thallium	45.6	2.00	mg/kg	50.00	ND	91.2	75-125	1.86	30	
Vanadium	81.7	1.00	mg/kg	50.10	35.0	93.1	75-125	1.17	30	
Zinc	87.0	5.00	mg/kg	50.00	38.7	96.5	75-125	3.44	30	
Batch BC00433 - EPA 7471A										
Blank	**Prepared & Analyzed: 03/03/20**									
Mercury	ND	0.100	mg/kg							
LCS	**Prepared & Analyzed: 03/03/20**									
Mercury	0.780	0.100	mg/kg	0.8325		93.7	80-120			
Matrix Spike **Source: 2003001-01**	**Prepared & Analyzed: 03/03/20**									
Mercury	0.809	0.100	mg/kg	0.8325	ND	97.2	75-125			
Matrix Spike Dup **Source: 2003001-01**	**Prepared & Analyzed: 03/03/20**									
Mercury	0.801	0.100	mg/kg	0.8325	ND	96.2	75-125	1.02	30	

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:73100
Report Date: 03/05/20
Submitted: 03/02/20
PLS Report No.: 2003008

Smith Emery GeoServices [LA]
791 East Washington Blvd.
Los Angeles, CA 90021

Attn: Ms. Ayesha Syeda Phone: (213) 745-5333 FAX:(213) 746-0744

Project: 9829 La Serna Drive, Whittier, CA / 46556-2

Notes and Definitions

NA	Not Applicable
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
MDL	Method Detection Limit
PQL	Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)

109137

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 3-2-20 PAGE 1 OF 2

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 1003008

CLIENT NAME: SES Project Name/No. 46556-2 P.O. NO.

AIRBILL NO: _____

ADDRESS: 9829 LA SERNA DRIVE, WHITTIER, CA

COOLER TEMP: 2.6°C

PROJECT MANAGER: AYESHA SYEDA PHONE NO: FAX NO:

PRESERVATIVE:

SAMPLER NAME: ARMANDO RESURRECCION (Printed) (Signature)

REMARKS:

X ON SAMPLE TUBES MEAN TEST THIS END OF TUBE

TAT (Analytical Turn Around Time): 0 = Same Day; 1 = 1 Day; 2 = 2 Days; 3 = 3 Days; N = Normal (5-7 Working Days)

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other: T = TEDLAR BAG, A = ACETATE TUBE

UST Project: Y N - Global ID# ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ANALYSES REQUESTED: VOCs EPA METHOD 8260B; TPHG EPA METHOD 8015; CAM METALS EPA 6010B/7471A

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	SOIL	SLUDGE	OTHER	TAT	CONTAINER: #	TYPE	SAMPLE CONDITION/ CONTAINER /COMMENTS:
1	PID 2.0	3-2-20	1040	B1-1-5'		✓			3	2/2	E/A	
2	2.8		1050	B1-2-10'								
3	3.1		1055	B1-3-15'								
4	2.1		1100	B1-4-20'								
5	3.1		0930	B2-1-5'								
6	4.1		0935	B2-2-10'								
7	4.8		0940	B2-3-15'								
8	7.8		0945	B2-4-20'								
9	4.4		0950	B2-5-24'								
10			1150	SV1-SUBSLAB		AIR			3	1	T	

Relinquished By: (Signature and Printed Name) Armando Resurreccion — Received By: (Signature and Printed Name) Luis Gutierrez — Date: 3/2/20 Time: 1333

Relinquished By: (Signature and Printed Name) Luis Gutierrez — Received By: (Signature and Printed Name) Guadalupe Tanaka — Date: 3/2/20 Time: 1333

Relinquished By: (Signature and Printed Name) — Received By: (Signature and Printed Name) — Date: Time:

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:

1. Samples returned to client? YES NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: _____ days

By _____ Date _____

PRESERVATIVE: 1-HNO_3, 2-H_2SO_4, 3-HCL, 4-Zinc Acetate, 5-NaOH, 6-NH_4 Buffer, 7-Other

LAB COPY

109136

POSITIVE LAB SERVICE

CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

DATE: 3-2-20 PAGE 2 OF 2

LOG BOOK NO. _____ FILE NO. _____ LAB NO. 2003008

CLIENT NAME: SEG Project Name/No. 46556-2 P.O. NO. AIRBILL NO: _____

ADDRESS: 9829 LA SERNA DRIVE, WHITTIER, CA

ANALYSES REQUESTED: COOLER TEMP: 2.6°C

PROJECT MANAGER: AYESHA SYEDA PHONE NO: FAX NO: PRESERVATIVE:

SAMPLER NAME: BRANDO REGUNCILLA (Printed) (Signature) REMARKS:

TAT (Analytical Turn Around Time): 0 = Same Day; 1 = 1 Day; 2 = 2 Days; 3 = 3 Days; N = Normal (5-7 Working Days)

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other; T = TEDLAR BAG

UST Project: Y N - Global ID# ___

	SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX: WATER	MATRIX: SOIL	MATRIX: SLUDGE	MATRIX: OTHER	TAT	CONTAINER: #	CONTAINER: TYPE	VOCs EPA 8260B								SAMPLE CONDITION/ CONTAINER /COMMENTS:
1		3-2-20	1130	SV2-SUBSLAB				AIR	3	1	T	✓								
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:
BRANDO REGUNCILLA	Luis Gutierrez	3/2/20	1333
Luis Gutierrez	Guadalupe Tanaka	3/2/20	1333

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:
1. Samples returned to client? YES NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: _____ days

By _____ Date _____

PRESERVATIVE: 1-HNO_3, 2-H_2SO_4, 3-HCL, 4-Zinc Acetate, 5-NaOH, 6-NH_4 Buffer, 7-Other

LAB COPY

APPENDIX B

REFERENCES

REFERENCES

1. “Phase I Environmental Site Assessment 9829 La Serna Drive, Whittier, CA” prepared by SEG dated February, 2019. (SEG File No. 46556-1)
2. The US Geological Survey Whittier Quadrangle, Los Angeles County, California.
3. EPA Regional 9 Table Regional Screening Level (RSL) Composite Worker Ambient Air Table (TR=1E-06, HQ=1) November 2019.
4. California Department of Toxic Substances Control (DTSC) and Human and Ecological Risk Office (HERO); Human Health Risk Assessment (HHRA) Note No.3 dated April 2019.
5. California Regional Water Quality Control Board- (RWQCB) Los Angeles May 1996 Guidebook for Maximum Soil Screening Levels.

Hazardous Material Survey Inspection Report

Project Site:
Restaurant Building
9829 La Serna Drive
Whittier, CA

Prepared for:
Mission Pacific Land Company
4100 Newport Place, Suite 480
Newport, CA 92660

750 S. Lincoln Avenue, #104-166, Corona, CA 92882
O: 951.545.2495 * F: 951.346.3093

Record of Certification:

This is to certify that this report was prepared by Focus Environmental Consulting (Focus) under contract with Mission Pacific Land Co. for the hazardous material survey inspection at the old restaurant building located at 9829 La Serna, Whittier, California. The inspection was completed utilizing applicable Federal and California State regulations. The findings in this report are consistent with accepted principles and practices established and prescribed by Southern California Air Quality Management District (SCAQMD), Occupational Safety and Health Administration (OSHA), National Emission Standards for Hazardous Air Pollutants (NESHAPS), Environmental Protection Agency (EPA) and California Department of Public Health (CDPH).

This report, the supporting data, findings, conclusions, opinions, and the recommendations it contains, represents the result of Focus' efforts on behalf of your firm. This report is not an abatement specification and should not be used for specifying removal methods or techniques.

The results, assessments and conclusions stated in this report are factually representative of the conditions and circumstances observed at this location on the dates of the inspection. We cannot assume responsibility for any change in conditions or circumstances that occurred after the inspection.

Introduction:

Report Date:	February 25, 2020
Client:	Mission Pacific Land Co. 4100 Newport Place, Suite 480 Newport, CA 92660
Project Site:	Restaurant Building 9829 La Serna Dr. Whittier, CA
Scope of Work:	Hazardous Material Survey Inspection
Project Date(s):	February 19, 2020

Summary:

The following is a report for the hazardous material survey inspection conducted by Mr. David Camarillo (CSST #98-2424, LI/RA #1223) assisted by David Camarillo II (Certified Building Inspector) Lansman Tingirides (Certified Building Inspector) of Focus Environmental Consulting (Focus). The survey was performed on February 19, 2020 at the above referenced project site.

The hazardous material survey inspection was conducted for the future demolition of the structure at the project site.

Site Description:

The restaurant building is a single-story wood structure on a concrete foundation with a pitched roof. The floors are covered with concrete, carpet and floor tile; interior walls are covered with drywall; exterior is finished in stucco and brick.

No other areas, materials or structures were included in the inspection during the site visit. This report is limited to only the areas and materials called out in this report. Hazards may still exist in the structure that was not part of our scope of work. If exposed, these hazards may require further sampling and proper removal and disposal by a certified contractor. This report excludes soil and subgrade materials. If exposed, these hazards may require further sampling and proper removal and disposal by a certified contractor.

Scope of Work:

The survey was conducted to identify asbestos-containing materials (ACM), lead-based paint (LBP) and hazardous waste materials (HWM) prior to a planned demolition. Sampling was limited to accessible materials reasonably assumed would be impacted by demolition activities.

If suspect materials not listed on the original report are encountered during abatement or demolition, Focus recommends work to be stopped until the materials can be properly sampled and assessed. If these materials are not sampled and analyzed, they must be assumed positive for asbestos unless sampled and proven otherwise.

Focus representatives collected necessary samples to satisfy the asbestos inspection requirements as stated in the NESHAP, 40 Code of Federal Regulations (CFR) Part 61, Subpart M; EPA, 40 CFR Part 763, Subpart E and SCAQMD, Rule 1403, which require that ACM be identified through a

documented asbestos inspection, then removed prior to demolition or renovation activities by an OSHA-certified asbestos abatement contractor.

The scope of the inspection was as follows:

- Assess the project area and generate a sampling scheme.
- Collect presumed asbestos-containing materials (PACM) bulk samples.
- Test a limited number of painted surfaces for LBP by X-ray Fluorescence (XRF) method.
- Assess the condition of all identified LBP.
- Limited hazardous waste material characterization and quantification.
- Quantify sampled material.
- Photograph sampled materials.
- Provide sketches of the structure including sampled locations.
- Generate a final written report of our findings which include analytical results.

Methods and Sampling Strategy:

Asbestos Bulk Sample Analysis and Results
Bulk samples of all homogeneous materials from identified areas containing suspect ACM were collected. A homogeneous material is defined as a surfacing material, thermal system insulation (TSI) or miscellaneous material that is uniform in use, color, texture and age of construction. Presumed ACM was also physically assessed for friability, condition and disturbance factors. Inaccessible suspect materials may be located between walls, in voids, or in other inaccessible areas.

Under EPA assessment criteria, if a single sample from a homogeneous material tests positive for asbestos then the entire homogeneous material located in the same functional space must be considered as being asbestos containing.

As materials were identified, a random bulk sampling protocol was used to collect bulk samples. Each bulk sample collected was placed into an individual sampling bag and given a discreet identification number, then recorded on chain-of-custody forms.

All bulk samples were submitted and analyzed by AIH Laboratory (AIH). AIH is accredited by the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NVLAP #500079-0). The laboratory reports #2002356, 2002359 and 2002362 are attached.

Samples were analyzed using the polarized light microscopy (PLM) techniques in accordance with the methodology approved by the U.S. Environmental Protection Agency (EPA). As set forth in the Code of Federal Regulations, 40 CFR Part 763, Appendix A to Subpart F, Section 1.2 an 1.7.2.4, the lower limit of reliability detection for asbestos using the PLM method is approximately one percent (1%) by volume. Cal-OSHA defines asbestos-containing construction materials (ACCM) as those materials having an asbestos content of greater than one tenth of one percent (>0.1%).

When None Detected (ND) appears in this report, it should be interpreted as meaning no asbestos was observed in the sample's material above the reliable limit of detection for the PLM method.

A total of seventy-two (72) suspect asbestos-containing material bulk samples were identified and collected for analysis during the survey. A total of seventy-two (72) sub-samples were analyzed by the laboratory.

Regulations require that any time ACM's are impacted during repair, renovation, removal or demolition that the work be performed by a CAL/OSHA registered and licensed asbestos abatement contractor.

The analytical findings are listed below:

Non-Asbestos-Containing Material(s)

Sample No.	Material Color & Description	Sample Location	Asbestos Result	Friable/Non-Friable	Condition Est. Quantity
01-01, 02, 03	Red 8"x4" Floor Tile w/Grey Thinset and Black Grout	Server Stations 1 & 2	ND	Non-Friable	Good 360 sq. ft.
02-04, 05, 06	Red 7.5"x3.5" Floor Tile w/Brown Thinset and Red Grout	Salad Bar	ND	Non-Friable	Good 250 sq. ft.
03-07, 08, 09	Brown 12"x12" Floor Tile w/Black Grout and Grey Thinset	Bar Area @ West End	ND	Non-Friable	Good 200 sq. ft.
04-10, 11, 12	Multi-Color Mosaic 1"x1" Floor Tile w/Grey Grout and Thinset	Bar Area @ North End	ND	Non-Friable	Good 190 sq. ft.
05-13, 14, 15	Brown 5.5"x5.5" Floor Tile w/Black Grout and Grey Thinset	Men's and Women's Restroom	ND	Non-Friable	Good 350 sq. ft.
06-16, 17, 18	Yellow Carpet Glue and Grey Leveling Compound	Bar Area and Dining Room	ND	Non-Friable	Good 4,000 sq. ft.
07-19, 20, 21	Red 4"x4" Floor Tile w/Black Grout and Grey Thinset	Lobby Area	ND	Non-Friable	Good 650 sq. ft.
08-22, 23, 24	Re 6"x6" Floor Tile w/Grey Grout and Thinset	Back House	ND	Non-Friable	Good 1,800 sq. ft.
09-25, 26, 27	Brown 6"x6" Floor Tile w/Black Grout and Grey Thinset	Back House @ West End, Office ad Restroom	ND	Non-Friable	Good 750 sq. ft.
10-28, 29, 30	White Drywall w/Joint Compound	Kitchen, Lobby and Dining Room	ND	Friable	Good 5,000 sq. ft.
11-31, 32, 33	Yellow 6"x3" Wall Tile w/Yellow Glue and Brown Grout	Back House @ Server Station and Kitchen	ND	Non-Friable	Good 700 sq. ft.
12-34, 35, 36	Yellow Resilient Fiberglass Panel Glue	Back House @ Kitchen and Refrigerator	ND	Non-Friable	Good 4,000 sq. ft.
13-37, 38, 39	White 6"x6" Wall Tile w/White Grout and Thinset	Men's and Women's Restroom	ND	Non-Friable	Good 350 sq. ft.
14-40, 41, 42	Tan 4"x4" Wall Tile w/Yellow Glue and White Grout	Bar Area @ West Wall	ND	Non-Friable	Good 50 sq. ft.
15-43, 44, 45	Mosaic Wall Tile w/White Grout and Thinset	Bar Area @ North Wall	ND	Non-Friable	Good 170 sq. ft.
16-46, 47, 48	Grey Brick Wall Mortar	Lobby Area	ND	Non-Friable	Good 2,000 sq. ft.

17-49, 50, 51	Blue 1'x1' Fissured Ceiling Tile w/Brown Hockey Puck Glue	Lobby and Dining Room	ND	Friable	Good 2,500 sq. ft.
18-52, 53, 54	Tan Exterior Wall Stucco	Exterior Walls	ND	Friable	Good 4,000 sq. ft.
19-55, 56, 57	White Rolled Roofing	Roof Area	ND	Non-Friable	Good 1,000 sq. ft.
20-58, 59, 60	Grey Roof Mastic	Roof Area Under Insulation	ND	Non-Friable	Good 100 sq. ft.
21-61, 62, 63	Black Roof Mastic	Roof Area Under Insulator	ND	Non-Friable	Good 50 sq. ft.
22-64, 65, 66	Red Roof Tile w/Black Felt Paper	Roof Area	ND	Non-Friable	Good 2.500 sq. ft.
23-67, 68, 69	Red 12"x12" Floor Tile w/Black Grout and Grey Thinset	Patio Area	ND	Non-Friable	Good 875 sq. ft.
24-70, 71, 72	Black Asphalt Composite	Parking Lot	ND	Non-Friable	Good sq. ft.

Lead Sample Analysis and Results

Currently, the State of California Housing and Urban Development (HUD) as well as the EPA define LBP as paint or other surface coating with lead content equal to or greater than 1.0 milligram per square centimeter (1.0 mg/cm²) of surface area by XRF or 5,000 parts per million (ppm) by paint chip analysis. The Los Angeles County Department of Health Services regulates a more rigorous level which defines "dangerous level of lead-bearing substances" as paint or other surface coating with lead content greater than 0.7 mg/cm² as per Los Angeles County Code, Title 11, Chapter 11.28, Section 11.28.010 C when measured by a lead detecting instrument.

For the purposes of this survey any coating found to have a lead concentration greater than 0.7 milligrams per square centimeter (mg/cm²) is considered to be Lead Based Paint (LBP) or 600mg/kg when using laboratory methods to analyze bulk samples (e.g. paint chip) and any coating having a lead concentration greater than 0.0 mg/cm² but less than or equal to 0.7 mg/cm² is considered to be Lead Containing Paint (LCP).

However, Federal and Cal/OSHA regulations for lead in construction do not specify a level of lead in paint that classifies it as LBP, therefore the removal of materials containing any concentration of lead, which includes LCP, must be performed by a Cal/OSHA certified contractor.

Detection of lead in any material or coating is subject to federal OSHA's Lead Exposure in Construction Rule (29 CFR Part 1926) and Cal OSHA's Lead Exposure in Construction Rule as defined in Title 8 CCR, Section 1532.1. When disturbed for construction purposes these areas are subject to Cal/OSHA exposure assessment requirements set forth in Title 8 CCR, Section 1532.1(d) which requires initial employee exposure monitoring assessment to evaluate work exposure during work that disturbs paint with **any detectable level of lead**. If airborne lead levels are above the established Cal/OSHA action limit or permissible exposure limit, additional monitoring and respiratory protection are required.

XRF readings were made on testing combinations in all room equivalents in an effort to test typical materials, which are representative of the room equivalent. Testing combinations were tested non-destructively by holding the Niton XL3t 980 Gold handheld XRF against the surface being tested. At each XRF sample location the Niton XL3t 980 Gold shutter is opened and one reading is made. A result of "Null" indicates the reading was interrupted prior to completion. To ensure that the XRF was working properly various quality control tests were performed before, during and after the on-site work. At the beginning of the workday, three start-up validation measurements are recorded in the "test" mode, using the calibration check standard associated with the Niton XL3t 980 Gold. This painted standard contains a known quantity of lead and allows the XRF operator to determine whether the instrument is functioning within acceptable tolerance ranges for accuracy and precision,

as determined by the manufacturer. In addition, calibration readings were taken on the red NIST 1.02 mg/cm² Standard Reference Material (SRM) paint film.

A summary of XRF readings for lead in paint or surface coatings can be found in the Lead Sample XRF Results section of the report.

Results are summarized in the table below:

SAMPLE No.	SITE	COMPONENT	SUBSTRATE	COLOR	COND	LEVEL mg/kg
01			Calibration			0.97
02			Calibration			0.97
03			Calibration			0.95
04	***Interior @ Bar***	***4"x4" Wall Tile***	***Wood***	***Tan***	***Intact***	***3.52***
05	Interior @ Bar	2" Mosaic Floor Tile	Concrete	Tan	Intact	0.06
06	Interior @ Bar	2" Mosaic Floor Tile	Concrete	Blue	Intact	0.01
07	Interior @ Bar	2" Mosaic Floor Tile	Concrete	Maroon	Intact	0.01
08	Interior @ Bar	Toilet	Porcelain	White	Intact	0.01
09	Interior @ Bar	Wall	Concrete	Tan	Intact	0.01
10	Interior @ Bar	Mosaic Floor Tile	Concrete	Brown	Intact	0.07
11	Interior @ Lobby	Wall	Wood	Green	Intact	0.02
12	Interior @ Lobby	Floor	Ceramic	Red	Intact	0.07
13	Men's Restroom	Door	Wood	Green	Intact	0.12
14	Men's Restroom	Sink	Porcelain	White	Intact	0.2
15	Men's Restroom	Wall Tile	Ceramic	White	Intact	0.07
16	Men's Restroom	Wall Tile	Ceramic	Black	Intact	0.01
17	Men's Restroom	Urinal	Porcelain	White	Intact	0.31
18	Men's Restroom	Toilet	Porcelain	White	Intact	0.03
19	Dining Room	Column	Wood	Grey	Intact	0.22
20	Dining Room	Ceiling Tile	Drywall	Blue	Intact	0.01
21	Dining Room	Beam	Wood	Green	Intact	0.04
22	Dining Room	Door Jam	Metal	Green	Intact	0.04
23	***Server Station 2***	***Wall Tile***	***Drywall***	***Yellow***	***Intact***	***10.5***
24	Office	Door	Wood	White	Intact	0.12
25	Office	Door Jam	Wood	White	Intact	0.02
26	Office Restroom	Sink	Porcelain	White	Intact	0.12
27	Office Restroom	Toilet	Porcelain	White	Intact	0.10
28	Back Men's Restroom	Toilet	Porcelain	White	Intact	0.13
29	Back Men's	Sink	Porcelain	White	Intact	0.32

	Restroom					
30	Backhouse	Sink	Porcelain	White	Intact	0.12
31	Backhouse	Electrical Box	Metal	Blue	Intact	0.08
32	Backhouse	Wall	Drywall	White	Intact	0.03
33	Backhouse	Ladder	Metal	White	Intact	0.15
34	Roof	HVAC Duct	Metal	White	Intact	0.01
35	Roof	Wall	Stucco	Green	Intact	0.07
36	Roof	Wall	Wood	Brown	Intact	0.06
37	Patio	Railing	Metal	Brown	Intact	0.09
38	Patio	Wall	Wood	Brown	Intact	0.07
39	Patio	Rail	Metal	Black	Intact	0.01
40	Patio	Wall	Stucco	Yellow	Intact	0.08
41	Patio	Rain Guard	Metal	Red	Intact	0.08
42	Patio	Window Frame	Wood	Brown	Intact	0.07
43	Patio	Wall	Brick	Red	Intact	0.6

When disturbed for construction purposes these areas are subject to Cal/OSHA exposure assessment requirements set for the in Title 8 CCR, Section 1532.1(d). this regulation requires initial employee exposure monitoring to evaluate work exposure during work that disturbs paint with **any detectable level of lead. If airborne lead levels are above the established Cal/OSHA action limit or permissible exposure limit, additional monitoring and respiratory protection required.*

Mercury

Mercury is typically present in quantities of between 20 to 50 milligrams (mg) per fluorescent light bulb. California State law defines “significant quantities” as greater than 25 bulbs.

Approximately 25 light fixtures were observed. It is assumed that these light fixtures hold anywhere from 1 to 4 fluorescent light bulbs. Approximately 50 mercury light tubes were observed.

Thermostats throughout the facility were inspected for the presence of mercury bulbs. No mercury bulbs were observed.

Polychlorinated Biphenyls (PCB) Light Ballasts

Fluorescent light ballasts contain “potting material” and a capacitor. The potting material is the insulating material. Fluorescent light ballasts manufactured before 1978 or which do not have a “No PCBs” label should be considered PCB fluorescent light ballasts (PCB ballasts) because the small capacitor included as one component of the ballast probably contains polychlorinated biphenyls. The proper EPA regulations of storage for disposal and disposal requirements for fluorescent light ballasts are according to Sec. 761.3 and regulations citation 40 C.F.R. Sec. 761.63.

Approximately 25 light fixtures were observed throughout the building. Of those 25 light fixtures, 50% were inspected and were found to be labeled “No PCBs”. All light fixtures should be inspected by the contractor before removal and disposal.

Tritium Gas EXIT Signs

As defined by the EPA: “Tritium is naturally produced by the interaction of cosmic rays with the atmosphere. Tritium can also be produced by man-made processes, as is the case of tritium exit signs.

Tritium decays by emitting a low-energy beta particle that cannot penetrate the outer layer of human skin. Therefore, the main hazard associated with tritium is internal exposure by inhalation. Internal contamination occurs when people swallow or breathe in radioactive materials, or when radioactive materials enter the body through an open wound or are absorbed through the skin. Some types of radioactive materials stay in the body and are deposited in different body organs. Other types are eliminated in blood, sweat, urine, and feces."

There were approximately 12 EXIT signs observed throughout the building. None of the EXIT signs observed appeared to be glowing. The signs appeared to be tritium free.

Limitations:

The interpretation of the preliminary findings identified in the submitted report is based upon the analytical findings, our professional experience and qualifications. The field investigation and laboratory results are limited to only those areas, which were exposed and/or physically accessible to the inspector as outlined by the scope of work. It is possible that asbestos exist in areas that were not identified, were inaccessible, unsafe or were not called out in this report. Focus does not guarantee or warrant that all asbestos-containing materials and lead base paint were discovered and/or sampled in the structure.

Focus does not take responsibility for exact footages of existing material quantified at the project site. Quantities and locations listed within this report are estimations only and are **not for bidding** purposes. The abatement contractor is solely responsible for confirming quantities and locations of ACM through site visits, drawings, specifications and related information pertaining to the structure and project area prior to any renovation and/or demolition work being performed. If discrepancies are found in relation to quantities and locations of ACM, the contractor is responsible for submitting this, in writing, to the contracting party prior to bidding.

The data and observations collected during the course of the inspection have been gathered to provide the client with information pertaining to the areas of the subject property identified in this report. Although Focus believes that the findings and conclusions provided in this report are reasonable, the inspection is limited to the conditions observed and to the information available at the time of the inspection. Due to the nature of the work, there is a possibility that conditions may exist which could not be identified within the scope of the inspection or which were not apparent at the time of our site work. The inspection is also limited to information available from the client at the time it was conducted. It is also possible that the testing methods employed at the time of the report may later be superseded by other methods. Focus Environmental does not accept responsibility for changes in the state of the art. This report should be readily available to all future owners should the property be re-sold.

We appreciate the opportunity in doing business with your firm. Should you have any further questions or concerns regarding this inspection and/or report, feel free to contact our office.

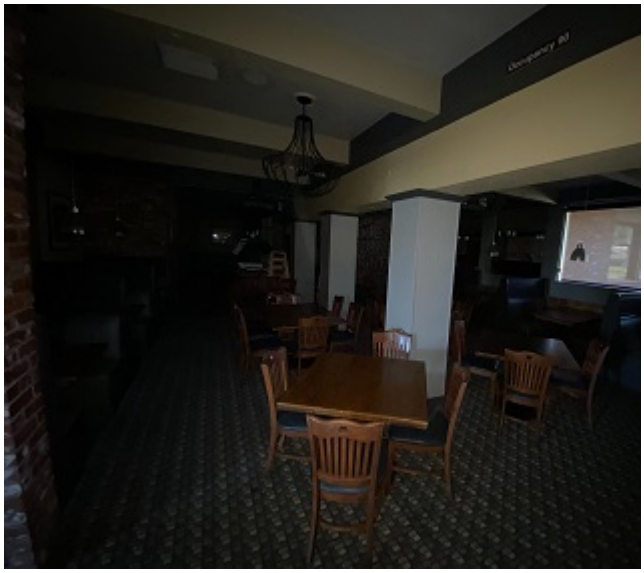
Sincerely,
Focus Environmental Consulting

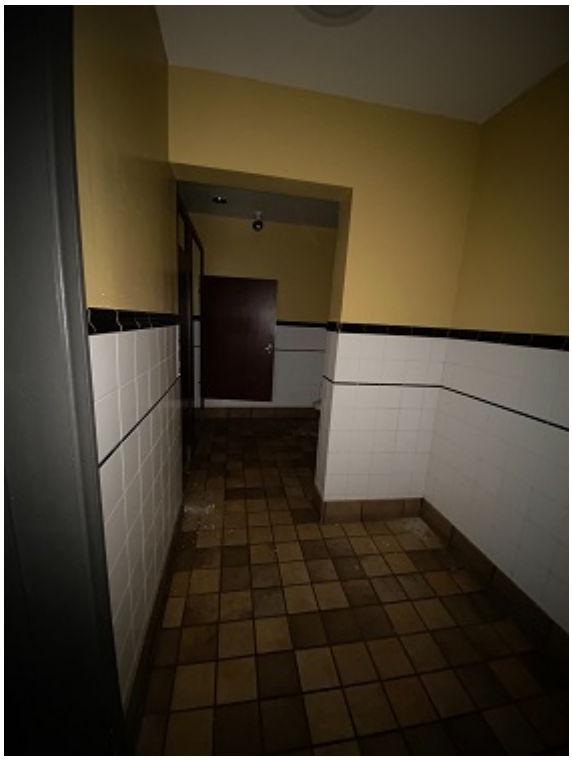
David Camarillo, Vice-President
CSST #98-2424, LI/RA #1223

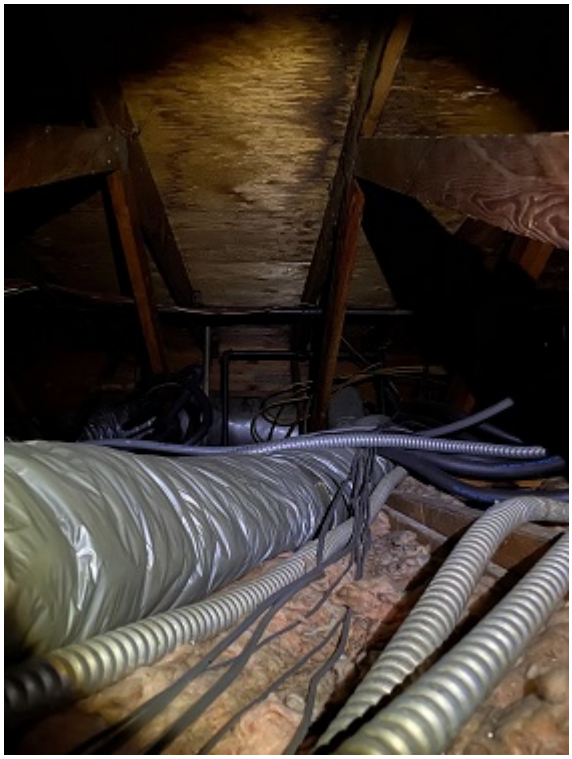
Jacob Pulliam, DOSH CAC #12-4969

Attachments:
Project Photographs
Laboratory Analytical Results/Sample Chains of Custody
Sample Location Sketches
Inspectors' Asbestos Certifications

Project Photographs

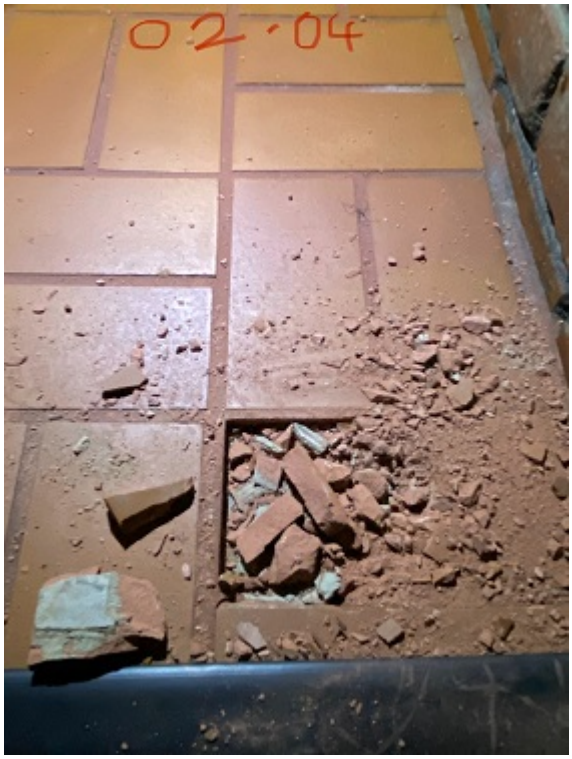






08-22

07-19


02-04

04-10

15-43

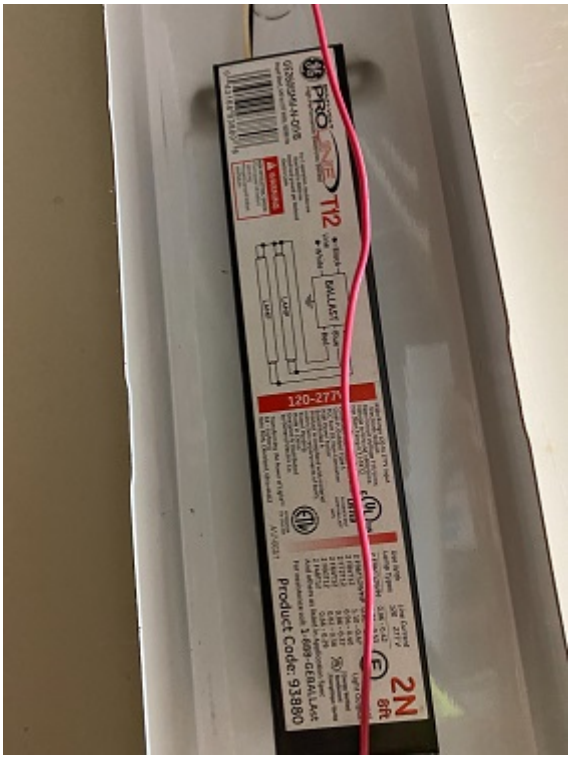
13-37

12-34

11-31

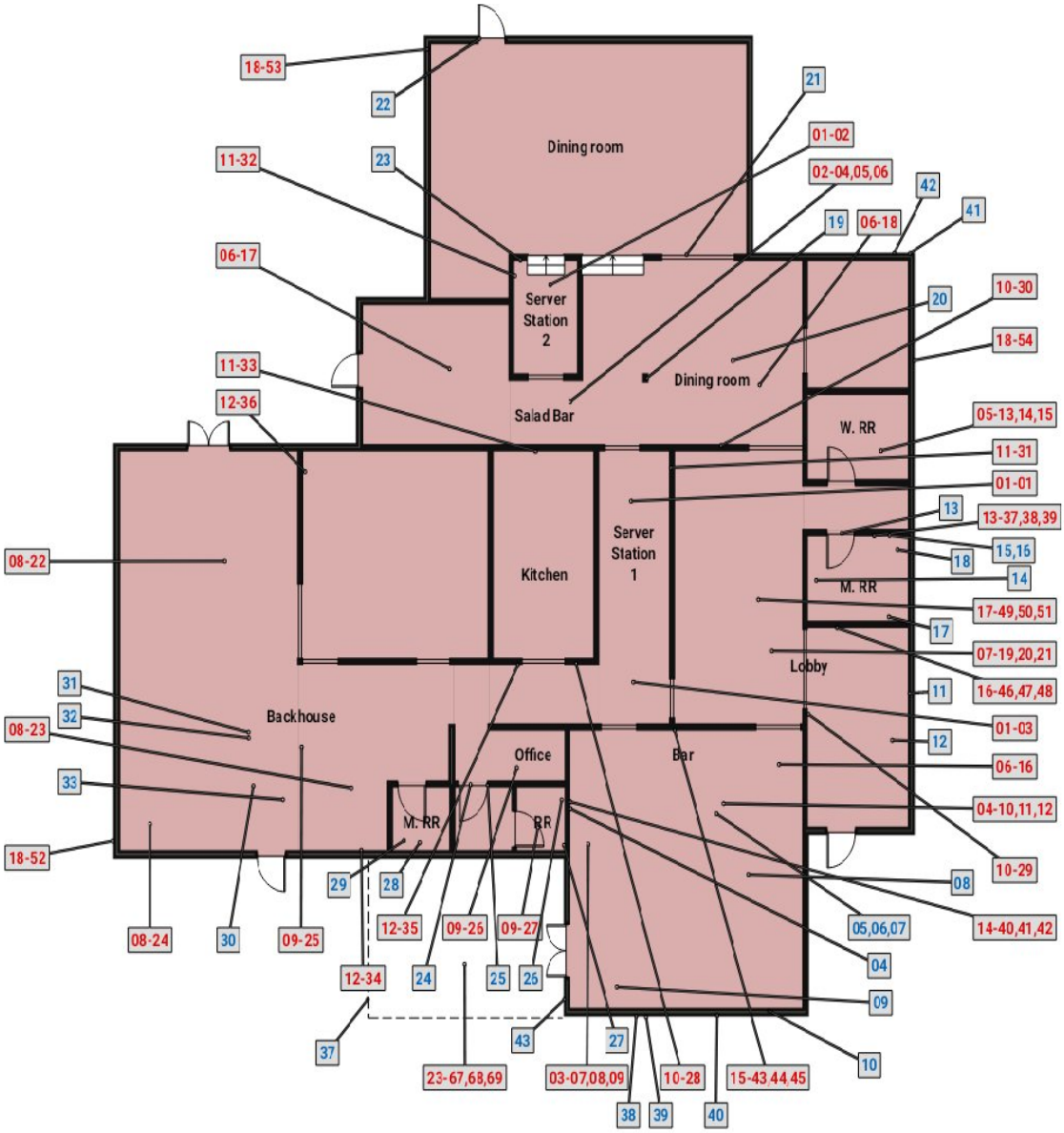
14-40

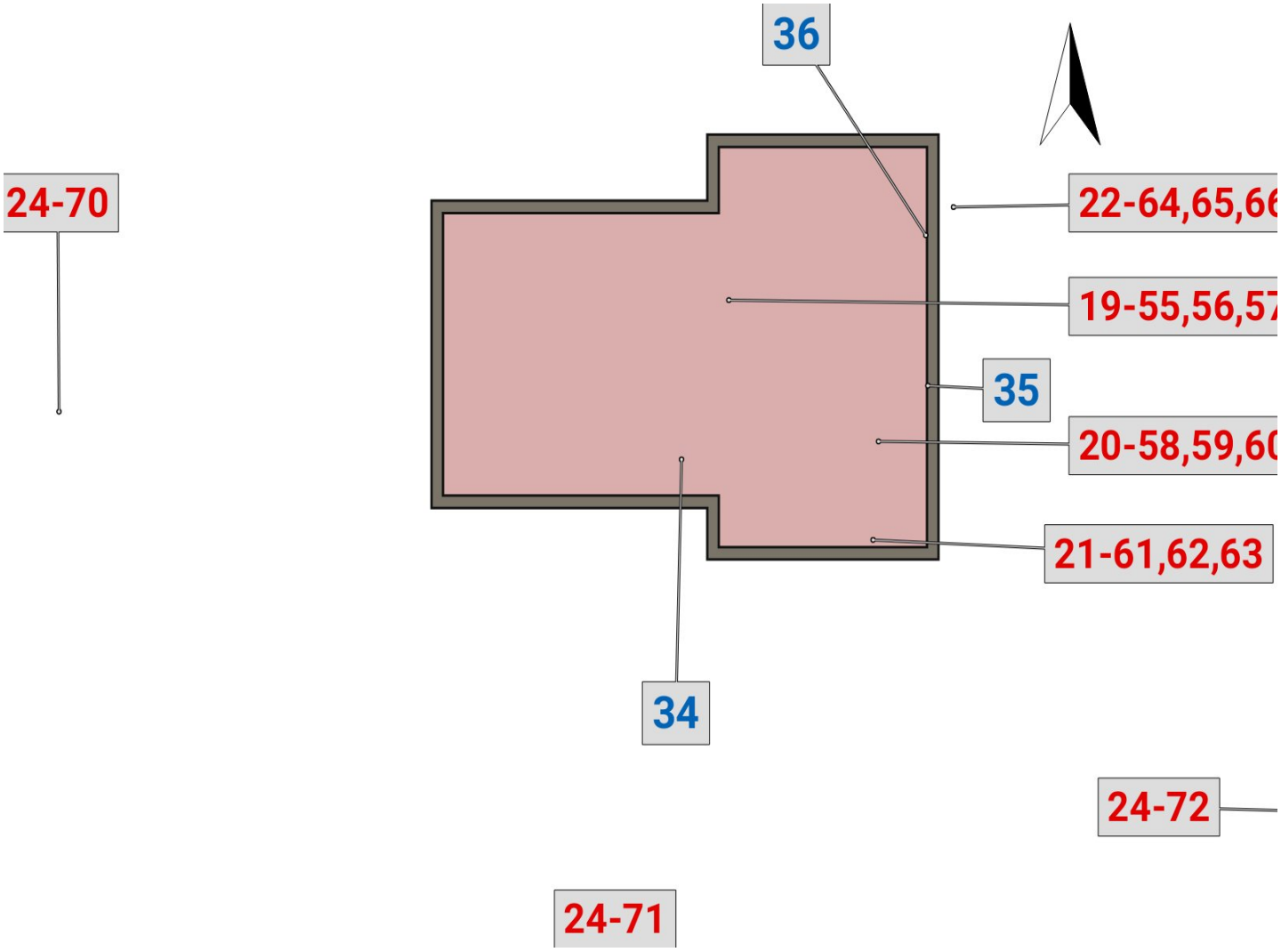
17-49


T12
BALLAST
2N
8R
Product Code: 93880

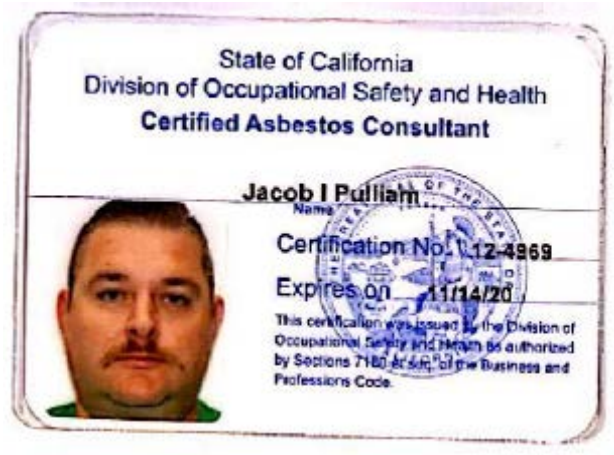
Laboratory Analytical Results/Sample Chains of Custody

Sample Location Drawing




36
24-70
22-64,65,66
19-55,56,57
35
20-58,59,60
21-61,62,63
34
24-72
24-71

Inspectors' Asbestos and Lead Certifications



Appendix F Preliminary Hydrology Study

PRELIMINARY HYDROLOGY STUDY

TTM NO. 83435
La Serna Drive Project
City of Whittier

Project Address:
9829 La Serna Drive
Whittier, California

Prepared For:

Mission Pacific Land Company
4100 Newport Place, Suite 480
Newport Beach, CA 92660
Contact: Jason Keller

Prepared By:

C&V Consulting, Inc.
9830 Irvine Center Drive
Irvine, CA 92618
Contact: Ryan Bittner, P.E.

April 2021

Preliminary Hydrology Study
For
Tentative Tract Map No. 83435

Acknowledgement and Signature Page

This Preliminary Hydrology Study was prepared by C&V Consulting, Inc. under the supervision of Ryan Bittner, P.E.

_____ _____

Ryan Bittner, P.E. 68167 Date
C&V Consulting, Inc.

TABLE OF CONTENTS

I. Purpose 1
II. Site Description 1
III. Methodology 2
IV. Design Assumption 2
V. Hydraulic Calculation 3
Pipe Sizing 3
Catch Basin Inlet Sizing 3
100-Year Water Surface Elevation (WSE) 3
VI. Results 4
VII. Conclusion 5
VIII. References 5

APPENDICES

A. Vicinity Map
B. Los Angeles Isohyet Map
C. HydroCalc Outputs
D. Preliminary Pre-Development Conditions Hydrology Map
E. Preliminary Post-Development Conditions Hydrology Map
F. Hydraulic Calculation
G. References

I. Purpose

The purpose of this report is to provide quantitative information to verify the design of the storm drain infrastructure and hydrologic methodology of the project site. The values and statements within this report confirm the subject site is designed and planned in accordance with the Los Angeles County Hydrology Manual and the City of Whittier drainage requirements.

II. Site Description

The proposed project site is located at southwest corner of the intersection between La Serna Drive and Janine Drive. The site comprises of two lots area with a total of 1.842 acre (APN:8224-017-022, and 023). The site is bounded by Janine Drive to the northeasterly direction, La Serna Drive to the southeast, and commercial buildings and parking lot to the south and west.

The previous developed site consists of a commercial building with a parking lot area. Majority of parking lot area is covered with impervious paving. A private alley within the project boundary is utilized for access to the adjacent properties to the west. The pre-development drainage of the project site generally surface sheet flow southeasterly towards the private alley via an onsite v-gutter and eventually downstream to La Serna Drive. All drainage appears to surface flow with no sign of any storm drain onsite to the downstream storm drainage system.

The project proposes the construction of 6 buildings with 42 attached condominium with private garages, private drive aisles, sidewalks, and common landscaped areas. The project site will be accessible with an entrance/ exit along Janine Drive and the existing private alley. The private alley on the southerly site is proposed for access to proposed development and existing adjacent properties. The private alley was analyzed as an offsite area due to the inseparable confluence flow from upstream adjacent properties, which peak flowrate drainage was determined to unaffected by replacement in-kind and analysis validated within this Hydrology report. Onsite drainage is divided into two (2) DMAs that are graded to ultimately route runoff towards La Serna Drive to preserve pre-development condition drainage conditions. Grated and curb inlets are place at the street low points to collect and direct runoffs from each DMA to a detention system, which will feed the WetlandMOD biofiltration system to conform with water quality treatment standards. Treated stormwater from both DMA will enter a pump station that outlets towards a proposed parkway drain on La Serna Drive.

In cases of high storm event, westerly portion of the site is graded to outlet overflow at the entrance of the site at the private alley which flows downstream as pre-development conditions. The runoff generated from the easterly portion of the site is captured at the catch basin installed with a pipe system that is size to outlet the 100-year storm event to the proposed parkway drain. During a higher storm event, runoff will top over the curb and sheet flow towards La Serna Drive as the low point of the proposed site to preserve pre-development conditions.

According to the federal Emergency Management Agency (FEMA) FIRM rate map number 06037C1835F, effective date September 26, 2008, the site is located within flood Zone X, area of Minimal Flood Hazard.

A separately preliminary LID plan is prepared to address the Los Angeles County storm water quality requirements.

Refer to Vicinity Map in Appendix A for site location.

III. Methodology

The project site's drainage was analyzed per the Los Angeles County Hydrology Manual. The pre-development and post-development conditions of the site were analyzed for peak flow rate and time of concentration for the 25- and 100-storm events based on acreage and land cover per LACDPW HydroCalc program.

IV. Design Assumption

1. The LACDPW HydroCalc Calculator Program was used to determine Tc, Peak run-off flow rate, and run-off volume for subarea based on the longest flow path and elevation difference.
2. The Property is located in the "Whitter" rainfall region per Figure 1.H1.10 of the Hydrology Manual. A depth of 6.05 inches of rainfall was determined from the 50-year storm 24-hour isohyet map.
3. The site is in the soil classification of "012" per Figure 1.H1.10 of the Hydrology Manual.
4. Pre-developed condition is determined to be a value of 83% impervious based on topographic information.
5. Proposed condition is assumed to be 100% impervious for conservative measures. Actual imperviousness is to be verify with final site plan to confirm the consistency of the drainage design during final engineering.
6. Proposed on-site storm drain will be sized to convey treated stormwater to the proposed pump station.
7. Proposed overflow storm drains for the easterly portion of the site to the parkway will be sized to convey the 100-year storm per urban flood requirement.
8. No direct connections to the public storm drain are proposed. Therefore, proposed peak flow mitigation will governed by the pre-development peak flows. The peak flowrate was determined to remain as equivalent indicated within this report.

V. Hydraulic Calculation

Pipe Sizing

Onsite storm drain piping will be sized for the treated stormwater flowrate and 100-year storm event and will be analyzed based on open channel flow. Therefore, WSPG hydraulic pressure analysis is not warranted.

$Q = \frac{k'}{n} d^{8/3} S^{1/2}$ per King's Handbook

k' = 0.463
d = pipe diameter

n=0.013*
S=0.005

Pipe Diameter	Max. Q (cfs)
8"	0.854
12"	2.518
15"	4.566
18"	7.425
24"	15.991
36"	47.146

n=0.013*
S=0.010

Pipe Diameter	Max. Q (cfs)
8"	1.208
12"	3.562
15"	6.457
18"	10.501
24"	22.614
36"	66.675

*A Manning's Roughness Coefficient of 0.013 has been utilized to represent the roughness coefficient of PVC and/or HDPE piping.

Catch Basin Inlet Sizing

Catch Basin inlet sizing will be sized based on the 25-year storm event to conform with LACDPW Hydrology urban flood street capacity and will be provided during final engineering.

100-Year Water Surface Elevation (WSE)

The elevation of the 100-year water surface will be analyzed during final engineering. Building finished floors will be set at a minimum of at least 1 foot above the 100-year WSE.

VI. Results

Below is a summary of the project site pre-development and post-development conditions peak runoff values for each DMAs and the total of the project site:

Pre-development Conditions Drainage Area	Area (ac)	Q_{25} (cfs)	Q_{100} (cfs)
DMA-XA-1	1.638	4.67	5.97
Offsite	0.205	0.58	0.75
Total	1.842	5.25	6.72

Post-development Conditions Drainage Area	Area (ac)	Q_{25} (cfs)	Q_{100} (cfs)
DMA-A-1	0.692	1.97	2.52
DMA-A-2	0.946	2.70	3.45
Offsite	0.205	0.58	0.75
Total	1.842	5.25	6.72

The analysis from HydroCalc demonstrates that the proposed development condition will generate the same peak runoff flowrate as the existing condition of the site; therefore, detention will only be required per water quality treatment for the proposed project site.

Refer to Appendix C, D, & E of this report for additional information and LACDPW HydroCalc output data, as well as the pre-developed and post-developed hydrology maps.

VII. Conclusion

The results from this hydrology study demonstrate that the proposed development condition will generate the same peak runoff flowrate as the existing condition of the site; therefore, detention will only be required per water quality treatment for the proposed project site. A separately preliminary LID plan is prepared to address the Los Angeles County storm water quality requirements.

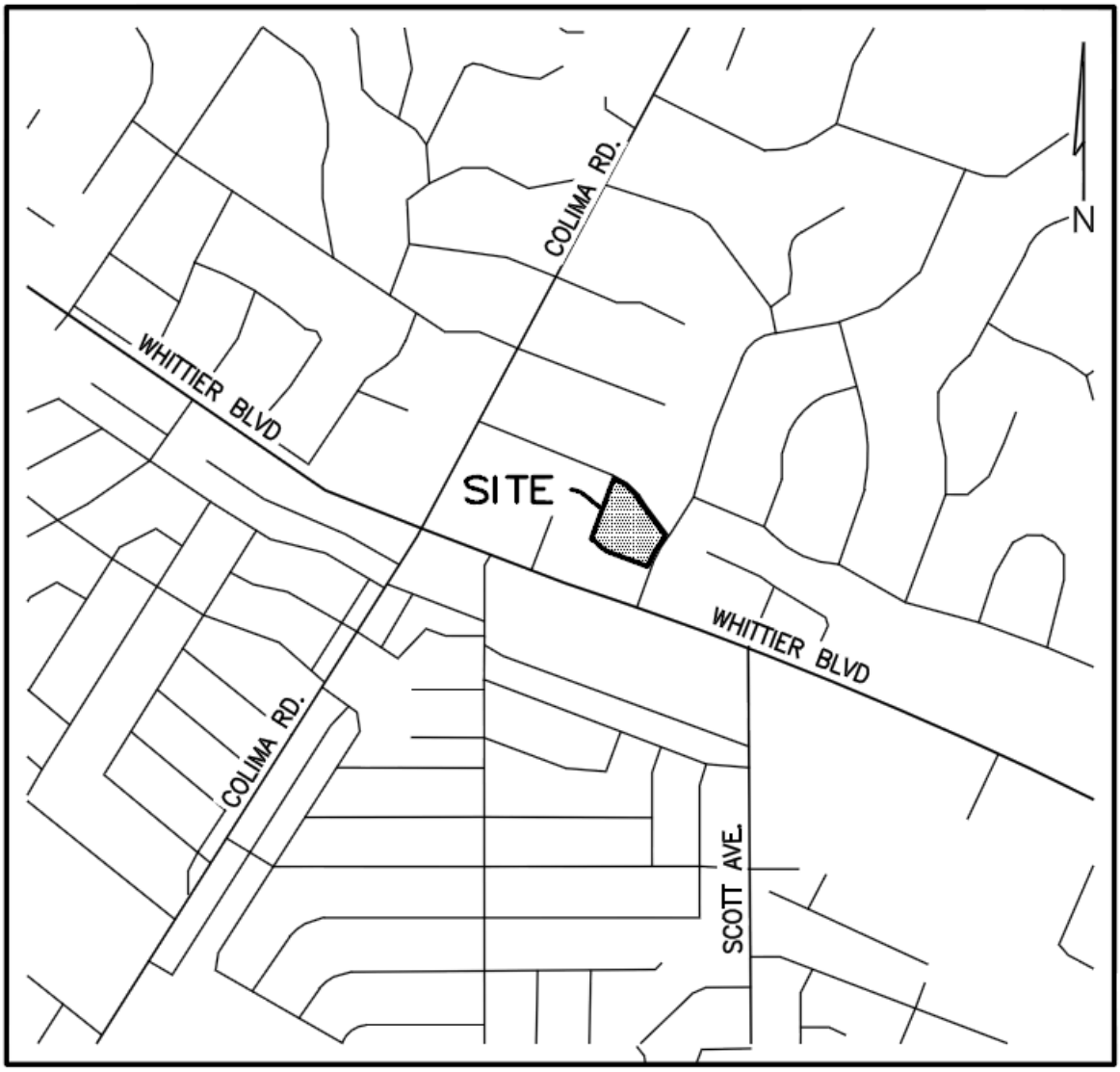
The westerly portion of the site is graded to outlet overflow at the entrance of the site at the private alley which flows downstream as pre-development conditions. The runoff generated from the easterly portion of the site is captured at the catch basin installed with a pipe system that is size to outlet the 100-year storm event to the proposed parkway drain. During a higher storm event, runoff will top over the curb and sheet flow towards La Serna Drive as the low point of the proposed site to preserve pre-development conditions.

VIII. References

1. Los Angeles County Department of Public Works (LACDPW) Hydrology Manual, January 2006.
2. LACDPW HydroCalc Program was utilized to determine flow rates and time of concentrations.
3. Existing and Proposed Conditions Hydrology Maps for Tract Map No. 83435, prepared by C&V Consulting, Inc.
4. KING, HORACE WILLIAMS HANDBOOK OF HYDRAULICS: for the Solution of Hydraulic Problems (Classic Reprint). FORGOTTEN Books, 2015

APPENDIX A

Vicinity Map



VICINITY MAP

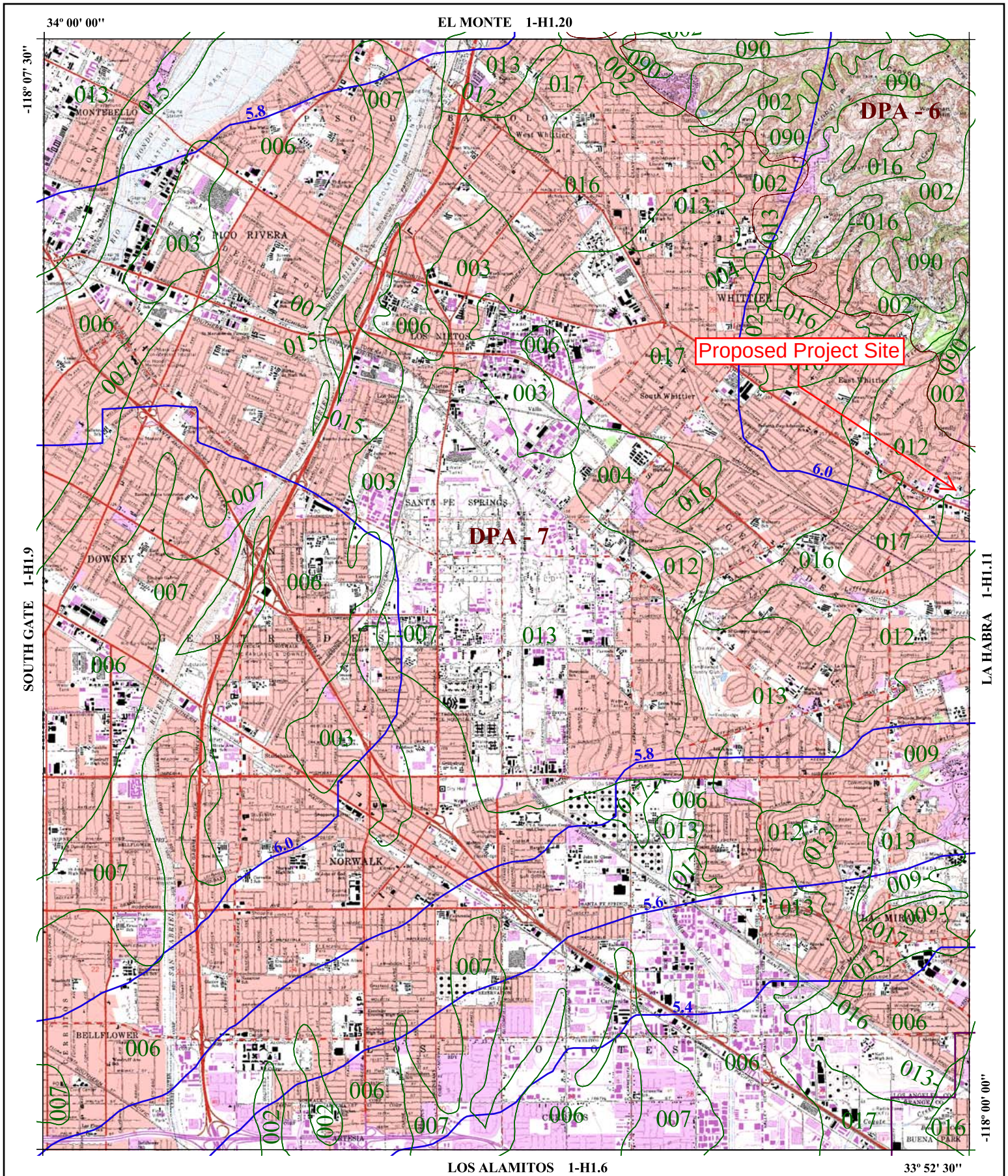
N.T.S.

9829 LA SERNA DRIVE

CITY OF WHITTIER, CALIFORNIA

APPENDIX B

Los Angeles Isohyet Map



25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

W H I T T I E R
50-YEAR 24-HOUR ISOHYET

1-H1.10

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

APPENDIX C

HydroCalc Outputs

HYDROLOGY SUMMARY

PRE-DEVELOPMENTCONDITIONS

DMA	DESCRIPTION	AREA (SQFT)	AREA (AC)	PERVIOUS AREA (sf)	IMPERVIOUS AREA (sf)	IMPERV %	Q25	Q100
XA	COMMERCIAL	71336.34	1.638	13047.79	58288.55	82%	4.6721	5.9705
OFFSITE	ALLEY	8914.22	0.205	600.55	8313.67	93%	0.5847	0.7472
TOTAL		80250.56	1.842	13648.34	66602.22	83%	5.2568	6.7177

*NOTE: IMPERVIOUS COVER IS BASED ON PRE-DEVELOPMENT TOPOGRAPHIC CONDITION

POST-DEVELOPMENT CONDITIONS

DMA	DESCRIPTION	AREA (SQFT)	AREA (AC)	PERVIOUS AREA (sf)	IMPERVIOUS AREA (sf)	IMPERV %	Q25	Q100
A-1	RESIDENTIAL	30146.51	0.692	0.00	30146.51	100%	1.9738	2.5223
A-2	RESIDENTIAL	41194.26	0.946	0.00	41194.26	100%	2.6983	3.4481
OFFSITE	ALLEY	8914.22	0.205	0.00	8914.22	100%	0.5847	0.7472
TOTAL		80254.99	1.842	0.00	80254.99	100%	5.2568	6.7176

*NOTE: PROPOSED CONDITION IS ASSUMED TO BE 100% IMPERVIOUS IN ANALYSIS FOR CONSERVATIVE MEASURES

Peak Flow Hydrologic Analysis

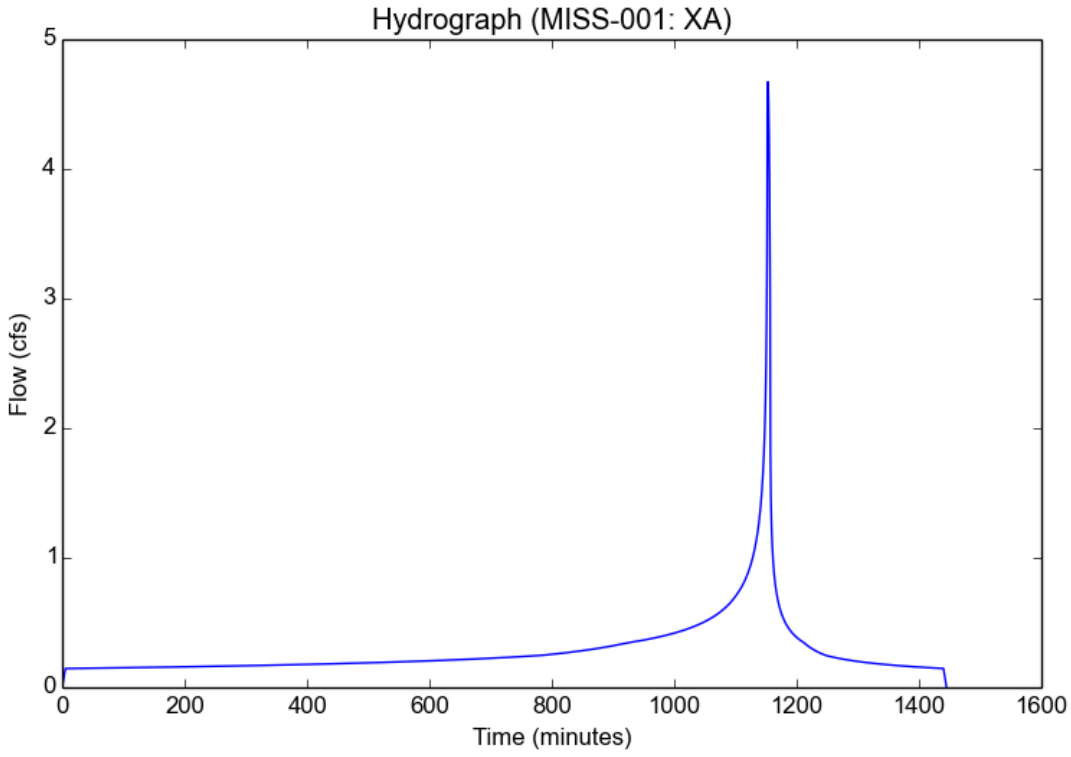
File location: P:/M/MISS-001/Admin/Reports/Hydrology/Appendix C - HydroCalc/HydroCalc/MISS-001 - XA, 25-yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001
Subarea ID	XA
Area (ac)	1.638
Flow Path Length (ft)	331.0
Flow Path Slope (vft/hft)	0.0296
50-yr Rainfall Depth (in)	6.05
Percent Impervious	0.82
Soil Type	12
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.3119
Peak Intensity (in/hr)	3.1692
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.6721
Burned Peak Flow Rate (cfs)	4.6721
24-Hr Clear Runoff Volume (ac-ft)	0.5815
24-Hr Clear Runoff Volume (cu-ft)	25332.065



Peak Flow Hydrologic Analysis

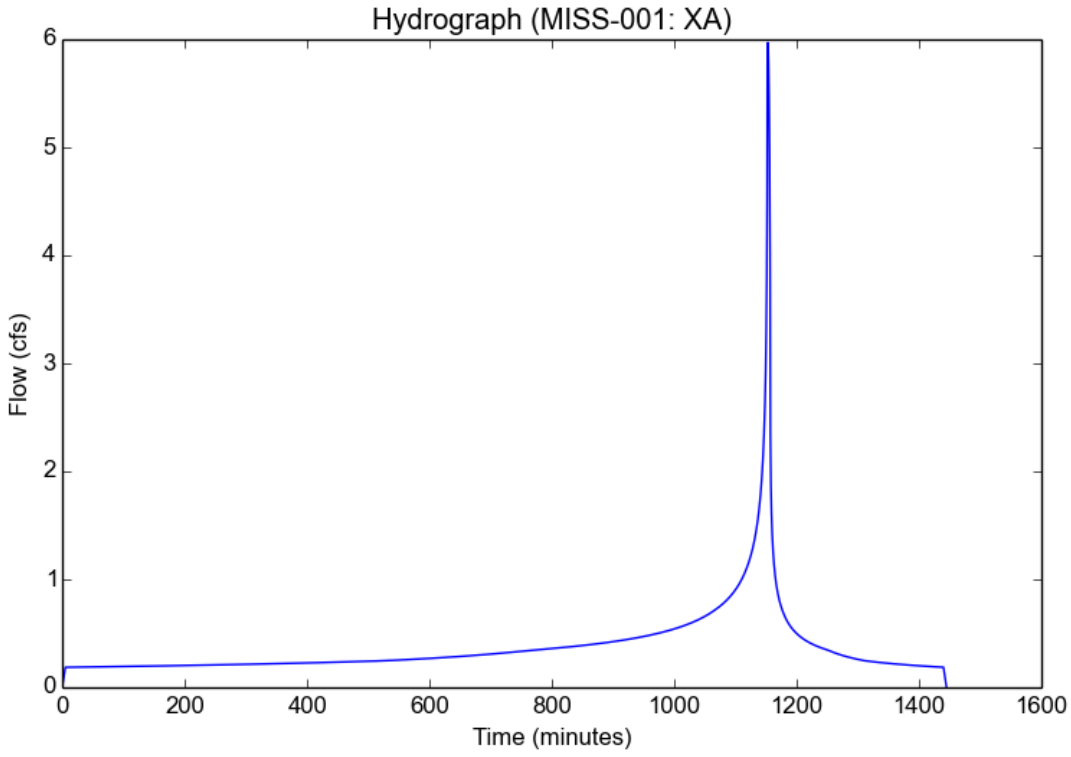
File location: P:/M/MISS-001/Admin/Reports/Hydrology/Appendix C - HydroCalc/HydroCalc/MISS-001 - XA, 100-yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001
Subarea ID	XA
Area (ac)	1.638
Flow Path Length (ft)	331.0
Flow Path Slope (vft/hft)	0.0296
50-yr Rainfall Depth (in)	6.05
Percent Impervious	0.82
Soil Type	12
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.7881
Peak Intensity (in/hr)	4.05
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	5.9705
Burned Peak Flow Rate (cfs)	5.9705
24-Hr Clear Runoff Volume (ac-ft)	0.7586
24-Hr Clear Runoff Volume (cu-ft)	33042.6051



Peak Flow Hydrologic Analysis

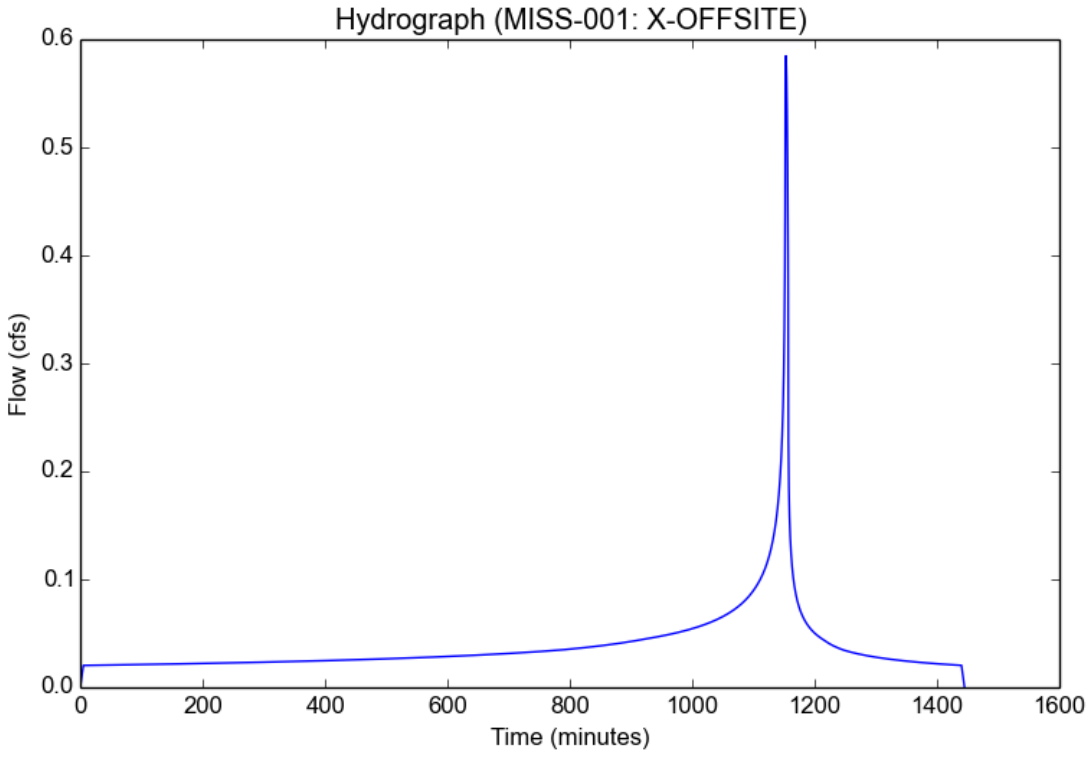
File location: P:/M/MISS-001/Admin/Reports/Hydrology/Appendix C - HydroCalc/HydroCalc/MISS-001 - X-OFFSITE, 25-yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001
Subarea ID	X-OFFSITE
Area (ac)	0.205
Flow Path Length (ft)	316.0
Flow Path Slope (vft/hft)	0.0133
50-yr Rainfall Depth (in)	6.05
Percent Impervious	0.93
Soil Type	12
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.3119
Peak Intensity (in/hr)	3.1692
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.5847
Burned Peak Flow Rate (cfs)	0.5847
24-Hr Clear Runoff Volume (ac-ft)	0.0778
24-Hr Clear Runoff Volume (cu-ft)	3389.0243



Peak Flow Hydrologic Analysis

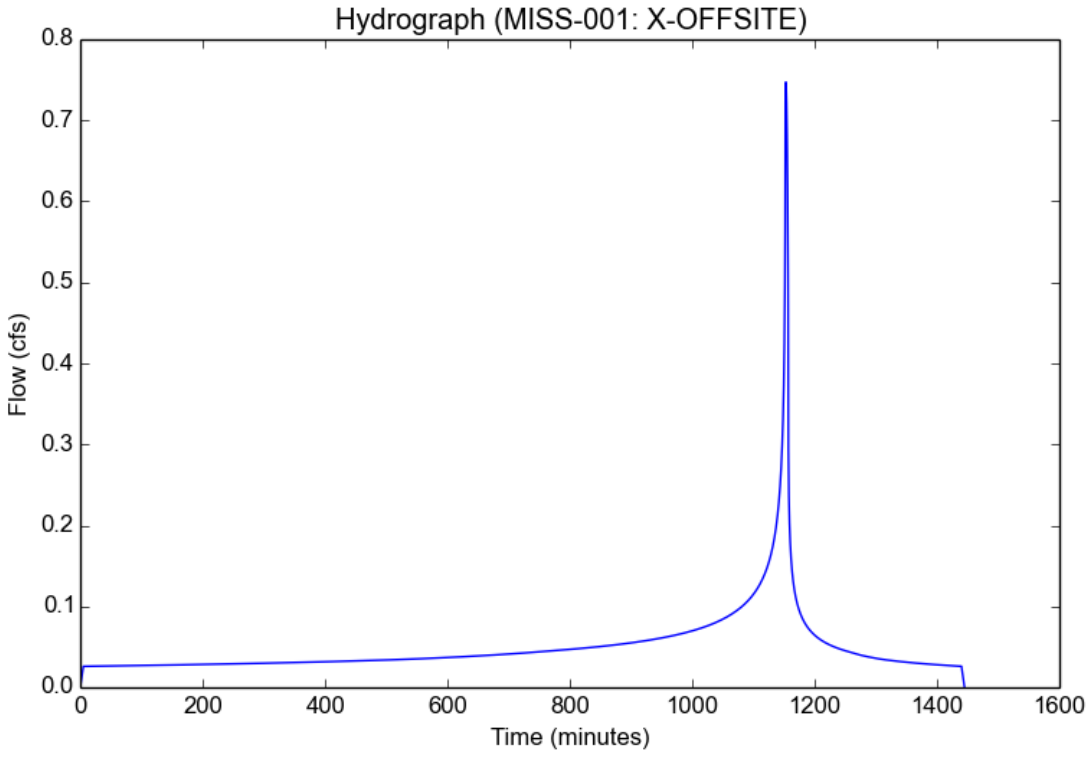
File location: P:/M/MISS-001/Admin/Reports/Hydrology/Appendix C - HydroCalc/HydroCalc/MISS-001 - X-OFFSITE, 100-yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001
Subarea ID	X-OFFSITE
Area (ac)	0.205
Flow Path Length (ft)	316.0
Flow Path Slope (vft/hft)	0.0133
50-yr Rainfall Depth (in)	6.05
Percent Impervious	0.93
Soil Type	12
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.7881
Peak Intensity (in/hr)	4.05
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.7472
Burned Peak Flow Rate (cfs)	0.7472
24-Hr Clear Runoff Volume (ac-ft)	0.1002
24-Hr Clear Runoff Volume (cu-ft)	4363.4896



Peak Flow Hydrologic Analysis

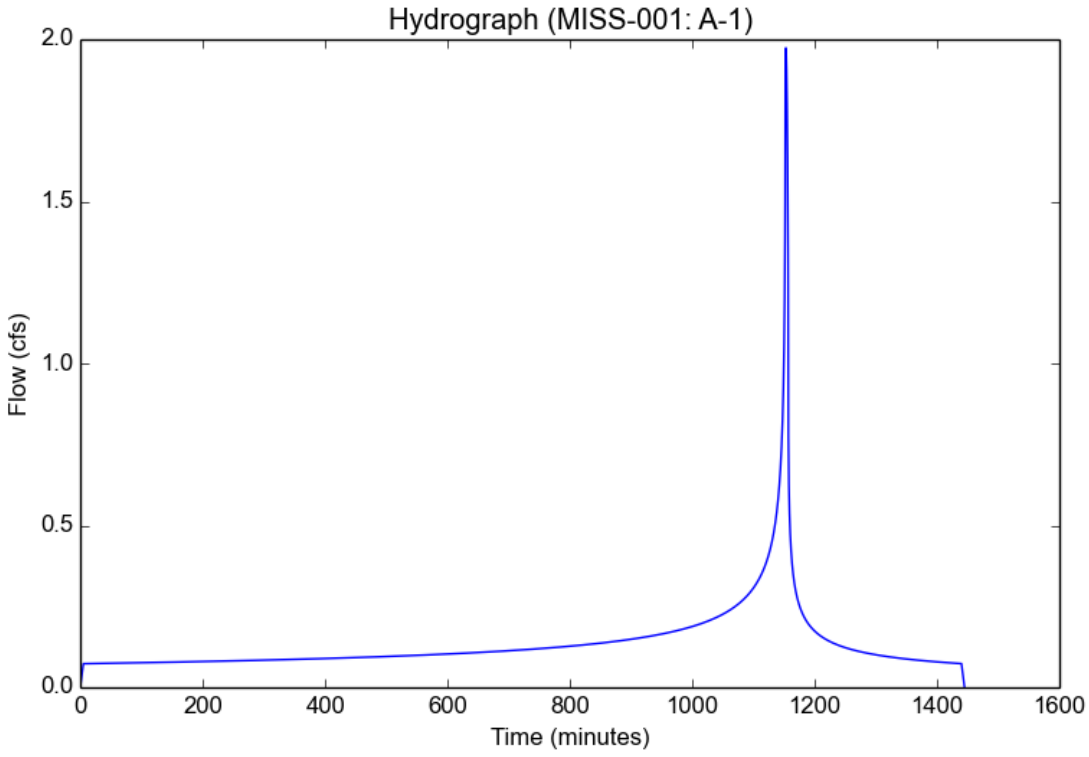
File location: P:/M/MISS-001/Admin/Reports/Hydrology/Appendix C - HydroCalc/HydroCalc/MISS-001 - A-1, 25-yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001
Subarea ID	A-1
Area (ac)	0.692
Flow Path Length (ft)	301.0
Flow Path Slope (vft/hft)	0.0272
50-yr Rainfall Depth (in)	6.05
Percent Impervious	1.0
Soil Type	12
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.3119
Peak Intensity (in/hr)	3.1692
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.9738
Burned Peak Flow Rate (cfs)	1.9738
24-Hr Clear Runoff Volume (ac-ft)	0.2734
24-Hr Clear Runoff Volume (cu-ft)	11909.7085



Peak Flow Hydrologic Analysis

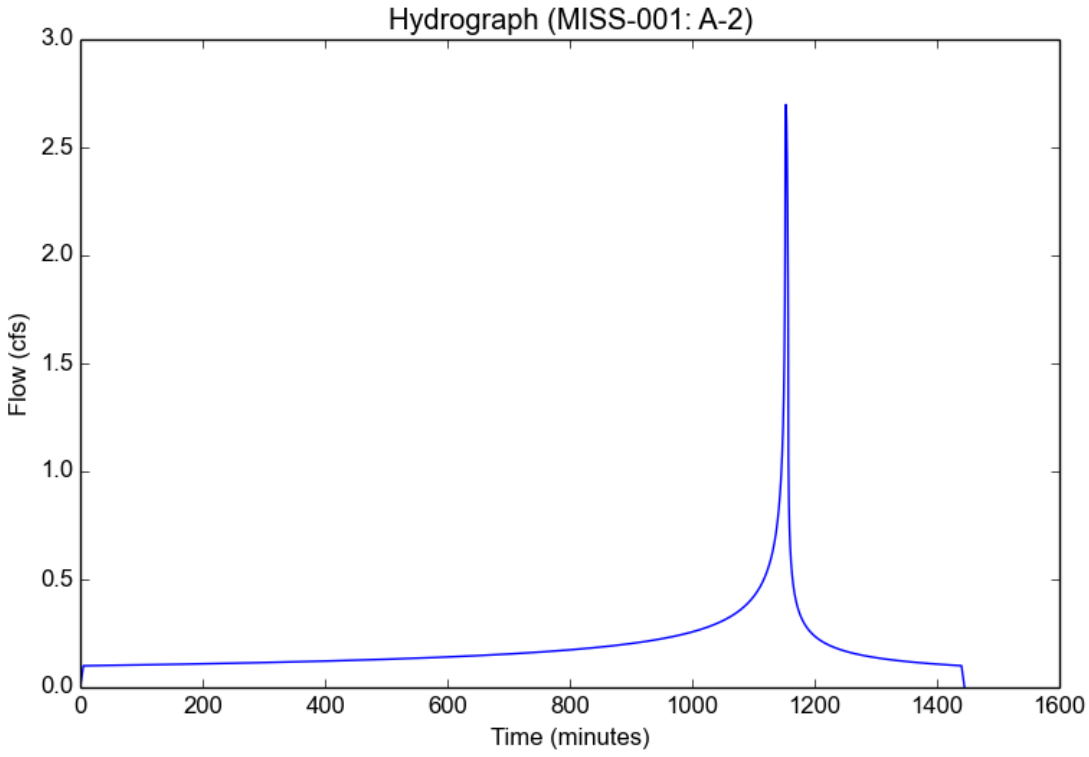
File location: P:/M/MISS-001/Admin/Reports/Hydrology/Appendix C - HydroCalc/HydroCalc/MISS-001 - A-2, 25-yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001
Subarea ID	A-2
Area (ac)	0.946
Flow Path Length (ft)	228.0
Flow Path Slope (vft/hft)	0.0145
50-yr Rainfall Depth (in)	6.05
Percent Impervious	1.0
Soil Type	12
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.3119
Peak Intensity (in/hr)	3.1692
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.6983
Burned Peak Flow Rate (cfs)	2.6983
24-Hr Clear Runoff Volume (ac-ft)	0.3738
24-Hr Clear Runoff Volume (cu-ft)	16281.1911



Peak Flow Hydrologic Analysis

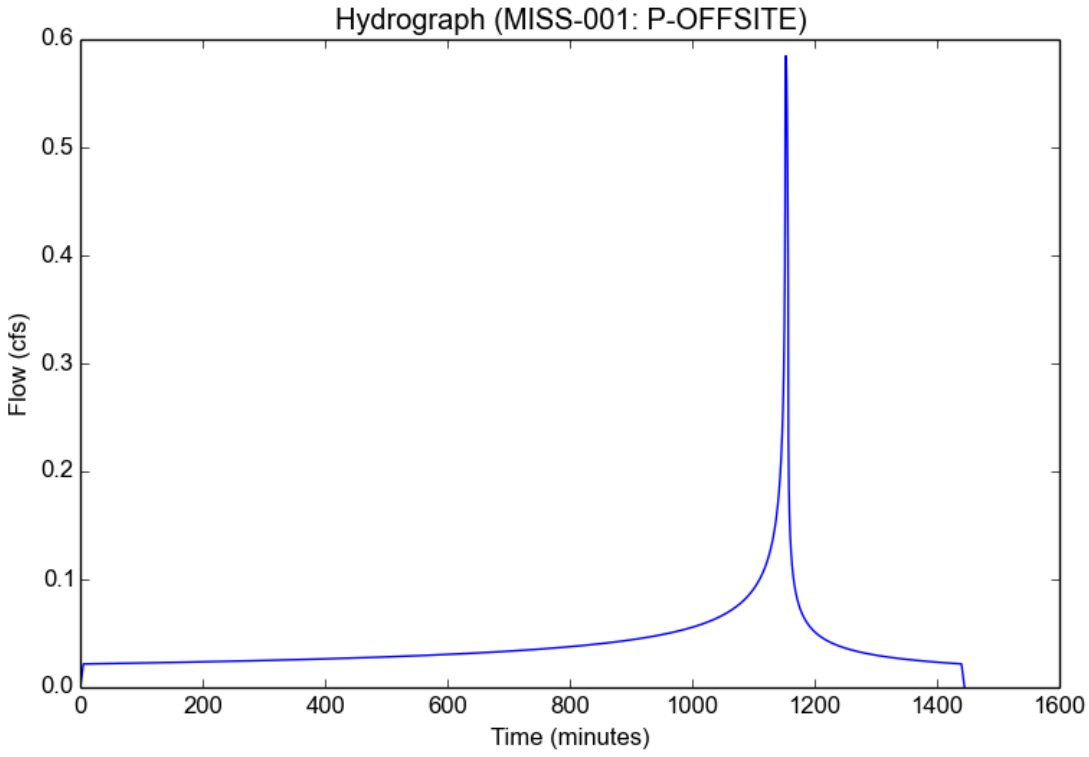
File location: P:/M/MISS-001/Admin/Reports/Hydrology/Appendix C - HydroCalc/HydroCalc/MISS-001 - P-OFFSITE, 25-yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001
Subarea ID	P-OFFSITE
Area (ac)	0.205
Flow Path Length (ft)	316.0
Flow Path Slope (vft/hft)	0.0133
50-yr Rainfall Depth (in)	6.05
Percent Impervious	1.0
Soil Type	12
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.3119
Peak Intensity (in/hr)	3.1692
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.5847
Burned Peak Flow Rate (cfs)	0.5847
24-Hr Clear Runoff Volume (ac-ft)	0.081
24-Hr Clear Runoff Volume (cu-ft)	3528.1651



Peak Flow Hydrologic Analysis

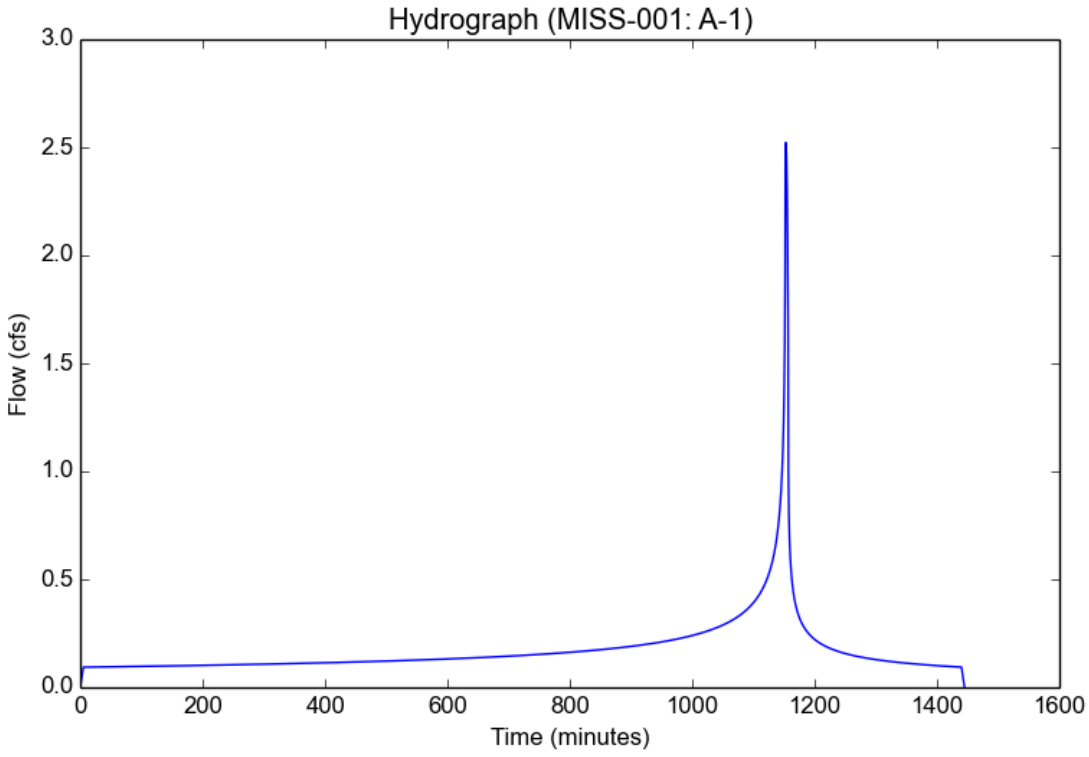
File location: P:/M/MISS-001/Admin/Reports/Hydrology/Appendix C - HydroCalc/HydroCalc/MISS-001 - A-1, 100-yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001
Subarea ID	A-1
Area (ac)	0.692
Flow Path Length (ft)	301.0
Flow Path Slope (vft/hft)	0.0272
50-yr Rainfall Depth (in)	6.05
Percent Impervious	1.0
Soil Type	12
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.7881
Peak Intensity (in/hr)	4.05
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.5223
Burned Peak Flow Rate (cfs)	2.5223
24-Hr Clear Runoff Volume (ac-ft)	0.3494
24-Hr Clear Runoff Volume (cu-ft)	15219.468



Peak Flow Hydrologic Analysis

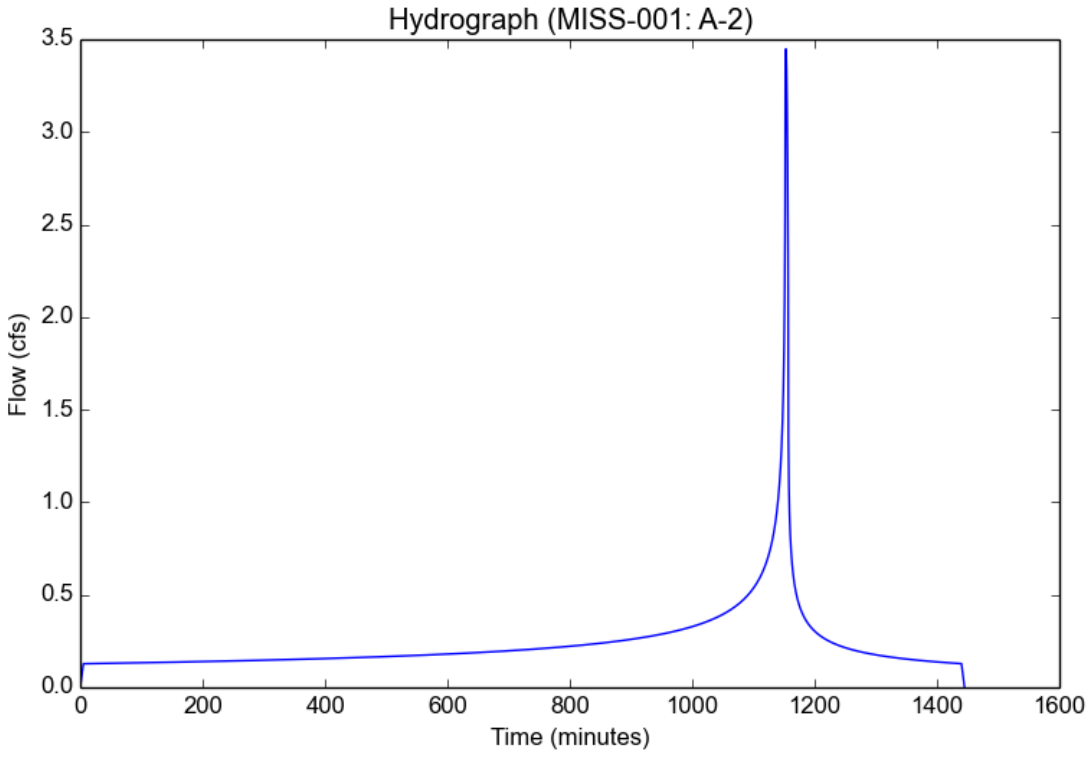
File location: P:/M/MISS-001/Admin/Reports/Hydrology/Appendix C - HydroCalc/HydroCalc/MISS-001 - A-2, 100-yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001
Subarea ID	A-2
Area (ac)	0.946
Flow Path Length (ft)	228.0
Flow Path Slope (vft/hft)	0.0145
50-yr Rainfall Depth (in)	6.05
Percent Impervious	1.0
Soil Type	12
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.7881
Peak Intensity (in/hr)	4.05
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.4481
Burned Peak Flow Rate (cfs)	3.4481
24-Hr Clear Runoff Volume (ac-ft)	0.4776
24-Hr Clear Runoff Volume (cu-ft)	20805.8045



Peak Flow Hydrologic Analysis

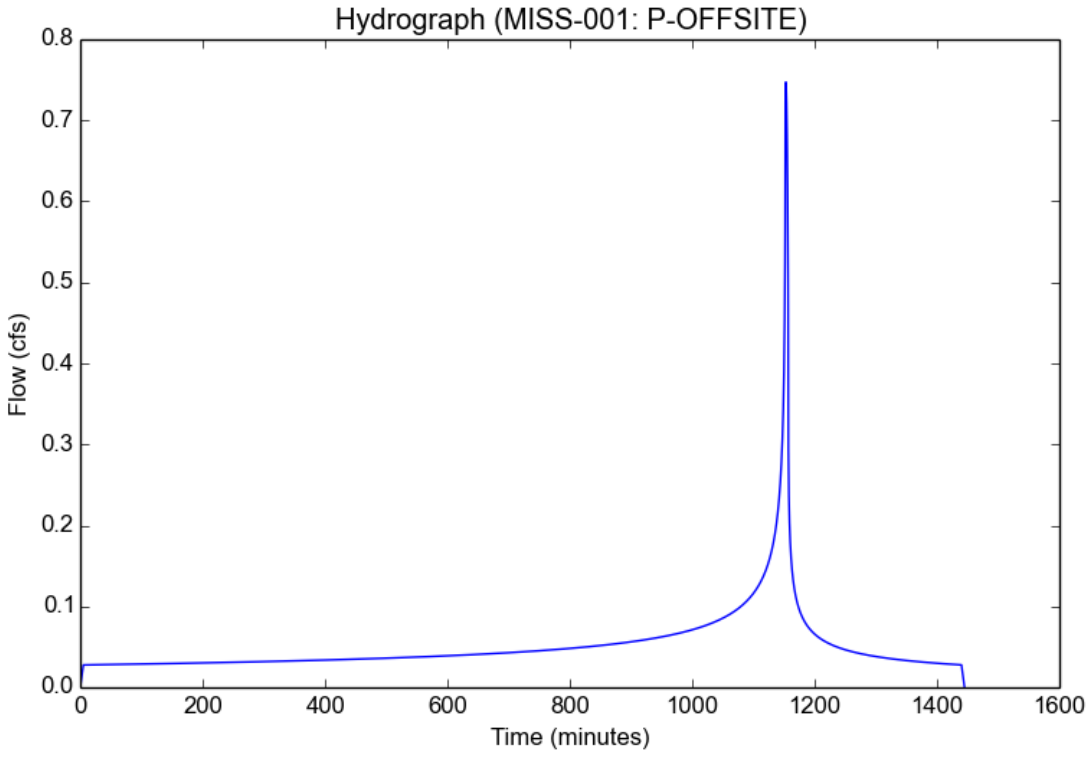
File location: P:/M/MISS-001/Admin/Reports/Hydrology/Appendix C - HydroCalc/HydroCalc/MISS-001 - P-OFFSITE, 100-yr.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001
Subarea ID	P-OFFSITE
Area (ac)	0.205
Flow Path Length (ft)	316.0
Flow Path Slope (vft/hft)	0.0133
50-yr Rainfall Depth (in)	6.05
Percent Impervious	1.0
Soil Type	12
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

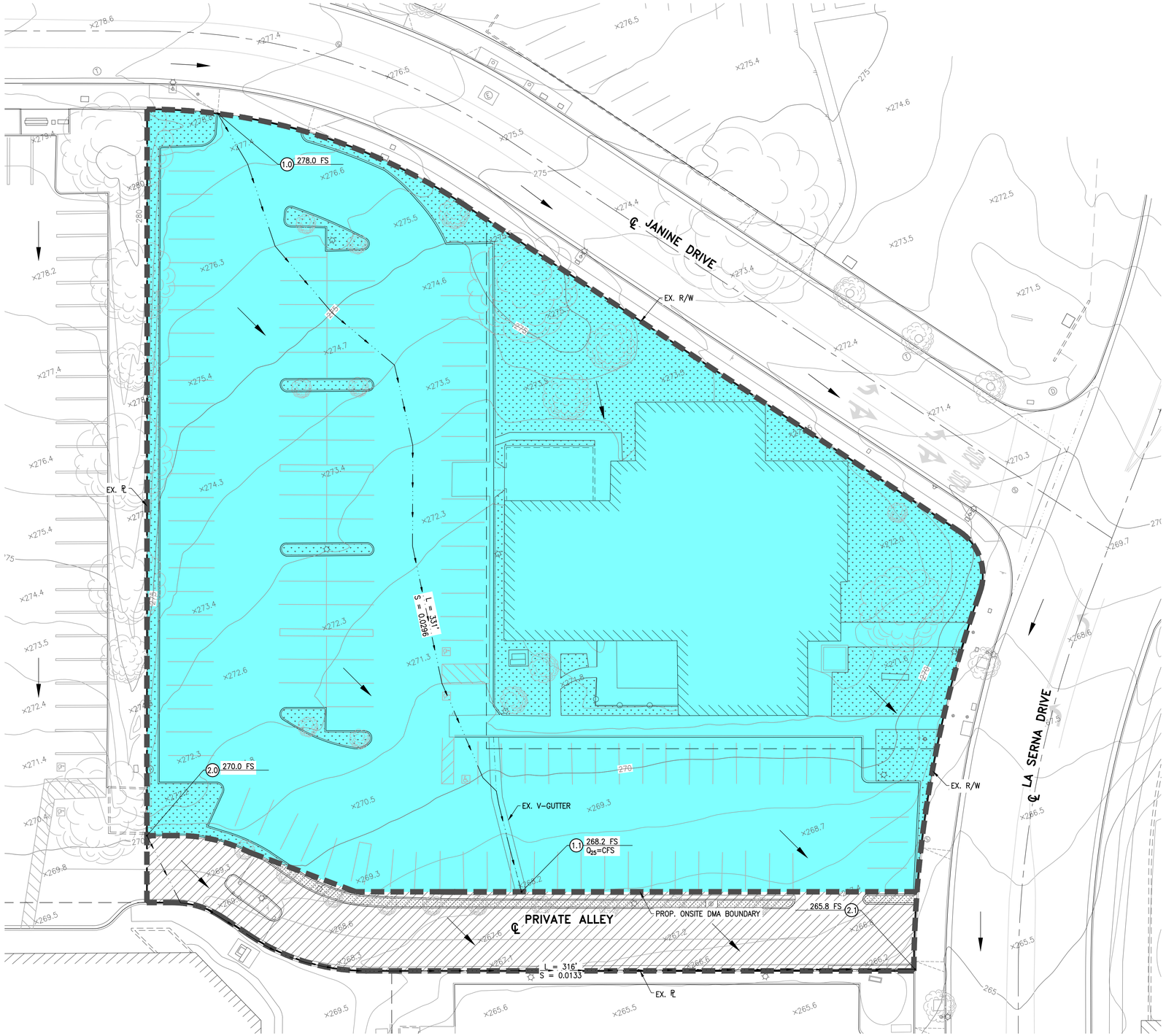
Output Results

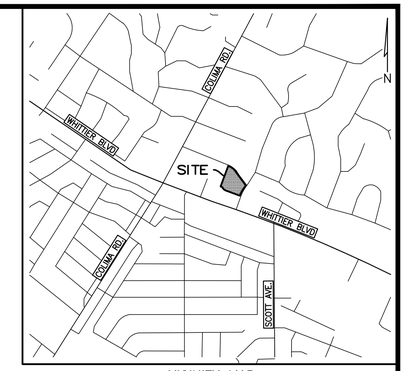
Modeled (100-yr) Rainfall Depth (in)	6.7881
Peak Intensity (in/hr)	4.05
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.7472
Burned Peak Flow Rate (cfs)	0.7472
24-Hr Clear Runoff Volume (ac-ft)	0.1035
24-Hr Clear Runoff Volume (cu-ft)	4508.6574



APPENDIX D

Preliminary Pre-Development Conditions Hydrology Map





VICINITY MAP
N.T.S.

LEGEND:

- DRAINAGE MANAGEMENT AREA (DMA) BOUNDARY
- SITE BOUNDARY
- EXISTING LOT LINE
- FLOW DIRECTION
- FLOW LINE
- PERVIOUS AREA
- INITIAL SUBAREA NODE
- SPOT ELEVATION (1 — 00.00)

DMA	COLOR	AREA (SF)	AREA (AC)	IMPERVIOUS %
XA		71,336.34	1.638	82%
OFFSITE		8,914.22	0.205	93%

NOTE: IMPERVIOUS COVER BASED ON SURVEY TOPOGRAPHY PER PRE-DEVELOPMENT CONDITION

PRE-DEVELOPMENT HYDROLOGY SUMMARY				
NODE	AREA (AC)	Q_{25} (CFS)	Q_{100} (CFS)	Tc (MIN)
1.1	0.692	4.67	5.97	5.0
2.1 (OFFSITE)	0.205	0.58	0.75	5.0

NOTE: PEAK FLOWRATE IS RUNOFF GENERATED FROM PROPOSED PROJECT SUBAREA.

SCALE: 1" = 20'

0 10 20 40

OWNER/DEVELOPER

MISSION PACIFIC LAND COMPANY
4100 NEWPORT PLACE, SUITE 480
NEWPORT BEACH, CALIFORNIA 92660

PREPARED BY :

C&V CONSULTING, INC.
CIVIL ENGINEERING
LAND PLANNING & SURVEYING
900 IRVINE CENTER DR
IRVINE, CALIFORNIA 92618
T. 949.916.3800
F. 949.916.3805
CVC-INC.NET

REGISTERED PROFESSIONAL ENGINEER
RYAN J. BITTNER
No. 68167
CIVIL
STATE OF CALIFORNIA

PRELIMINARY PRE-DEVELOPMENT CONDITIONS HYDROLOGY MAP
TENTATIVE TRACT NO. 83435

9829 LA SERNA DRIVE
WHITTIER, CALIFORNIA

SHEET 1 OF 1

SCALE: AS SHOWN | DRAWN BY: KL | CHECKED BY: MM

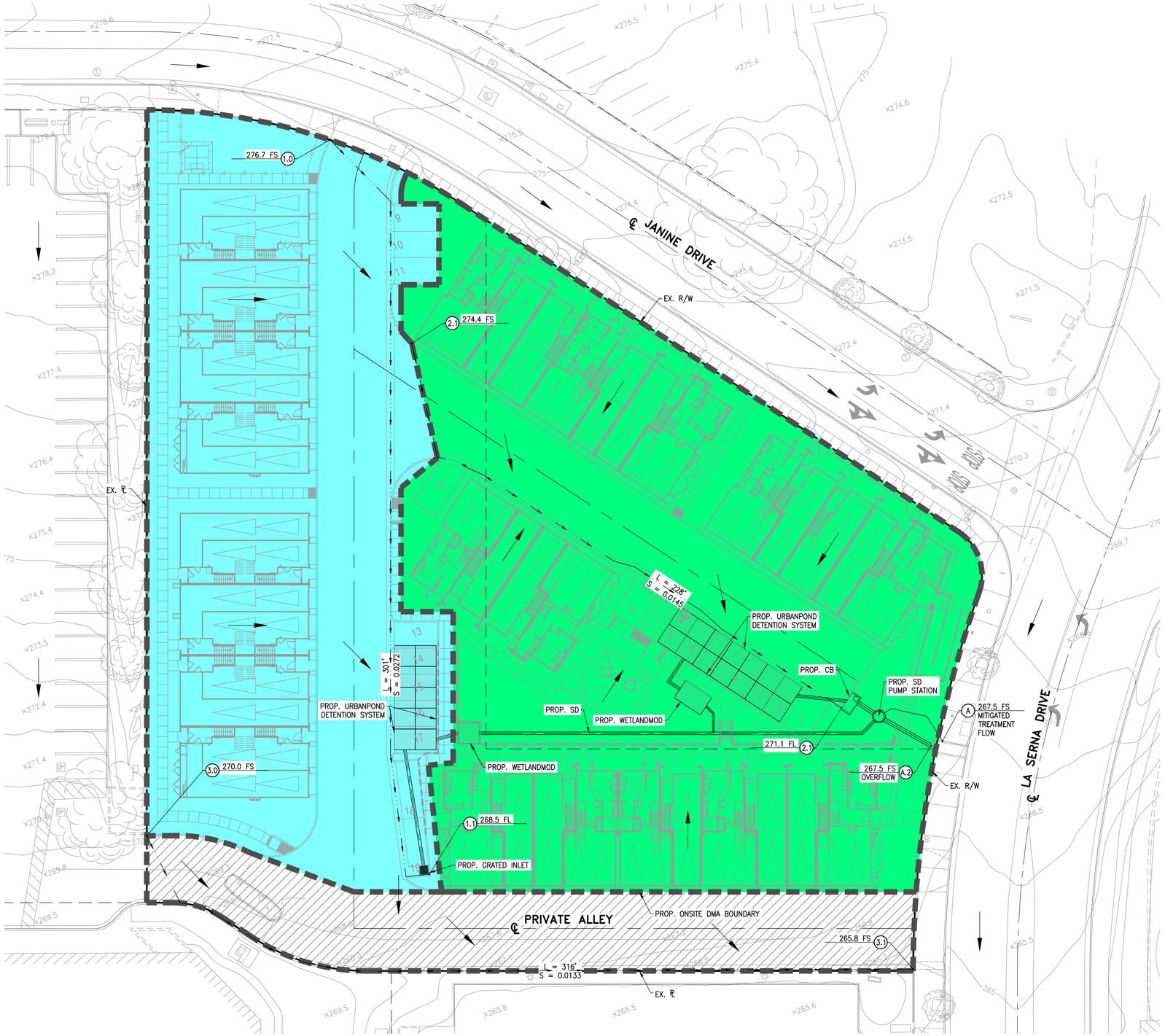
CITY OF WHITTIER

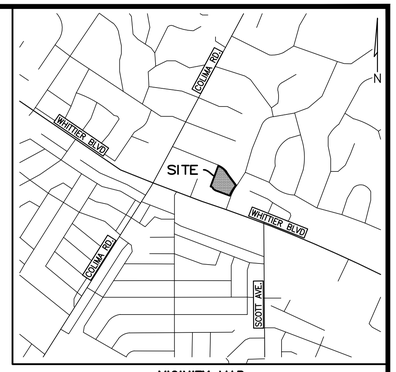
PLAN SET: PD01
DATE: 4/21/21

F:\PROJECTS\WORKSHEETS\PLOTTED\PDH-XHYDS.DWG
BY: KHEUM 4/21/21 4:32 PM

APPENDIX E

Preliminary Post-Development Conditions Hydrology Map





VICINITY MAP
N.T.S.

LEGEND:

- DRAINAGE MANAGEMENT AREA (DMA) BOUNDARY
- SITE BOUNDARY
- EXISTING LOT LINE
- FLOW DIRECTION
- FLOW LINE
- SUBAREA NODE / SPOT ELEVATION (1 / 00.00)

DMA	COLOR	AREA (SF)	AREA (AC)	IMPERVIOUS %
A-1		30,146.51	0.692	100%
A-2		41,194.26	0.960	100%
OFFSITE		8,914.22	0.205	100%

NOTE: PROPOSED DEVELOPMENT IMPERVIOUS COVERS ARE ASSUMED TO BE 100% FOR CONSERVATIVE MEASURES.

POST-DEVELOPMENT HYDROLOGY SUMMARY				
NODE	AREA (AC)	Q_{25} (CFS)	Q_{100} (CFS)	Tc (MIN)
1.1	0.692	1.97	2.52	5.0
2.1	0.946	2.70	3.45	5.0
3.1 (OFFSITE)	0.205	0.58	0.75	5.0

NOTE: PEAK FLOWRATE IS RUNOFF GENERATED FROM PROPOSED PROJECT SUBAREA.

PROJECT SITE FLOW RATE SUMMARY			
STORM EVENT	PRE-DEVELOPMENT PEAK FLOWRATE (CFS)	POST-DEVELOPMENT PEAK FLOWRATE (CFS)	Δ
25-YEAR	5.25	5.25	0%
100-YEAR	6.72	6.72	0%

NOTE: PEAK FLOWRATE IS TOTAL RUNOFF GENERATED FROM PROPOSED PROJECT SUBAREAS.

WATER QUALITY TREATMENT SUMMARY				
DMA	SWQDV (CF)	1.5xSWQDV	CAPACITY	MITIGATED (CFS)
A-1	2,286.93	3,430.39	3,874.91	0.011
A-2	3,126.35	4,689.52	5,812.36	0.017

NOTE: POST-DEVELOPED WATER QUALITY DESIGN VOLUME WILL BE BASED ON GONVERNING 85TH PERCENTILE FLOW RATE CALCULATIONS. REFER TO THE SEPARATELY PREPARED PRELIMINARY LID FOR MORE INFORMATION.

SCALE: 1" = 20'
0 10 20 40

OWNER/DEVELOPER

MISSION PACIFIC LAND COMPANY
4100 NEWPORT PLACE, SUITE 480
NEWPORT BEACH, CALIFORNIA 92660

PREPARED BY :

C&V CONSULTING, INC.
CIVIL ENGINEERING
LAND PLANNING & SURVEYING
900 IRVINE CENTER DR.
IRVINE, CALIFORNIA 92618
T. 949.916.3800
F. 949.916.3805
CVC-INC.NET

REGISTERED PROFESSIONAL ENGINEER
RYAN J. BITTNER
No. 68167
CIVIL
STATE OF CALIFORNIA

PRELIMINARY POST-DEVELOPMENT CONDITIONS HYDROLOGY MAP
TENTATIVE TRACT NO. 83435

9829 LA SERNA DRIVE
WHITTIER, CALIFORNIA

SHEET 1 OF 1

SCALE: AS SHOWN | DRAWN BY: KL | CHECKED BY: MM

CITY OF WHITTIER

PLAN SET: PSD1
DATE: 4/21/21

P:\PROJECTS\83435\PRELIM\HYDRO\83435-PRELIM-HYDRO.DWG
BY: KL 4/21/2021 8:28 PM

APPENDIX F

Hydraulic Calculation

(To be Provided in Final Engineering)

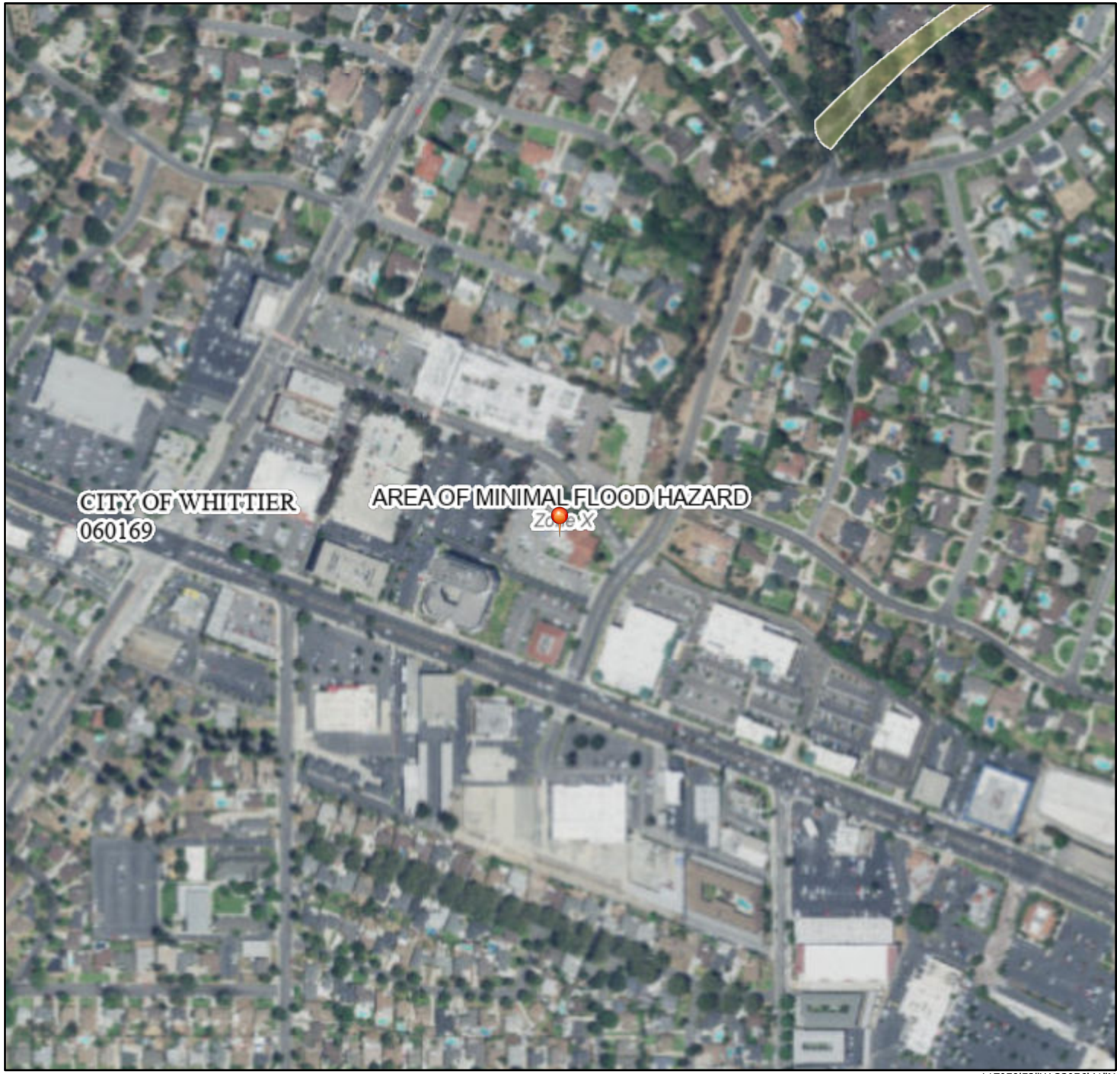
APPENDIX G

References

National Flood Hazard Layer FIRMette

FEMA

118°0'29"W 33°57'11"N



117°59'52"W 33°56'41"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

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*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/16/2021 at 7:33 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix G Preliminary Low Impact Development (LID) Plan

Preliminary Low Impact Development (LID) Plan

Prepared for:
Mission Pacific Land Company
4100 Newport Place, Suite 480
Newport Beach, CA 92660
Contact: Jason Keller
(949) 333-6752

Property:
TTM No. 83435
APN 8224-017-022 & 023
9829 La Serna Drive
Whittier, CA 90605

Prepared by:
C&V Consulting, Inc.
9830 Irvine Center Drive
Irvine, CA 92618
(949) 916-3800
Contact: Ryan J Bittner, P.E.

Preparation Date: April 2021

Receipt of WDID

REPLACE THIS SHEET

To be provided prior to final approval

Notice of Intent

REPLACE THIS SHEET

To be provided prior to final approval

Table of Contents

SECTION PAGE

SECTION 100
COVER I
RECEIPT OF WDID II
NOTICE OF INTENT III
LIST OF FIGURES IV
LIST OF APPENDICES IV
PROJECT OWNER'S CERTIFICATION V
ENGINEER CERTIFICATION VI

SECTION 200 1

A.Contact Information/List of Responsible Parties 1

SECTION 300 2

A.References 2

SECTION 400 – BODY OF LID 3

A.Objectives 3
B.Project Background and Description 3
C.Vicinity Map 3
D.Pre-development Site Drainage Condition 4
E.Post-development Site Drainage Conditions 4
F.LID Project Types, Characteristics, & Activities 5
G.Pollutant Source Identification and BMP Selection 5
H.Source Control BMPs 6
I.Structural BMPs 10
J.BMP Maintenance, Inspection, and Repair 14
K.Inspection, Maintenance, and Responsibility for BMPs 14
L.Operation/Maintenance Funding after Project Completion 17

List of Figures

Figure 1: Project Vicinity Map
Figure 2: BMP Exhibit
Figure 3: Impaired Waters

List of Appendices

Appendix A: Volume and Flowrate Calculations & Hydrologic Report
Appendix B: Site BMPs
Appendix C: WetlandMOD Biofiltration System, UrbanPond Stormwater Storage
Appendix D: "NO DUMPING – DRAINS TO OCEAN" Stencil Examples
Appendix E: Catch Basin Cleaning
Appendix F: General Education Materials
Appendix G: Operation and Maintenance Plan
Appendix H: Geotechnical Investigation

Project Owner's Certification of the Preliminary Low Impact Development (LID) Plan

Project Name: ***La Serna Drive Project***

Project Number: **Tentative Tract Map No. 83435**
APN 8224-017-022, and 023

Project Address: **9829 La Serna Drive**
Whittier, CA 90605

This Preliminary Low Impact Development (LID) Plan for the ***La Serna Drive*** (***TTM No. 83435)*** project has been prepared for Mission Pacific land Company by C&V Consulting, Inc. It is intended to comply with the requirements of the City of Whittier's Conditions of Approval.

The undersigned is authorized to approve implementation of provisions of this plan as appropriate, and will strive to have the plan carried out by successors consistent with the County of Los Angeles LID Manual and the intent of the NPDES storm water requirements.

"I certify under penalty of law that this document and all attachments were prepared under my jurisdiction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathered the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Owner's Name:	Jason Keller		
Owner's Title:	Director of Forward Planning		
Company:	Mission Pacific Land Company		
Address:	4100 Newport Place, suite 480, Newport Beach, CA 92660		
Email:	jkeller@missionpacific.com		
Telephone No.:	(949) 333-6752		
Signature:		Date:	

Engineer Certification

Engineer's Name:	Ryan J. Bittner		
Engineer's Title:	President		
Company:	C&V Consulting, Inc.		
Address:	9830 Irvine Center Drive, Irvine, CA 92618		
Email:	rbittner@cvc-inc.net		
Telephone No.	(949) 916-3800		
I hereby certify that this Low Impact Development Plan is in compliance with, and meets the requirements set forth in, Order No. R4-2012-0175, of the Los Angeles Regional Water Quality Control Board.			
Engineer's Signature		Date	
Place Stamp Here			

Section 200

A. Contact Information/List of Responsible Parties

The property contact information is:

Jason Keller
Director of Forward Planning
Mission Pacific Land Company
4100 Newport Place, Suite 480
Newport Beach, CA 92660
(949) 333-6752

The property owner shall have primary responsibility and significant authority for the implementation, maintenance, and inspection of the property BMPs. Duties of the Owner include but are not limited to:

- Implementing all elements of the LID, including but not limited to:
  - Implementation of prompt and effective erosion and sediment control measures
  - Implementing all non-storm water management, and materials and waste management activities, such as: monitoring, discharges, general site clean-up; vehicle and equipment cleaning, spill control; good construction housekeeping to ensure that no materials other than storm water are discharged which may have an adverse effect on receiving waters or storm drain systems, etc.
- Pre-storm inspections
- Storm event inspections
- Post-storm inspections
- Routine inspections as described in the LID
- Ensuring elimination of all unauthorized discharges
- The Owner shall be assigned authority to mobilize crews in order to make immediate repairs to the control measures.
- Coordinate all of the necessary corrections/repairs are made immediately, and that the project complies with the LID at all times.
- Managing and report any Illicit Connections or Illegal Discharges.

Section 300

A. References

The following documents are made a part of this LID by reference:

- Project plans and specifications for the City of Whittier to support the ***La Serna Drive (TTM No. 83435)*** project, prepared by C&V Consulting, Inc., 9830 Irvine Center Drive, Irvine, CA 92618.

- County of Los Angeles Department of Public Works, Low Impact Development Standards Manual dated February 2014

- State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES No. CAS000002 dated July 1, 2010.

- California Stormwater BMP Handbook – Construction, November 2009.

- California Stormwater BMP Handbook – New Development and Redevelopment, January 2003.

- Los Angeles County Municipal Stormwater/ NPDES Permit Order R4-2012-0175

Section 400 – Body of LID

A. Objectives

This Low Impact Development (LID) Plan has four main objectives:

1) Identify all pollutant sources, including sources of sediment that may affect the quality of storm water discharges associated with daily use / activity (storm water discharges) from the property site.
2) Identify non-storm water discharges.
3) Identify, construct, implement and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the property site.
4) Develop a maintenance schedule for BMPs designed to reduce or eliminate pollutants.

B. Project Background and Description

The proposed project is located at Whittier, California and consist approximately 1.84 acres. The proposed development intends to construct 6 buildings of 42 attached condominium units with private garages, private drive aisles, sidewalks, and common landscaped areas. The residential project site will be accessible with two (2) entrance/ exit along Janine Drive and a private alley. The private alley is a shared access path to the westerly adjacent properties, and it is proposed to be analyze as an offsite area as it will be replaced in-kind; in addition, a separate Hydrology Report determined the peak flowrate for different storm event will remain to the equal as pre-development conditions.

The pre-development conditions of the project site consist of a commercial building with a parking area covered within impervious paving. Topographic information was obtained to establish the impervious cover of the pre-development conditions to be 83%. The proposed imperviousness for the entire site is assumed 100% impervious based for conservative measures. Actual imperviousness is to be verify with final site plan to confirm the consistency of the water quality treatment design during final engineering.

C. Vicinity Map

The site comprises two lots that is located the south-west corner of La Serna Drive and Janine Drive, City of Whittier, County of Los Angeles, (APN: 8224-017-022, and 023). The site is bounded by Janine Drive to the northeasterly direction, La Serna Drive to the southeast, and commercial buildings and parking lot to the south and west.

Refer to Figure 1 for the Vicinity Map.

D. Pre-development Site Drainage Condition

The previous developed site consists of a commercial building with a parking lot area. Majority of parking lot area is covered with impervious paving. A private alley within the project boundary is utilized for shared access to the adjacent properties to the west. The existing site elevations ranging between approximately 278.0 feet and 266.0 feet above mean sea level. Generally, the existing site drainage surface flows overland in the southeasterly direction towards the private alley and flows into the rights-of-way of La Serna Drive. Within the public rights-of-way, drainage continues downstream southerly via existing street gutter on La Serna Drive. All flow ultimately outlets toward the existing San Gabriel River which drains to the Pacific Ocean at San Pedro Bay. Water bodies downstream of the project site are listed on the most current 303 (d) List as follows:

- Tacobi Creek
- Cayote Creek
- San Gabriel River Reach 1 (Estuary to Firestone)
    - Coliform Bacteria
    - pH
- San Gabriel Estuary
    - Ammonia as Nitrogen
    - Copper
    - Dioxin
    - Nickel
    - Oxygen, Dissolved
- San Pedro Bay Near/ Off Shore Zones
    - Chlordane
    - DDT (tissue & sediment)
    - PCBs (Polychlorinated biphenyls)
    - Sediment Toxicity

All facilities downstream of the project site are engineered, therefore the project is exempt from Hydromodification Control requirements.

E. Post-development Site Drainage Conditions

The project proposes the construction of 6 buildings with 42 attached condominium with private garages, private drive aisles, sidewalks, and common landscaped areas. The project site will be accessible with an entrance/ exit along Janine Drive and the existing private alley. The private alley with an area of 0.205 acre on the southerly site is proposed to be a shared access to proposed development and existing adjacent properties. The private alley was designed as an offsite area due to the inseparable confluence flow from upstream adjacent properties, which is not accounted within the water quality treatment as it is proposed to be replace in-kind. Onsite drainage is divided into two (2) DMAs that are graded to ultimately route runoff towards La Serna Drive to preserve pre-development condition drainage conditions. Grated and curb inlets are place at the street low points to collect and direct runoffs from each DMA to

the detention systems, which will feed the two (2) proposed WetlandMOD biofiltration systems to conform with water quality treatment standards. Treated stormwater from both DMA will enter a pump station that outlets towards a proposed parkway drain on La Serna Drive.

In cases of high storm event, westerly portion of the site is graded to outlet overflow at the entrance of the site at the private alley which flows downstream as pre-development conditions. The runoff generated from the easterly portion of the site is captured at the catch basin installed with a pipe system that is size to outlet the 100-year storm event to the proposed parkway drain. During a higher storm event, runoff will top over the curb and sheet flow towards La Serna Drive as the low point of the proposed site to preserve pre-development conditions.

Per Preliminary Geotechnical Investigation, prepared by Albus & Associates, Inc. dated April 13, 2021, infiltration BMP was determined to be infeasible due to the underlain by the fine-gained nature of the subsurface soils; therefore, biofiltration BMPs are considered for the proposed site.

Refer to Figure 2, BMP Exhibit for additional information.

F. LID Project Types, Characteristics, & Activities

Per the Los Angeles Department of Public Works (LACDPW), *Low Impact Development Standards Manual*, dated February 2014, the proposed project is classified as a "Designated Project." A "Designated Project" is defined by the LACDPW as follows:

> "Redevelopment projects, which are developments that result in creation or addition or replacement of either: (1) 5,000 square feet or more of impervious surface on a site that was previously developed as described in the above bullets; or (2) 10,000 square feet or more of impervious surface area on a site that was previous developed as a single family home."

G. Pollutant Source Identification and BMP Selection

The following is a list of materials to be used in the daily construction activities at the project site, which will potentially contribute to pollutants, other than sediment, to storm water runoff. Control Practices for each activity are identified below:

- Vehicle fluids, including oil, grease, petroleum, and coolants from personal vehicles.
- Landscaping materials and wastes (topsoil, plant materials, herbicides, fertilizers, mulch, pesticides)
- General trash debris and litter
- Pet waste (bacteria/ fecal coliforms)

The Best Management Practices (BMPs) that have been selected for implementation on this project are detailed in the following sections.

H. Source Control BMPs

Project proponents shall implement Site Design concepts that achieve each of the following:

- Minimize Urban Runoff
- Minimize Impervious Footprint
- Conserve Natural Areas
- Minimize Directly Connected Impervious Areas (DCIAs)

Table-1 identifies the source control and treatment BMPs and how each is implemented to achieve each Site Design concept. BMP fact sheets are provided by the LACDPW *Low Impact Development Standards Manual* and the California Stormwater Quality Association.

Table-1: Source Control BMPs

BMP	BMP DESCRIPTION	CHECK ONE		IF NOT APPLICABLE, STATE BRIEF REASON
		INCLUDED?	NOT APPLICABLE	
	Non-Structural Source Control BMPs:			
	Education for Leasers', Operators, Occupants, or Employees	X		
	Activity Restrictions (CC&Rs)	X		
SD-12	Landscape Irrigation Practices	X		
SD-32	Common Area Litter Control	X		
SE-7	Street Sweeping Private Streets and Parking Lots	X		
	Drainage Facility Inspection and Maintenance	X		
	Structural Source Control BMPs:			
SD-13	Storm Drain Message and Signage	X		
SD-10	Landscape Irrigation Practices	X		
SD-11	Roof Runoff Controls	X		

BMP	BMP DESCRIPTION	CHECK ONE		IF NOT APPLICABLE, STATE BRIEF REASON
		INCLUDED?	NOT APPLICABLE	
	Protect Slopes and Channels		X	No proposed slopes and channels
SD-30	Outdoor Vehicle/Equipment/ Accessory Washing Area		X	No proposed car wash racks
	Proper Site Design:			
SD-30	Fuel and Maintenance Area		X	No proposed fueling areas
SD-33	Air/Water Supply Area Drainage		X	No proposed air/water supply
SD-32	Outdoor Trash Storage and Waste Handling Area		X	No Outdoor Trash Storage
SD-31	Outdoor Loading/ Unloading Dock Area		X	No proposed loading/unloading dock areas
SD-35	Outdoor Vehicle/Equipment Repair/Maintenance Area		X	No proposed maintenance bays
SD-36	Outdoor Vehicle/Equipment/ Accessory Washing Area		X	No proposed wash areas
S-2	Outdoor Material Storage Area		X	No proposed material storage areas
SD-36	Outdoor Work Areas or Processing Areas		X	No proposed outdoor work areas
	Provide Wash Water Controls for Food Preparation Areas		X	No proposed food preparation areas

Non-Structural Measures

Non-structural BMPs are generally managerial, educational, inspection and/ or maintenance oriented. These items consist of educating employees and occupants, developing, and implementing HOA guidelines, implementing BMPs and enforcing Code requirements. Non-structural BMPs used for this project are summarized below:

Education for Employees and Occupants

Practical informational materials will be provided to homeowners, HOA and employees on general good housekeeping practices that contribute to protection of storm water quality. Among other things, these materials will describe the use of chemicals (including household type) that should be limited to the property, with no discharge of specified wastes via hosing or other direct discharge to gutters, catch basins and storm drains. Initially, the Owner will provide these materials. Thereafter, such materials will be available through the HOA education program.

This program must be maintained, enforced, and updated periodically by the HOA. Educational materials including, but not limited to, the materials included in the Appendix F of this plan will be made available to the employees and contractors of the HOA.

Activity Restrictions

Activities on this site will be limited to activities related to residential living. The project's Conditions, Covenants, and Restrictions (CC&Rs) will outline the activities that are restricted on the property. Such activities related to the LID include car washing, car maintenance and disposal of used motor fluids, pet waste cleanup, and trash container areas.

Efficient Landscape System & Landscape Maintenance

Management programs will be designed and established by the HOA, who will maintain the common areas within the project site. These programs will include how to mitigate the potential dangers of fertilizer and pesticide usage (refer to the Maintenance and Frequency Table). Ongoing maintenance will be consistent with the State of California Model- Water Efficient Landscape Ordinance. Fertilizer and pesticide usage shall be consistent with County Management Guidelines for use of Fertilizers and Pesticides.

Street Sweeping in Private Streets and Parking Lots

The HOA shall have all streets and parking lots swept on a weekly basis. This procedure will be intensified around October 15th of each year prior to and throughout rain storm period.

Drainage Facility Inspection & Maintenance

The HOA will be responsible for implementing each of the BMPs detailed in this plan. The HOA will also be responsible for cleaning and maintaining the BMPs on a regular basis. Refer to Appendix G for the Operation and Maintenance Plan. Refer to Appendix C for site specific drainage BMP information.

Storm Drain Stenciling/ Signage
Phrase "No Dumping – Drains to Ocean" or equally effective phrase to be stenciled on catch basins to alert the public to the destination of pollutants discharged into storm water. This stenciling will be inspected and re-stenciled on a periodic basis by the HOA. Refer to Table 4 for maintenance frequency.

Landscape & Irrigation System Design
As part of the design of all common area landscape irrigation shall employ water conservation principals, including, but not limited to, such provisions as water sensors, programmable irrigation times (for short cycles), etc. will be used. Such common areas will be maintained by the HOA.

Common Area Litter Control
The HOA must implement trash management and litter control procedures in common areas aimed at reducing pollution of drainage water. The HOA may contract a landscape maintenance company to provide this service during regularly scheduled maintenance which will consist of litter patrol and noting trash disposal violations and reporting the violations to the HOA for investigation.

Title 22 CC&R Compliance
The HOA will comply with this Regulation as part of the development's CC&Rs. CC&Rs will be prepared as a separate document and reviewed by the City's Attorney.

Uniform Fire Code Implementation
The HOA will comply with this Code as part of the development's CC&Rs. CC&Rs will be prepared as a separate document and reviewed by the City's Attorney.

Employee Training
A training program will be established as it would apply to future employees, contractors, and homeowners of the HOA to inform and train in maintenance activities regarding the impact of dumping oil, paints, solvents, or other potentially harmful chemicals into storm drains; the proper use of fertilizers and pesticides in landscaping maintenance practices; and the impacts of littering and improper water disposal.

The HOA (or a hired firm) will conduct the training program which will include targeted training sessions with specific construction disciplines (landscaping, concrete finishers, painters, etc.). See Appendix F for examples of educational materials that will be provided to the Employees.

The project's CC&Rs will include provisions for future employee training programs conducted on a yearly based prior to the rainy season.

I. Structural BMPs

Structural BMPs shall be installed by the developer, through the construction and development of the project, for instance; landscaping and irrigation systems shall be designed by licensed landscape architects and installed by qualified contractors to specifications and standards of the City of Whittier. The structural BMPs used for this project are summarized below:

Expected pollutants associated with this development include vehicle discharge fluids, landscaping materials and waste, litter, and pet waste. To mitigate these pollutants, the structural best management practices summarized below.

Table-2: Design BMPs

BMP	TECHNIQUE	INCLUDED? YES	INCLUDED? NO	BRIEF DESCRIPTION OF METHOD
SD-10	Minimize Impervious Area/Maximize Permeability (C-Factor Reduction)	X		We have incorporated landscape areas wherever possible within the project site. See Appendix B for details.
	Minimize Directly Connected Impervious Areas (DCIAs) (C-Factor Reduction)	X		We minimize DCIAs by limiting sidewalks and parking areas to the minimum necessary for proper use. Steppingstones are to be used in areas with minimal foot traffic.
	Create Reduced or "Zero Discharge" Areas (Runoff Volume Reduction)	X		The entire SWQDV will be detained onsite, resulting in an overall runoff volume reduction.

Table-3: Treatment BMPs

BMP	NAME	INCLUDED?		IF NOT APPLICABLE, STATE BRIEF REASON
		YES	NO	
VEG-5	Vegetated Filter Strip		X	Alternative BMP selected
VEG-4	Vegetated Swale		X	Space not available for BMP
MP-40	Media Filter		X	Alternative BMP selected
MP-52	Drain Inserts		X	Alternative BMP selected
T-3	Extended Detention Basin		X	Alternative BMP selected
T-4	Wet Pond		X	Alternative BMP selected
T-2	Constructed Wetland		X	Alternative BMP selected
T-1	Sand Filter		X	Alternative BMP selected
RET-5	Permeable Pavement without an Underdrain		X	Alternative BMP selected
RET-2	Infiltration Basin		X	Alternative BMP selected
RET-3	Infiltration Trench		X	Alternative BMP selected
TC-40	Media Filter		X	Alternative BMP selected
BIO-1	Biofiltration	X		proposed WetlandMOD will be utilized in the proposed development and provide treatment of 1.5 times the SWQDV.

Biofiltration: WetlandMOD Biofiltration Treatment System

The unique treatment capabilities of the 'WetlandMod' System - 'BioClean' System) incorporates capture, screening, hydrodynamic separation, advanced media filtration, biofiltration to reduce and control water volume in a more efficient way compared to traditional downward flow bioretention system.

The 'BioClean' System removes a range of pollutants associated with urban run-off. Suspended Solids, Heavy metals, Pathogens, Phosphorus, oil and grease pollutants are removed from storm water runoff at a high level of efficiency. The public Agency has found that this system is an acceptable solution to biological treatment of first flush storm water during the project Entitlement Phase of the project when infiltration is not an option for a site due to Geotechnical issues with underlying soils. The 'BioClean' System treats runoff by first intercepting flow through a pre-treatment chamber and pipe inlet from the area drain storm drains and storage pipe where it's screened through a filter where trash, litter, gross solids and sediment are captured. The second stage of treatment provides treatment through biofiltration media. The perimeter filter utilizing bio-media provides physical treatment by physically and chemically capturing fine total suspended solids, metals, nutrients, and bacteria. The final stage of treatment provides treatment in the wetland chamber through sub-surface flow by biological remediation through a combination of physical, chemical, and biological processes.

The 'BioClean' System is a horizontal flow-based BMP for this project and is designed based on the Manufacturer's design calculations for the device at the Treatment Design Volume provided in Appendix 'A'. Since the site is not providing infiltration, the design volume is 1.5 times the LID volume. Storage chambers are provided upstream of the biofiltration system to ensure this volume is captured and fed to the biofiltration system. See Appendix 'A' for design treatment volume calculations.

The drawdown calculation on the project-specific detail within Appendix C verifies that the proposed WetlandMod Biofiltration System will treat the required volume within 96 hours. The calculation is copies below for reference:

Drawdown Duration: (8119.91 cf)/[(0.0291 cfs)(3600 sec/hr)] = 77.45 hr < 96 hr ✓

Drainage Management Area (DMA)	Size (ac)	SWQDV (cf)*	SWQDV x 1.5 (cf)	MWS Model	MWS HGL Height (ft)	Treatment Capacity (cf)
A-1	0.692	2,286.93	3,430.39	WM-8-8-V	3.4	3,874.91
A-2	0.946	3,126.35	4,689.52	WM-8-12-V	3.4	5,812.36
Total	1.638	5,413.28	8,119.91	-	-	9,687.27

*Los Angeles County Department of Public Works (LACDPW) HydroCalc Software was utilized to calculate stormwater quality design volume (SWQDV). The governing flowrate between the 0.75-inch storm event and the 85th Percentile storm event was utilized for design. Refer to Appendix A for HydroCalc outputs.

The proposed site will generate a total design volume of approximately 5,413.28 cf. After multiplying this value by a factor of 1.5, the required treatment volume equals 8,119.91 cf. The WetlandMOD Biofiltration Systems provide a total treatment capacity

of approximately 9,687.27 cf and therefore provide more than enough treatment for the proposed development. The WetlandMOD systems will address the pollutants of concern associated with the development type. Refer to Appendix C for more information on WetlandMOD Biofiltration System.

BioClean's UrbanPond Stormwater Storage System

The WetlandMOD Bio-filtration system requires the design volume to be stored upstream to ensure the entire treatment volume is captured and fed to the biofiltration system. BioClean's UrbanPond is modular precast concrete structure that can be assembled from one to several hundred modules in various shapes and configurations to meet site specific volume requirements. Each module is 8 feet wide by 8 feet long (outer dimension). A design depth of 6 feet is utilized for preliminary sizing of the required footprint for the storage capacity. Refer to Appendix C for more information on UrbanPond Storage System.

Drainage Management Area (DMA)	Size (ac)	SWQDV (cf)*	SWQDV x 1.5 (cf)	Module Storage Capacity per Module (cf)	# of Module	Storage Capacity (cf)
A-1	0.692	2,286.93	3,430.39	357	10	3,570
A-2	0.946	3,126.35	4,689.52	357	14	4,998
Total	1.638	5,413.28	8,119.91	-	-	8,568

Catch Basin Inspection

The HOA will maintain the drainage systems, including catch basins and culverts. The HOA is required to have catch basins inspected and, if necessary, cleaned prior to the storm season, no later than October 15th each year or prior to the first 24-hour storm event, whichever occurs first. These duties may be contracted out to the landscape maintenance firm hired by the HOA. Please see Appendix E for maintenance program. Refer to Appendix G for the Operation and Maintenance Plan.

Runoff-Minimizing Landscape Design

As part of the design of all common area landscape areas, similar planting material with similar water requirements will be used in order to reduce excess irrigation runoff and promote surface filtration. Such common areas will be maintained by the HOA.

Community Car Wash Racks

No community car wash rack or area will be provided, therefore, vehicle washing by residents on the property will not be allowed per the CC&Rs.

Self-Contained Washing

Self-contained washing of vehicles by residents or owners on the property will not be allowed per the CC&Rs.

Outdoor Material Storage Areas

Outdoor material storage areas refer to storage areas or storage facilities solely for the storage of materials. Improper storage of materials outdoors may provide an opportunity for toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and

other pollutants to enter the storm water conveyance system. Outdoor Storage by residents or owners on the property will not be allowed per the CC&Rs.

J. BMP Maintenance, Inspection, and Repair

Inspections will be conducted as follows:

- Annually and prior to the start of the rainy season
- Every (1) month during rainy season
- At any other time(s) or intervals of time specified in the contract documents

Repairs and/ or maintenance procedures shall be carried out at the soonest possible time.

K. Inspection, Maintenance, and Responsibility for BMPs

Table-4 and Table-5 show the lists of the post-construction BMPs (routine non-structural and structural), the required ongoing maintenance, the inspection and maintenance frequency, the inspection criteria, and the entity or party responsible for implementation, maintenance, and/or inspection.

Table-4: Non-Structural BMP Maintenance Responsibility/Frequency Matrix

BMP	RESPONSIBILITY	FREQUENCY
Homeowner/ Business owner Education, Activity Restrictions	HOA will provide educational materials. Those materials and responsibilities must be passed onto subsequent property owners.	Continuous. CC&Rs to be provided to homeowners at the time they purchase the property and updates provided by the HOA as they occur.
Common Area Landscape Management	HOA will appoint a landscape maintenance contractor	Monthly during regular maintenance and use with management guidelines for use of fertilizers and pesticides.
Parking Areas and Drive Aisle Management	HOA	The Drives Aisles are to be swept on a routine scheduled basis to facilitate the pickup of trash and debris (plant or otherwise) and to remove excessive oil, grease and build-up. During sweeping, debris is to be removed from the parking areas and drives and then scrubbed and rinsed. This sweeping schedule will be at a minimum occurrence of once a week and as necessary to rid / reduce active pollutants from the pavement areas. This maintenance requirement will be listed in the Convent, Conditions and Restrictions (CC&Rs) of this project. These CC&Rs will be recorded to the property at the County Recorder's Office and be included on the final Title report of these properties.
Litter Control by Sweeping	HOA	Weekly inspection and pick up any excess trash on the ground, noting trash disposal violations to the HOA for remediation.

BMP	RESPONSIBILITY	FREQUENCY
Employee Training	HOA	Monthly for maintenance personnel and employees to include the educational materials contained in the approved LID.
Common Area Catch Basin Inspection & Cleaning	HOA will appoint a landscape maintenance contractor for common areas and storm drain facilities.	Inspect basins once a month. Clean debris and silt in bottom of catch basins as needed. Intensified on or about October 15th each year or prior to the first 24-hour storm event, whichever occurs first. Refer to Appendix E.

Table-5: Structural BMP Maintenance Responsibility/ Frequency Matrix

BMP	RESPONSIBILITY	FREQUENCY
Common Area Efficient Irrigation	HOA will appoint a landscape contractor after construction	Once a week, in conjunction with maintenance activities. Verify that runoff minimizing landscape design continues to function by checking that water sensors are functioning properly, that irrigation heads are adjusted properly to eliminate overspray to hardscape areas, and to verify that irrigation timing and cycle lengths are adjusted in accordance with water demands, given time of year, weather and day or night time temperatures.
Common Area Runoff Efficient Landscape Design	HOA will appoint a landscaping contractor	Once a week in conjunction with maintenance activities and prior to finalizing any replanting schemes. Verify that plants continue to be grouped according to similar water requirements in order to reduce excess irrigation runoff.
WetlandMOD biofiltration system	HOA	WetlandMOD biofiltration system maintenance will conform to manufacturer's specifications. Please see additional information in Appendix C
Bioclean's UrbanPond Stormwater Storage System	HOA	UrbanPond Storage System maintenance will conform to manufacturer's specifications. Please see additional information in Appendix C

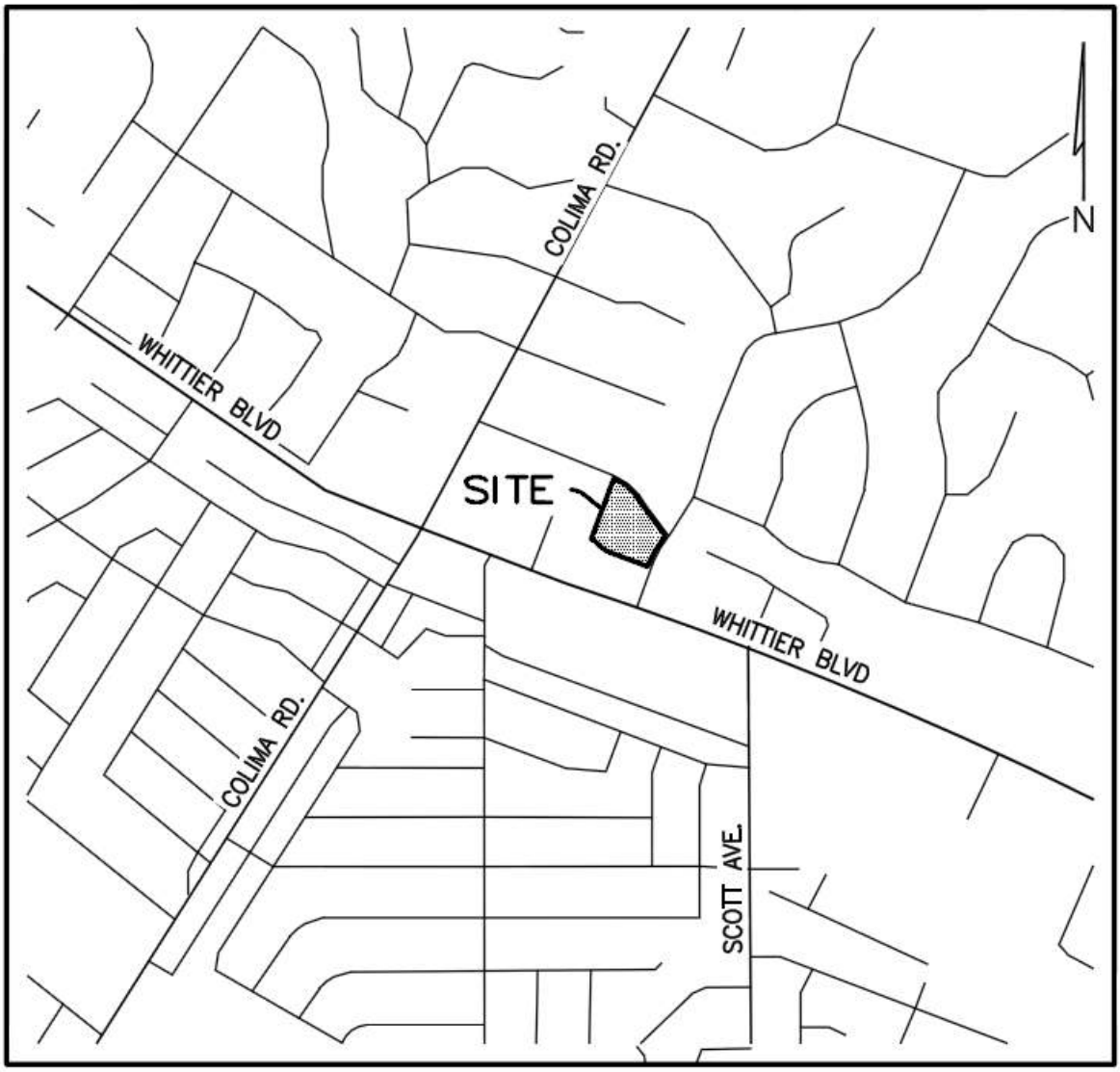
L. Operation/Maintenance Funding after Project Completion

The post-construction BMPs as described above will be funded and maintained by:

Jason Keller
Director of Forward Panning
Mission Pacific Land Company
4100 Newport Place, Suite 480
Newport Beach, CA 92660
(949) 333-6752

Maintenance and requirements of the maintenance for the properties will be listed in the Convent, Conditions and Restrictions (CC&Rs) of this project and will be the responsibility of the property owner at all times. These CC&Rs will be recorded to the property at the County Recorder's Office and be included on the Title report of these properties.

Figure 1:
Project Vicinity Map



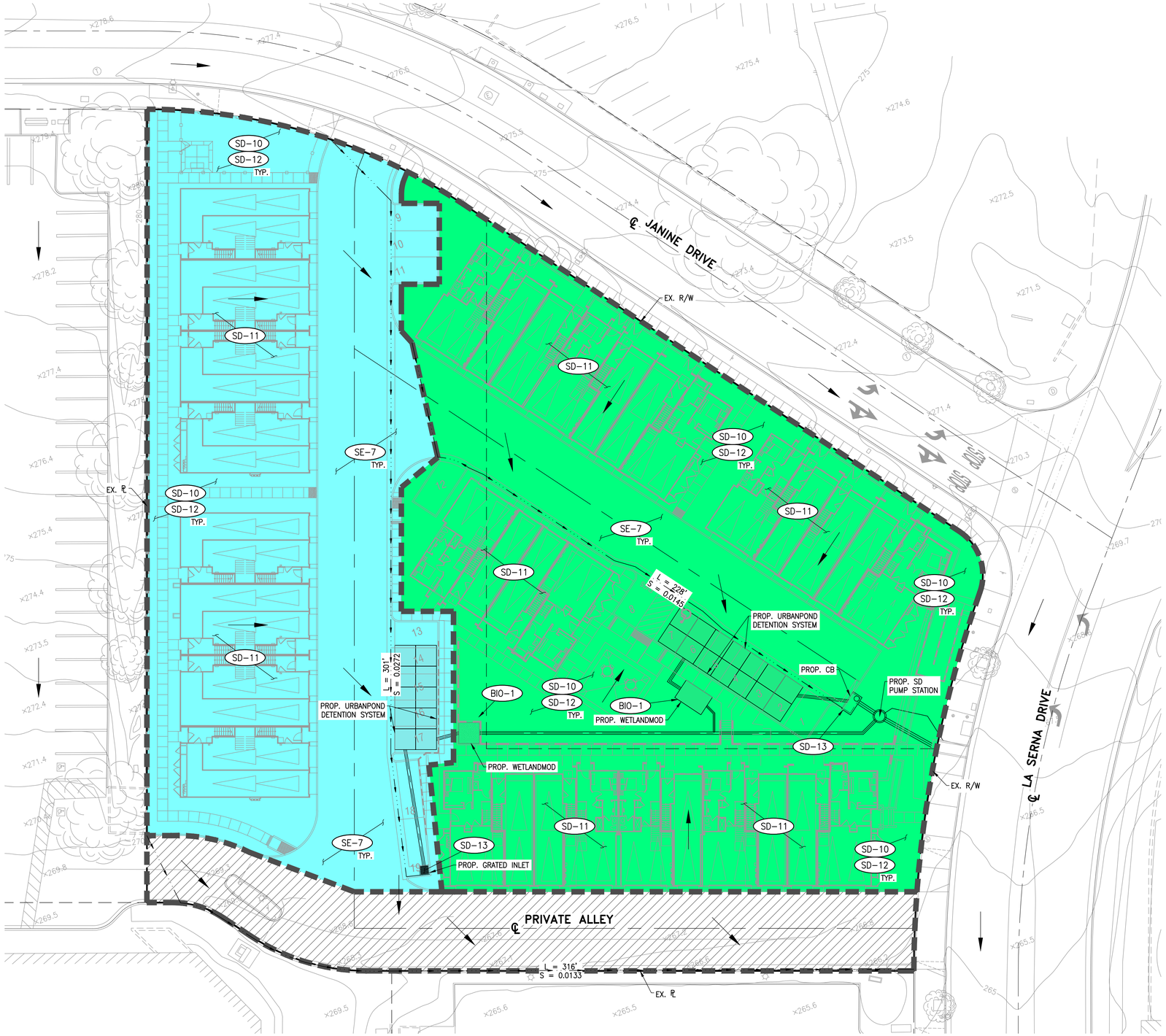
VICINITY MAP

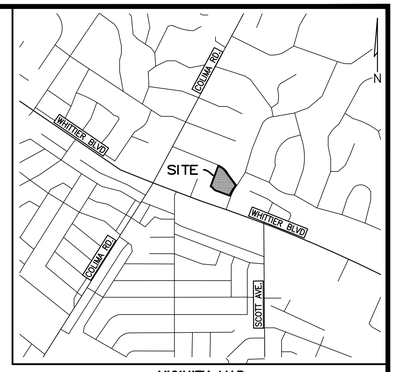
N.T.S.

9829 LA SERNA DRIVE

CITY OF WHITTIER, CALIFORNIA

Figure 2:
BMP Exhibit





VICINITY MAP
N.T.S.

LEGEND:

- DRAINAGE MANAGEMENT AREA (DMA) BOUNDARY
- SITE BOUNDARY
- EXISTING LOT LINE
- FLOW DIRECTION
- FLOW LINE

BEST MANAGEMENT PRACTICES:

- SE-7 — PRIVATE STREET SWEEPING
- SD-10 — SITE DESIGN & LANDSCAPE PLANNING
- SD-11 — ROOF RUNOFF CONTROLS
- SD-12 — EFFICIENT IRRIGATION
- SD-13 — STORM DRAIN SIGNAGE
- BIO-1 — WETLANDMOD SYSTEM

DMA	COLOR	AREA (SF)	AREA (AC)	IMPERVIOUS %
A-1		30,146.51	0.692	100%
A-2		41,194.26	0.960	100%
OFFSITE		8,914.22	0.205	100%

NOTE: PROPOSED DEVELOPMENT IMPERVIOUS COVERS ARE ASSUMED TO BE 100% FOR CONSERVATIVE MEASURES.

WATER QUALITY TREATMENT SUMMARY					
DMA	AREA (AC)	SWQDV (CF)	1.5xSWQDV	TREATMENT CAPACITY	STORAGE CAPACITY
A-1	0.692	2,286.93	3,430.39	3,874.91	3,570.0
A-2	0.946	3,126.35	4,689.52	5,812.36	4,998.0

NOTE: POST-DEVELOPED WATER QUALITY DESIGN VOLUME WILL BE BASED ON GONVERNING 85TH PERCENTILE FLOW RATE CALCULATIONS. REFER TO THE PRELIMINARY LID REPORT FOR CALCULATION DETAILS.

SCALE: 1" = 20'

0 10 20 40

OWNER/DEVELOPER

MISSION PACIFIC LAND COMPANY
4100 NEWPORT PLACE, SUITE 480
NEWPORT BEACH, CALIFORNIA 92660

PREPARED BY :

C&V CONSULTING, INC
CIVIL ENGINEERING
LAND PLANNING & SURVEYING
900 IRVINE CENTER DR
IRVINE, CALIFORNIA 92618
T. 949.916.3800
F. 949.916.3805
CVC-INC.NET

REGISTERED PROFESSIONAL ENGINEER
RYAN J. BITTNER
No. 68167
CIVIL
STATE OF CALIFORNIA

LOW IMPACT DEVELOPMENT BMP EXHIBIT
TENTATIVE TRACT NO. 83435

9829 LA SERNA DRIVE
WHITTIER, CALIFORNIA

SHEET 1 OF 1

SCALE: AS SHOWN | DRAWN BY: KL | CHECKED BY: MM

CITY OF WHITTIER

PLAN SET: PSD1
DATE: 4/22/21

P:\PJ\MISS-001\PSD\SHEETS\PJ\LID\LID-PLAN.DWG
BY: KA MD LOAD 4/22/21 4:34 PM

Figure 3:
Impaired Waters

COUNTY OF LOS ANGELES

LOS ANGELES RIVER WATERSHED

Los Angeles River Watershed

PACIFIC OCEAN

PROPOSED PROJECT SITE

MILES
0 1 2 4

LEGEND

- LOS ANGELES RIVER WATERSHED
- UNINCORPORATED AREA
- DAM / LAKE / RESERVOIR
- MAJOR RIVER
- MAJOR CHANNEL

Data contained in this map is produced in whole or part from the Los Angeles County Department of Public Works' digital database.

Appendix A:
Volume and Flowrate Calculations & Hydrologic Report

The proposed development was analyzed for the 0.75-in storm event and the 85th Percentile storm event using the LACDPW HydroCalc software. The governing stormwater runoff volume between the two storm events was utilized for design. In accordance with the LA County BMP Design Manual, a factor of 1.5 was applied to obtain the design volume. Below is a summary of the HydroCalc outputs:

DMA	85th Percentile Storm ✓		0.75-in Storm		Governing Volume (cfs)	SWQDV x 1.5 (cfs)
	Volume (cf)	Flowrate (cfs)	Volume (cf)	Flowrate (cfs)		
A-1	2,286.93	0.2336	1,681.57	0.1568	2,286.93	3,430.39
A-2	3,126.35	0.3307	2,298.79	0.2205	3,126.35	4,689.52
Total	5,413.28		3,980.36		5,413.28	8,119.91

Refer to LACDPW HydroCalc Output Data within this Appendix for Volume and Flowrate Calculations.

Peak Flow Hydrologic Analysis

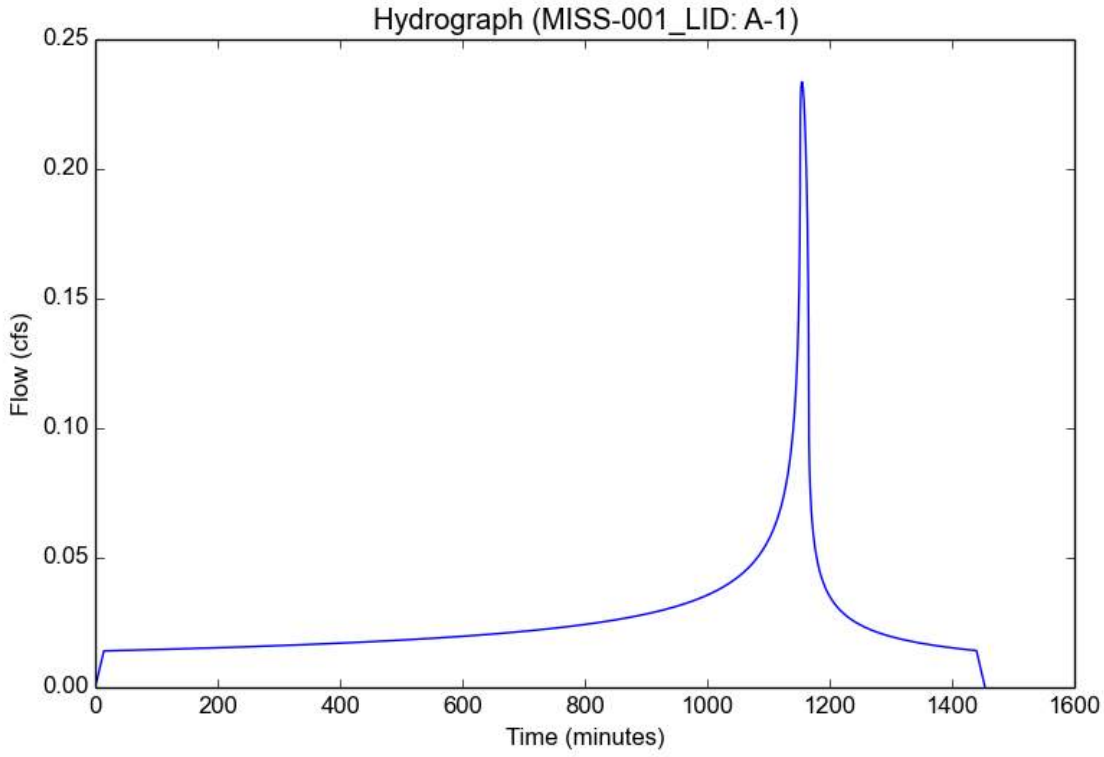
File location: P:/M/MISS-001/Admin/Reports/LID/Appendix A - HydroCalc/MISS-001_LID - A-1, 85th.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001_LID
Subarea ID	A-1
Area (ac)	0.692
Flow Path Length (ft)	301.0
Flow Path Slope (vft/hft)	0.0272
85th Percentile Rainfall Depth (in)	1.02
Percent Impervious	1.0
Soil Type	12
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.02
Peak Intensity (in/hr)	0.3751
Undeveloped Runoff Coefficient (Cu)	0.6561
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	0.2336
Burned Peak Flow Rate (cfs)	0.2336
24-Hr Clear Runoff Volume (ac-ft)	0.0525
24-Hr Clear Runoff Volume (cu-ft)	2286.9273



Peak Flow Hydrologic Analysis

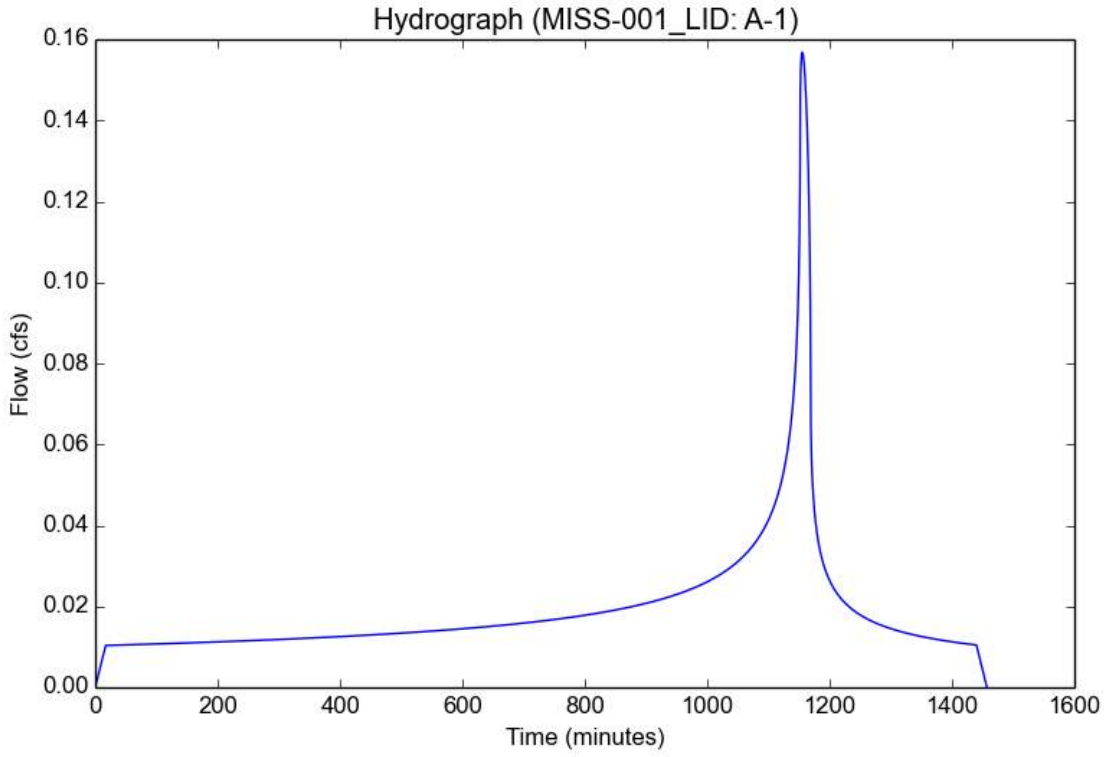
File location: P:/M/MISS-001/Admin/Reports/LID/Appendix A - HydroCalc/MISS-001_LID - A-1, 0.75in.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001_LID
Subarea ID	A-1
Area (ac)	0.692
Flow Path Length (ft)	301.0
Flow Path Slope (vft/hft)	0.0272
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	1.0
Soil Type	12
Design Storm Frequency	0.75 inch storm
Fire Factor	0
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2517
Undeveloped Runoff Coefficient (Cu)	0.5753
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	0.1568
Burned Peak Flow Rate (cfs)	0.1568
24-Hr Clear Runoff Volume (ac-ft)	0.0386
24-Hr Clear Runoff Volume (cu-ft)	1681.5661



Peak Flow Hydrologic Analysis

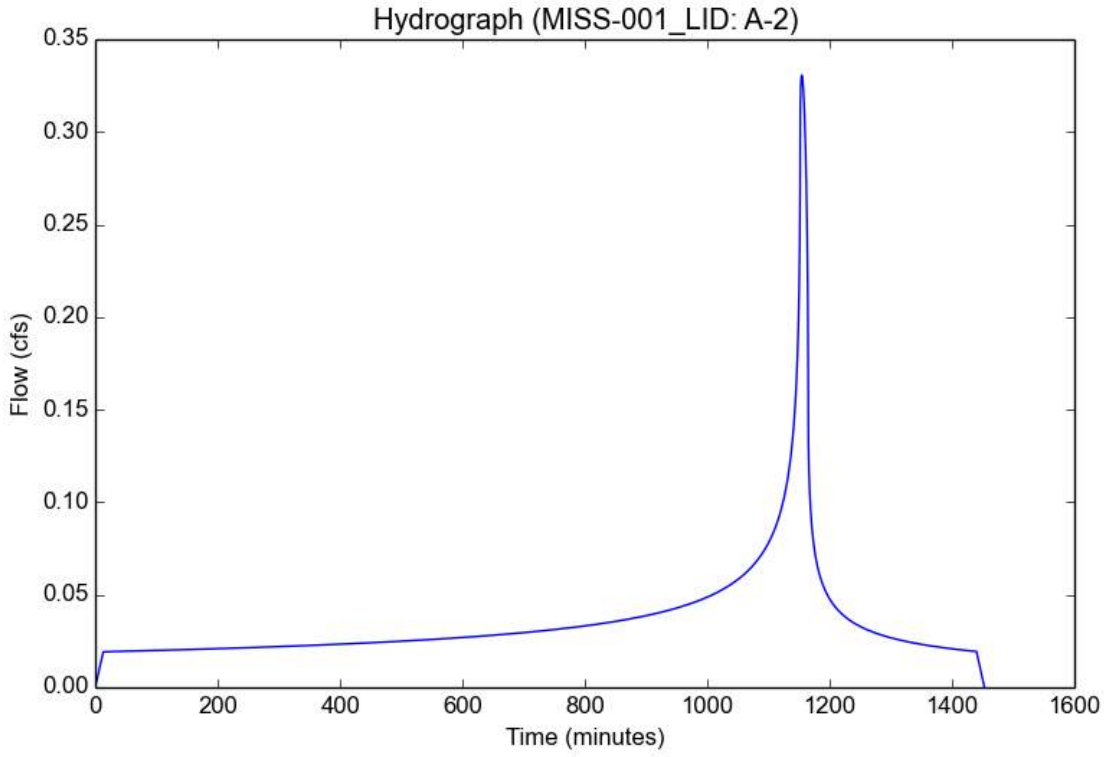
File location: P:/M/MISS-001/Admin/Reports/LID/Appendix A - HydroCalc/MISS-001_LID - A-2, 85th.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001_LID
Subarea ID	A-2
Area (ac)	0.946
Flow Path Length (ft)	228.0
Flow Path Slope (vft/hft)	0.0145
85th Percentile Rainfall Depth (in)	1.02
Percent Impervious	1.0
Soil Type	12
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.02
Peak Intensity (in/hr)	0.3884
Undeveloped Runoff Coefficient (Cu)	0.6648
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	0.3307
Burned Peak Flow Rate (cfs)	0.3307
24-Hr Clear Runoff Volume (ac-ft)	0.0718
24-Hr Clear Runoff Volume (cu-ft)	3126.3475



Peak Flow Hydrologic Analysis

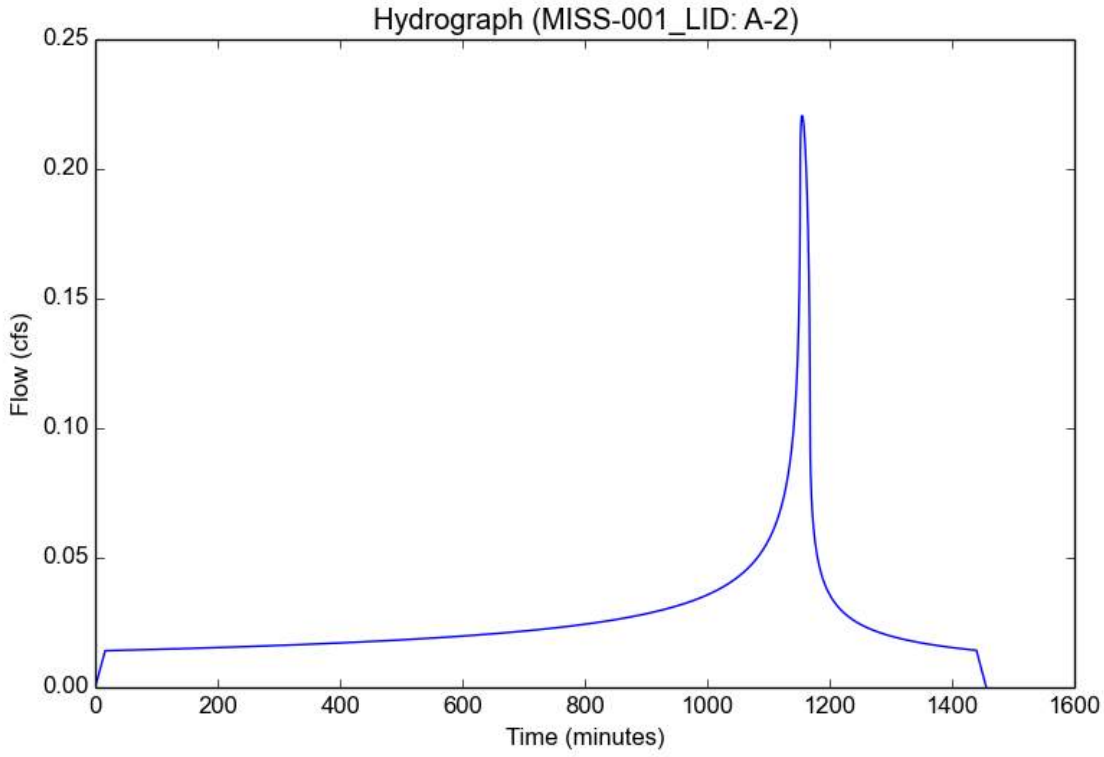
File location: P:/M/MISS-001/Admin/Reports/LID/Appendix A - HydroCalc/MISS-001_LID - A-2, 0.75in.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MISS-001_LID
Subarea ID	A-2
Area (ac)	0.946
Flow Path Length (ft)	228.0
Flow Path Slope (vft/hft)	0.0145
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	1.0
Soil Type	12
Design Storm Frequency	0.75 inch storm
Fire Factor	0
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.259
Undeveloped Runoff Coefficient (Cu)	0.5801
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	0.2205
Burned Peak Flow Rate (cfs)	0.2205
24-Hr Clear Runoff Volume (ac-ft)	0.0528
24-Hr Clear Runoff Volume (cu-ft)	2298.7874



Appendix B:
Site BMPs

BIO-1: Biofiltration

Definition

A biofiltration area is a vegetated shallow depression that is designed to receive and treat stormwater runoff from downspouts, piped inlets, or sheet flow from adjoining paved areas. A shallow ponding zone is provided above the vegetated surface for temporary storage of stormwater runoff. During storm events, stormwater runoff accumulates in the ponding zone and gradually infiltrates the surface and filters through the biofiltration soil media before being collected by an underdrain system.

Stormwater runoff treatment occurs through a variety of natural mechanisms as stormwater runoff filters through the vegetation root zone. In biofiltration areas, microbes and organic material in the biofiltration soil media help promote the adsorption of pollutants (e.g., dissolved metals and petroleum hydrocarbons) into the soil matrix. Plants utilize soil moisture and promote the drying of the soil through transpiration. Biofiltration areas are typically planted with native, drought-tolerant plant species that do not require fertilization and can withstand wet soils for at least 96 hours.

A schematic of a typical biofiltration area is presented in Figure E-7.

LID Ordinance Requirements

Biofiltration can be used as an alternative compliance measure.

Pollutant of Concern	Treated by Biofiltration?
Suspended solids	No
Total phosphorus	No
Total nitrogen	Yes
Total Kjeldahl nitrogen	Yes
Cadmium, total	No
Chromium, total	Yes
Copper, total	No
Lead, total	Yes
Zinc, total	No

Source: Treatment Best Management Practices Performance, Los Angeles Regional Water Quality Control Board, December 9, 2013.

Advantages

- Has a low cost for installation
- Enhances site aesthetics
- Requires little maintenance

Disadvantages

- May require individual owner/tenants to perform maintenance

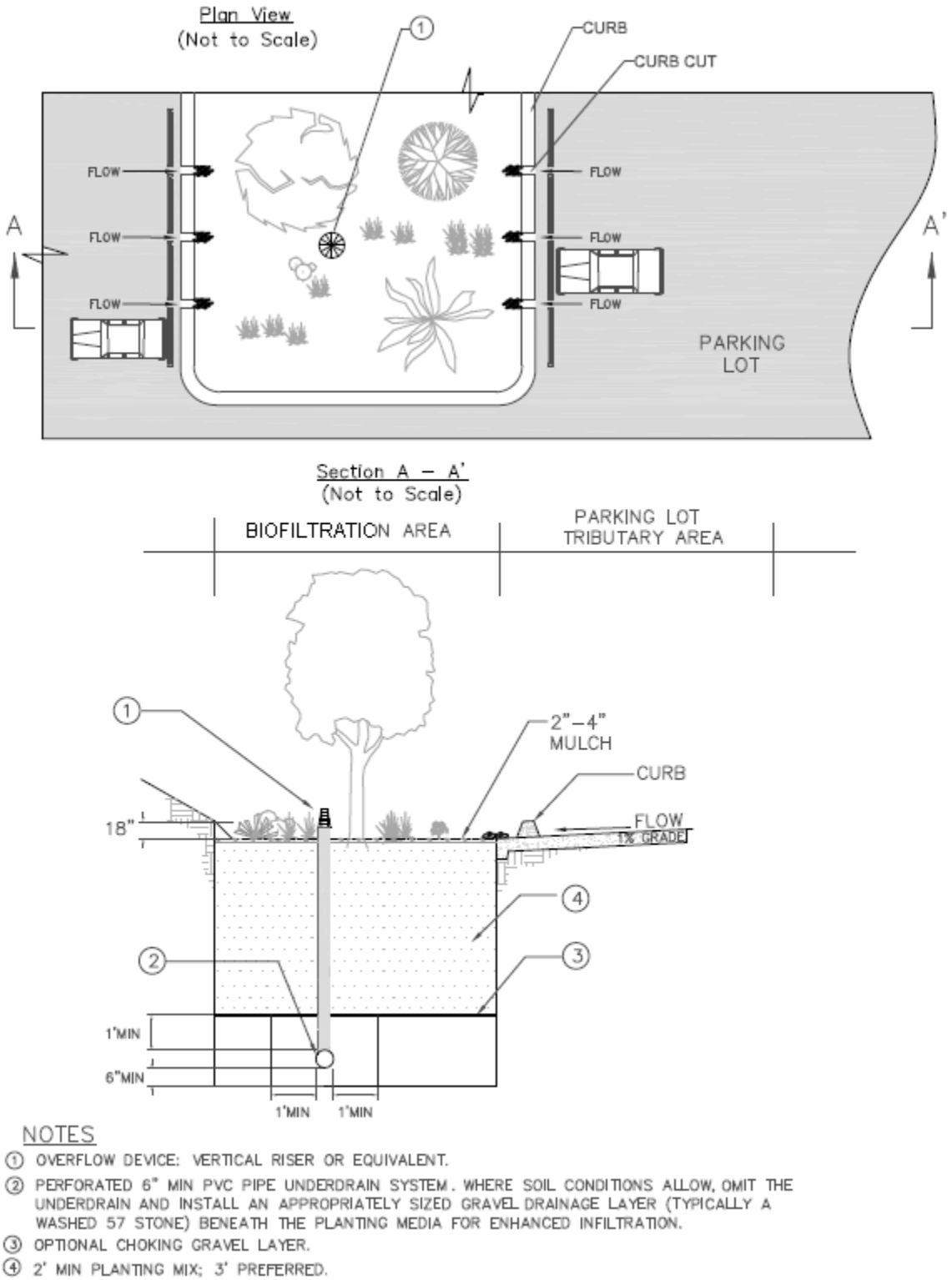


Figure E-7. Biofiltration Area Schematic

General Constraints and Implementation Considerations

- Biofiltration areas can be applied in various settings including, but not limited to:
  - Individual lots for rooftop, driveway, and other on-site impervious surface
  - Shared facilities located in common areas for individual lots
  - Areas within loop roads or cul-de-sacs
  - Landscaped parking lot islands
  - Within right-of-ways along roads
  - Common landscaped areas in apartment complexes or other multi-family housing designs
  - Parks and along open space perimeter
- If tire curbs are provided and parking stalls are shortened, cars are allowed to overhang the biofiltration area.
- Biofiltration areas must be located sufficiently far from structure foundations to avoid damage to structures (as determined by a certified structural or geotechnical engineer).
- Any parking areas bordering the biofiltration area must be monolithically poured concrete or deepended curb concrete to provide structural stability to the adjacent parking section.
- Geomembrane liners must be used in areas subject to spills or pollutant hot spots.
- During construction activities should avoid compaction of native soils below planting media layer or gravel zone.
- Stormwater runoff must be diverted around the biofiltration area during the period of vegetation establishment. If diversion is not feasible, the graded and seeded areas must be protected with suitable sediment controls (i.e., silt fences).All damaged areas should be repaired, seeded, or re-planted immediately.
- The general landscape irrigation system should incorporate the biofiltration area, as applicable.

Design Specifications

The following sections describe the design specifications for biofiltration areas.

Geotechnical

Due to the potential to contaminate groundwater, cause slope instability, impact surrounding structures, and potential for insufficient infiltration capacity, an extensive geotechnical site investigation must be conducted during the site planning process to verify site suitability for biofiltration. All geotechnical investigations must be performed according to the most recent GMED Policy GS 200.1. Soil infiltration rates and the

groundwater table depth must be evaluated to ensure that conditions are satisfactory for proper operation of a biofiltration area. The project applicant must demonstrate through infiltration testing, soil logs, and the written opinion of a licensed civil engineer that sufficiently permeable soils exist on-site to allow the construction of a properly functioning biofiltration system.

Biofiltration areas are appropriate for soils with a minimum corrected in-situ infiltration rate of 0.3 in/hr. The geotechnical report must determine if the proposed project site is suitable for a biofiltration area and must recommend a design infiltration rate (see "Design Infiltration Rate" under the "Sizing" section). The geotechnical investigation should be such that a good understanding is gained as to how the stormwater runoff will move through the soil (horizontally or vertically) and if there are any geological conditions that could inhibit the movement of water.

Pretreatment

Pretreatment refers to design features that provide settling of large particles before stormwater runoff enters a stormwater quality control measure in order to reduce the long-term maintenance burden. Pretreatment should be provided to reduce the sediment load entering a biofiltration area in order to maintain the infiltration rate of the biofiltration area. To ensure that biofiltration areas are effective, the project applicant must incorporate pretreatment devices that provide sediment removal (e.g., vegetated swales, vegetated filter strips, sedimentation manholes, and proprietary devices). The use of at least two pretreatment devices is highly recommended for biofiltration areas.

Geometry

- Biofiltration areas must be sized to capture and treat 1.5 times the SWQDv that is not reliably retained on the project site with an 18-inch maximum ponding depth.
- The planting soil depth must be a minimum of two feet, although three feet is preferred. The planting soil depth should provide a beneficial root zone for the chosen vegetation and adequate water storage for the stormwater runoff. A deeper planting soil depth will also provide a smaller surface area footprint.
- A gravel storage layer below the biofiltration area soil media is required to provide adequate temporary storage to retain 1.5 times the SWQDv that is not reliably retained on the project site and to promote infiltration.

Sizing

Biofiltration areas are sized using a simple sizing method where 1.5 times the SWQDv that is not reliably retained on the project site must be completely filtered within 96 hours. If the incoming stormwater runoff flow rate is lower than the long term filtration rate, above ground storage does not need to be provided. If the incoming stormwater runoff flow rate is higher than the long term filtration rate, above ground storage shall be provided (see steps below).

Step 1: Calculate the design volume

Biofiltration areas should be sized to capture and treat 1.5 times the portion of the SWQDv (see Section 6 for SWQDv calculation procedures) that is not reliability retained on the project site, as calculated by the equation below:

$$V_B = 1.5 \times (SWQDv - V_R)$$

Where:

V_B = Biofiltration volume [ft^3];
SWQDv = Stormwater quality design volume [ft^3]; and
V_R = Volume of stormwater runoff reliably retained on-site [ft^3].

Step 2: Calculate the design infiltration rate

Determine the corrected in-situ infiltration rate (f_{design}) of the native soil using the procedures described in the most recent GMED Policy GS 200.1.

Step 3: Calculate the surface area

Select a surface ponding depth (d) that satisfies the geometric criteria and meets the site constraints. Selecting a deeper ponding depth (up to 1.5 ft) generally yields a smaller footprint, however, it will require greater consideration for public safety, energy dissipation, and plant selection.

Calculate the time for the selected ponding depth to filter through the planting media using the following equation:

$$\mathrm{d} = t_p \times \frac{\mathrm{f_{design}}}{12}$$

Where:

d = Ponding depth (max 1.5 ft) [ft];
t_p = Required detention time for surface ponding (max 96 hr) [hr]; and
f_{design} = Design infiltration rate [in/hr].

If t_p exceeds 96 hours, reduce surface ponding depth (d). In nearly all cases, t_p should not approach 96 hours unless f_{design} is low.

Calculate the required infiltrating surface (filter bottom area) using the following equation:

$$A = \frac{V_B}{d}$$

Where:

A = Bottom surface area of biofiltration area [ft^2];
V_B = Biofiltration design volume [ft^3]; and
d = Ponding depth (max 1.5 ft) [ft].

Flow Entrance and Energy Dissipation

Maintain a minimum slope of 1 percent for pervious surfaces and 0.5 percent for impervious surfaces to the biofiltration area inlet. The following types of flow entrance can be used for biofiltration cells:

- Level spreaders (i.e., slotted curbs) can be used to facilitate sheet flow.
- Dispersed, low velocity flow across a landscape area. Dispersed flow may not be possible given space limitations or if the biofiltration area is controlling roadway or parking lot flows where curbs are mandatory.
- Dispersed flow across pavement or gravel and past wheel stops for parking areas.
- Flow spreading trench around perimeter of biofiltration area. May be filled with pea gravel or vegetated with 3:1 side slopes similar to a swale. A vertical-walled open trench may also be used at the discretion of LACDPW.
- Curb cuts for roadside or parking lot areas, if approved by LACDPW: curb cuts should include rock or other erosion controls in the channel entrance to dissipate energy. Flow entrance should drop two to three inches from curb line and provide an area for settling and periodic removal of sediment and coarse material before flow dissipates to the remainder of the biofiltration area.
- Piped entrances, such as roof downspouts, should include rock, splash blocks, or other erosion controls at the entrance to dissipate energy and disperse flows.
- Woody plants (trees, shrubs, etc.) can restrict or concentrate flows and can be damaged by erosion around the root ball and must not be placed directly in the entrance flow path.

Drainage

Biofiltration areas must be designed to drain below the planting soil in less than 96 hours. Soils must be allowed to dry out periodically in order to restore hydraulic capacity to receive stormwater runoff from subsequent storm events, maintain infiltration rates, maintain adequate soil oxygen levels for healthy soil biota and vegetation, and provide proper soil conditions for biodegradation and retention of pollutants.

Underdrain

Biofiltration areas require an underdrain to collect and discharge stormwater runoff that has been filtered through the soil media, but not infiltrated, to another stormwater quality control measure, storm drain system, or receiving water. The underdrain must have a mainline diameter of eight inches using slotted PVC SDR 26 or PVC C9000. Slotted PVC allows for pressure water cleaning and root cutting, if necessary. The slotted pipe

should have two to four rows of slots cut perpendicular to the axis of the pipe or at right angles to the pitch of corrugations. Slots should be 0.04 to 0.1 inches wide with a length of 1 to 1.25 inches. Slots should be longitudinally-spaced such that the pipe has a minimum of one square inch opening per lineal foot and should face down.

The underdrain should be placed in a gravel envelope (Class 2 Permeable Material per Caltrans Spec. 68-1.025) that measures three feet wide and six inches deep. The underdrain is elevated from the bottom of the biofiltration area by six inches within the gravel envelope to create a fluctuating anaerobic/aerobic zone below the underdrain to facilitate denitrification within the anaerobic/anoxic zone and reduce nutrient concentrations. The top and sides of the underdrain pipe should be covered with gravel to a minimum depth of 12 inches. The underdrain and gravel envelope should be covered with a geomembrane liner to prevent clogging. The following aggregate should be used for the gravel envelope:

Particle Size (ASTM D422)	% Passing by Weight
¾ inch	100%
¼ inch	30-60%
#8	20-50%
#50	3-12%
#200	0-1%

Underdrains should be sloped at a minimum of 0.5 percent and must drain freely to an approved discharge point.

Rigid non-perforated observation pipes with a diameter equal to the underdrain diameter should be connected to the underdrain to provide a clean-out port as well as an observation well to monitor drainage rates. The wells/clean-outs should be connected to the perforated underdrain with the appropriate manufactured connections. The wells/clean-outs should extend six inches above the top elevation of the biofiltration area mulch, and should be capped with a lockable screw cap. The ends of underdrain pipes not terminating in an observation well/clean-out should also be capped.

Hydraulic Restriction Layer

Lateral infiltration pathways may need to be restricted due to the close proximity of roads, foundations, or other infrastructure. A geomembrane liner, or other equivalent waterproofing, may be placed along the vertical walls to reduce lateral flows. This geomembrane liner must have a minimum thickness of 30 mils and meet the requirements of Table E-12. Generally, waterproof barriers should not be placed on the bottom of the biofiltration unit, as this would prevent incidental infiltration which is important to meeting the required pollutant load reduction.

Table E-12. Geomembrane Liner Specifications for Biofiltration Areas

Parameter	Test Method	Specifications
Material		Nonwoven geomembrane liner
Unit weight		8 oz/yd^3 (minimum)
Filtration rate		0.08 in/sec (minimum)
Puncture strength	ASTM D-751 (Modified)	125 lbs (minimum)
Mullen burst strength	ASTM D-751	400 lb/in^2 (minimum)
Tensile strength	AST D-1682	300 lbs (minimum)
Equiv. opening size	US Standard Sieve	No. 80 (minimum)

Planting/Storage Media

- The planting media placed in the biofiltration area should achieve a long-term, in-place infiltration rate of at least 5 in/hr. Higher infiltration rates of up to 12 in/hr are permissible. The biofiltration soil media must retain sufficient moisture to support vigorous plant growth.
- The planting media mix must consist of 60 to 80 percent sand and 20 to 40 percent compost.
- Sand should be free of wood, waste, coatings such as clay, stone dust, carbonate, or any other deleterious material. All aggregate passing the No. 200 sieve size should be non-plastic. Sand for biofiltration should be analyzed by an accredited laboratory using #200, #100, #40, #30, #16, #8, #4, and 3/8 sieves (ASTM D422 or as approved by the local permitting authority) and meet the following gradations (Note: all sand complying with ASTM C33 for fine aggregate comply with the gradation requirements listed below):

Particle Size (ASTM D422)	% Passing by Weight
3/8 inch	100%
#4	90-100%
#8	70-100%
#16	40-95%
#30	15-70%
#40	5-55%
#110	0-15%
#200	0-5%

Note: The gradation of the sand component of the biofiltration soil media is believed to be a major factor in the infiltration rate of the media mix. If the desired hydraulic conductivity of the biofiltration soil media cannot be achieved within the specified proportions of sand and compost (#2), then it may be necessary to utilize sand at the coarser end of the range specified minimum percent passing.

- Compost should be a well-decomposed, stable, weed-free organic matter source derived from waste materials including yard debris, wood wastes, or other organic material not including manure or biosolids meeting standards developed by the USCC. The product shall be certified through the USCC STA Program (a compost testing and information disclosure program). Compost quality shall be verified via a laboratory analysis to be:
    - Feedstock materials must be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
    - pH between 6.5 and 8.0 (may vary with plant palette)
    - Organic Matter: 35 to 75 percent dry weight basis
    - Carbon and Nitrogen Ratio: 15:1 < C:N < 25:1
    - Maturity/Stability: Compost must have a dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120°F) upon delivery or rewetting is not acceptable.
    - Toxicity: any one of the following measures is sufficient to indicate non-toxicity:
        - NH_4:NH_3 < 3
        - Ammonium < 500 ppm, dry weight basis
        - Seed germination > 80 percent of control
        - Plant trials > 80 percent of control
        - Solvita® > 5 index value
    - Nutrient content:
        - Total Nitrogen content ≥ 0.9 percent preferred
        - Total Boron should be < 80 ppm; soluble boron < 2.5 ppm
    - Salinity: < 6.0 mmhos/cm
    - Compost for biofiltration area should be analyzed by an accredited laboratory using #200, ¼-inch, ½-inch, and 1-inch sieves (ASTM D422) and meet the gradation requirements in the table below:

Particle Size (ASTM D422)	% Passing by Weight
1 inch	99-100
½ inch	90-100
¼ inch	40-90
#200	2-10

Tests should be sufficiently recent to represent the actual material that is anticipated to be delivered to the site. If processes or sources used by the supplier have changed significantly since the most recent testing, new tests should be requested.

The gradation of compost used in biofiltration soil media is believed to play an important role in the saturated infiltration rate of the media. To achieve a higher saturated infiltration rate, it may be necessary to utilize compost at the coarser end of the range (minimum percent passing). The percent passing the #200 sieve (fines) is believed to be the most important factor in hydraulic conductivity.

In addition, coarser compost mix provides more heterogeneity of the biofiltration soil media, which is believed to be advantageous for more rapid development of soil structure needed to support healthy biological processes. This may be an advantage for plant establishment with lower nutrient and water input.

- Biofiltration soil media not meeting the above criteria should be evaluated on a case-by-case basis. Alternative biofiltration soil media must meet the following specifications:

  "Soils for biofiltration facilities must be sufficiently permeable to infiltrate stormwater runoff at a minimum of rate of 5 in/hr during the life of the facility, and provide sufficient retention of moisture and nutrients to support healthy vegetation." The following steps shall be followed by LACDPW to verify that alternative biofiltration soil media mixes meet the specification:

  - Submittals – The applicant must submit to LACDPW for approval:
    - A sample of mixed biofiltration soil media.
    - Certification from the soil supplier or an accredited laboratory that the biofiltration soil media meets the requirements of this specification.
    - Certification from an accredited geotechnical testing laboratory that the biofiltration soil media has an infiltration rate between 5 and 12 in/hr.
    - Organic content test results of the biofiltration soil media. Organic content test shall be performed in accordance with the Testing Methods for the Examination of Compost and Composting (TMECC) 05.07A, "Loss-On-Ignition Organic Matter Method".
    - Organic grain size analysis results of mixed biofiltration soil media performed in accordance with ASTM D422, Standard Test Method for Particle Size Analysis of Soils.
    - A description of the equipment and methods used to mix the sand and compost to produce the biofiltration soil media.
  - The name of the testing laboratory(ies) and the following information:

- Contact person(s)
- Address(es)
- Phone contact(s)
- E-mail address(es)
- Qualifications of laboratory(ies) and personnel including date of current certification by STA, ASTM, or approved equal.

o Biofiltration soils shall be analyzed by an accredited laboratory using #200 and ½-inch sieves (ASTM D422 or as approved by LACDPW), and meet the gradation described in the table below:

Particle Size (ASTM D422)	% Passing by Weight
½ inch	97-100
#200	2-5

- Biofiltration soil media shall be analyzed by an accredited geotechnical laboratory for the following tests:
  - o Moisture – density relationships (compaction tests) must be conducted on biofiltration soil media. Biofiltration soil media for the permeability test shall be compacted to 85 to 90 percent of the maximum dry density (ASTM D1557).
  - o Constant head permeability testing in accordance with ASTM D2434 shall be conducted on a minimum of two samples with a 6-inch mold and vacuum saturation.
- Mulch is recommended for the purpose of retaining moisture, preventing erosion, and minimizing weed growth. Projects subject to the California Model Water Efficiency Landscaping Ordinance (or comparable local ordinance) will be required to provide at least 2 inches of mulch. Aged mulch, also called compost mulch, reduces the ability of weeds to establish, keeps soil moist, and replenishes soil nutrients. Biofiltration areas must be covered with two to four inches (average three inches) of mulch at the start and an annual placement (preferably in June after weeding) of one to two inches of mulch beneath plants.
- The planting media design height must be marked appropriately, such as a collar on the overflow device or with a stake inserted two feet into the planting media and notched, to show biofiltration surface level and ponding level.

Vegetation

Prior to installation, a licensed landscape architect must certify that all plants, unless otherwise specifically permitted, conform to the standards of the current edition of American Standard for Nursery Stock as approved by the American Standards Institute, Inc. All plant grades shall be those established in the current edition of American Standards for Nursery Stock.

- Shade trees must have a single main trunk. Trunks must be free of branches below the following heights:

CALIPER (in)	Height (ft)
1½-2½	5
3	6

- Plants must be tolerant of summer drought, ponding fluctuations, and saturated soil conditions for 96 hours.
- It is recommended that a minimum of three types of tree, shrubs, and/or herbaceous groundcover species be incorporated to protect against facility failure due to disease and insect infestations of a single species.
- Native plant species and/or hardy cultivars that are not invasive and do not require chemical inputs must be used to the maximum extent practicable.

The biofiltration area should be vegetated to resemble a terrestrial forest community ecosystem, which is dominated by understory trees, a shrub layer, and herbaceous ground cover. Select vegetation that:

- Is suited to well-drained soil;
- Will be dense and strong enough to stay upright, even in flowing water;
- Has minimum need for fertilizers;
- Is not prone to pests and is consistent with Integrated Pest Management practices; and
- Is consistent with local water conservation ordinance requirements.

Irrigation System

Provide an irrigation system to maintain viability of vegetation, if applicable. The irrigation system must be designed to local code or ordinance specifications.

Restricted Construction Materials

The use of pressure-treated wood or galvanized metal at or around a biofiltration area is prohibited.

Overflow Device

An overflow device is required at the 18-inch ponding depth. The following, or equivalent, should be provided:

- A vertical PVC pipe (SDR 26) to act as an overflow riser.
- The overflow riser(s) should be eight inches or greater in diameter, so it can be cleaned without damage to the pipe.

- The inlet to the riser should be at the ponding depth (18 inches for fenced biofiltration areas and 6 inches for areas that are not fenced), and be capped with a spider cap to exclude floating mulch and debris. Spider caps should be screwed in or glued (e.g., not removable). The overflow device should convey stormwater runoff in excess of 1.5 times the SWQDv that is not reliably retained on the project site to an approved discharge location (another stormwater quality control measure, storm drain system, or receiving water).

Maintenance Requirements

Maintenance and regular inspections are important for proper function of biofiltration areas. Biofiltration areas require annual plant, soil, and mulch layer maintenance to ensure optimal infiltration, storage, and pollutant removal capabilities. In general, biofiltration maintenance requirements are typical landscape care procedures and include:

- Irrigate plants as needed during prolonged dry periods. In general, plants should be selected to be drought-tolerant and not require irrigation after establishment (two to three years).
- Inspect flow entrances, ponding area, and surface overflow areas periodically, and replace soil, plant material, and/or mulch layer in areas if erosion has occurred. Properly-designed facilities with appropriate flow velocities should not cause erosion except potentially during in extreme events. If erosion occurs, the flow velocities and gradients within the biofiltration area and flow dissipation and erosion protection strategies in the pretreatment area and flow entrance should be reassessed. If sediment is deposited in the biofiltration area, identify the source of the sediment within the tributary area, stabilize the source, and remove excess surface deposits.
- Prune and remove dead plant material as needed. Replace all dead plants, and if specific plants have a high mortality rate, assess the cause and, if necessary, replace with more appropriate species.
- Remove weeds as needed until plants are established. Weed removal should become less frequent if the appropriate plant species are used and planting density is attained.
- Select the proper soil mix and plants for optimal fertility, plant establishment, and growth to preclude the use of nutrient and pesticide supplements. By design, biofiltration facilities are located in areas where phosphorous and nitrogen levels are often elevated such that these should not be limiting nutrients. Addition of nutrients and pesticides may contribute pollutant loads to receiving waters.
- In areas where heavy metals deposition is likely (i.e., tributary areas to industrial, vehicle dealerships/repair, parking lots, roads), replace mulch annually. In areas where metals deposition is less likely (i.e., residential lots), replace or add mulch as needed to maintain a two to three inch depth at least once every two years.

- Analyze soil for fertility and pollutant levels if necessary. Biofiltration soil media are designed to maintain long-term fertility and pollutant processing capability.
- Eliminate standing water to prevent vector breeding.
- Inspect overflow devices for obstructions or debris, which should be removed immediately. Repair or replace damaged pipes upon discovery.
- Inspect, and clean if necessary, the underdrain.

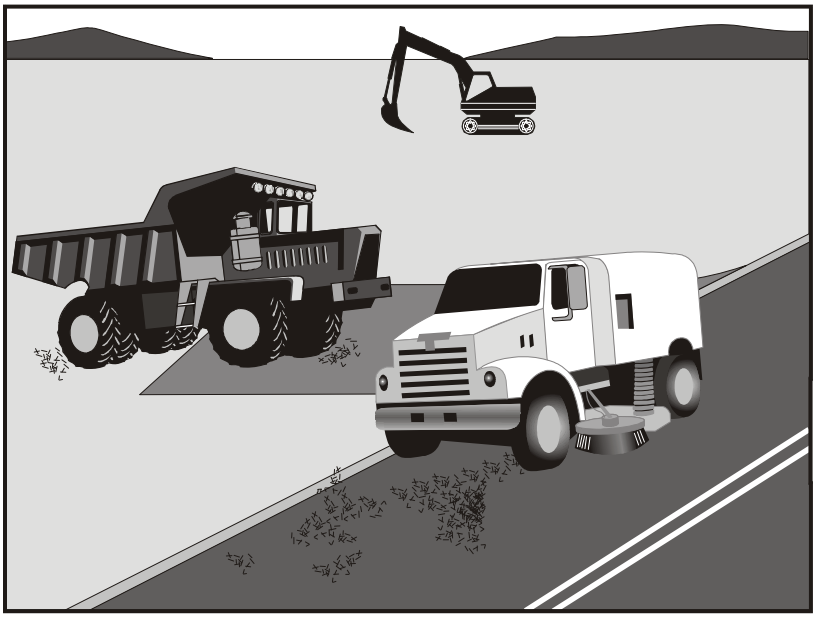
A summary of potential problems that need to be addressed by maintenance activities is presented in Table E-13.

The County requires execution of a maintenance agreement to be recorded by the property owner for the on-going maintenance of any privately-maintained stormwater quality control measures. The property owner is responsible for compliance with the maintenance agreement. A sample maintenance agreement is presented in Appendix H.

Table E-13. Biofiltration Troubleshooting Summary

Problem	Conditions When Maintenance Is Needed	Maintenance Required
Vegetation	Overgrown vegetation	Mow and prune vegetation as appropriate.
	Presence of invasive, poisonous, nuisance, or noxious vegetation or weeds	Remove this vegetation and plant native species as needed.
Trash and Debris	Trash, plant litter, and dead leaves present	Remove and properly dispose of trash and debris.
Irrigation (if applicable)	Not functioning correctly	Check irrigation system for clogs or broken lines and repair as needed.
Inlet/Overflow	Inlet/overflow areas clogged with sediment and/or debris	Remove material.
	Overflow pipe blocked or broken	Repair as needed.
Erosion/Sediment Accumulation	Splash pads or spreader incorrectly placed Presence of erosion or sediment accumulation	Check inlet structure to ensure proper function. Repair, or replace if necessary, the inlet device. Repair eroded areas with gravel as needed. Re-grade the biofiltration area as needed.
Contaminants and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Remove any evidence of visual contamination from floatables such as oil and grease.
Standing water	Standing water observed more than 96 hours after storm event	Inspect, and clean as needed, the underdrain to ensure proper function. Clear clogs as needed. Remove and replace planter media (sand, gravel, topsoil, mulch) and vegetation.

Street Sweeping and Vacuuming SE-7



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

Limitations

Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).

Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.
- Do not use kick brooms or sweeper attachments. These tend to spread the dirt rather than remove it.

- If not mixed with debris or trash, consider incorporating the removed sediment back into the project

Costs

Rental rates for self-propelled sweepers vary depending on hopper size and duration of rental. Expect rental rates from $58/hour (3 yd^3 hopper) to $88/hour (9 yd^3 hopper), plus operator costs. Hourly production rates vary with the amount of area to be swept and amount of sediment. Match the hopper size to the area and expect sediment load to minimize time spent dumping.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- When actively in use, points of ingress and egress must be inspected daily.
- When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily. More frequent removal, even continuous removal, may be required in some jurisdictions.
- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Labor Surcharge and Equipment Rental Rates, State of California Department of Transportation (Caltrans), April 1, 2002 – March 31, 2003.

Site Design & Landscape Planning SD-10

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Roof Runoff Controls SD-11

Rain Garden

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Various roof runoff controls are available to address stormwater that drains off rooftops. The objective is to reduce the total volume and rate of runoff from individual lots, and retain the pollutants on site that may be picked up from roofing materials and atmospheric deposition. Roof runoff controls consist of directing the roof runoff away from paved areas and mitigating flow to the storm drain system through one of several general approaches: cisterns or rain barrels; dry wells or infiltration trenches; pop-up emitters, and foundation planting. The first three approaches require the roof runoff to be contained in a gutter and downspout system. Foundation planting provides a vegetated strip under the drip line of the roof.

Approach

Design of individual lots for single-family homes as well as lots for higher density residential and commercial structures should consider site design provisions for containing and infiltrating roof runoff or directing roof runoff to vegetative swales or buffer areas. Retained water can be reused for watering gardens, lawns, and trees. Benefits to the environment include reduced demand for potable water used for irrigation, improved stormwater quality, increased groundwater recharge, decreased runoff volume and peak flows, and decreased flooding potential.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Cisterns or Rain Barrels

One method of addressing roof runoff is to direct roof downspouts to cisterns or rain barrels. A cistern is an above ground storage vessel with either a manually operated valve or a permanently open outlet. Roof runoff is temporarily stored and then released for irrigation or infiltration between storms. The number of rain

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

barrels needed is a function of the rooftop area. Some low impact developers recommend that every house have at least 2 rain barrels, with a minimum storage capacity of 1000 liters. Roof barrels serve several purposes including mitigating the first flush from the roof which has a high volume, amount of contaminants, and thermal load. Several types of rain barrels are commercially available. Consideration must be given to selecting rain barrels that are vector proof and childproof. In addition, some barrels are designed with a bypass valve that filters out grit and other contaminants and routes overflow to a soak-away pit or rain garden.

If the cistern has an operable valve, the valve can be closed to store stormwater for irrigation or infiltration between storms. This system requires continual monitoring by the resident or grounds crews, but provides greater flexibility in water storage and metering. If a cistern is provided with an operable valve and water is stored inside for long periods, the cistern must be covered to prevent mosquitoes from breeding.

A cistern system with a permanently open outlet can also provide for metering stormwater runoff. If the cistern outlet is significantly smaller than the size of the downspout inlet (say ¼ to ½ inch diameter), runoff will build up inside the cistern during storms, and will empty out slowly after peak intensities subside. This is a feasible way to mitigate the peak flow increases caused by rooftop impervious land coverage, especially for the frequent, small storms.

Dry wells and Infiltration Trenches

Roof downspouts can be directed to dry wells or infiltration trenches. A dry well is constructed by excavating a hole in the ground and filling it with an open graded aggregate, and allowing the water to fill the dry well and infiltrate after the storm event. An underground connection from the downspout conveys water into the dry well, allowing it to be stored in the voids. To minimize sedimentation from lateral soil movement, the sides and top of the stone storage matrix can be wrapped in a permeable filter fabric, though the bottom may remain open. A perforated observation pipe can be inserted vertically into the dry well to allow for inspection and maintenance.

In practice, dry wells receiving runoff from single roof downspouts have been successful over long periods because they contain very little sediment. They must be sized according to the amount of rooftop runoff received, but are typically 4 to 5 feet square, and 2 to 3 feet deep, with a minimum of 1-foot soil cover over the top (maximum depth of 10 feet).

To protect the foundation, dry wells must be set away from the building at least 10 feet. They must be installed in solids that accommodate infiltration. In poorly drained soils, dry wells have very limited feasibility.

Infiltration trenches function in a similar manner and would be particularly effective for larger roof areas. An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. These are described under Treatment Controls.

Pop-up Drainage Emitter

Roof downspouts can be directed to an underground pipe that daylights some distance from the building foundation, releasing the roof runoff through a pop-up emitter. Similar to a pop-up irrigation head, the emitter only opens when there is flow from the roof. The emitter remains flush to the ground during dry periods, for ease of lawn or landscape maintenance.

Foundation Planting

Landscape planting can be provided around the base to allow increased opportunities for stormwater infiltration and protect the soil from erosion caused by concentrated sheet flow coming off the roof. Foundation plantings can reduce the physical impact of water on the soil and provide a subsurface matrix of roots that encourage infiltration. These plantings must be sturdy enough to tolerate the heavy runoff sheet flows, and periodic soil saturation.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Supplemental Information

Examples

- City of Ottawa's Water Links Surface –Water Quality Protection Program
- City of Toronto Downspout Disconnection Program
- City of Boston, MA, Rain Barrel Demonstration Program

Other Resources

Hager, Marty Catherine, Stormwater, "Low-Impact Development", January/February 2003. www.stormh2o.com

Low Impact Urban Design Tools, Low Impact Development Design Center, Beltsville, MD. www.lid-stormwater.net

Start at the Source, Bay Area Stormwater Management Agencies Association, 1999 Edition

Efficient Irrigation SD-12

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Appendix C:
WetlandMOD Biofiltration System, UrbanPond Stormwater Storage

Typical WetlandMOD Biofiltration Vault details have been provided for this Preliminary LID. Project specific details will be provided during final engineering.

WetlandMod Volume Based Sizing Calculations -

Los Angeles County, California (5 in/hr)

Model #	Physical Depth of Model from TC, FS, or TC to INVERT OUT	Wetland Chamber Perimeter (ft)	**Wetland Chamber Max HGL Height (ft)	Wetland Chamber Surface Area (sq ft)	Recommended Max Water Quality Volume (cu ft) where : Drain Down Time = 72 Hours	Recommended Max Water Quality Volume (cu ft) where : Drain Down Time = 96 Hours
WM-4-4	4.13'	6.7	3.40	22.78	657.82	877.09
WM-4-6	4.13'	9.4	3.40	31.96	922.91	1230.55
WM-4-8	4.13'	14.8	3.40	50.32	1453.09	1937.45
WM-4-13	4.13'	18.4	3.40	62.56	1806.55	2408.73
WM-4-15	4.13'	22.4	3.40	76.16	2199.27	2932.36
WM-4-17	4.13'	26.4	3.40	89.76	2592.00	3456.00
WM-4-19	4.13'	30.4	3.40	103.36	2984.73	3979.64
WM-4-21	4.13'	34.4	3.40	116.96	3377.45	4503.27
WM-6-8	4.13'	18.8	3.40	63.92	1845.82	2461.09
WM-8-8	4.13'	29.6	3.40	100.64	2906.18	3874.91
WM-8-12	4.13'	44.4	3.40	150.96	4359.27	5812.36
WM-8-16	4.13'	59.2	3.40	201.28	5812.36	7749.82
WM-8-20	4.13'	74.0	3.40	251.60	7265.45	9687.27
WM-8-24	4.13'	88.8	3.40	301.92	8718.55	11624.73

Shallow or Deeper Units Available. Change in Height Will Affect Treatment Capacity

** Not the physical height of the unit but the max HGL in the system at peak treatment flow rate

Based on loading rate of 5 in/hr using Los Angeles County Required Biofiltration Media Mix Per County Design Manaual with Required Safety Factor.

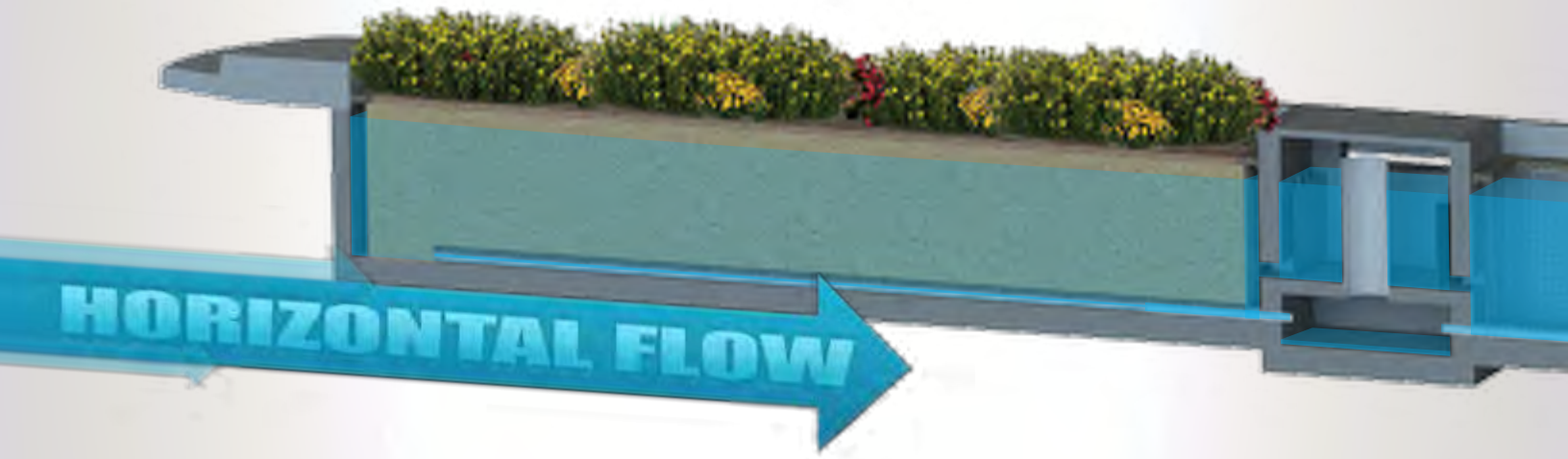
MODULAR WETLANDS

Modular Wetland Systems, Inc. **Copyright 2013** **www.modularwetlands.com**

info@modularwetlands.com **P: 760-433-7640** **2972 San Luis Rey Rd, Oceanside CA 92058**

MODULAR WETLANDS™

*Advanced **Stormwater** Biofiltration*



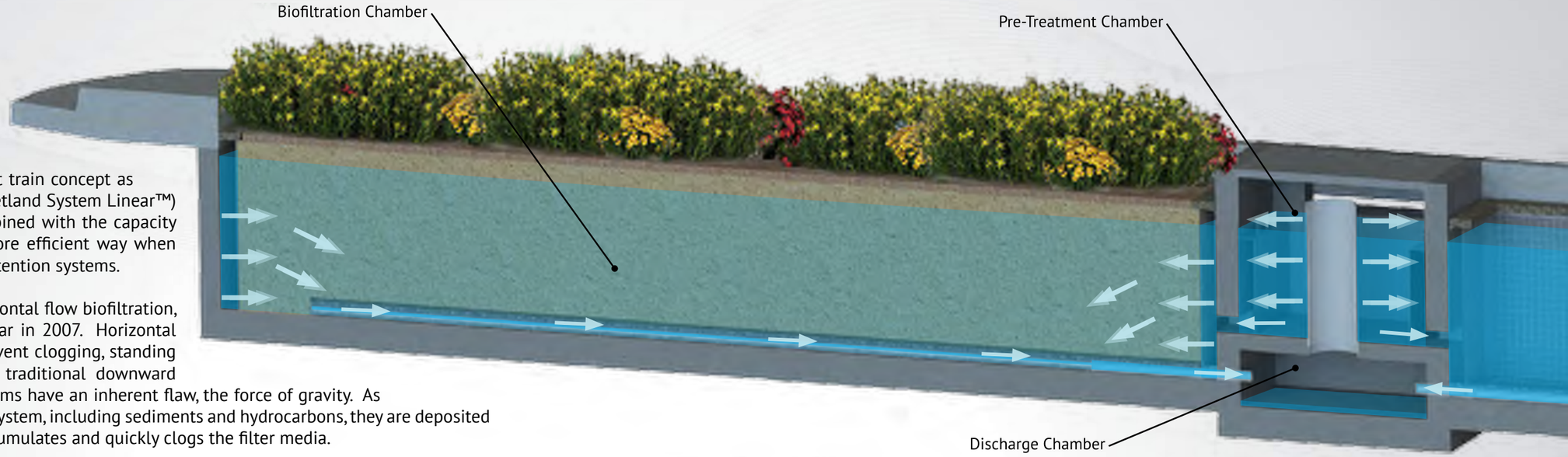
WetlandMod™

MODULAR WETLAND TREATMENT, VOLUME REDUCTION, REUSE & STORAGE SYSTEM

A NEW DIRECTION IN TRADITIONAL BIORETENTION / BIOFILTRATION SYSTEMS

Overview

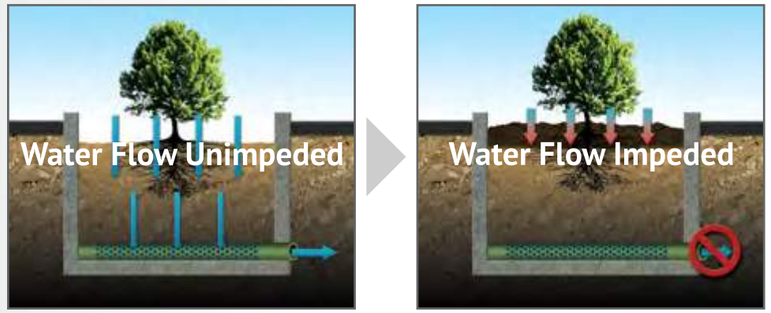
Modular Wetland Systems, Inc. continues to provide groundbreaking stormwater treatment and volume reduction/control technology with the **WetlandMod™**. This modular system provides the same treatment train concept as the industry leading MWS Linear (Modular Wetland System Linear™) - screening, separation, & biofiltration - combined with the capacity to reduce and control water volume in a more efficient way when compared to traditional downward flow bioretention systems.



The system is built upon the concept of horizontal flow biofiltration, which was first introduced by the MWS Linear in 2007. Horizontal flow works with gravity, not against it, to prevent clogging, standing water and other problems associated with traditional downward flow bioretention systems. Bioretention systems have an inherent flaw, the force of gravity. As stormwater runoff carries pollutants into the system, including sediments and hydrocarbons, they are deposited on top of the bioretention media where it accumulates and quickly clogs the filter media.

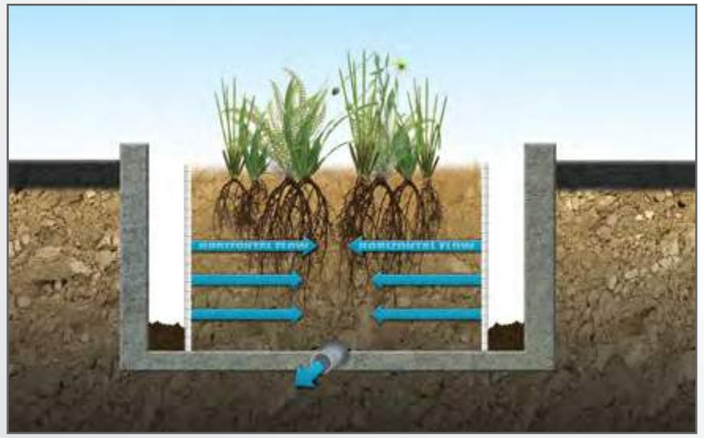
It has been documented that sediment accumulation from just a few storm events can completely clog a bioretention system. This leads to drastically reduced infiltration rates, expensive maintenance burdens, and safety issues associated with standing water, depressed landscaping and vector control.

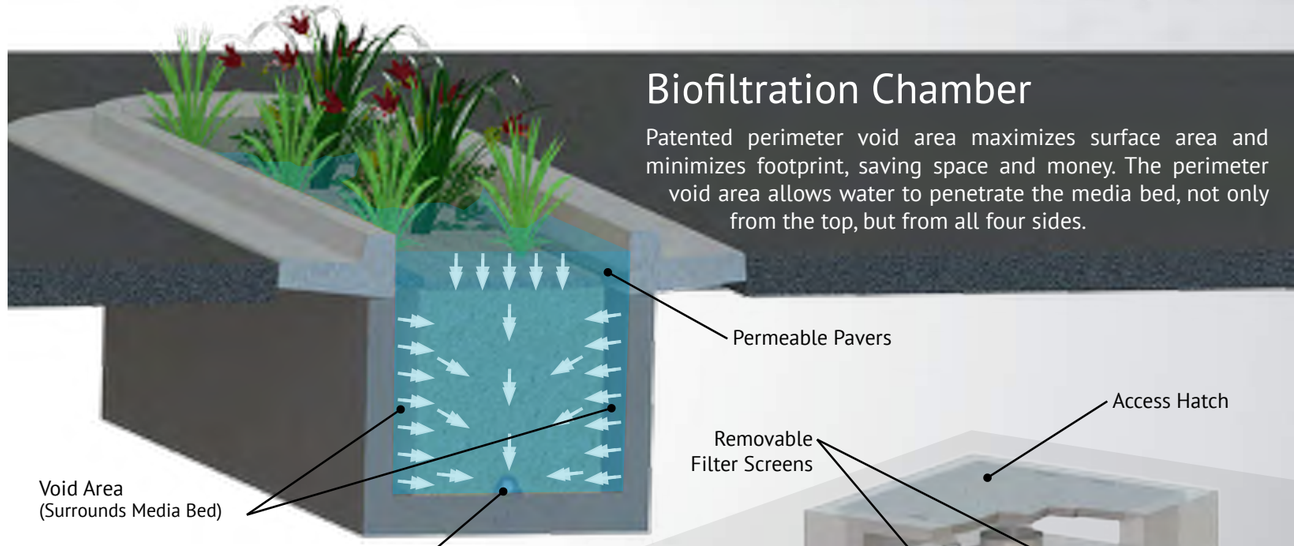
Downward Flow



Sediments Accumulate on Top of the Media Leading to Clogging

The **WetlandMod™** overcomes these challenges by utilizing pre-treatment, a horizontal flow biofiltration bed, and orifice flow control. The initial surface of the media bed in the **WetlandMod™** is oriented on a vertical plane, as opposed to horizontally, therefore running parallel with the force of gravity as opposed to perpendicular. This simple concept, increases surface area, reduces BMP footprint, prevents clogging and leads to an enhanced overall system with lower maintenance costs. The **WetlandMod™** can utilize various blends to meet local stormwater bioretention media specifications. The system is also available with an organic-free WetlandMEDIA to prevent nutrient leaching and maximize pollutant removal.

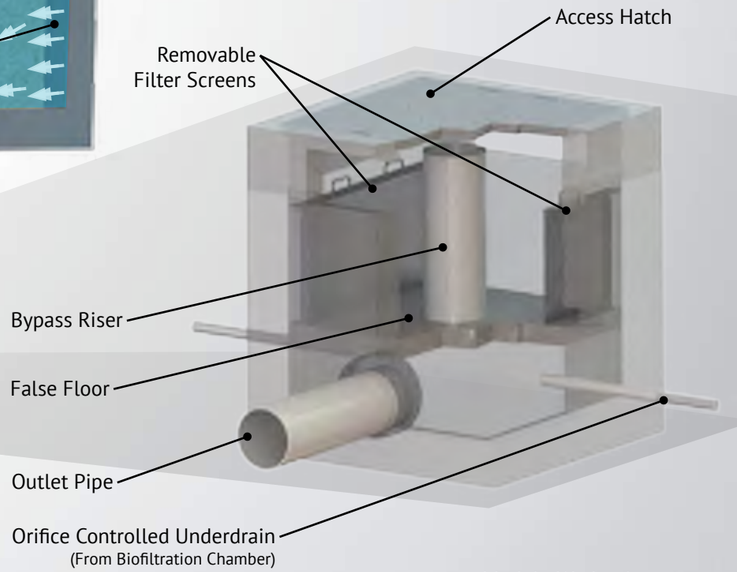




Biofiltration Chamber

Patented perimeter void area maximizes surface area and minimizes footprint, saving space and money. The perimeter void area allows water to penetrate the media bed, not only from the top, but from all four sides.

Pre-Treatment & Discharge Chamber



Configuration

One of the biggest challenges of the implementation of LID and bioretention/biofiltration systems is the associated space requirements. The large space requirements of traditional bioretention systems can cause design and feasibility issues, increasing the overall cost to comply with local and state stormwater regulations.

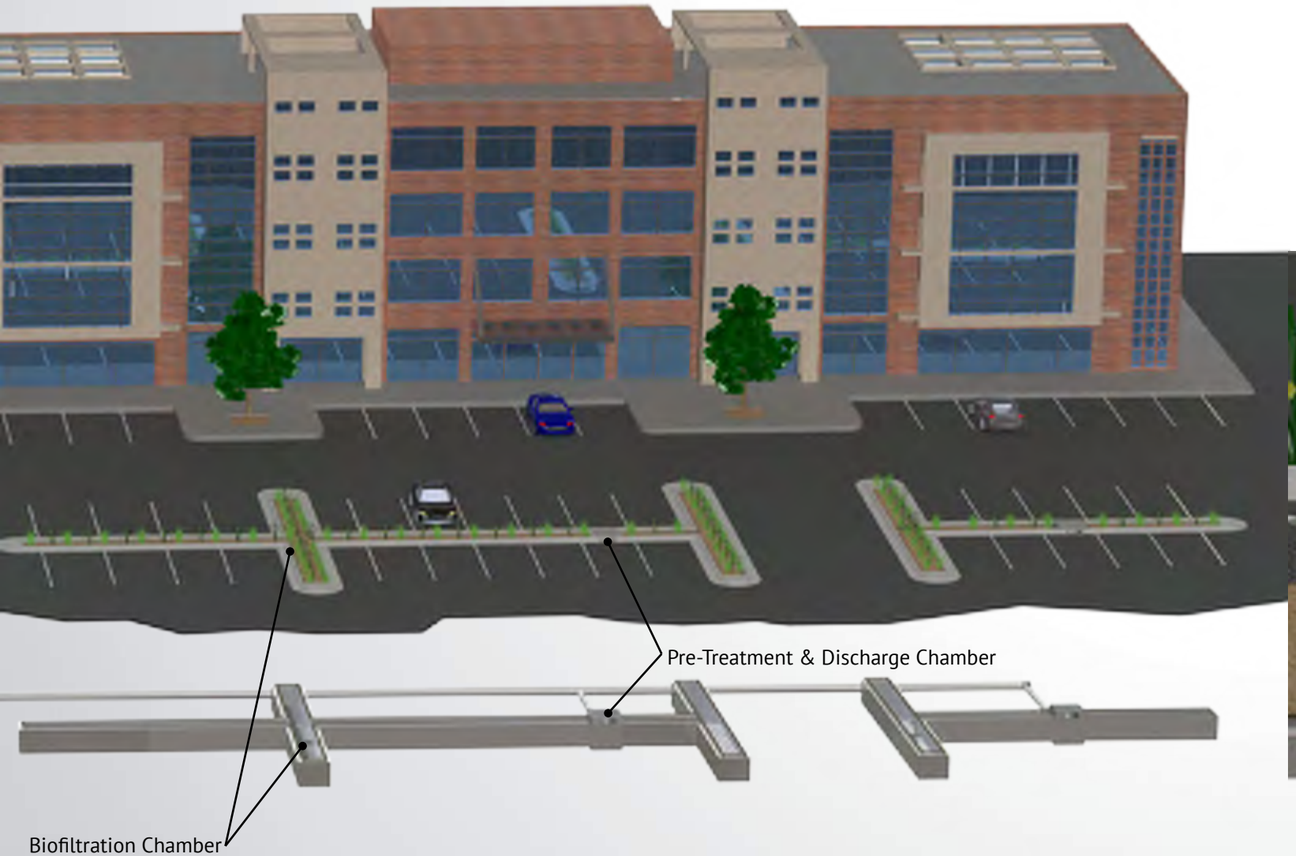
The **WetlandMod™** marks the first technological breakthrough to address how we comply with these regulations. The goal of the system is to minimize footprint and land costs associated with traditional bioretention/ biofiltration systems. This is acheived by utilizing horizontal flow technology and combining it with traditional downward flow, therefore maximizing the surface area for a given footprint.

Designed To Minimize Required BMP Footprint and Maximize Buildable Space

This system is constructed from modular precast concrete structures. The system comes standard with a curb-type pre-treatment structure, including internal bypass. The biofiltration chambers can be made in any length and shape (shown below) to allow for easy integration with parking lot island designs. The system comes in two standard widths, 4 feet (18" minimum media requirement - San Diego County) and 5 feet (24" minimum media requirement - Los Angeles County).

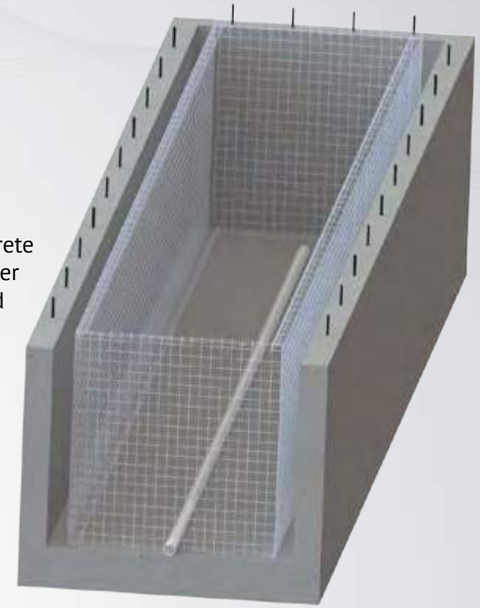
Footprint Reduction Up To 61% Over Traditional Bioretention Systems

(Example: Planter Boxes, Rain Gardens, Biofiltration)



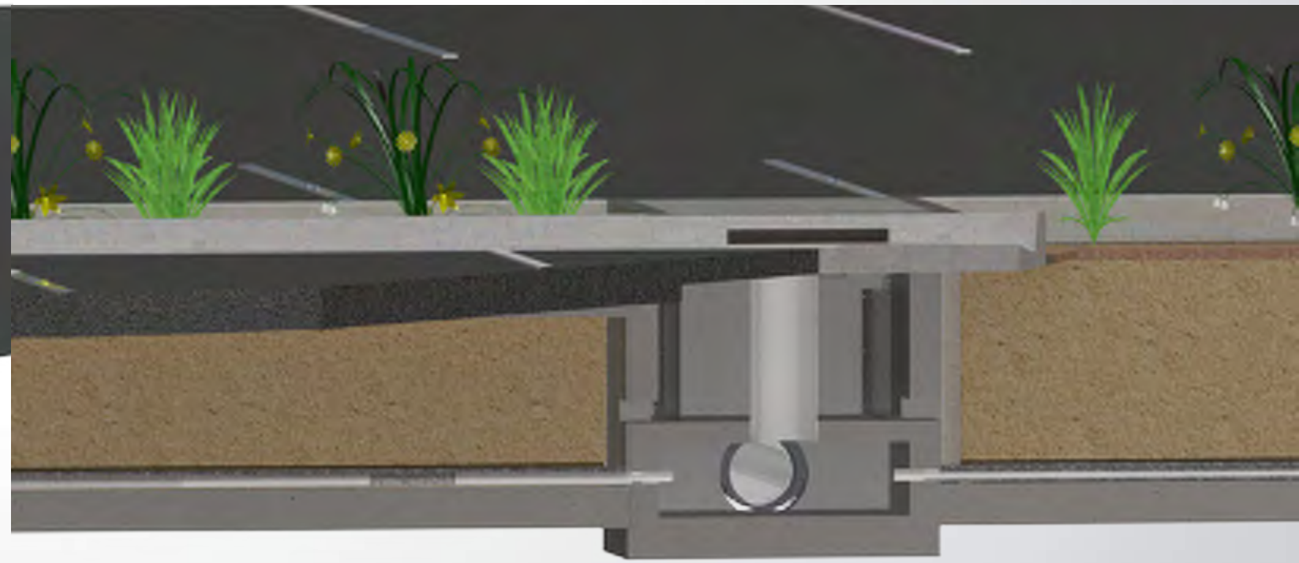
Wetland Chamber Module

The *Wetland Chamber Module* is constructed of precast concrete and available in various lengths and heights. The chamber also includes rebar dowels to attach structure to curb and gutter. Units can be connected mechanically end-to-end for longer modules.



Pre-Treatment Chamber Module

Pre-treatment Chambers come standard with built-in curb inlets to intercept sheet flows from surrounding areas. The pre-treatment chamber is available with an optional internal bypass for high flows and it is easily accessible for quick maintenance. Trash, debris and sediments are isolated in a central location, minimizing maintenance requirements on the biofiltration chamber.

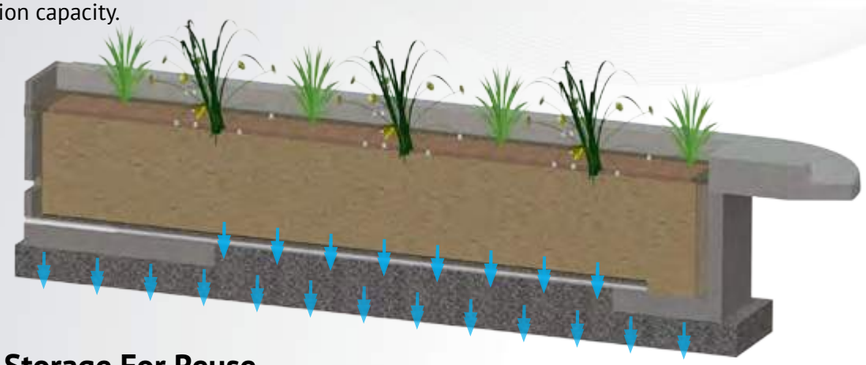


Curb Inlet

Configurations

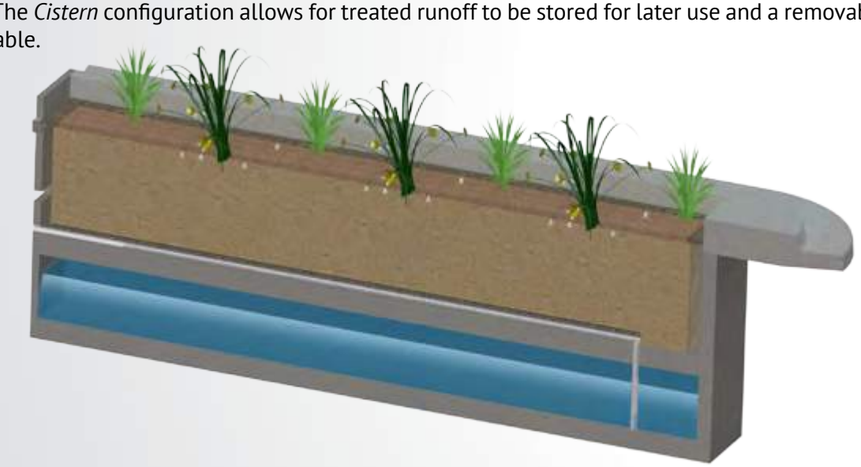
Open Bottom - Infiltration

This configuration is available with an open basin to maximize infiltration and meet "partial infiltration" requirements in many jurisdictions. A 12" rock base is recommended under the structure to maximize storage and infiltration capacity.



Cistern - Storage For Reuse

An optional storage vessel under the biofiltration chamber stores water for reuse, including irrigation and grey water. The *Cistern* configuration allows for treated runoff to be stored for later use and a removable sump pump is available.



WetlandMEDIA

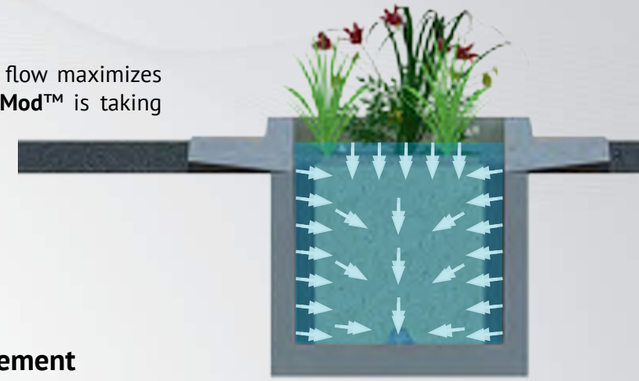
WetlandMEDIA is an organic free alternative to traditional bioretention media. It offers higher infiltration rates and a sorptive media mix with high ion exchange capacity. This makes it ideal for nutrient removal. WetlandMEDIA also supports robust vegetation and prevents standing water.

Bioretention Mix

The **WetlandMod™** is designed to utilize any type of bioretention mix required to meet local requirements and specifications, including a *5-Inch Per Hour* sand compost mix found in most LID manuals.

Sizing

The combination of horizontal flow and downward flow maximizes surface area and minimizes footprint. The **WetlandMod™** is taking bioretention/biofiltration to a new level.



18" Media - San Diego County Minimum Requirement

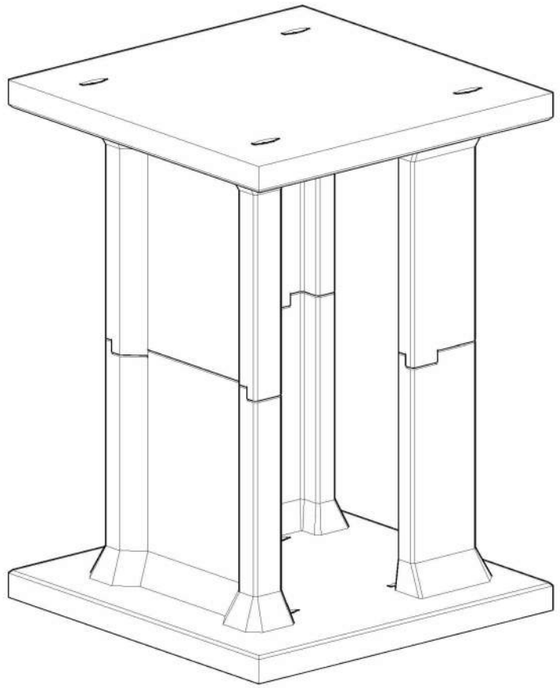
18" Media Thickness	WetlandMod	Traditional Bioretention
Chamber Width I.D. (ft.)	4.00	4.00
Cage Width (ft.)	3.34	n/a
Void Width (ft.)	0.33	n/a
Chamber Height Max (TC) (ft.)	4.40	n/a
Assoc. Cage Height Max (ft.)	3.52	n/a
TC to Top of Cage Distance (ft.)	0.88	n/a
Ponding Over Media (ft.)	0.33	Variable
Chamber Height Min (ft.)	1.61	Variable
Assoc. Cage Height Min (ft.)	1.83	Variable
TC to Top of Cage Distance (ft.)	0.88	Variable
MAX Surface Area Per Linear Foot (sq. ft.)	**10.38**	**4**
Footprint Reduction Provided	**61%**	
MIN Surface Area Per Linear Foot (sq. ft.)	**7**	**4**
Footprint Reduction Provided	**43%**	

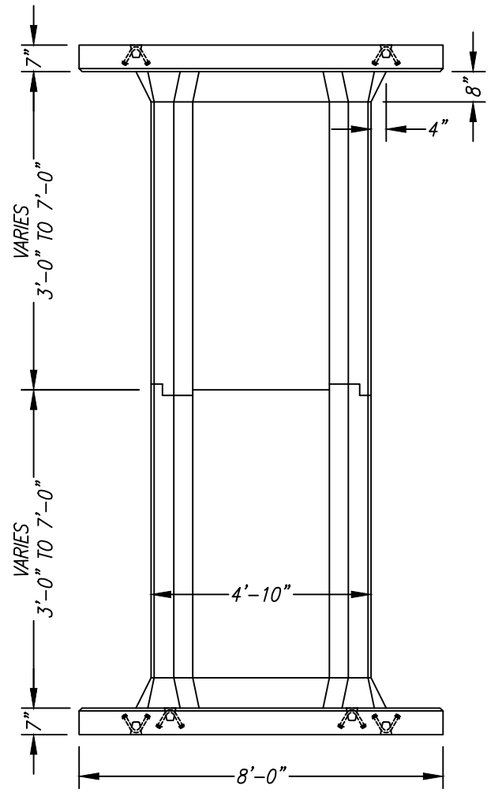
24" Media - Los Angeles County Minimum Requirement

24" Media Thickness	WetlandMod	Traditional Bioretention
Chamber Width I.D. (ft.)	5.00	5.00
Cage Width (ft.)	4.34	n/a
Void Width (ft.)	0.33	n/a
Chamber Height Max (TC) (ft.)	4.40	n/a
Assoc. Cage Height Max (ft.)	3.52	n/a
TC to Top of Cage Distance (ft.)	0.88	n/a
Ponding Over Media (ft.)	0.33	Variable
Chamber Height Min (ft.)	2.05	Variable
Assoc. Cage Height Min (ft.)	2.33	Variable
TC to Top of Cage Distance (ft.)	0.88	Variable
MAX Surface Area Per Linear Foot (sq. ft.)	**11.38**	**5**
Footprint Reduction Provided	**56%**	
MIN Surface Area Per Linear Foot (sq. ft.)	**9**	**5**
Footprint Reduction Provided	**44%**	

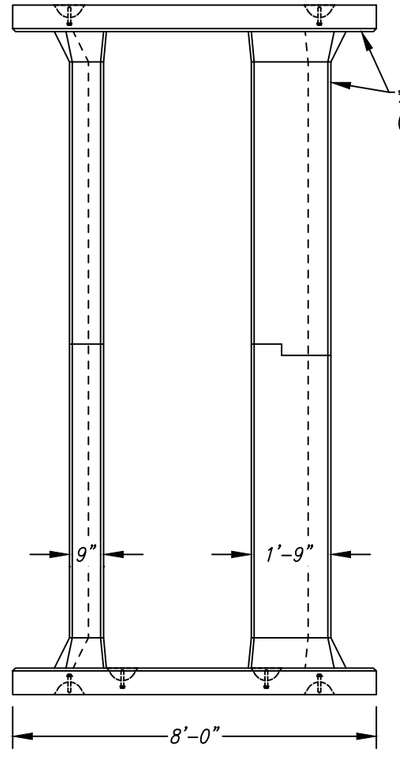
Advantages of WetlandMod™ Over Traditional Downward Flow Bioretention/Biofiltration Systems

- Minimizes Clogging
- Advanced Pre-Treatment
- Maximized Surface Area
- Minimal Footprint
- High Nutrient Removal
- Easy Maintenance
- No Standing Water Concerns
- Greater Volume Reduction, Moisture Retention and Evapotranspiration
- Orifice Controlled Discharge

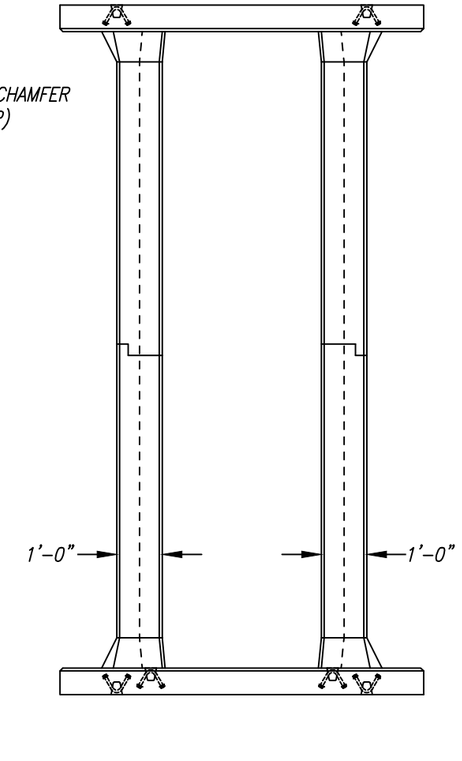




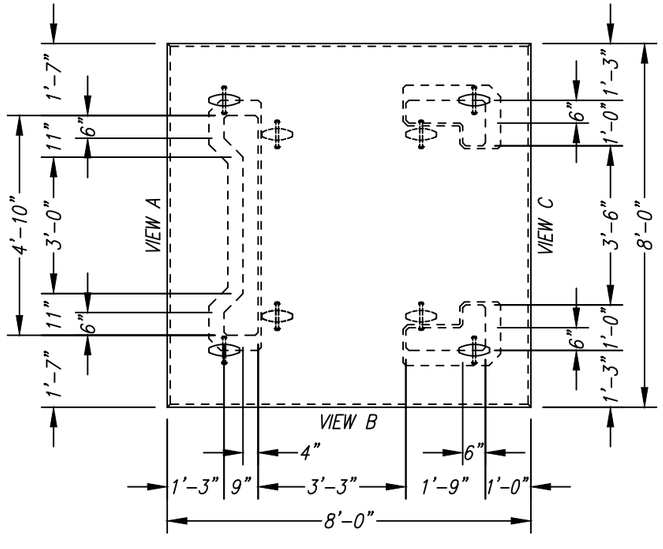
ELEVATION VIEW A



ELEVATION VIEW B



ELEVATION VIEW C



TOP VIEW

1:40 SCALE

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 10,151,083 B2 & 10,151,096 B2. RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

PROPRIETARY AND CONFIDENTIAL:

THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE SOLE PROPERTY OF FORTERRA AND ITS COMPANIES. THIS DOCUMENT, NOR ANY PART THEREOF, MAY BE USED, REPRODUCED OR MODIFIED IN ANY MANNER WITH OUT THE WRITTEN CONSENT OF FORTERRA.

Bio Clean
A Forterra Company

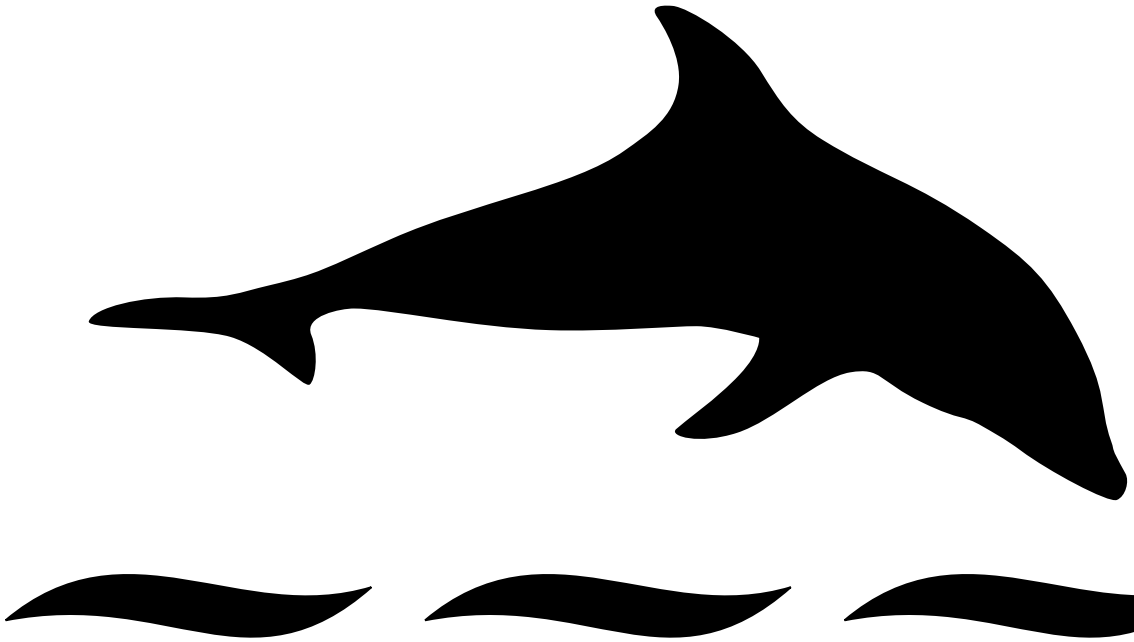
URBANPOND
PRECAST CONCRETE STORMWATER DETENTION
DOUBLE MODULE - INTERIOR

7/30/19SSERTICH

Appendix D:
"NO DUMPING – DRAINS TO OCEAN" Stencil Examples

Sample Stencil 1

NO DUMPING



DRAINS TO OCEAN

Sample Stencil 2

Appendix E:
Catch Basin Cleaning

United States Environmental Protection Agency | Office of Water Washington, D.C. | EPA 832-F-99-011 September 1999

EPA

Storm Water O&M Fact Sheet Catch Basin Cleaning

DESCRIPTION

Catch basins are chambers or sumps, usually built at the curb line, which allow surface water runoff to enter the storm water conveyance system. Many catch basins have a low area below the invert of the outlet pipe intended to retain coarse sediment. By trapping sediment, the catch basin prevents solids from clogging the storm sewer and being washed into receiving waters. Catch basins must be cleaned periodically to maintain their ability to trap sediment, and consequently their ability to prevent flooding. The removal of sediment, decaying debris, and highly polluted water from catch basins has aesthetic and water quality benefits, including reducing foul odors, reducing suspended solids, and reducing the load of oxygen-demanding substances that reach receiving waters.

APPLICABILITY

Catch basin cleaning should be performed at any facility that has an on-site storm sewer system that includes catch basins and manholes.

Although catch basin cleaning is easily implemented, it is often overlooked in an overall storm water management plan. In addition, many of the catch basin cleaning programs that have been implemented focus only on removal of debris from grate openings; full implementation of the catch basin cleaning BMP should also include removal of debris from the catch basin itself.

ADVANTAGES AND DISADVANTAGES

Catch basin cleaning is an efficient and cost-effective method for preventing the transport of sediment and pollutants to receiving water bodies. This improves both the aesthetics and the quality of the receiving water body.

Limitations associated with cleaning catch basins include:

- Catch basin debris usually contains appreciable amounts of water and offensive organic material which must be properly disposed.
- Catch basins may be difficult to clean in areas with poor accessibility and in areas with traffic congestion and parking problems.
- Cleaning is difficult during the winter when snow and ice are present.

Sediment and debris removed from catch basins can potentially be classified as hazardous waste. As a result, the materials must be disposed in a proper manner to avoid negative environmental impacts.

PERFORMANCE

Based on current data, it is not possible to quantify the water quality benefits to receiving waters resulting from catch basin cleaning. The rate at which catch basins fill with debris, as well as the total amount of material which can be removed by different frequencies of cleaning, are highly variable and cannot be readily predicted. Past studies have estimated that typical catch basins retain up to 57 percent of coarse solids and 17 percent of equivalent biological oxygen demand (BOD).

In addition, data collected as part of a Nationwide Urban Runoff Program (NURP) project in Castro Valley Creek, California, indicated that catch basins, cleaned on an average of once every year and a half, contained approximately 60 pounds of material each at the time of the cleaning.

OPERATION AND MAINTENANCE

Catch basins should be inspected at least annually to determine if they need to be cleaned. Typically, a catch basin should be cleaned if the depth of deposits is greater than or equal to one-third the depth from the basin to the invert of the lowest pipe or opening into or out of the basin. If a catch basin significantly exceeds the one-third depth standard during the annual inspection, then it should be cleaned more frequently. If woody debris or trash accumulates in a catch basin, then it should be cleaned on at least a weekly basis.

Catch basins can be cleaned either manually or by specially designed equipment. This equipment may include bucket loaders and vacuum pumps. Material removed from catch basins is usually disposed in conventional landfills. Before any materials can be disposed, it is necessary to perform a detailed chemical analysis to determine if the materials meet the EPA criteria for hazardous waste. This will help determine how the materials should be stored, treated, and disposed.

COSTS

Catch basin cleaning costs will vary depending upon the method used, the required cleaning frequency, the amount of debris removed, and debris disposal costs.

Cleaning costs for catch basins were estimated in three NURP program studies (Midwest Research Institute, 1982). These estimates are summarized in Table 1.

In communities equipped with vacuum street sweepers, a cleaning cost of $8 per basin cleaned is recommended for budgetary purposes (Southeastern Wisconsin Regional Planning Commission, 1991.) Cleaning catch basins manually costs approximately twice as much as cleaning the basins with a vacuum attached to a sweeper. Therefore, a cost estimate of $16 per catch basin cleaned may be used for manual cleaning. It should be noted that costs vary depending on local market conditions.

TABLE 1 CLEANING COST PER CATCH BASIN

Location	Method	Cost
Castro Valley, CA	Vacuum attached to street sweeper	$7.70
Salt Lake County, UT	Vacuum attached to street sweeper	$10.30
Winston-Salem, NC	Vacuum attached to street sweeper	$6.30

Source: MRI, 1982.

REFERENCES

1. Midwest Research Institute, 1982. *Collection of Economic Data from Nationwide Urban Runoff Program Projects-Final Report.* Report to U.S. Environmental Protection Agency.

2. Minnesota Pollution Control Agency, 1989. *Protecting Water Quality in Urban Areas.*

3. Southeastern Wisconsin Regional Planning Commission, 1991. *Cost of Urban Nonpoint Source Water Pollution Control Measures,* Technical Report No. 31.

4. U.S. EPA, 1983. *Final Report of the Nationwide Urban Runoff Program.* EPA 841/583109.

5. U.S. EPA, 1977. *Catch Basin Technology Overview and Assessment.* EPA-600/2-77-051.

6. Washington State Department of Ecology, 1992. *Storm Water Management Manual for Puget Sound.*

ADDITIONAL INFORMATION

Alameda County, California
Jim Scanlin
Alameda Countywide Clean Water Program
951 Turner Court, Room 300
Hayward, CA 94545

King County, Washington
Dave Hancock
Department of Natural Resources, Water and Land Resources Division, Drainage Services Section
700 5th Avenue, Suite 2200
Seattle, WA 98104

Salt Lake County, Utah
Terry Way
Salt Lake County Engineering Division
2001 South State Street, Suite N3300
Salt Lake City, UT 84190

Southeastern Wisconsin Regional Planning Commission
Bob Biebel
916 N. East Avenue, P.O. Box 1607
Waukesha, WI 53187

City of Winston Salem, North Carolina
Terry Cornett
Department of Public Works, Streets Division
P.O. Box 2511
Winston Salem, NC 27106

The mention of trade names or commercial products does not constitute endorsement or recommendation for the use by the U.S. Environmental Protection Agency.

For more information contact:

Municipal Technology Branch
U.S. EPA
Mail Code 4204
401 M St., S.W.
Washington, D.C., 20460

OWM MTB
Excellence in compliance through optimal technical solutions
MUNICIPAL TECHNOLOGY BRANCH

Appendix F:
General Education Materials

Clean beaches and healthy creeks, rivers, bays and ocean are important to Los Angeles County. However, many common activities can lead to water pollution if you're not careful. Home improvement projects and work sites must be maintained to ensure that building materials do not enter the street, gutter or storm drain. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never dump building materials into the ocean, so don't let them enter the storm drains. Follow these tips to help prevent water pollution.

For more information, please call the
City of Whittier
Public Works Department
at **(562) 567-9500**
or visit
www.cityofwhittier.org

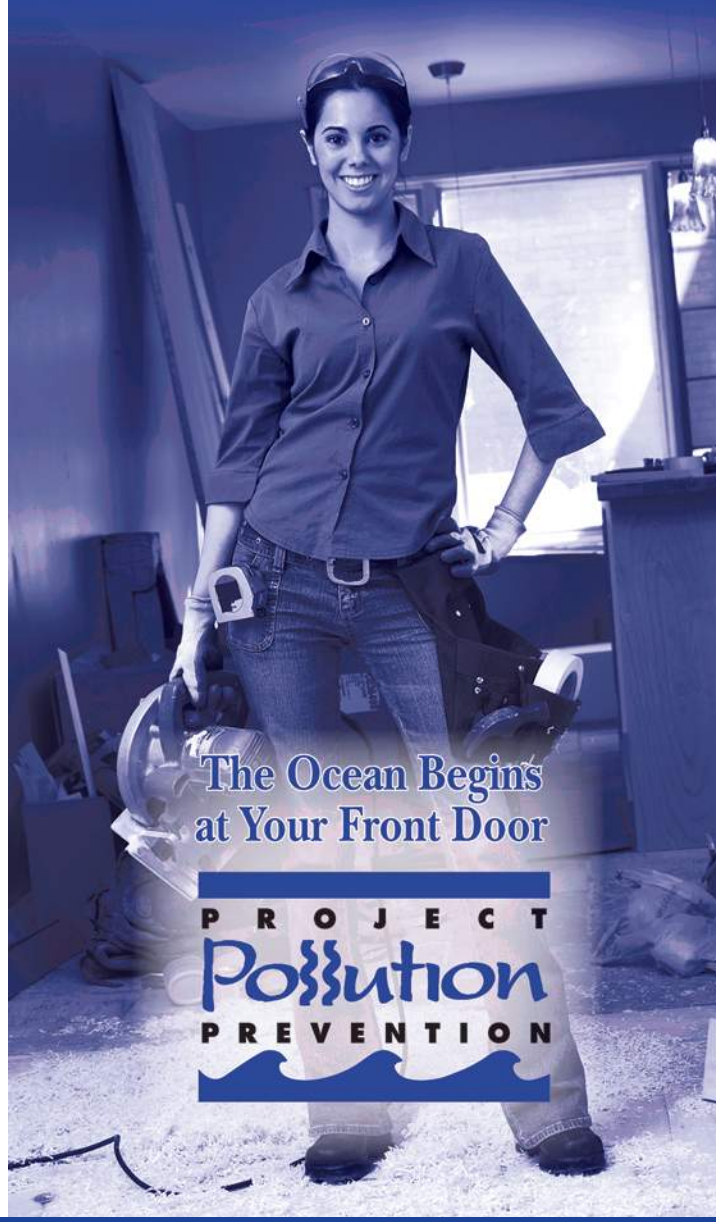
To report a spill, call the
Los Angeles County
24-Hour Water Pollution Reporting Hotline
at **1-888-CLEAN-LA**
(1-888-253-2652)

For emergencies, dial 911.

This brochure was created by the Orange County Stormwater Program and modified for the Greater Los Angeles Area by the City of Whittier.

Help Prevent Ocean Pollution:

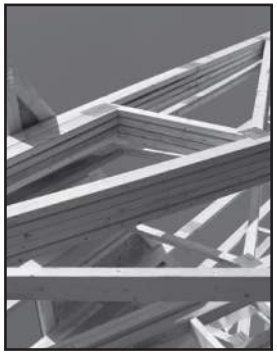
Tips for Home Improvement Projects



Tips for Home Improvement Projects

Home improvement projects can cause significant damage to the environment. Whether you hire a contractor or work on the house yourself, it is important to follow these simple tips while renovating, remodeling or improving your home:

General Construction



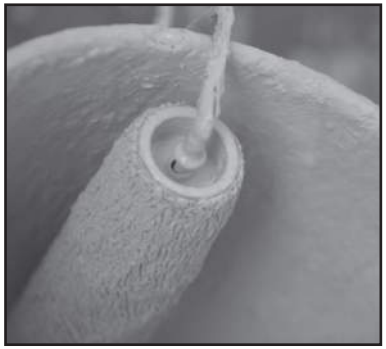
- Schedule projects for dry weather.
- Keep all construction debris away from the street, gutter and storm drain.
- Store materials under cover with temporary roofs or plastic sheets to eliminate or reduce the possibility that rainfall, runoff or wind will carry materials from the project site to the street, storm drain or adjacent properties.

Building Materials

- Never hose materials into a street, gutter or storm drain.
- Exposed piles of construction material should not be stored on the street or sidewalk.
- Minimize waste by ordering only the amount of materials needed to complete the job.
- Do not mix more fresh concrete than is needed for each project.
- Wash concrete mixers and equipment in a designated washout area where the water can flow into a containment area or onto dirt.
- Dispose of small amounts of dry excess materials in the trash. Powdery waste, such as dry concrete, must be properly contained within a box or bag prior to disposal. Call your local trash hauler for weight and size limits.

Paint

- Measure the room or object to be painted, then buy only the amount needed.
- Place the lid on firmly and store the paint can upside-down in a dry location away from the elements.
- Tools such as brushes, buckets and rags should never be washed where excess water can drain into the street, gutter or storm drain. All tools should be rinsed in a sink connected to the sanitary sewer.
- When disposing of paint, never put wet paint in the trash.
- Dispose of water-based paint by removing the lid and letting it dry in the can. Large amounts must be taken to a Household Hazardous Waste Collection Center (HHWCC).



- Oil-based paint is a household hazardous waste. All leftover paint should be taken to a HHWCC or collection event. .
- For a list of HHWCC locations or a schedule of upcoming collection events near you, please call **(888) 253-2652** or visit **www.CleanLA.com**.

Erosion Control

- Schedule grading and excavation projects for dry weather.
- When temporarily removing soil, pile it in a contained, covered area where it cannot spill into the street, or obtain the required temporary encroachment or street closure permit and follow the conditions instructed by the permit.
- When permanently removing large quantities of soil, a disposal location must be found prior to excavation. Numerous businesses are available to handle disposal needs. For disposal options, visit **www.calrecycle.ca.gov/SWFacilities/**
- Prevent erosion by planting fast-growing annual and perennial grasses. They will shield and bind the soil.

Recycle

- Use a construction and demolition recycling company to recycle lumber, paper, cardboard, metals, masonry (bricks, concrete, etc.), carpet, plastic, pipes (plastic, metal and clay), drywall, rocks, dirt and green waste.

- For a listing of construction and demolition recycling locations in your area, visit **www.calrecycle.ca.gov/Recycle.**

Spills

- Clean up spills immediately by using an absorbent material such as cat litter, then sweep it up and dispose of it in the trash.
- Immediately report spills that have entered the street, gutter or storm drain to the County's 24-Hour Water Pollution Reporting Hotline at **(888) 253-2652** or visit **www.CleanLA.com** to fill out an incident reporting form.

PROJECT Pollution PREVENTION

Do your part to prevent water pollution in our creeks, rivers, bays, and ocean.

Clean beaches and healthy creeks, rivers, bays and ocean are important to Los Angeles County. However, not properly disposing of household hazardous waste can lead to water pollution. Batteries, electronics, paint, oil, gardening chemicals, cleaners and other hazardous materials cannot be thrown in the trash. They also must never be poured or thrown into yards, sidewalks, driveways, gutters or streets. Rain or other water could wash the materials into the storm drain and eventually into our waterways and the ocean. In addition, hazardous waste must not be poured in the sanitary sewers (sinks and toilets).

NEVER DISPOSE OF HOUSEHOLD HAZARDOUS WASTE IN THE TRASH, STREET, GUTTER, STORM DRAIN, OR SEWER.

For more information, please call the
City of Whittier
Public Works Department
at **(562) 567-9500**
or visit
www.cityofwhittier.org

To report illegal dumping of household hazardous waste or to report a spill, call the
Los Angeles County
24-Hour Water Pollution Reporting Hotline
at **1-888-CLEAN-LA**
(1-888-253-2652)

For emergencies, dial 911.

RECYCLE USED OIL

This brochure was created by the Orange County Stormwater Program and modified for the Greater Los Angeles Area by the City of Whittier.

Help Prevent Ocean Pollution:

Proper Disposal of Household Hazardous Waste

The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Pollution Prevention

Leftover household products that contain corrosive, toxic, ignitable, or reactive ingredients are considered to be "household hazardous waste" or "HHW." HHW can be found throughout your home, including the bathroom, kitchen, laundry room and garage.

WHEN POSSIBLE, USE NON-HAZARDOUS OR LESS-HAZARDOUS PRODUCTS.

Disposal of HHW down the drain, on the ground, into storm drains, or in the trash is illegal and unsafe.

Proper disposal of HHW is actually easy. Simply drop them off at a Household Hazardous Waste Collection Center (HHWCC) or at the nearest HHW/E-Waste collection event for free disposal and recycling. Many materials including anti-freeze, latex-based paint, motor oil and batteries can be recycled. Some centers have a "Stop & Swap" program that lets you take partially used home, garden, and automobile products free of charge. There are nine permanent HHWCCs in Los Angeles County:

Los Angeles:.....550 Charles E Young Dr W
Los Angeles:.....4600 Colorado Blvd
Los Angeles:.....2649 E Washington Blvd
Northridge:.....10241 N Balboa Blvd
Palmdale:.....1200 W City Ranch Rd
Playa del Rey:.....7660 W Imperial Hwy, Gate B
San Pedro:.....1400 N Gaffey St
Signal Hill:.....2755 California Ave
Sun Valley:.....11025 Randall St

Hours of operation vary by location. All centers are closed on rainy days and major holidays. For more information or a schedule of upcoming HHW/E-Waste collection events, please call **(888) 253-2652** or visit **www.CleanLA.com.**

Common household hazardous wastes

- Batteries
- Paint and paint products
- Adhesives
- Drain openers
- Household cleaning products
- Wood and metal cleaners and polishes
- Pesticides
- Fungicides/wood preservatives
- Automotive products (antifreeze, motor oil, fluids)
- Grease and rust solvents
- Fluorescent lamps
- Mercury (thermometers & thermostats)
- All forms of electronic waste including computers and microwaves
- Pool & spa chemicals
- Cleaners
- Medications
- Propane (camping & BBQ)
- Mercury-containing lamps
- Television & monitors (CRTs, flatscreens)

Tips for household hazardous waste

- Never dispose of HHW in the trash, street, gutter, storm drain or sewer.
- Keep these materials in closed, labeled containers and store materials indoors or under a cover.
- When possible, use non-hazardous products.
- Reuse products whenever possible or share with family and friends.
- Purchase only as much of a product as you'll need. Empty containers may be disposed of in the trash.
- HHW can be harmful to humans, pets and the environment. Report emergencies to 911.

Clean beaches and healthy creeks, rivers, bays and ocean are important to Los Angeles County. However, not properly disposing of used oil is illegal and can lead to fines. If you pour or drain oil onto driveways, sidewalks or streets, it can be washed into the storm drain.

Help prevent water pollution by taking your used oil and oil filters to a used oil collection center. Most major automotive maintenance centers will accept up to five gallons of used motor oil at no cost. For a list of locations, please visit www.calrecycle.ca.gov/UsedOil/Reports/CenterSearch/

For more information, please call the
City of Whittier
Public Works Department
at **(562) 567-9500**
or visit
www.cityofwhittier.org

For information about the proper disposal of household hazardous waste, call the
Los Angeles County
Environmental Hotline
at **1-888-CLEAN-LA**
(1-888-253-2652)
or visit **www.CleanLA.com**

For additional information about the nearest oil recycling center, visit
www.calrecycle.ca.gov/UsedOil/Reports/CenterSearch

RECYCLE USED OIL

This brochure was created by the Orange County Stormwater Program and modified for the Greater Los Angeles Area by the City of Whittier.

Help Prevent Ocean Pollution:

Tips for the Home Mechanic

PROJECT Pollution PREVENTION

The Ocean Begins at Your Front Door

Tips for the Home Mechanic

WORK SITE

- Locate the storm drains on or near your property. Do not allow used oil or any materials to flow into these drains.
- Examine your home for sources of pollution.
- Perform automotive projects under cover and in a controlled area to prevent stormwater runoff.
- Sweep or vacuum your automotive workspace regularly
- Use a damp mop to clean work areas. Never hose down surfaces into the street, gutter or storm drain.

- Pour mop water into a sink or toilet. Never dispose of water in a parking lot, street, gutter or storm drain.

PREVENT LEAKS AND SPILLS

- Keep absorbent materials such as rags and/or cat litter in the work area
- Empty drip pans into a labeled, seal container before they are full
- Wipe up any spills or repair leaks as they happen. Don't let them sit.
- Place large pans under any wrecked cars until all fluids are drained.
- Promptly dispose of collected fluids into a hazardous waste drum or deliver them to an oil recycling center. Used oil recycling locations can be found at www.calrecycle.ca.gov/UsedOil/Reports/CenterSearch/

CLEANING SPILLS

- Clean up spills immediately by using absorbent material such as rags, cat litter, or sand. If the material spilled is hazardous, dispose of the rag, litter, or sand in the same manner as hazardous waste. If the material spill is non-hazardous, dispose of it in the trash.

- Immediately report spills that have entered the street, gutter or storm drain to the County's 24-Hour Water Pollution Reporting Hotline at 1-888-CLEAN-LA (1-888-253-2652) or visit www.CleanLA.com to fill out an incident report.
- Report emergencies to 911.

VEHICLE FLUID MANAGEMENT

- Vehicle fluids are hazardous waste and must be stored and disposed of in accordance with all local, state and federal laws.
- Designate an area to drain vehicle fluids away from storm drains and sanitary drains.
- When possible, drain vehicle fluids indoors or within covered areas, and only over floors that are constructed of a non-porous material such as concrete. Asphalt and dirt floors absorb spilled or leaked fluids, making the cleanup extremely difficult.

PROJECT Pollution PREVENTION

Clean beaches and healthy creeks, rivers, bays and ocean are important to Los Angeles County. However, many common activities can lead to water pollution if you're not careful. Pet waste and pet care products can be washed into the storm drains that flow to the ocean. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never put pet waste or pet care products into the ocean, so don't let them enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information, please call the
City of Whittier
Public Works Department
at **(562) 567-9500**
or visit
www.cityofwhittier.org

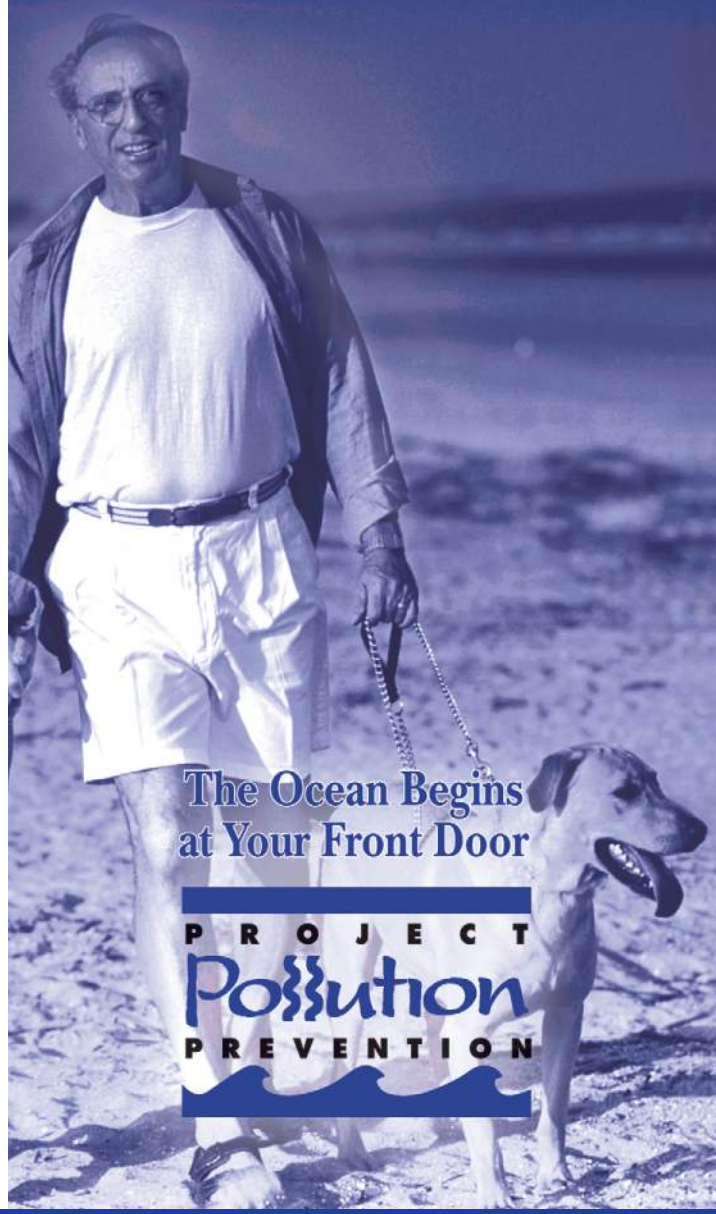
To report a spill, call the
Los Angeles County
24-Hour Water Pollution Reporting Hotline
at **1-888-CLEAN-LA**
(1-888-253-2652)

For emergencies, dial 911.

This brochure was created by the Orange County Stormwater Program and modified for the Greater Los Angeles Area by the City of Whittier.

Help Prevent Ocean Pollution:

Tips for Pet Care



Tips for Pet Care

Never let any pet care products or washwater run off your yard and into the street, gutter, or storm drain.

Washing Your Pets

Even biodegradable soaps and shampoos can be harmful to marine life and the environment.

- If possible, bathe your pets indoors using less-toxic shampoos or have your pet professionally groomed. Follow instructions on the products and clean up spills.

- If you bathe your pet outside, wash it on your lawn or another absorbent/ permeable surface to keep the washwater from running into the street, gutter, or storm drain.

Flea Control

- Consider using oral or topical flea control products.

- If you use flea control products such as shampoos, sprays or collars, make sure to dispose of any unused products at a Household Hazardous Waste Collection Center or collection event. For a list of center locations or for a schedule of upcoming collection events near you, please call **(888) 253-2652** or visit **www.CleanLA.com**.

Why You Should Pick Up After Your Pet

It's the law! Every city has an ordinance requiring you to pick up after your pet. Besides being a nuisance, pet waste can lead to water pollution, even if you live inland. During rainfall, pet waste left outdoors can wash into storm drains. This waste flows directly into our waterways and the ocean where it can harm human health, marine life, and the environment.

As it decomposes, pet waste demands a high level of oxygen from water. This decomposition can contribute to killing marine life by reducing the amount of dissolved oxygen available to them.

Have fun with your pets, but please be a responsible pet owner by taking care of them and the environment.

- Take a bag with you on walks to pick up after your pet.

- Dispose of the waste in the trash or in a toilet.

PROJECT Pollution PREVENTION

Clean beaches and healthy creeks, rivers, bays and ocean are important to Los Angeles County. However, many common activities can lead to water pollution if you're not careful. Fertilizers, pesticides and other chemicals that are left on yards or driveways can be blown or washed into storm drains that flow to the ocean. Overwatering lawns can also send materials into storm drains. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never pour gardening products into the ocean, so don't let them enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information,
please call the
City of Whittier
Public Works Department
at **(562) 567-9500**
or visit
www.cityofwhittier.org

To report a spill,
call the
Los Angeles County
24-Hour Water Pollution
Reporting Hotline
at **1-888-CLEAN-LA**
(1-888-253-2652)

For emergencies, dial 911.

This brochure was created by the Orange County Stormwater Program and modified for the Greater Los Angeles Area by the City of Whittier.

Help Prevent Ocean Pollution:

Tips for Landscape & Gardening

Tips for Landscape & Gardening

Never allow gardening products or polluted water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.
- Plant native vegetation to reduce the amount of water, fertilizers, and pesticide applied to the landscape.

- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.

- Use slow-release fertilizers to minimize leaching, and use organic fertilizers.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.

- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting. For more information, visit **www.ipm.ucdavis.edu.**
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Hazardous Waste Collection Center or collection event to be recycled. Center locations are provided below. For more information or a schedule of upcoming collection events, call **(888) 253-2652** or visit **www.CleanLA.com.**

Household Hazardous Waste Collection Centers

Los Angeles: 550 Charles E Young Dr W Los Angeles: 4600 Colorado Blvd
Los Angeles: 2649 E Washington Blvd
Northridge: 10241 N Balboa Blvd Palmdale: 1200 W City Ranch Rd
Playa del Rey: 7660 W Imperial Hwy, Gate B San Pedro: 1400 N Gaffey St
Signal Hill: 2755 California Ave
Sun Valley: 11025 Randall St

Appendix G:
Operation and Maintenance Plan

(To be provided during final engineering)

Appendix H:
Geotechnical Investigation

ALBUS & ASSOCIATES
formerly Albus-Keefe & Associates, Inc.

April 13, 2021
J.N.: 2962.00

Mr. Jason Keller
Mission Pacific Land Company
4100 Newport Place, Suite 480
Newport Beach, CA 92660

Subject: **Preliminary Geotechnical Investigation, Proposed Multi-Family Residential Development, (La Serna Apartments) TTM No. 83435, 9829 La Serna Drive, Whittier, California**

Dear Mr. Keller,

Pursuant to your request, ***Albus & Associates, Inc***. is pleased to present to you our preliminary geotechnical investigation report for the proposed development at the subject site. This report presents the results of our aerial photo and literature review, subsurface exploration, laboratory testing, and engineering analyses. Conclusions and recommendations relevant to the design and construction of the proposed site development are also presented herein based on the findings of our work.

We appreciate this opportunity to be of service to you. If you should have any questions regarding the contents of this report, please do not hesitate to call.

Sincerely,

ALBUS & ASSOCIATES, INC.

Michael O. Spira
Principal Engineering Geologist

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 PURPOSE AND SCOPE 1
1.2 SITE LOCATION AND DESCRIPTION 1
1.3 PROPOSED DEVELOPMENT 3
2.0 INVESTIGATION 3
2.1 RESEARCH 3
2.2 SUBSURFACE EXPLORATION 3
2.3 LABORATORY TESTING 4
3.0 SUBSURFACE CONDITIONS 4
3.1 SOIL CONDITIONS 4
3.2 GROUNDWATER 4
3.3 FAULTING 4
4.0 ANALYSES 5
4.1 SEISMICITY 5
4.2 STATIC SETTLEMENT 6
5.0 CONCLUSIONS 7
5.1 FEASIBILITY OF PROPOSED DEVELOPMENT 7
5.2 GEOLOGIC HAZARDS 7
5.2.1 Ground Rupture 7
5.2.2 Ground Shaking 7
5.2.3 Landsliding 7
5.2.4 Liquefaction 7
5.3 STATIC SETTLEMENT 8
5.4 EXCAVATION AND MATERIAL CHARACTERISTICS 8
5.5 SHRINKAGE/BULKAGE AND SUBSIDENCE 8
5.6 SOIL EXPANSION 8
6.0 RECOMMENDATIONS 9
6.1 EARTHWORK 9
6.1.1 General Earthwork and Grading Specifications 9
6.1.2 Pre-Grade Meeting and Geotechnical Observation 9
6.1.3 Site Clearing 9
6.1.4 Ground Preparation (Removals and Overexcavations) 10
6.1.5 Scarification 10
6.1.6 Fill Placement 10
6.1.7 Import Materials 11
6.1.8 Temporary Excavations 11
6.2 SEISMIC DESIGN PARAMETERS 11
6.2.1 Mapped Seismic Design Parameters 11
6.2.2 Site-Specific Seismic Design Parameters 12
6.3 PRELIMINARY FOUNDATION DESIGN 13
6.3.1 General 13
6.3.2 Soil Expansion 13
6.3.3 Static and Seismic Settlement 13
6.3.4 Allowable Bearing Value 13
6.3.5 Lateral Resistance 13

6.3.6 Footing and Slab on Grade 14
6.3.7 Post-Tensioned Slab on Grade 14
6.3.8 Foundation Observations 15
6.4 RETAINING AND SCREENING WALLS 15
6.4.1 General 15
6.4.2 Allowable Bearing Value and Lateral Resistance 16
6.4.3 Active Earth Pressures 16
6.4.4 Drainage and Moisture-Proofing 17
6.4.5 Foundation Observations 17
6.4.6 Wall Backfill 17
6.5 EXTERIOR FLATWORK 17
6.6 CONCRETE MIX DESIGN 18
6.7 CORROSION 18
6.8 PRELIMINARY PAVEMENT DESIGN 19
6.8.1 Preliminary Pavement Structural Sections 19
6.8.2 Subgrade Preparation 19
6.8.3 Aggregate Base 19
6.8.4 Asphaltic Concrete 20
6.8.5 Concrete Paver 20
6.8.6 Portland Cement Concrete 20
6.9 POST GRADING CONSIDERATIONS 20
6.9.1 Site Drainage and Irrigation 20
6.9.2 Utility Trenches 21
6.10 PERCOLATION CHARACTERISTICS 21
6.11 PLAN REVIEW AND CONSTRUCTION SERVICES 22
7.0 LIMITATIONS 22

FIGURES AND PLATES

Figure 1 - Site Location Map
Plate 1 - Geotechnical Map

APPENDICES

APPENDIX A - EXPLORATION LOGS
Plates A-0 through A-7

APPENDIX B - LABORATORY TESTS RESULTS
Table B – Summary of Laboratory Test Results
Plate B-1 through B-3 – Grain Size Distribution Plots
Plates B-4 through B-8 – Consolidation Plots
Plates B-9 – Direct Shear Plot

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purposes of our preliminary geotechnical investigation were to evaluate geotechnical conditions within the project area and to provide conclusions and recommendations relevant to the design and construction of the proposed improvements at the subject site. The scope of this investigation included the following:

- Review of the historical aerial photographs
- Review of published geologic and seismic data for the site and surrounding area
- Review of environmental reports for the site
- Exploratory drilling and soil sampling
- Laboratory testing of selected soil samples
- Engineering analyses of data obtained from our review, exploration, and laboratory testing
- Evaluation of site seismicity, liquefaction potential, settlement potential and onsite infiltration
- Preparation of this report

1.2 SITE LOCATION AND DESCRIPTION

The site is located at the address of 9829 La Serna Drive within the city of Whittier, California. The site is bordered by Credit Union of Southern California building and associated parking lot to the south, Janine Drive to the north and northeast, La Serna Drive to the southeast, and by an office building and associated parking lot to the west and northwest. The location of the site and its relationship to the surrounding areas is shown on the Site Location Map, Figure 1.

Topographically, the project site very gently slopes to the south with elevations ranging from 279 feet above mean sea level at the far northern corner of the site to 266 feet above mean sea level at the far southern corner of the site. The site generally drains to the south towards La Serna Drive.

The site was previously occupied by a Marie Callender's Restaurant. Associated with the restaurant was a single-story building in the eastern portion of the site, an asphalt-covered parking area and various landscaping elements with large tress. A shared driveway is also present along the southern margin of the site At the time of our investigation, the restaurant building had been recently demolished leaving a large dirt covered patch. The remainder of the site was not disturbed. Chain link fencing currently encloses the parking lot and former building area.

From our review of aerial photographs and of the referenced Phase I Environmental Assessment Report Targhee, Inc. Environmental Consulting, dated, January 11, 1993, the restaurant building was

© 2020 Google

N

SITE LOCATION MAP

TTM No. 83435
9829 La Serna Dr.
Whittier, California

NOT TO SCALE

FIGURE 1

constructed in 1977. Prior to then the site was part of large orchard. No other previous site use is known.

1.3 PROPOSED DEVELOPMENT

Based on the conceptual design site plan dated March 2, 2021, prepared by WHA Architects and the preliminary engineered site plan prepared by C&V Consulting, Inc., site development is anticipated to consist of 44 three-story townhome units with associated interior driveways, parking stalls and underground utilities.

No grading or structural plans were available in preparing this proposal. However, we anticipate demolition of existing site improvements and some minor cuts and fills will be required to achieve future surface configuration. We anticipate that future foundation loads will be moderate. All structures are anticipated to be at grade.

2.0 INVESTIGATION

2.1 RESEARCH

We have reviewed the referenced geologic publications and maps (see references) and historical aerial photographs. We also reviewed the referenced environmental reports for the site. Data from these sources were utilized to develop some of the findings and conclusions presented herein.

2.2 SUBSURFACE EXPLORATION

Subsurface exploration for this investigation was conducted on March 16, 2020 and consisted of the drilling of four (4) soil borings to depths ranging from approximately 16.5 to 51.5 feet below the existing ground surface (bgs). The borings were drilled using a truck-mounted, continuous flight, hollow-stem-auger drill rig. A representative of Albus & Associates, Inc. logged the exploratory borings. Visual and tactile identifications were made of the materials encountered, and their descriptions are presented in the Exploration Logs in Appendix A. The approximate locations of the exploratory excavations completed by this firm are shown on the enclosed Geotechnical Map, Plate 1.

Bulk, relatively undisturbed and Standard Penetration Test (SPT) samples were obtained at selected depths within the exploratory borings for subsequent laboratory testing. Relatively undisturbed samples were obtained using a 3-inch O.D., 2.5-inch I.D., California split-spoon soil sampler lined with brass rings. SPT samples were obtained from the boring using a standard, unlined SPT soil sampler. During each sampling interval, the sampler was driven 18 inches with successive drops of a 140-pound automatic hammer falling 30 inches. The number of blows required to advance the sampler was recorded for each six inches of advancement. The total blow count for the lower 12 inches of advancement per soil sample is recorded on the exploration log. Samples were placed in sealed containers or plastic bags and transported to our laboratory for analyses. The borings were backfilled with auger cuttings upon completion of sampling.

2.3 LABORATORY TESTING

Selected samples obtained from our subsurface exploration were tested in our soil laboratory. Tests consisted of in-situ moisture content and dry density, maximum dry density and optimum moisture content, expansion index, soluble sulfate content, direct shear, consolidation/collapse potential, grain-size distribution analysis, and corrosivity testing (pH, chloride, and resistivity). A description of laboratory test criteria and test results is presented in Appendix B.

3.0 SUBSURFACE CONDITIONS

3.1 SOIL CONDITIONS

Descriptions of the earth materials encountered during our investigation are summarized below and are presented in detail on the Exploration Logs presented in Appendix A.

Soil materials encountered at the subject site consisted of older alluvium overlain by artificial fill. The artificial fill typically consists of mottled light brown and brown, damp and stiff to very stiff silty clay/clayey silt with various amounts of sand. The thickness of artificial fill encountered across the site in our exploratory borings varied from 1.5 to 3.5 feet. Thicker accumulations of artificial fill may be encountered locally where the former building was located and associated with underground utilities.

Older alluvial materials were encountered below the artificial fill materials to the maximum depth of exploration (51.5 feet below the ground surface). These deposits are typically reddish brown, yellowish brown, and light brown in color, dry to damp and very stiff to hard silty clay and medium dense to dense silty sand. A more detailed description of the soil material encountered at each of the boring locations is presented in Appendix A.

3.2 GROUNDWATER

Groundwater was not encountered during this firm's subsurface exploration to a maximum depth of 51.5 feet below the existing ground surface. The CDMG Special Report 037 suggests that historic high groundwater for the subject site is between 80 to 100 feet.

3.3 FAULTING

Based on our review of the referenced publications and seismic data, no active faults are known to project through or immediately adjacent the subject sites and the sites do not lie within an "Earthquake Fault Zone" as defined by the State of California in Earthquake Fault Zoning Act. Table 3.1 presents a summary of known seismically active faults within 10 miles of the sites based on the 2008 USGS National Seismic Hazard Maps.

TABLE 3.1
Summary of Faults

Name	Dist. (miles)	Slip Rate (mm/yr.)	Preferred Dip (degrees)	Slip Sense	Rupture Top (km)	Fault Length (km)
Puente Hills (Santa Fe Springs)	1.53	0.7	29	thrust	2.8	11
Elsinore;W	1.65	2.5	75	strike slip	0	45
Elsinore;W+GI+T	1.65	n/a	84	strike slip	0	124
Elsinore;W+GI	1.65	n/a	81	strike slip	0	83
Elsinore;W+GI+T+J	1.65	n/a	84	strike slip	0	199
Elsinore;W+GI+T+J+CM	1.65	n/a	84	strike slip	0	241
Puente Hills (Coyote Hills)	4.37	0.7	26	thrust	2.8	17
Puente Hills (LA)	7.27	0.7	27	thrust	2.1	22
San Jose	9.41	0.5	74	strike slip	0	20
Elysian Park (Upper)	9.99	1.3	50	thrust	3	20

4.0 ANALYSES

4.1 SEISMICITY

2019 CBC requires seismic parameters in accordance with ASCE 7-16. Unless noted otherwise, all section numbers cited in the following refer to the sections in ASCE 7-16.

Per Section 20.3 the project site was designated as Site Class D. We used the OSHPD seismic hazard tool to obtain the basic mapped acceleration parameters, including short periods (S_S) and 1-second period (S_1) MCE_R Spectral Response Accelerations. Section 11.4.8 requires site-specific ground hazard analysis for structures on Site Class E with S_S greater than or equal to 1.0 or Site Class D or E with S_1 greater than or equal to 0.2. Based on the mapped values of S_S and S_1 the project site falls within this category, requiring site-specific hazard analysis in accordance with Section 21.2.

However, "A ground motion hazard analysis is not required for structures where: Structures on Site Class D sites with S_1 greater than or equal to 0.2, provided the value of the seismic response coefficient Cs is determined by Eq. (12.8-2) for values of $T \leq 1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either Eq. (12.8-3) for $T_L \geq T > 1.5T_s$ or Eq. (12.8-4) for $T > T_L$." Assuming this exception is met for this project, a ground motion hazard analysis is not required and mapped seismic values can be used. Should this exception not be met, a ground motion hazard analysis is required to determine the Design response spectra for the proposed structures at this site.

Both mapped and site-specific seismic design parameters are provided in this report as presented in Section 6.2. Details of a ground motion hazard analysis are explained below.

According to Section 21.2.3 (Supplement 1), the site-specific Risk Targeted Maximum Considered Earthquake (MCE_R) spectral response acceleration at any period is the lesser of the probabilistic and the deterministic response accelerations, subject to the exception specified in the same section. The probabilistic response spectrum was developed using the computer program OpenSHA (Field et al., 2013), which implements Method 1 as described on Section 21.2.1.1. Fault Models 3.1 and 3.2 from the Third Uniform California Earthquake Rupture Forecast (UCERF3) were used as the earthquake rupture forecast models for the PSHA. In addition to known fault sources, background seismicity was also included in the PSHA. The ground motion Prediction Equations (GMPEs) selected for use in this analysis are those developed for the Pacific Earthquake Engineering Research Center (PEER) Next Generation Attenuation (NGA) West 2 project. Four GMPEs - Abrahamson et al. (2014), Boore et al. (2014), Campbell and Bozorgnia (2014), and Chiou and Youngs (2014) were used to perform the analysis.

In accordance with Section 21.2.2 (Supplement 1), the deterministic spectral response acceleration at each period was calculated as the 84th percentile, 5% damped response acceleration, using NGA-West2 GMPE Worksheet. For this, the information from at least three causative faults with the greatest contribution per deaggregation analysis were used and the larger acceleration spectrum among these was selected as the deterministic response spectrum. The deterministic spectrum was adjusted per requirements in Section 21.2.2 (Supplement 1) where applicable. Both probabilistic and deterministic spectra were subjected to the maximum direction scale factors specified in Section 21.2 to produce the maximum acceleration spectra.

Design response spectrum was developed by subjecting the site-specific MCE_R response spectrum to the provisions outlined in Section 21.3. This process included comparison with 80% code-based design spectrum determined in accordance with Section 11.4.6. The short period and long period site coefficient (Fa and Fv, respectively) were determined per Section 21.3 in conjunction with Table 11.4-1. Site specific design acceleration parameters (S_{MS}, S_{M1}, S_{DS}, and S_{D1}) were calculated according to Section 21.4.

Per Section 11.2 (definitions on Page 79 of ASCE7-16) for evaluation of liquefaction, lateral spreading, seismic settlements, and other soil-related issues, Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration PGA_M shall be used. The site-specific PGA_M is calculated per Section 21.5.3, as the lesser of the probabilistic PGA_M (Section 21.5.1) and deterministic PGA_M (Section 21.5.2), but no less than 80% site modified peak ground acceleration, PGA_M, obtained from OSHPD seismic hazard tool. From our analyses, we obtain a PGA_M of 0.792g.

4.2 STATIC SETTLEMENT

Laboratory testing of older alluvial materials suggests they are somewhat overconsolidated. The over consolidation ratio (OCR) was interpreted to range about 5 in the upper 10 feet. Two analyses were performed to evaluate settlement of the structures. The first model was based on a conventional shallow strip footing 2 feet wide and a wall load of 2,000 psf. This model yielded a total settlement of 0.4 inches. The second model was based on a conventional square footing with 5

feet width and a column load of 2,000 psf. This model yielded a total settlement of 0.4 inches. Both analyses assume the upper 2 feet of existing fill soils would be removed and replaced as compacted fill.

5.0 CONCLUSIONS

5.1 FEASIBILITY OF PROPOSED DEVELOPMENT

From a geotechnical point of view, the proposed site development is considered feasible provided the recommendations presented in this report are incorporated into the design and construction of the project. Furthermore, it is also our opinion that the proposed development will not adversely impact the stability of adjoining properties. Key issues that could have significant fiscal impacts on the geotechnical aspects of the proposed site development are discussed in the following sections of this report.

5.2 GEOLOGIC HAZARDS

5.2.1 Ground Rupture

No known active faults are known to project through the subject sites nor do the sites lie within the boundaries of an "Earthquake Fault Zone" as defined by the State of California in the Whittier Earthquake Fault Zoning Act. The closest known active fault is Elsinore fault zone, Whittier section (Whittier fault) fault located approximately 1.65 miles away. Therefore, potential for ground rupture due to an earthquake beneath the sites is considered low.

5.2.2 Ground Shaking

The site is situated in a seismically active area that has historically been affected by generally moderate to occasionally high levels of ground motion. The site lies in relatively close proximity to several seismically active faults; therefore, during the life of the proposed improvements, the property will probably experience similar moderate to occasionally high ground shaking from these fault zones, as well as some background shaking from other seismically active areas of the Southern California region. Design and construction in accordance with the current California Building Code (CBC) requirements is anticipated to address the issues related to potential ground shaking.

5.2.3 Landsliding

Geologic hazards associated with landsliding are not anticipated at the site since the site is relatively level.

5.2.4 Liquefaction

Engineering research of soil liquefaction potential (Youd, et al., 2001) indicates that generally three basic factors must exist concurrently in order for liquefaction to occur. These factors include:

- A source of ground shaking, such as an earthquake, capable of generating soil mass distortions.
- A relatively loose silty and/or sandy soil.

- A relative shallow groundwater table (within approximately 50 feet below ground surface) or completely saturated soil conditions that will allow positive pore pressure generation.

Considering that the site is not underlain by relatively loose silty and/or sandy soils and that groundwater was not encountered to the maximum depth of 51.5 feet during our site exploration, the potential for liquefaction to occur beneath the site is considered very low. The site is **not** located within a State-designated zone of potentially liquefiable soils.

5.3 STATIC SETTLEMENT

Analyses were performed to evaluate potential for static settlement of the underlying older alluvium. Our analyses were based on the results of consolidation tests performed on selected samples from our borings as well as the correlations between deformation properties (elastic modulus) and the onsite soil properties as represented by standard penetration test blow counts corrected for hammer efficiency (N_{60}).

Provided site grading is performed in accordance with the recommendations provided herein and based on the anticipated relatively light foundation loads, total and differential static settlement is not anticipated to exceed 1 inch and ½-inch over 30 feet, respectively, for the proposed residential structure. The estimated magnitudes of static settlements are considered within tolerable limits for the proposed structure.

5.4 EXCAVATION AND MATERIAL CHARACTERISTICS

Onsite earth materials are anticipated to be relatively easy to excavate with conventional heavy earthmoving equipment. The site earth materials are generally considered suitable for reuse as fill provided they are cleared on deleterious debris and oversized rocks (greater than 4 inches in greatest dimension). Concrete debris and asphalt from demolition of the existing parking lot can be reduced in size (4" minus) and incorporated within fill soils during earthwork operations.

5.5 SHRINKAGE/BULKAGE AND SUBSIDENCE

Volumetric changes in earth quantities will occur when excavated onsite soil materials are replaced as properly compacted fill. We estimate that the near surface soils will shrink approximately less than 5 to 10 percent when removed and replaced as compacted fill. Subsidence due to processing of excavations exposing competent materials is anticipated to be negligible. The estimates of shrinkage and subsidence are intended as an aid for project engineers in determining earthwork quantities. However, these estimates should be used with some caution since they are not absolute values. Contingencies should be made for balancing earthwork quantities based on actual shrinkage and subsidence that occurs during the grading process.

5.6 SOIL EXPANSION

Based on our laboratory test results and the USCS visual manual classification, the near-surface soils are generally anticipated to possess a **Medium** expansion potential. However, a very high swell strain was observed in the consolidation test result from a sample collected in B-4 at 4 feet within the

older alluvial materials. Adverse effects from expansive materials can be mitigated through the use of adequately designed foundations and slab systems. Specific recommendations for foundations and slab systems are presented in a later section of this report. Additional mitigation can also be achieved by lime treatment, removal and replacement, and the placement of compacted fills below slabs on grade at lower relative compactions and higher moistures to lessen their expansion potential. Specific recommendations for these additional mitigation measures can be provided, if requested. Additional testing for soil expansion will be required subsequent to rough grading and prior to construction of foundations and other concrete flatwork to confirm these conditions.

6.0 RECOMMENDATIONS

6.1 EARTHWORK

6.1.1 General Earthwork and Grading Specifications

All earthwork and grading should be performed in accordance with applicable requirements of Cal/OSHA, applicable specifications of the Grading Codes of the City of Whittier, California in addition to the recommendations presented herein.

6.1.2 Pre-Grade Meeting and Geotechnical Observation

Prior to commencement of grading, we recommend a meeting be held between the developer, City Inspector, grading contractor, civil engineer, and geotechnical consultant to discuss the proposed grading and construction logistics. We also recommend a geotechnical consultant be retained to provide soil engineering and engineering geologic services during site grading and foundation construction. This is to observe compliance with the design specifications and recommendations and to allow for design changes in the event that subsurface conditions differ from those anticipated. If conditions are encountered that appear to be different than those indicated in this report, the project geotechnical consultant should be notified immediately. Design and construction revisions may be required.

6.1.3 Site Clearing

Areas to be graded should be cleared of vegetation, existing asphalt, underground improvements to be abandoned and deleterious materials. Under certain conditions, existing underground utility lines may also be abandoned in place. However, specific recommendations should be provided by this firm in advance. Any seepage pits and water wells encountered during future site grading should also be properly destroyed or abandoned in accordance with the requirements established by the governing agencies as well as recommendations made in the field by the project geotechnical consultant.

The project geotechnical consultant should be notified at the appropriate times to provide observation services during clearing operations to verify compliance with the above recommendations. Voids created by clearing and excavation should be left open for observation by the geotechnical consultant. Should any unusual soil conditions or subsurface structures be encountered during site clearing or grading that are not described or anticipated herein, these conditions should be brought to the immediate attention of the project geotechnical consultant for corrective recommendations as needed.

Temporary construction equipment (office trailers, power poles, etc.) should be positioned to allow adequate room for clearing and recommended ground preparation to be performed for proposed structures, pavements, and hardscapes.

6.1.4 Ground Preparation (Removals and Overexcavations)

In general, the artificial fill materials are considered unsuitable for support of the proposed development and should be removed down to competent older alluvium. Based on our exploratory borings, the depth of the artificial fill materials is anticipated to be up to 3.5 feet. However, deeper fills are expected in the areas of the previous site improvements (i.e., utility lines) and where the former building was demolished. In addition to the artificial fill materials, disturbed older alluvial materials in the vicinity of the existing trees may also be present and will require removal.

Removal of unsuitable materials should extend laterally beyond the limits of proposed buildings and structural improvements a distance equal to the depth of removal (i.e., 1:1, H:V projection) but not less than 5 feet. However, removals for retaining walls and pavement may be limited to the edge of the foundations or pavement where lateral restrictions to removals are present such as property lines. The estimated depths of unsuitable materials, based on our exploratory borings, are shown on the Geotechnical Map, Plate 1. The actual depth and limits of removals should be determined by the geotechnical consultant during grading.

Following removals, all building pads and walls should be overexcavated to a minimum depth of 1 foot below the bottoms of footings. The building pad overexcavations should extend at least 5 feet beyond the outside edge of the perimeter foundations, whereas for the wall, the overexcavations maybe limited to the edge of the foundations. Pavement areas should also be overexcavated at least 2 feet below finish grades. The overexcavations for pavement areas should extend to the outside edge of the pavement.

All removal and overexcavations buttons excavations should be evaluated by the geotechnical consultant during grading to confirm the exposed conditions are as anticipated and to provide supplemental recommendations if required.

6.1.5 Scarification

Prior to placement of compacted fill, the exposed ground should be scarified to a depth of 6 to 8 inches, moisture conditioned to at least 110 percent of the optimum moisture content, then compacted to at least 90 percent of the laboratory standard. The laboratory standard for maximum dry density and optimum moisture content for each soil type should be determined in accordance with ASTM D 1557.

6.1.6 Fill Placement

Materials excavated from the site may be reused as fill provided they are free of deleterious material (i.e. tree roots) and particles greater than 4 inches in maximum dimension (oversized materials). Asphaltic and concrete debris generated during site demolition or encountered within the existing fill can be incorporated within new fill soils during earthwork operations provided they are reduced to no more than 4 inches in maximum dimension. Such materials should be mixed thoroughly with fill soils to prevent nesting. All fill should be placed in lifts no greater than 8 inches in loose thickness, moisture conditioned to at least the optimum moisture content, then compacted in place to at least 90

percent of the laboratory standard. Each lift should be treated in a similar manner. Subsequent lifts should not be placed until the project geotechnical consultant has approved the preceding lift.

6.1.7 Import Materials

If import materials are required to achieve the proposed finish grades, the proposed import soils should have an Expansion Index (EI, ASTM D 4829) less than 91 and possess negligible soluble sulfate concentrations. Import sources should be indicated to the geotechnical consultant prior to hauling the materials to the site so that appropriate testing and evaluation of the fill materials can be performed in advance.

6.1.8 Temporary Excavations

Temporary construction slopes in site materials that are not surcharged may be cut vertically up to a height of 4 feet. Temporary excavations greater than 4 feet but no greater than 10 feet in height that are not surcharged should be laid back at a maximum gradient of 1:1 (H:V) or properly shored.

Excavations should not be left open for prolonged periods of time. The project geotechnical consultant should observe all temporary cuts to confirm anticipated conditions and to provide alternate recommendations if conditions dictate. All excavations should conform to the requirements of Cal/OSHA. Based on the anticipated removal/overexcavation depths discussed herein and the current positions of the buildings from property lines, we anticipate that removals can be accomplished with open cuts. However, if deeper removals are required during grading or final building locations are closer to property lines than currently shown on the referenced plans resulting in insufficient room for recommended lay back cuts, shoring or slot cutting methods may be required. Additional recommendations for such conditions can be provided after reviewing final site plans and during grading.

6.2 SEISMIC DESIGN PARAMETERS

6.2.1 Mapped Seismic Design Parameters

For design of the project in accordance with Chapter 16 of the 2019 CBC, the mapped seismic parameters may be taken as presented in the tables 6.1.

TABLE 6.1
2019 CBC Mapped Seismic Design Parameters

Parameter	Value
Site Class	D
Mapped MCE_R Spectral Response Acceleration, short periods, S_S	1.795
Mapped MCE_R Spectral Response Acceleration, at 1-sec. period, S_1	0.639
Site Coefficient, F_a	1.0
Site Coefficient, F_v	1.7*
Adjusted MCE_R Spectral Response Acceleration, short periods, S_{MS}	1.795
Adjusted MCE_R Spectral Response Acceleration, at 1-sec. period, S_{M1}	1.086
Design Spectral Response Acceleration, short periods, S_{DS}	1.196
Design Spectral Response Acceleration, at 1-sec. period, S_{D1}	0.724
Long-Period Transition Period, T_L (sec.)	8
Seismic Design Category for Risk Categories I-IV	II

MCE_R = Risk-Targeted Maximum Considered Earthquake

*According to Section 11.4.8 in ASCE 7-16, "a ground motion hazard analysis shall be performed in accordance with Section 21.2 for the following structures on Site Class D and E sites with S_1 greater than or equal to 0.2." However, "A ground motion hazard analysis is not required for structures where: Structures on Site Class D sites with S_1 greater than or equal to 0.2, provided the value of the seismic response coefficient C_s is determined by Eq. (12.8-2) for values of $T \leq 1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either Eq. (12.8-3) for $T_L \geq T > 1.5T_s$ or Eq. (12.8-4) for $T > T_L$." The F_v value of 1.7 above from Table 11.4-2 assumes that this exception is met and that a ground motion hazard analysis is not required. Should this exception not be met, the site-specific seismic design parameters provided in the next section should be used.

6.2.2 Site-Specific Seismic Design Parameters

In addition to the Code Spectra parameters presented in Table 6.1, we have performed a site-specific ground motion hazard analysis in accordance with Chapter 21 of ASCE 7-16 to obtain site-specific seismic design acceleration parameters, the risk-targeted maximum considered earthquake response spectrum, and the design earthquake response spectrum. The site-specific seismic design parameters are presented in Table 6.2.

TABLE 6.2
2019 CBC Site Specific Seismic Design Parameters

Parameter	Value
Site Class	D
Adjusted MCE Spectral Response Acceleration, short periods, S_{MS}	1.945
Adjusted MCE Spectral Response Acceleration, at 1-sec. period, S_{M1}	1.278
Design Spectral Response Acceleration, short periods, S_{DS}	1.297
Design Spectral Response Acceleration, at 1-sec. period, S_{D1}	0.852

MCE = Maximum Considered Earthquake

6.3 PRELIMINARY FOUNDATION DESIGN

6.3.1 General

The following design parameters are provided to assist the project structural engineer to design foundations for structures at the site. These design parameters are based on typical site materials encountered during subsurface exploration and are provided for preliminary design and estimating purposes. The project geotechnical consultant should provide final design parameters following observation and testing of site materials during grading. Depending on actual materials encountered during site grading, the design parameters presented herein may require modification.

6.3.2 Soil Expansion

Although expansion index test results indicate that soils possess medium expansion potential, the recommendations presented herein are based on soils with a **High** expansion potential due to a very high swell strain noted in one of the consolidation test results. Following site grading, additional testing of site soils should be performed by the project geotechnical consultant to confirm the basis of these recommendations. If site soils with higher expansion potentials are encountered or imported to the site, the recommendations contained herein may require modification.

6.3.3 Static and Seismic Settlement

Provided that the recommendations for ground preparation in this report are followed and based on anticipated foundation loads discussed herein, total and differential static settlements are anticipated to be less than 1 inch and ½ inch over 30 feet, respectively. These values are considered within tolerable limits of proposed structures and site improvements. Design of the structures should consider these maximum anticipated settlements.

6.3.4 Allowable Bearing Value

Foundations in compacted fill or competent native soils may utilize a bearing value of 1,300 pounds per square foot (psf) for continuous and pad footings a minimum width of 12 inches and founded at a minimum depth of 12 inches below the lowest adjacent grade. This value may be increased by 170 psf and 510 psf for each additional foot in width and depth, respectively, up to a maximum value of 3,000 psf. Recommended allowable bearing values include both dead and live loads, and may be increased by one-third for wind and seismic forces.

6.3.5 Lateral Resistance

A passive earth pressure of 300 pounds per square foot per foot of depth (psf/ft) up to a maximum value of 2,000 pounds per square foot (psf) may be used to determine lateral bearing for footings. This value may be increased by one-third when designing for wind and seismic forces. A coefficient of friction of 0.29 times the dead load forces may also be used between concrete and the supporting soils to determine lateral sliding resistance. No increase in the coefficient of friction should be used when designing for wind and seismic forces.

The above values are based on footings placed directly against compacted fill or competent native soils. In the case where footing sides are formed, all backfill against the footings should be compacted to at least 90 percent of the laboratory standard.

6.3.6 Footing and Slab on Grade

Exterior and interior building footings should be founded at a minimum depth of 18 inches and 12 inches, respectively, below the lowest adjacent grade. All continuous footings should be reinforced with a minimum of four No. 5 bars, two top and two bottom. The structural engineer may require different reinforcement and should dictate if greater than the recommendations provided herein.

Interior isolated pad footings should be a minimum of 24 inches square and founded at minimum depths of 12 inches below the lowest adjacent final grade. Exterior isolated pad footings intended for support of patio covers or similar construction should be a minimum of 24 inches square and founded at a minimum depth of 24 inches below the lowest adjacent final grade.

Interior concrete slabs constructed on grade should be a minimum 5 inches thick and should be reinforced with No. 3 bars spaced 12 inches on center, each way. Care should be taken to ensure the placement of reinforcement at mid-slab height. The structural engineer may recommend a greater slab thickness and reinforcement based on the proposed use and loading conditions and such recommendations should govern if greater than the recommendations presented herein.

Concrete floor slabs in areas to receive carpet, tile, or other moisture-sensitive coverings should be underlain with a minimum of 10-mil moisture vapor retarder conforming to ASTM E 1745-11, Class A. The membrane should be properly lapped, sealed, and underlain with at least 4 inches of sand having a SE no less than 30. One inch of this sand may be placed over the membrane to aid in the curing of the concrete. This vapor retarder system is anticipated to be suitable for most flooring finishes that can accommodate some vapor emissions. However, this system may emit more than 4 pounds of water per 1000 sq. ft. and, therefore, may not be suitable for all flooring finishes. Additional steps should be taken if such vapor emission levels are too high for anticipated flooring finishes.
Special consideration should be given to slabs in areas to receive ceramic tile or other rigid, crack-sensitive floor coverings. Design and construction of such areas should mitigate hairline cracking as recommended by the structural engineer.

For design of the slab in accordance with the WRI, an effective Plastic Index (PI) of 41 should be used in the design. This value includes factors for ground slope and overconsolidation. The beams should be reinforced with a minimum of four No. 4 bars, two top and two bottom. Beams should be spaced at a maximum spacing of 15 feet in each direction. From our preliminary calculations, beams spaced at 15 feet on center and having a depth of 12 inches below the bottom of slab meet the minimum requirements of the WRI.

6.3.7 Post-Tensioned Slab on Grade

As an alternative, a post-tension foundation system can be used for support of the proposed buildings. Perimeter edge beams for the post-tensioned slabs should have a minimum effective width of 12 inches and be founded at a minimum depth of 12 inches below the lowest adjacent final ground surface. Where a post-tensioned mat is utilized, the exterior edge of the mat should be embedded at least 8 inches below the lowest adjacent grade. The thickness of the floor slab/mat should be determined by the project structural engineer; however, we recommend a minimum slab thickness of 4 inches.

Concrete floor slabs in areas to receive carpet, tile, or other moisture-sensitive coverings should be underlain with a minimum of 10-mil moisture vapor retarder conforming to ASTM E 1745, Class A. The membrane should be properly lapped, sealed, and underlain within a layer of sand at least 4 inches thick. One inch of sand may be placed over the membrane to aid in the curing of the concrete. The sand should have a SE no less than 30. This vapor retarder system is anticipated to be suitable for most flooring finishes that can accommodate some vapor emissions. However, this system may emit more than 4 pounds of water per 1000 sq. ft. and therefore, may not be suitable for all flooring finishes. Additional steps should be taken if such vapor emission levels are too high for anticipated flooring finishes. Where a mat is utilized, the sand may be reduced to 1 inch provided the mat is at least 8 inches thick.

Prior to placing concrete, subgrade soils below slab-on-grade/mat areas should be thoroughly moistened to provide moisture contents that are at least 110 percent of the optimum moisture content to a depth of 12 inches.

Based on the guidelines provided in the "Design of Post-Tensioned Slabs-on-Ground" 3rd Edition by Post-Tensioning Institute, the e_m and y_m values are summarized in Table 6.2 below.

TABLE 6.2
PTI Design Parameters

Parameter	Value
Edge Lift Moisture Variation Distance, e_m	3.8 feet
Edge Lift, y_m	3.311 inches
Center Lift Moisture Variation Distance, e_m	6.5 feet
Center Lift, y_m	2.669 inches

6.3.8 Foundation Observations

Foundation excavation should be observed by the project geotechnical consultant to verify that they have been excavated into competent bearing soils and to the minimum embedment recommended above. These observations should be performed prior to placement of forms or reinforcement. The excavations should be trimmed neat, level and square. Loose, sloughed or moisture-softened materials and debris should be removed prior to placing concrete.

6.4 RETAINING AND SCREENING WALLS

6.4.1 General

The following preliminary design and construction recommendations are provided for general retaining and screen walls supported by engineered compacted fill or competent native soils. Final wall designs specific to the site development should be provided for review once completed. The structural engineer and architect should provide appropriate recommendations for sealing at all joints and applying moisture-proofing material on the back of the walls.

6.4.2 Allowable Bearing Value and Lateral Resistance

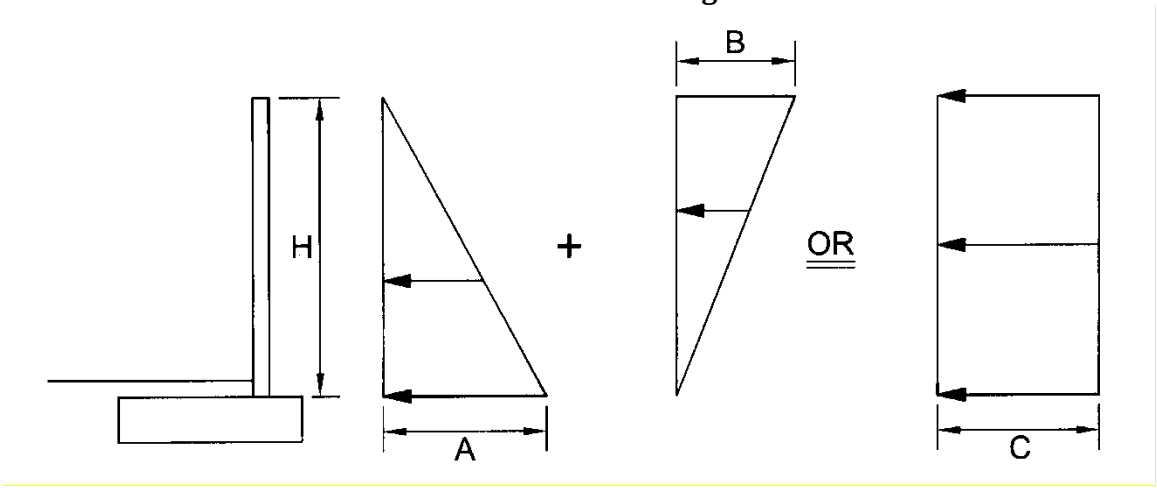
Design of retaining and screen walls may utilize the bearing and lateral resistance values provided in Section 6.4.4 and **Error! Reference source not found.**4.5. The passive earth pressure for walls along property lines, where lateral removals are likely restricted should be reduced by 50%.

6.4.3 Active Earth Pressures

Static and seismic earth pressures for level and 2:1 (H:V) backfill conditions are provided in Table 6.3. Seismic earth pressures provided herein are based on the method provided by Seed & Whitman (1970) using a peak ground acceleration (PGA) of 0.46 g for 10% probability of exceedance in 50 years. As indicated in Section 1803.5.12 of the 2019 CBC, retaining walls supporting 6 feet of backfill or less are not required to be designed for seismic earth pressures. The values provided in the following table do not consider hydrostatic pressure. Retaining walls should also be designed to support adjacent surcharge loads imposed by other nearby footings or traffic loads in addition to the earth pressure.

TABLE 6.3

SEISMIC EARTH PRESSURES
Pressure Diagram



Static Component | Seismic Component | Total Force

Pressure Values
Walls Up To 10 Feet High

Value	Backfill Condition	
	Level	2H:1V Slope
A	46H	26H
B	14H	14H
C	30H	20H

Note:
H is in feet and resulting pressure is in psf. Design may utilize either the sum of the static component and the seismic component force diagrams or the total force diagram above. SEAOSC has suggested using a load factor of 1.7 for the static component and 1.0 for the seismic component. The actual load factors should be determined by the structural engineer.

6.4.4 Drainage and Moisture-Proofing

Retaining walls should be constructed with a perforated pipe and gravel subdrain to prevent entrapment of water in the backfill. The perforated pipe should consist of 4-inch-diameter, ABS SDR-35 or PVC Schedule 40 with the perforations laid down. The pipe should be embedded in ¾- to 1½-inch open-graded gravel wrapped in filter fabric. The gravel should be at least one foot wide and extend at least one foot up the wall above the footing and drainage outlet. Drainage gravel and piping should not be placed below outlets and weepholes. Filter fabric should consist of Mirafi 140N, or equal. Outlet pipes should be directed to positive drainage devices.

The use of weepholes may be considered in locations where aesthetic issues from potential nuisance water are not a concern. Weepholes should be 2 inches in diameter and provided at least every 6 feet on center. Where weepholes are used, perforated pipe may be omitted from the gravel subdrain.

Retaining walls supporting backfill should also be coated with a moisture-proofing compound or covered with such material to inhibit infiltration of moisture through the walls. Moisture-proofing material should cover any portion of the back of wall that will be in contact with soil and should lap over and onto the top of footing. A drainage panel should be provided between the soil backfill and waterproofing. The panel should extend from the top of the backdrain gravel up to within 12 inches of finish grade. The top of footing should be finished smooth with a trowel to inhibit the infiltration of water through the wall. The project structural engineer should provide specific recommendations for moisture-proofing, water stops, and joint details.

6.4.5 Foundation Observations

Footing excavations should be observed by the project geotechnical consultant to verify that they have been excavated into competent bearing soils and to the minimum embedment recommended herein. These observations should be performed prior to placement of forms or reinforcement. The excavations should be trimmed neat, level and square. Loose, sloughed or moisture-softened materials and debris should be removed prior to placing concrete.

6.4.6 Wall Backfill

Onsite soils may generally be used for backfill of retaining walls. However, soils with an expansion index equal to or greater than 70 should not be used. The project geotechnical consultant should approve all backfill used for retaining walls. Wall backfill should be moisture-conditioned to slightly over the optimum moisture content; placed in lifts no greater than 12 inches in thickness, and then mechanically compacted with appropriate equipment to at least 90 percent of the laboratory standard. Hand-operated compaction equipment should be used to compact the backfill placed immediately adjacent to the wall to avoid damage to the wall. Flooding or jetting of backfill material is not recommended.

6.5 EXTERIOR FLATWORK

Exterior flatwork should be a minimum 4 inches thick. Cold joints or saw cuts should be provided at least every 5 feet in each direction. Flatwork having a minimum dimension more than 5 feet should be reinforced with No. 3 bars spaced 24 inches center to center each way or 6-inch by 6-inch, W2.9

by W2.9 welded wire mesh. Special jointing detail should be provided in areas of block-outs, notches, or other irregularities to avoid cracking at points of high stress. Subgrade soils below flatwork should be thoroughly moistened to at least 120 percent of the optimum moisture content to a depth of 12 inches. Moistening should be accomplished by lightly spraying the area over a period of a few days just prior to pouring concrete. The geotechnical consultant should observe and verify the density and moisture content of subgrade soils prior to pouring concrete to ensure that the required compaction and pre-moistening recommendations have been met.

Drainage from flatwork areas should be directed to local area drains and/or other appropriate collection devices designed to carry runoff water to the street or other approved drainage structures. The concrete flatwork should also be sloped at a minimum gradient of 2 percent away from building foundations and retaining walls.

6.6 CONCRETE MIX DESIGN

Laboratory testing of near-surface soils for soluble sulfate content indicates soluble sulfate concentration of 0.014%. We recommend following the procedures provided in ACI 318, Table 4.3.1 for **S1** sulfate exposure. Upon completion of rough grading, an evaluation of as-graded conditions and further laboratory testing should be completed for the site to confirm or modify the recommendations provided in this section.

6.7 CORROSION

Results of preliminary testing of soils for pH and minimum resistivity indicate the site is potentially **Severely Corrosive** to metals that are in contact or close proximity to onsite soils. As such, specific recommendations should be obtained from a corrosion specialist if construction will include metals that will be near or in direct contact with site soils.

Results of preliminary testing of soils for chloride indicate a relatively low risk for corrosion due to chlorides in site soils. Construction of reinforced concrete in accordance with the current ACI requirements for concrete cover over rebar is anticipated to provide appropriate protection of reinforcing steel.

6.8 PRELIMINARY PAVEMENT DESIGN

6.8.1 Preliminary Pavement Structural Sections

Based on the soil conditions present at the site and an estimated traffic index, preliminary pavement sections are provided in the table 6.4. An assumed "R-value" of 5 was used for the near-surface soil in this preliminary pavement design. The sections provided below are for planning purposes only and should be re-evaluated subsequent to site grading. Final pavement sections should be based on actual R-value testing of in-place soils and analysis of anticipated traffic. ***Due to a very high swell strain noted in one of the consolidation test results, full depth AC can be used for driveways and parking stalls to help reduce infiltration in the subsurface.***

TABLE 6.4
PRELIMINARY PAVEMENT STRUCTURAL SECTIONS

Location	Traffic Index	AC (inches)	Concrete Pavers (mm)	PCC (inches)	AB (inches)
Private Driveway	5.5	3.0 4.0 5.0 8.5	--	--	13.0 10.0 8.0 0
		--	--	8.0	--
		--	80.0	--	14.0
Parking Stalls	--	3.0	--	--	6.0
		5.5			0.0

6.8.2 Subgrade Preparation

Prior to placement of paving elements, subgrade soils should be scarified 6 inches, moisture-conditioned to above the optimum moisture content then compacted to at least 90 percent of the maximum dry density determined in accordance with ASTM D1557. Areas observed to pump or yield under vehicle traffic should be removed and replaced with firm and unyielding engineered compacted soil or aggregate base materials.

6.8.3 Aggregate Base

Aggregate base materials should be Crushed Aggregate Base or Crushed Miscellaneous Base conforming to Section 200-2 of the Standard Specification for Public Works Construction (Greenbook) or Class 2 Aggregate Base conforming to the Caltrans' Standard Specifications. The materials should be moisture conditioned to slightly over the optimum moisture content then compacted to at least 95 percent of ASTM D 1557.

6.8.4 Asphaltic Concrete

Paving asphalt should be PG 64-10 conforming to the requirements of Section 203-1 of the Greenbook. Asphalt concrete materials should conform to Section 203-6 and construction should conform to Section 302 of the Greenbook.

6.8.5 Concrete Paver

Concrete pavers should conform to the requirements of ASTM C 936. Construction of the pavers, including bedding sand, should follow manufacturer's specifications. The typical thickness of bedding sand is about 1 inch. The gradation of bedding sand should meet the requirement in Table 6.5.

TABLE 6.5
Gradation for Sand Bedding

Sieve Size	Percent Passing
⅜"	100
No. 4	95 - 100
No. 8	80 - 100
No. 16	50 - 85
No. 30	25 - 60
No. 50	5 - 30
No. 100	0 - 10
No. 200	0 - 1

6.8.6 Portland Cement Concrete

Portland cement concrete used to construct concrete paving should conform to Section 201 of the Greenbook and should have a minimum compressive strength of 3,250 pounds per square inch (psi) at 28 days. Reinforcement and jointing of concrete pavement sections should be designed according to the minimum recommendations provided by the Portland Cement Association (PCA). For rigid pavement, transverse and longitudinal contraction joints should be provided at spacing no greater than 15 feet. Score joints may be constructed by saw cutting to a depth of ¼ of the slab thickness. Expansion/cold joints may be used in lieu of score joints. Such joints should be properly sealed. Where traffic will traverse over cold joints without keyways or dowels or edges of concrete paving, the edges should be thickened by 20% of the design thickness toward the edge over a horizontal distance of 5 feet.

6.9 POST GRADING CONSIDERATIONS

6.9.1 Site Drainage and Irrigation

The ground immediately adjacent to foundations should be provided with positive drainage away from the structures in accordance with 2019 CBC, Section 1804.4. No rain or excess water should be allowed to pond against structures such as walls, foundations, flatwork, etc.

Excessive irrigation water can be detrimental to the performance of the proposed site development. Water applied in excess of the needs of vegetation will tend to percolate into the ground. Such

percolation can lead to nuisance seepage and shallow perched groundwater. Seepage can form on slope faces, on the faces of retaining walls, in streets, or other low-lying areas. These conditions could lead to adverse effects such as the formation of stagnant water that breeds insects, distress or damage of trees, surface erosion, slope instability, discoloration and salt buildup on wall faces, and premature failure of pavement. Excessive watering can also lead to elevated vapor emissions within buildings that can damage flooring finishes or lead to mold growth inside the home.

Key factors that can help mitigate the potential for adverse effects of overwatering include the judicious use of water for irrigation, use of irrigation systems that are appropriate for the type of vegetation and geometric configuration of the planted area, the use of soil amendments to enhance moisture retention, use of low-water demand vegetation, regular use of appropriate fertilizers, and seasonal adjustments of irrigation systems to match the water requirements of vegetation. Specific recommendations should be provided by a landscape architect or other knowledgeable professional.

6.9.2 Utility Trenches

Trench excavations should be constructed in accordance with the recommendations contained in Section **Error! Reference source not found.** of this report. Trench excavations must also conform to the requirements of Cal/OSHA.

Trench backfill materials and compaction criteria should conform to the requirements of the local municipalities. As a minimum, utility trench backfill should be compacted to at least 90 percent of the laboratory standard. Materials placed within the pipe zone (6 inches below and 12 inches above the pipe) should consist of particles no greater than ¾ inches and have a SE of at least 30. The materials within the pipe zone should be moisture-conditioned and compacted by hand-operated compaction equipment. Above the pipe zone (>1 foot above pipe), the backfill may consist of general fill materials. Trench backfill should be moisture-conditioned to slightly over the optimum moisture content, placed in lifts no greater than 12 inches in thickness, and then mechanically compacted with appropriate equipment to at least 90 percent of the laboratory standard. For trenches with sloped walls, backfill material should be placed in lifts no greater than 8 inches in loose thickness, and then compacted by rolling with a sheepsfoot roller or similar equipment. The project geotechnical consultant should perform density testing along with probing to verify that adequate compaction has been achieved.

Within shallow trenches (less than 18 inches deep) where pipes may be damaged by heavy compaction equipment, imported clean sand having a SE of 30 or greater may be utilized. The sand should be placed in the trench, thoroughly watered, and then compacted with a vibratory compactor. For utility trenches located below a 1:1 (H:V) plane projecting downward from the outside edge of the adjacent footing base or crossing footing trenches, concrete or slurry should be used as trench backfill.

6.10 PERCOLATION CHARACTERISTICS

Based on the subsurface exploration and percolation testing, infiltration of stormwater is not considered to be feasible due to the site being underlain by the fine-grained nature of the subsurface soils, which have impeded the infiltration testing. Infiltration of stormwater through the use of a shallow chamber system or dry well at the site is deemed unfeasible. Percolation characteristics of

site soils are not anticipated to meet the minimum requirements of the Los Angeles County guidelines. Therefore, the treatment of stormwater will require the use of other methods such as biofiltration.

6.11 PLAN REVIEW AND CONSTRUCTION SERVICES

We recommend ***Albus & Associates, Inc.*** be engaged to review any future development plans, including civil plans (grading plans), foundation plans, and proposed structural loads, prior to construction. This is to verify that the assumptions of this report are valid and that the preliminary conclusions and recommendations contained in this report have been properly interpreted and are incorporated into the project plans and specifications. If we are not provided the opportunity to review these documents, we take no responsibility for misinterpretation of our preliminary conclusions and recommendations.

We recommend that a geotechnical consultant be retained to provide soil engineering services during the construction of the project. These services are to observe compliance with the design, specifications or recommendations, and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

If the project plans change significantly from the assumed development described herein, the project geotechnical consultant should review our preliminary design recommendations and their applicability to the revised construction. If conditions are encountered during construction that appears to be different than those indicated in this report or subsequent design reports, the project geotechnical consultant should be notified immediately. Design and construction revisions may be required.

7.0 LIMITATIONS

This report is based on the proposed development and geotechnical data as described herein. The materials encountered on the project site and utilized in our laboratory testing for this investigation are believed representative of the total project area, and the conclusions and recommendations contained in this report are presented on that basis. However, soil and bedrock materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could affect the conclusions and recommendations contained herein. As such, observation and testing by a geotechnical consultant during the grading and construction phases of the project are essential to confirm the basis of this report.

This report has been prepared consistent with that level of care being provided by other professionals providing similar services at the same locale and time period. The contents of this report are professional opinions and as such, are not to be considered a guaranty or warranty.

This report should be reviewed and updated after a period of one year or if the site ownership or project concept changes from that described herein.

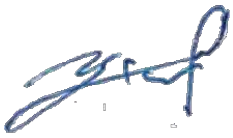
This report has been prepared for the exclusive use of **Mission Pacific Land Company** and their project consultants in the planning and design of the proposed development. This report has not

been prepared for use by parties or projects other than those named or described herein. This report may not contain sufficient information for other parties or other purposes.

This report is subject to review by the controlling governmental agency.

Respectfully submitted,

ALBUS & ASSOCIATES, INC.



Eung Jin Jeon, Ph.D.
Associate Engineer
G.E. 3096

Michael O. Spira
Principal Engineering Geologist
C.E.G. 1976

REFERENCES

Reports

Smith-Emery Company. 1993. Phase I Environmental Assessment Update Report, 9829 La Serna Drive, Whittier, California. Report dated November 2, 1993.

Targhee, Inc. Environmental Consulting. 1993. Phase I Environmental Assessment Report, 9829 La Serna Drive, Whittier, California. Report dated January 11, 1993.

Publications

Abrahamson, N.A., Silva, W.J., and Kamai, R. 2014. "Update of the AS08 Ground-Motion Prediction Equations Based on the NGA-West2 Data Set." Earthquake Spectra 30 (3): 1179-1197.

American Society of Civil Engineers, 2017, Minimum Design Loads and Associated Criteria for Buildings and Other Structures, ASCE 7-16.

Boore, D.M., Stewart, J.P., Seyhan, E., and Atkinson, G.M. 2014. "NGA-West2 Equations for Predicting PGA, PGV, and 5% damped PSA for Shallow Crustal Earthquakes." Earthquake Spectra 30 (3): 1057-1085.

Dibblee, T.W., Jr. 2001. Geologic map of the Whittier and La Habra quadrangles, Los Angeles and Orange County, California: Dibblee Geological Foundation, Map DF-74, scale 1:24,000.

California Geologic Survey. 2008. Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117A.

California Department of Conservation, Division of Mines and Geology. 1998. "Seismic Hazard Zone Report for the Whittier 7.5-Minute Quadrangle, Los Angles and Orange Counties, California." Seismic Hazard Report 037.

Campbell, K.W., and Bozorgnia, Y. 2014. "NGA-West2 Ground Motion Model for the Average Horizontal Components of PGA, PGV, and 5%-damped Linear Acceleration Response Spectra." Earthquake Spectra 30 (3): 1087-1115.

Chiou, B.S.-J., and Youngs, R.R. 2014. "Update of the Chiou and Youngs NGA Model for the Average Horizontal Component of Peak Ground Motion and Response Spectra, Earthquake Spectra, 30 (3): 1117-1153.

Field, E.H., Biasi, G.P., Bird, P., Dawson, T.E., Felzer, K.R., Jackson, D.D., Johnson, K.M., Jordan, T.H., Madden, C., Michael, A.J., Milner, K.R., Page, M.T., Parsons, T., Powers, P.M., Shaw, B.E., Thatcher, W.R., Weldon, R.J., II, and Zeng, Y., 2013, Uniform California earthquake rupture forecast, version 3 (UCERF3)—The time-independent model: U.S. Geological Survey Open-File Report 2013–1165, 97 p., California Geological Survey Special Report 228, and Southern California Earthquake Center Publication 1792, http://pubs.usgs.gov/of/2013/1165/.

REFERENCES (cont.)

Los Angeles County Department of Public Works Well Data (accessed 2021): https://dpw.lacounty.gov/general/wells/

Post-Tensioning Institute, 2004, Post-Tensioned Slabs-on-Ground 3rd Edition.

Seed, H.B., and Whitman, R.V. "Design of Earth Retaining Structures for Dynamic Loads," ASCE Specialty Conference, Lateral Stresses in the Ground and Design of Earth Retaining Structures, Cornell Univ., Ithaca, New York, 103-147, 1970

Wood, J., 1973. "Earthquake-induced Soil Pressure on Structures", Report EERL 73-05, California Institute of Technology, Pasadena, California, 311 pp, 1973.

Youd, T.L., Idriss, I.M., Andrus, R.D., Arango, I., Castro, G., Christian, J., Dobry, R., Finn, W.D.L., Harder, L.F., Hynes, M.E., Ishihara, K., Koester, J.P., Liao, S.S.C., Marcuson, W.F., Martin, G.R., Mitchell, J.K., Moriwaki, Y., Power, M.S., Robertson, P.K., Seed, R.B., and Stokoe, K.H. 2001. "Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils." ASCE Journal of Geotechnical and Geoenvironmental Engineering 127 (10): 817-833.

Plans

Preliminary Engineered Site Plan, 9829 La Serna Drive, Whittier, California, prepared by C&V Consulting Inc., Scale 1"=20'.

Conceptual Design Site Plan, La Serna Townhomes, Whittier, California, prepared by WHA Architects, dated March 2, 20201, Scale 1"=20'.

Aerial Photographs

Historical Aerial Photo website by
https://historicaerials.com/viewer

ALBUS & ASSOCIATES

GEOTECHNICAL MAP

Job No.: 2962.00 | Date: 04/13/21 | Plate: 1

EXPLANATION

L A r

- E r B r

3.5 - E d D U M r

CITY OF WHITTIER

PUBLIC WORKS DEPARTMENT

13230 PENN STREET
WHITTIER, CA 90602-1716
TEL. (562) 567-9500

NO.	DATE	BY	DESCRIPTION	APPROVED

REVISIONS

CONSULTANT INFORMATION :

C&V CONSULTING, INC.
9830 IRVINE CENTER DR.
IRVINE, CA., 92618
949-916-3800

C&V CONSULTING, INC. CIVIL ENGINEERING LAND PLANNING & SURVEYING

REVIEWED BY : DATE : _____

CONSULTANTS

PREPARED BY :

REGISTERED PROFESSIONAL ENGINEER RYAN J. BITTNER No. 68167 CIVIL STATE OF CALIFORNIA

DATE

ENGINEER

REFERENCE:
WF- S-
P- SD-

PROJECT FILE:

APPROVED BY:

KYLE CASON
INTERIM DIRECTOR

DATE

ENGINEERING DIVISION

TENTATIVE TRACT NO. 83435
9829 LA SERNA DRIVE
WHITTIER, CALIFORNIA
PRELIMINARY ENGINEERED SITE PLAN

DESIGNED BY : MM
DRAWN BY : DA
CHECKED BY : RJB
CONSULTANT JOB/SHEET NO.
DWG. NO.
SHT 1 OF 1 SHTS

APPENDIX A

EXPLORATION LOGS

Field Identification Sheet

Light gray

Gray

Dark gray

Gray Brown

Light brown

Brown

Dark Brown

Olive brown

Olive

Yellow

Yellowish brown

Yellowish red

Red

Reddish Brown

Tan

Description Order:

Description, Color, Moisture, Density, Grain Size, Additional Description

Description	%	Example
	0-5	Sand
trace	5-15	Sand trace Silt
with	15-30	Sand with Silt
	30+	Silty Sand

More Examples

Sand with Silt trace Clay

Sand trace Silt and Clay

Sand with Silt and Clay

Gravelly Sand with Silt trace Clay

Silty Clay with Sand trace Gravel

Moisture

Dry	absence of water
Damp	below optimum
Moist	near optimum
Very Moist	above optimum
Wet	free water visible

Density (Navfac)

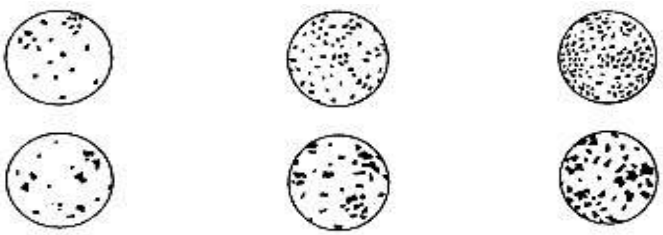
Coarse grained soils	SPT	CA
Very Loose	0-3	0-5
Loose	3-8	5-13
Medium Dense	8-14	13-22
Dense	14-25	22-40
Very Dense	25>	40>
Fine grained soils		
Very Soft	2<	0-3
Soft	2-4	3-6
Medium Stiff	4-8	6-13
Stiff	8-15	13-24
Very Stiff	15-30	24-48
Hard	30>	48>

Grain Size

Description		Sieve Size	Approx. Size
Boulders		>12"	Larger than basketball
Cobbles		3-12"	Fist to basketball
Gravel	coarse	3/4-3"	Thumb to Fist
	fine	#4-3/4"	Pea to Thumb
Sand	coarse	#10-4	Rock Salt to Pea
	medium	#40-10	Sugar to Rock Salt
	fine	#200-40	Flour to Sugar
Fines		Pass #200	Smaller than Flour

Additional Description (ie. roots, pinhole pores, debris, etc.)

Trace 5% Moderate 15% Abundant 30%



EXPLORATION LOG

Project:		Location:
Address:		Elevation:
Job Number:	Client:	Date:
Drill Method:	Driving Weight:	Logged By:

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		EXPLANATION							
		Solid lines separate geologic units and/or material types.							
		Dashed lines indicate unknown depth of geologic unit change or material type change.							
5		**Solid black rectangle** in Core column represents California Split Spoon sampler (2.5in ID, 3in OD).							
		Double triangle in core column represents SPT sampler.							
10		**Vertical Lines** in core column represents Shelby sampler.							
		Solid black rectangle in Bulk column respresents large bag sample.							
		Other Laboratory Tests:							
15		Max = Maximum Dry Density/Optimum Moisture Content							
		EI = Expansion Index							
		SO4 = Soluble Sulfate Content							
		DSR = Direct Shear, Remolded							
		DS = Direct Shear, Undisturbed							
		SA = Sieve Analysis (1" through #200 sieve)							
		Hydro = Particle Size Analysis (SA with Hydrometer)							
20		200 = Percent Passing #200 Sieve							
		Consol = Consolidation							
		SE = Sand Equivalent							
		Rval = R-Value							
		ATT = Atterberg Limits							

EXPLORATION LOG

Project: La Serna Apartments		Location: B-1
Address: 9829 La Serna Dr, Whittier, CA		Elevation: 271
Job Number: 2962.00	Client: Mission Pacific Investments	Date: 3/16/2021
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: sdonyanavard

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		ARTIFICIAL FILL (Af) Silty Clay with Sand trace Gravel (CL): Brown, damp, very stiff, fine to coarse grained sand, fine to coarse gravel, pocket sand, rootlets							Max EI SO4 DS pH Resist Ch
				26	■	■	12.9	113.6	
		OLDER ALLUVIUM (Qoal) Silty Clay trace Sand (CL): Reddish brown, damp, very stiff, mica present, rootlets, pin-hole pores,caliche		22	■	■	10.2	106.9	Consol
5									
		@ 6 ft, hard		42	■		13.5	112.9	Consol
10		Silt with Clay and Sand (ML): Yellowish brown, damp, very stiff, fine to medium grained sand, pin-hole pores, caliche		27	■		12.5	111.6	SA Hydro
15		@ 15 ft, dry, hard		53	▼				

Albus & Associates, Inc.

Plate A-2

EXPLORATION LOG

Project: La Serna Apartments		Location: B-1
Address: 9829 La Serna Dr, Whittier, CA		Elevation: 271
Job Number: 2962.00	Client: Mission Pacific Investments	Date: 3/16/2021
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: sdonyanavard

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		@ 20 ft, magnesium stainings		66					
25		Sandy Silt trace Clay (ML): Yellowish brown, damp, hard, fine grained sand		43					SA Hydro
30		@ 30 ft, fine to coarse grained sand, increased sand content		43					
35		@ 35 ft, fine grained sand, caliche		66					

EXPLORATION LOG

Project: La Serna Apartments		Location: B-1
Address: 9829 La Serna Dr, Whittier, CA		Elevation: 271
Job Number: 2962.00	Client: Mission Pacific Investments	Date: 3/16/2021
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: sdonyanavard

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		Sandy Silt (ML): Yellowish brown, damp to moist, hard, fine to coarse grained sand, mica present		44					SA Hydro
45		Sandy Clay trace Gravel (CL): Reddish brown, dry, hard, fine to coarse grained sand, fine gravel		90/ 11"					
50				65					
		End of the boring at depth of 51.5 feet. No groundwater encountered. Backfilled with soil cuttings.							

EXPLORATION LOG

Project: La Serna Apartments		Location: B-2
Address: 9829 La Serna Dr, Whittier, CA		Elevation: 267.8
Job Number: 2962.00	Client: Mission Pacific Investments	Date: 3/16/2021
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: sdonyanavard

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		Asphalt (AC): 4 inch asphalt							
		Crushed Aggregate Base (AB): 3 inch base							
		ARTIFICIAL FILL (Af) Clay (CL): Dark brown, damp							
		OLDER ALLUVIUM (Qoal) Clay (CL): Dark brown, moist, stiff		18	■		19.6	106.4	
5		Silty Clay (CL): Yellowish brown, moist, stiff, pin-hole pores, mica present		21	■		17.5	107.7	Consol
				18	■		17.1	104.2	
10		Silty Clay with Sand (CL): Reddish brown, damp, hard, medium grained sand, caliche, mica present		49	■		13.2	117.6	
15		Sandy Silt trace Clay (ML): Reddish brown, damp, hard, fine to medium grained sand, mica present, caliche		20	⧗				
		End of boring at depth of 16.5 feet. No groundwater encountered. Backfilled with soil cuttings.							

EXPLORATION LOG

Project: La Serna Apartments		Location: B-3
Address: 9829 La Serna Dr, Whittier, CA		Elevation: 271.7
Job Number: 2962.00	Client: Mission Pacific Investments	Date: 3/16/2021
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: sdonyanavard

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		Asphalt (AC): 3 inch asphalt							
		Crushed Aggregate Base (CAB): 8 inch base							
		ARTIFICIAL FILL (Af) Clayey Silt (ML): Mottled light brown and brown, damp, stiff		19			13.9	105.4	
		OLDER ALLUVIUM (Qoal) Clayey Silt (ML): Yellowish brown, damp, very stiff		33			10.8	104.7	
5		Sandy Silt trace Clay (ML): Light brown, dry to damp, very stiff, fine grained sand, pin-hole pores		21			6.3	102.8	Consol
10		Silty Sand (SM): Light brown, dry to damp, medium dense, fine grained sand, mica present		27			5.5	110.5	
15				18					
		End of boring at depth of 16.5 feet. No groundwater encountered. Backfilled with soil cuttings.							

EXPLORATION LOG

Project: La Serna Apartments		Location: B-4
Address: 9829 La Serna Dr, Whittier, CA		Elevation: 276.6
Job Number: 2962.00	Client: Mission Pacific Investments	Date: 3/16/2021
Drill Method: Hollow-Stem Auger	Driving Weight: 140 lbs / 30 in	Logged By: sdonyanavard

Depth (feet)	Lith-ology	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		Asphalt (AC): 6 inch asphalt							
		Crushed Aggregate Base (CAB): 3 inch base							
		ARTIFICIAL FILL (Af) Silty Clay trace Sand (CL): Mottled light brown and brown, dry to damp, hard, fine to medium grained sand		50	■		11.3	113	
		OLDER ALLUVIUM (Qoal) Clayey Silt trace Sand (ML): Yellowish brown, dry to damp, hard, fine grained sand, pin-hole pores		72	■		9.3	114.2	Consol
5				70	■		11.4	102.2	
10		Sandy Silt/Silty Sand (ML/SM): Yellowish brown, dry, hard/dense, fine grained sand, pin-hole pores		41	■		5.9	105.9	
15		Silty Sand (SM): Light brown, dry, dense, fine grained sand, caliche		25	▼				
		End of boring at depth of 16.5 feet. No groundwater encountered. Backfilled with soil cuttings.							

APPENDIX B

LABORATORY TEST RESULTS

LABORATORY TESTING PROGRAM

Soil Classification

Soils encountered within the exploratory borings were initially classified in the field in general accordance with the visual-manual procedures of the Unified Soil Classification System (ASTM D 2488). The samples were re-examined in the laboratory and classifications were reviewed and then revised where appropriate. The assigned group symbols are presented on the Exploration Logs provided in Appendix A.

In-Situ Moisture Content and Dry Density

Moisture content and dry density of in-place soil materials were determined in representative strata. Test data are summarized on the Exploration Logs, Appendix A.

Maximum Dry Density and Optimum Moisture Content

Maximum dry density and optimum moisture content were performed on a representative sample of the site materials obtained from our field explorations. The test was performed in accordance with ASTM D 1557. Pertinent test values are given in Table B-1.

Expansion Potential

Expansion index testing was performed on a selected sample. The test was performed in accordance with ASTM D4829. The test result and expansion potential are presented in Table B-1.

Soluble Sulfate Content

A chemical analysis was performed on a selected sample to determine soluble sulfate content. This test was performed in our soil laboratory in accordance with California Test Method No 417. The test result is included in Table B-1.

Particle Size Analyses

Particle size analyses were performed on representative samples of site materials in accordance with ASTM D 422. The results are presented graphically on the attached Plate B-1 to B-3.

Consolidation

Consolidation tests were performed for selected soil samples in general conformance with ASTM D 2435. Axial loads were applied in several increments to a laterally restrained 1-inch-high sample. Loads were applied in geometric progression by doubling the previous load, and the resulting deformations were recorded at selected time intervals. The specific test samples were inundated at selected loads to evaluate the effects of a sudden increase in moisture content (hydro-consolidation potential). Results of the tests are graphically presented on Plates B-4 to B-8.

Direct Shear

The Coulomb shear strength parameters, angle of internal friction and cohesion, were determined for a bulk sample and intact samples obtained from one our borings. The tests were performed in

general conformance with Test Method ASTM D 3080. The bulk sample was remolded to 90 percent of maximum dry density and at the optimum moisture content. Three specimens were prepared for each test, artificially saturated, and then sheared under varied loads at an appropriate constant rate of strain. Results are graphically presented on Plate B-9.

Corrosion

Select samples were tested for minimum resistivity, chloride, pH in accordance with California Test Method 643. Results of these tests are provided in Table B-1.

TABLE B-1
SUMMARY OF LABORATORY TEST RESULTS [1]

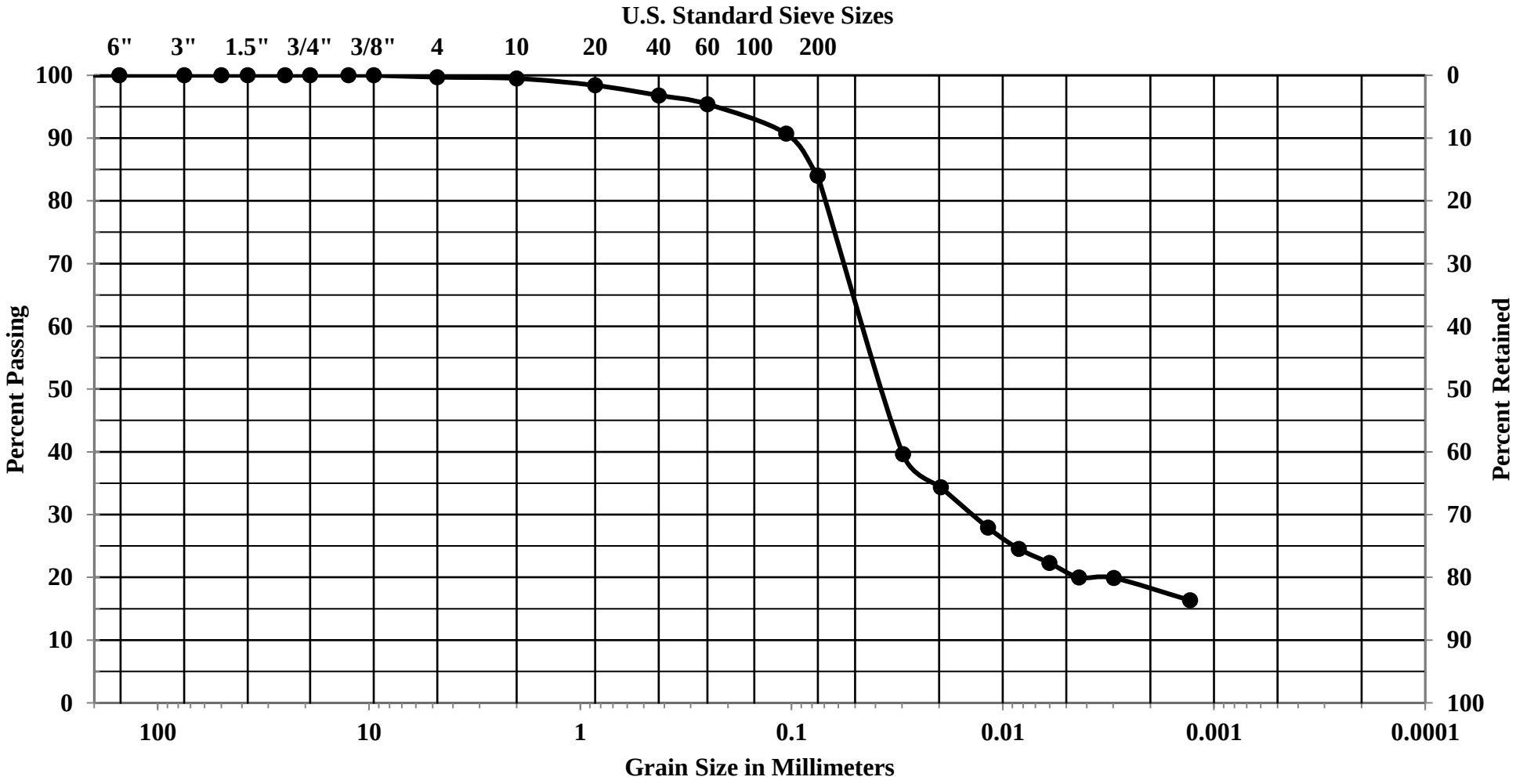
Boring No.	Sample Depth (ft.)	Soil Description	Test Results	
B-1	0-5	Silty Clay with Sand	Maximum Dry Density (pcf):	123
			Optimum Moisture (%):	11.5
			Expansion Index:	72 [2]
			Expansion Potential:	Medium [2]
			Soluble Sulfate Content (%):	0.014
			Sulfate Exposure:	Negligible
			Min. Resistivity (ohm-cm):	250
			Chloride (ppm):	37.5
			pH:	7.0

Note:

1. Additional laboratory test results are provided on the boring logs provided in Appendix A.
2. Although expansion index test results indicate that soils are a **medium** expansion potential, our recommendations presented in this report are based on soils with a **high** expansion potential based on high swell strain from one of the consolidation test results.

GRAIN SIZE DISTRIBUTION

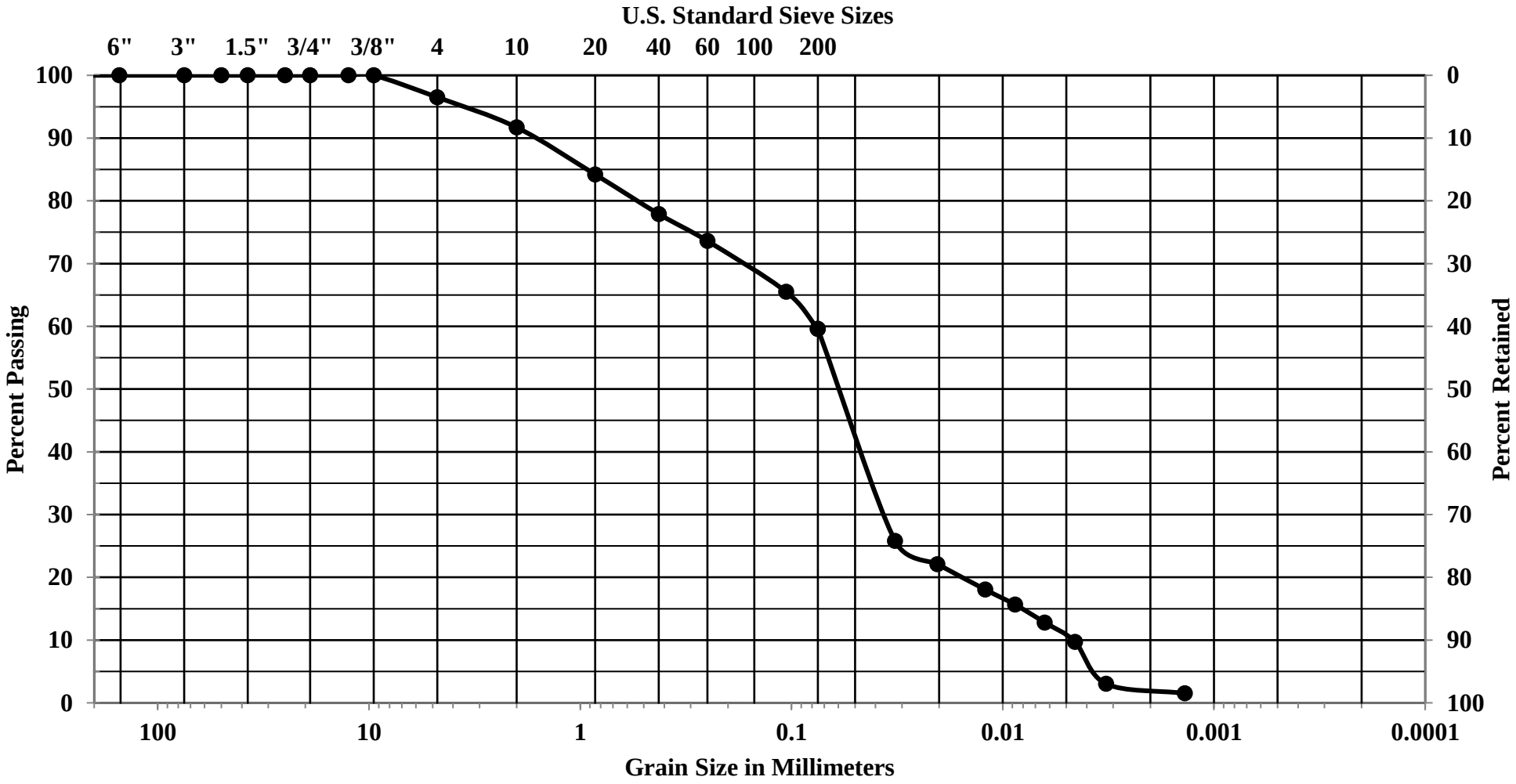
COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



Job Number	Location	Depth	Description
2962.00	B-1	10	Silt with Clay and Sand

GRAIN SIZE DISTRIBUTION

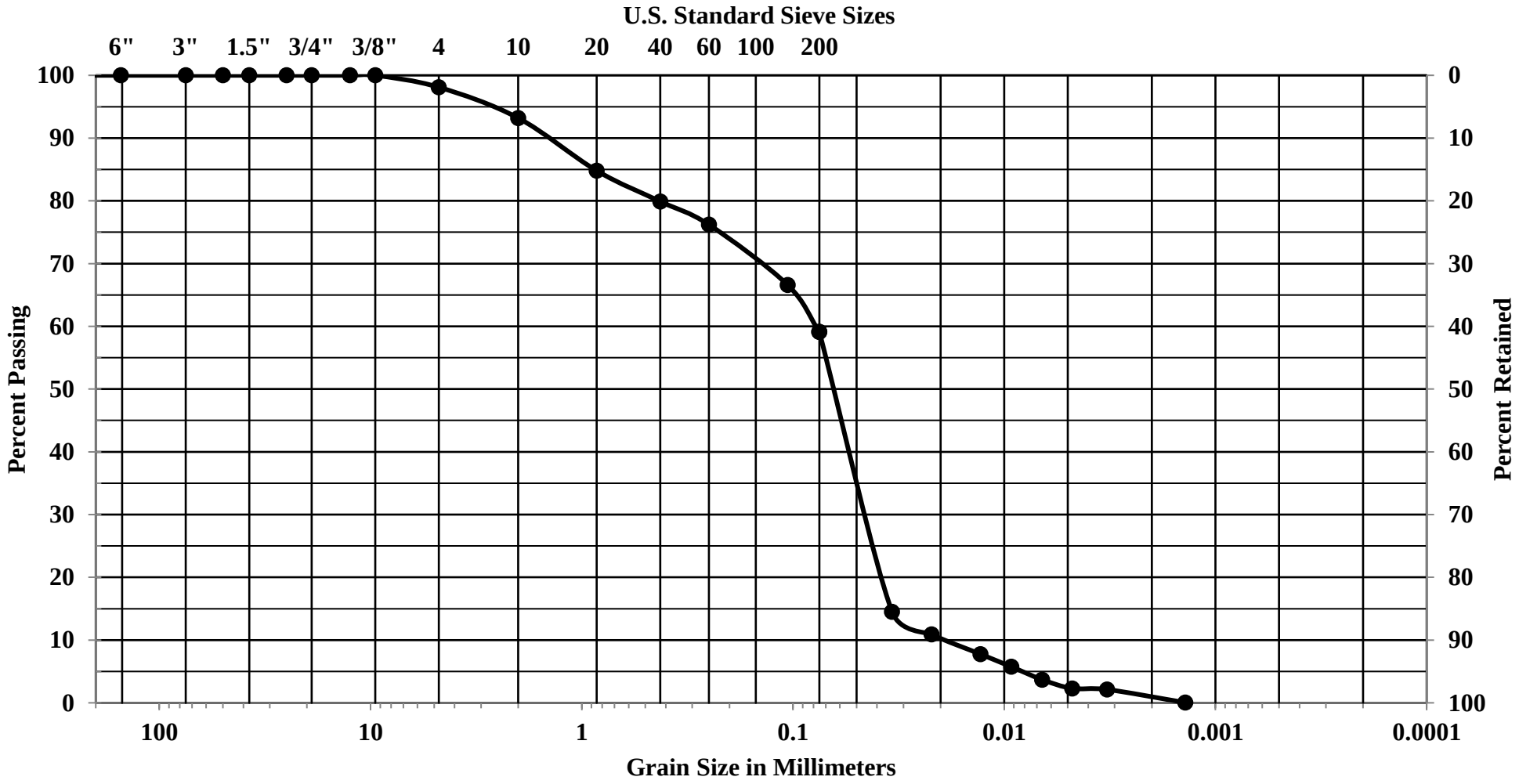
COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



Job Number	Location	Depth	Description
2962.00	B-1	25	Sandy Silt trace Clay

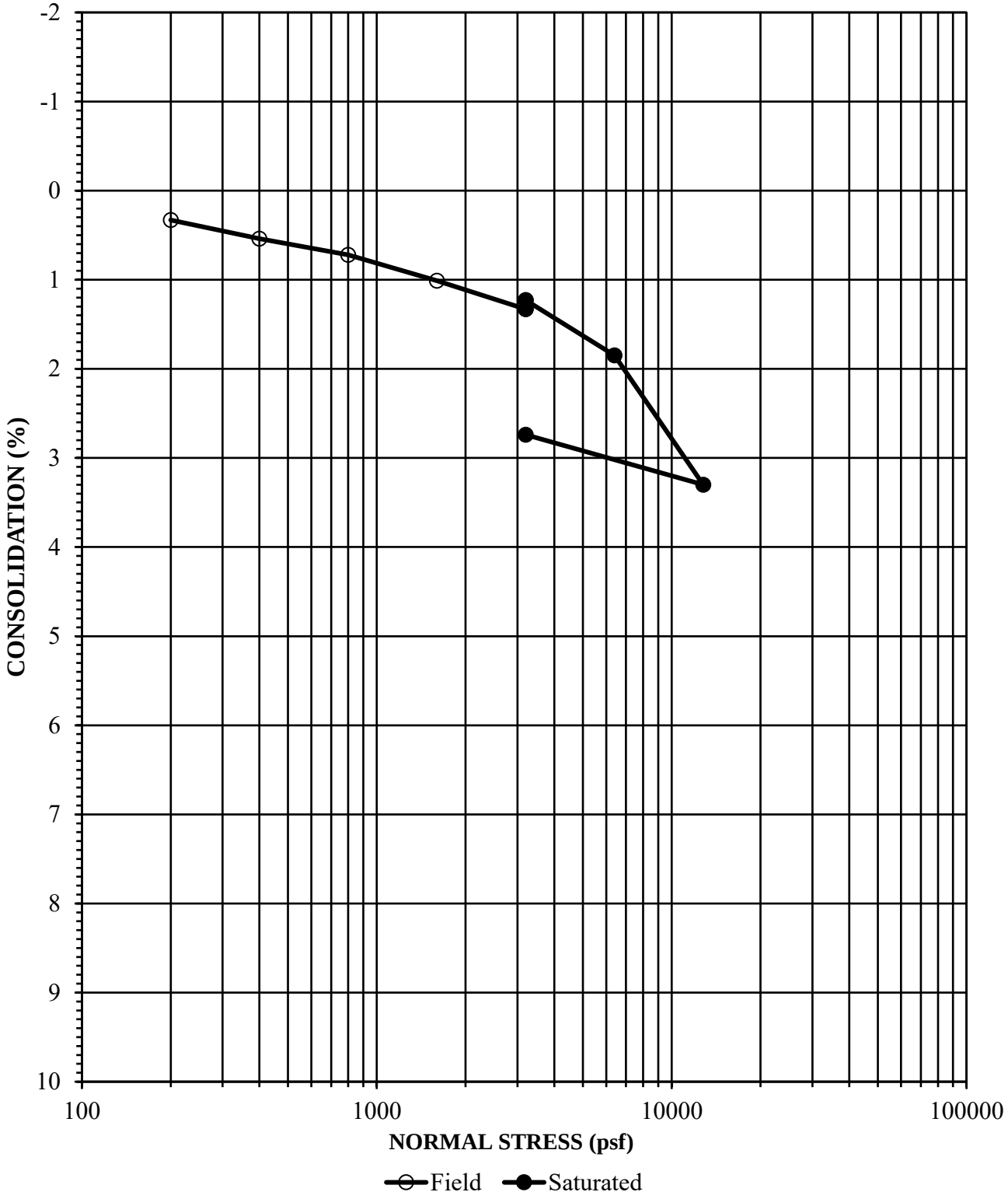
GRAIN SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



Job Number	Location	Depth	Description
2962.00	B-1	40	Sandy Silt

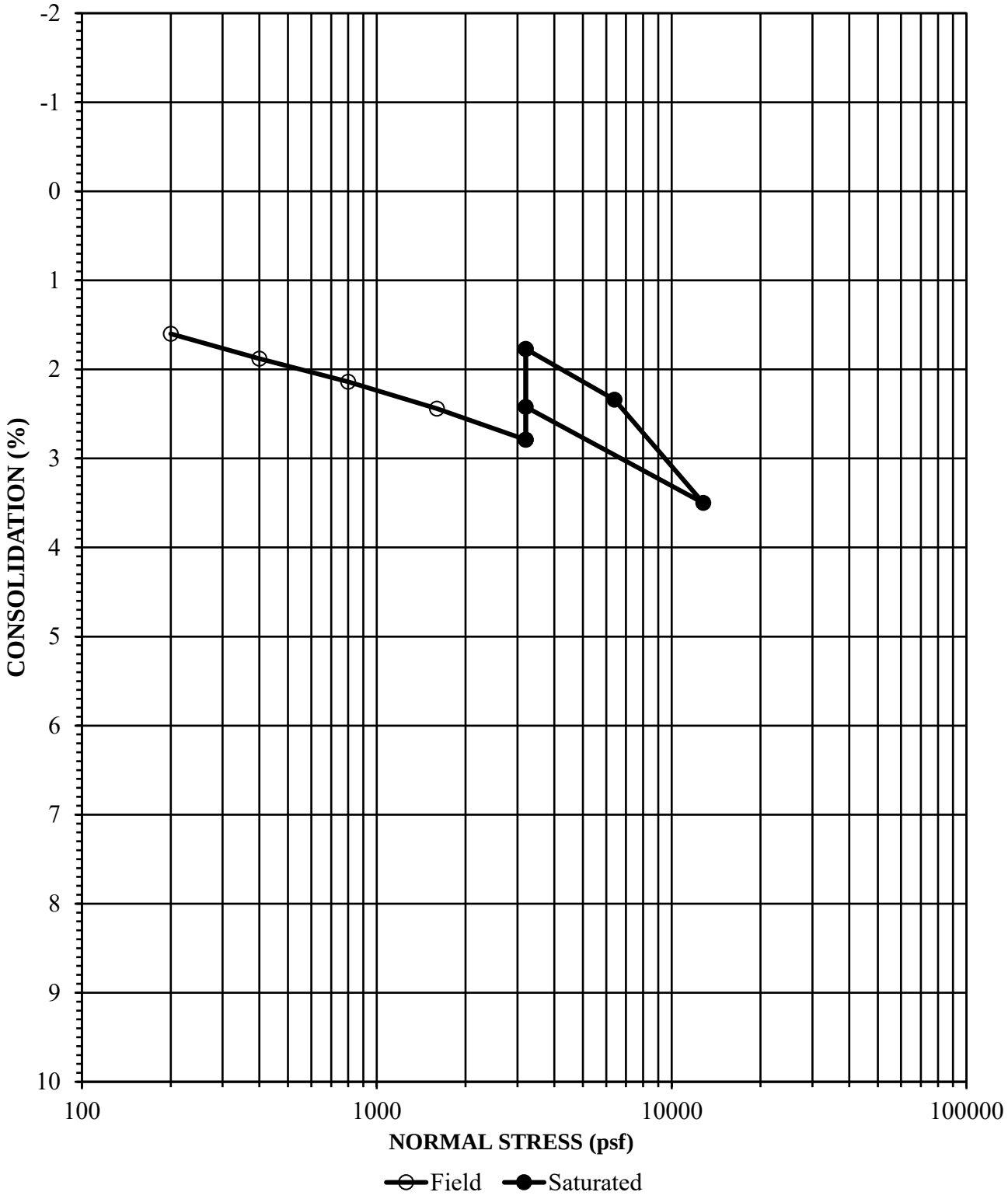
CONSOLIDATION



Job Number	Location	Depth	Description
2962.00	B-1	4	Silty Clay with Sand

Initial Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Concent (%)
107.7	9.6	18.1

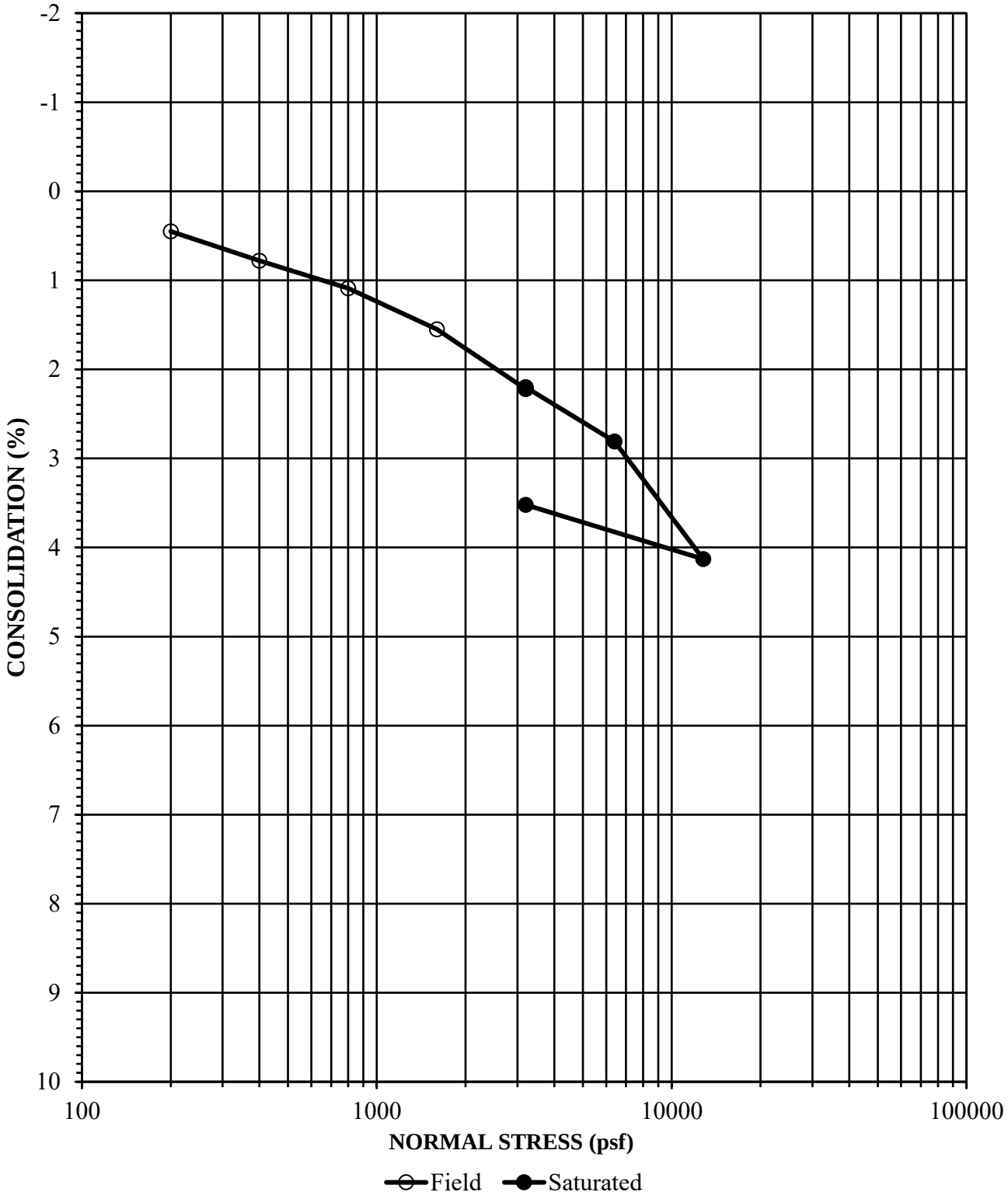
CONSOLIDATION



Job Number	Location	Depth	Description
2962.00	B-1	6	Silty Clay trace Sand

Initial Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Concent (%)
115.2	12.8	15.9

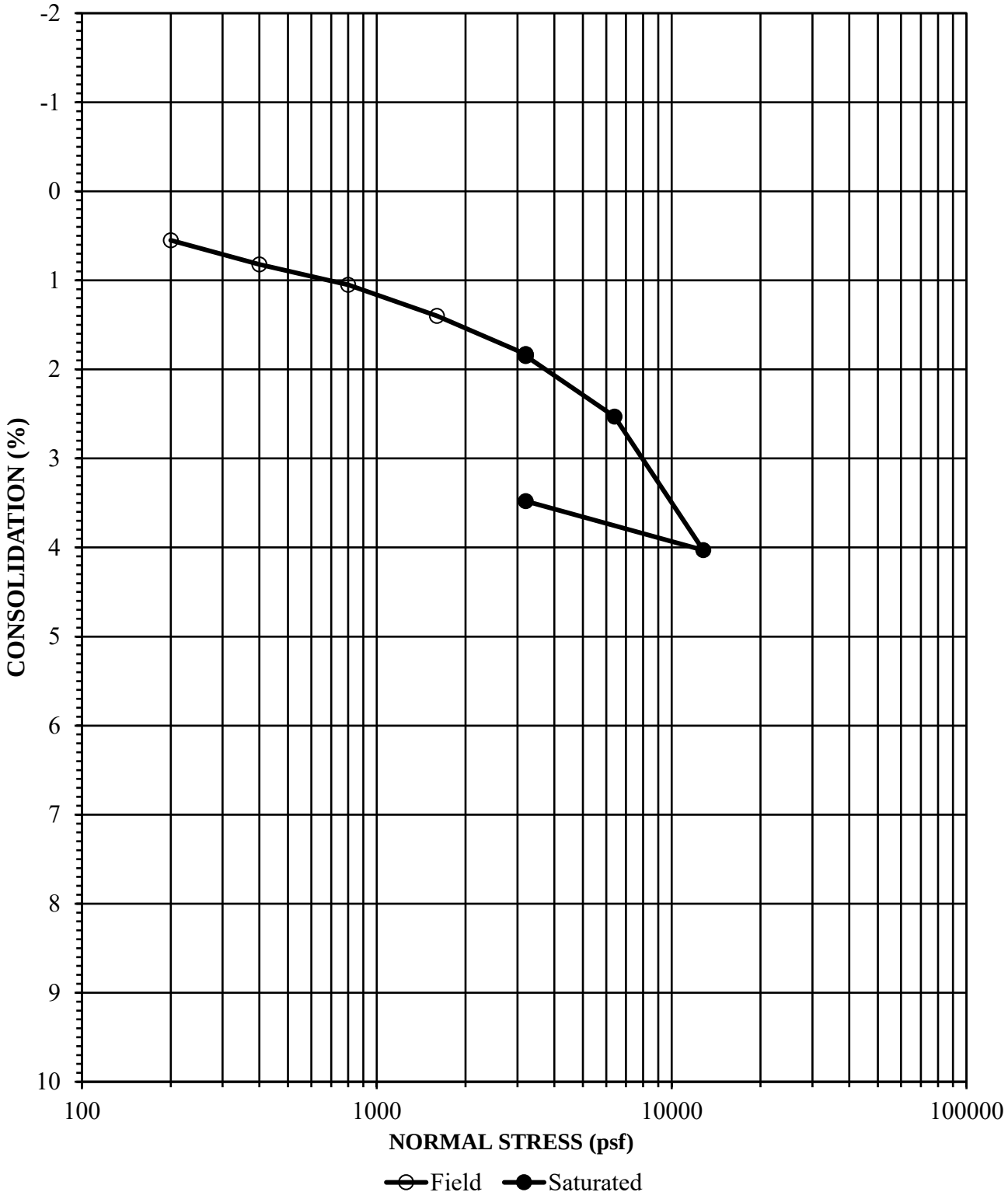
CONSOLIDATION



Job Number	Location	Depth	Description
2962.00	B-2	4	Silty Clay trace Sand

Initial Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Concent (%)
106.2	18.1	18.9

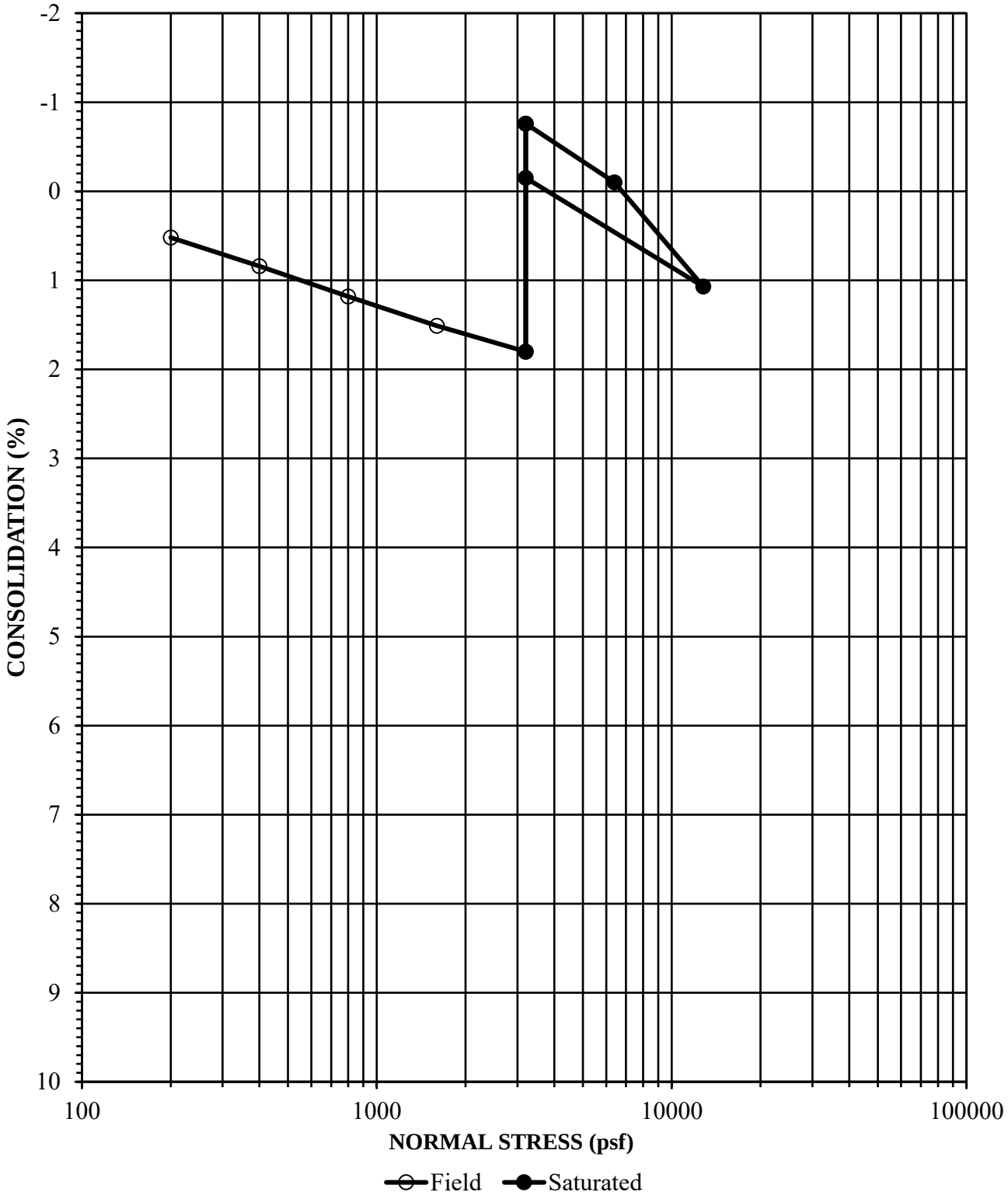
CONSOLIDATION



Job Number	Location	Depth	Description
2962.00	B-3	6	Sandy Silt trace Clay

Initial Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Concent (%)
96.5	10.2	25.1

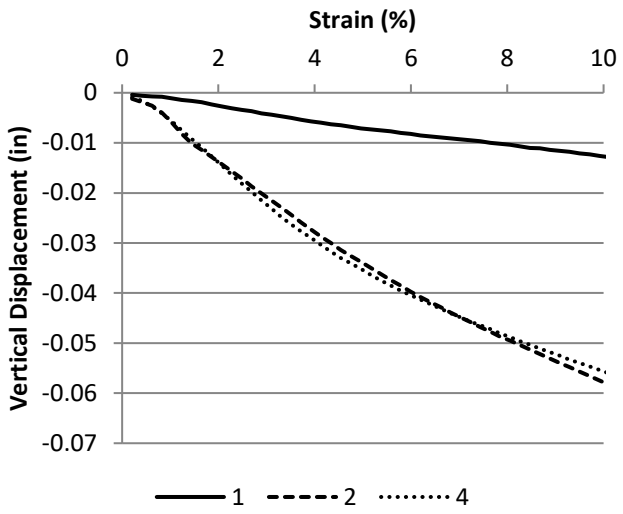
CONSOLIDATION

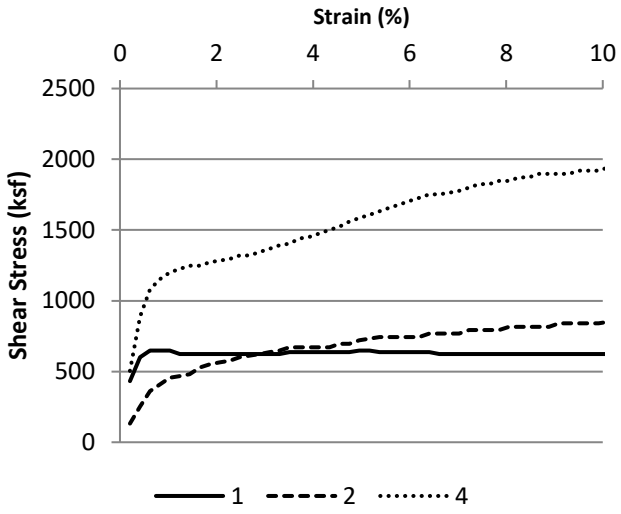


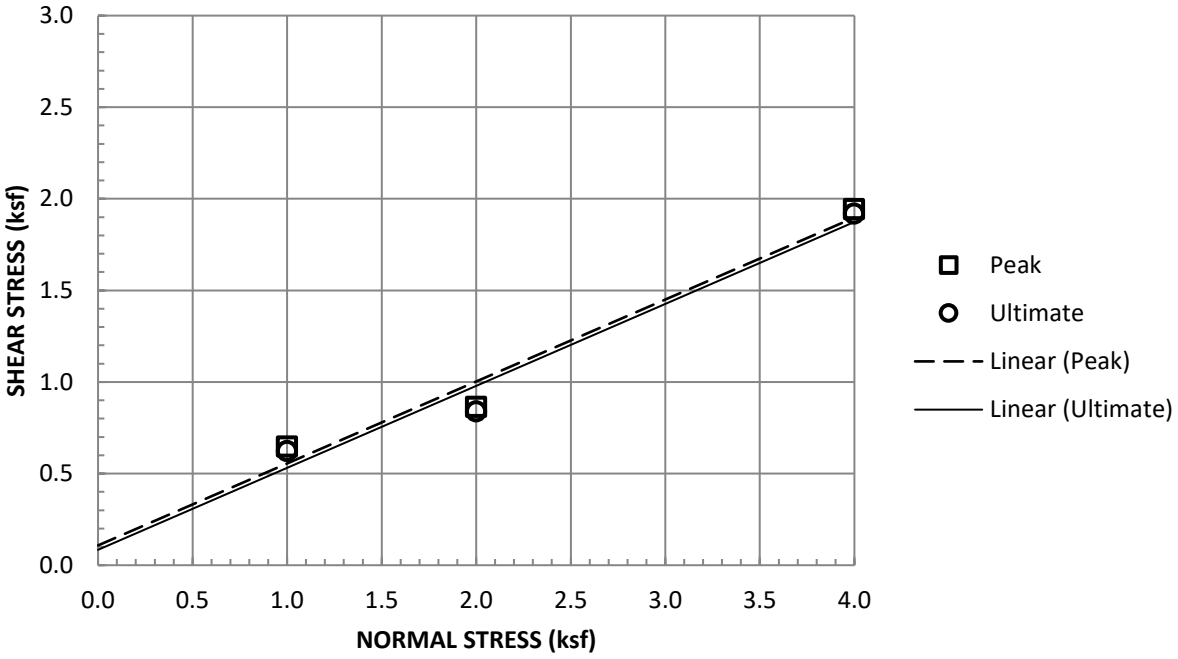
Job Number	Location	Depth	Description
2962.00	B-4	4	Clayey Silt trace Sand

Initial Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Concent (%)
113.5	12.3	17.7

DIRECT SHEAR







Sample Type:	Remolded, Saturated		
Normal Stress (ksf)	1	2	4
Peak Shear Stress (ksf)	0.648	0.864	1.944
Peak Displacement (in)	0.013	0.059	0.057
Ultimate Shear Stress (ksf)	0.624	0.84	1.92
Ultimate Displacement (in)	0.25	0.25	0.25
Initial Dry Density (pcf)	110	110	110
Initial Moisture Content (%)	12.3	12.3	12.3
Final Moisture Content (%)	16.5	13.7	17
Strain Rate (in/min)	.005		

Job Number	Location	Depth	Description
2962.00	B-1	0-5	Silty Clay

Appendix H Noise Impact Analysis

LA SERNA TOWNHOMES

NOISE IMPACT ANALYSIS

CITY OF WHITTIER

PREPARED BY:

William Maddux
bmaddux@urbanxroads.com
(619) 788-1971

FEBRUARY 11, 2022

TABLE OF CONTENTS

Table of Contents ..... **i**
Appendices ..... **ii**
List of Exhibits ..... **ii**
List of Tables ..... **iii**
List of Abbreviated Terms ..... **v**
Executive Summary **1**
1 Introduction **3**
1.1 Site Location 3
1.2 Project Description 3
Project Design Feature (PDF) 3
2 Fundamentals **7**
2.1 Range of Noise 7
2.2 Noise Descriptors 8
2.3 Sound Propagation 8
2.4 Noise Control 10
2.5 Noise Barrier Attenuation 10
2.6 Land Use Compatibility With Noise 10
2.7 Community Response to Noise 10
2.8 Vibration 11
3 Regulatory Setting **13**
3.1 State 13
3.2 City of Whittier 13
3.3 Construction Noise Standards 16
3.4 Construction Vibration Standards 16
4 Significance Criteria **19**
4.1 CEQA Guidelines Not Further Analyzed 19
4.2 Noise-Sensitive Receivers 19
4.3 Significance Criteria Summary 20
5 Existing Noise Level Measurements **23**
5.1 Measurement Procedure and Criteria 23
5.2 Noise Measurement Locations 23
5.3 Noise Measurement Results 24
6 Traffic noise prediction Methods and Procedures **27**
6.1 FHWA Traffic Noise Prediction Model 27
7 Off-Site Traffic Noise analysis **29**
8 On-site Traffic Noise Impacts **31**
8.1 On-Site Exterior Noise Analysis 31
8.2 On-Site Interior Noise Analysis 32
9 Sensitive Receiver Locations **35**
10 Operational Noise Impacts **37**
10.1 Operational Noise Sources 37

10.2 Reference Noise Levels 38
10.3 CadnaA Noise Prediction Model 39
10.4 Project Operational Noise Levels 41
10.5 Project Operational Noise Level Increases 42
11 Construction Impacts 45
11.1 Construction Activities 45
11.2 Typical Construction Reference Noise Levels 45
11.3 Typical Construction Noise Analysis 47
11.4 Typical Construction Noise Level Compliance 48
11.5 Typical Construction Vibration Impacts 49
12 References 51
13 Certification 53

APPENDICES

Appendix 3.1: City of Whittier Noise Ordinance
Appendix 5.1: Study Area Photos
Appendix 5.2: Noise Level Measurement Worksheets
Appendix 8.1: On-Site Noise Model
Appendix 10.1: CadnaA Operational Noise Model Inputs
Appendix 11.1: CadnaA Construction Noise Model Inputs

LIST OF EXHIBITS

Exhibit 1-A: Location Map 5
Exhibit 1-B: Site Plan 6
Exhibit 2-A: Typical Noise Levels 7
Exhibit 2-B: Noise Level Increase Perception 11
Exhibit 2-C: Typical Levels of Ground-Borne Vibration 12
Exhibit 3-A: Noise and Land Use Compatibility Guidelines 15
Exhibit 5-A: Noise Measurement Locations 25
Exhibit 9-A: Sensitive Receiver Locations 36
Exhibit 10-A: Operational Noise Source Locations 40
Exhibit 11-A: Typical Construction Noise Source Locations 46

LIST OF TABLES

Table ES-1: Summary of CEQA Significance Findings 1
Table 3-1: Building damage Vibration Criteria 17
Table 4-1: Significance Criteria Summary 21
Table 5-1: 24-Hour Ambient Noise Level Measurements 24
Table 6-1: Roadway Parameters 27
TABLE 6-2: Time Of Day Vehicle Splits 28
TABLE 6-3: Traffic Flow By Vehicle Type (Vehicle Mix) 28
Table 8-1: Exterior Noise Levels (CNEL) 31
Table 8-2: First-Floor Interior Noise Impacts (CNEL) 33
Table 8-3: Second-Floor Interior Noise Impacts (CNEL) 34
Table 8-4: Third-Floor Interior Noise Impacts (CNEL) 34
Table 10-1: Reference Noise Levels 38
Table 10-2: Project Daytime Operational Noise Levels 41
Table 10-3: Project Nighttime Operational NOise Levels 41
Table 10-4: Daytime Project operational Noise Level Increases 43
Table 10-5: Nighttime operational Noise Level Increases 44
Table 11-1: Typical Construction Reference Noise Levels 47
Table 11-2: Typical Construction Equipment Noise Level Summary 48
Table 11-3: Typical Construction Noise Level Compliance 48
Table 11-4: Vibration Source Levels for Construction Equipment 49
Table 11-5: Typical Construction Equipment Vibration Levels 50

This page intentionally left blank

LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	Hertz
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
mph	Miles per hour
OPR	Office of Planning and Research
PPV	Peak particle velocity
Project	La Serna Townhomes
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

This page intentionally left blank.

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the potential noise impacts and the necessary noise mitigation measures, if any, for the proposed La Serna Townhomes ("Project"). The Project site is located on the southwest corner of La Serna Drive and Janine Drive in the City of Whittier.

The results of this La Serna Townhomes Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1). Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA. All impacts are considered less than significant without mitigation.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	-
On-Site Noise	8	*Less Than Significant*	-
Interior Noise	8	*Less Than Significant*	-
Operational Noise	10	*Less Than Significant*	-
Construction Noise	11	*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

As discussed in the following report:

- the Project would not result in an increase in local or regional traffic volumes and thus would not result in a substantial increase in off-site noise levels;
- the proposed buildings on the Project site would be exposed to noise levels in excess of the normally compatible noise level standards of the City of Whittier, thus requiring interior noise level evaluation;
- based on the interior noise level evaluation, with standard construction techniques and the provision of mechanical ventilation for each unit, interior noise levels would comply with State and City of Whittier interior noise standards;
- operational noise sources, including a dog park, barbeque/recreation area, roof-top air conditioning units, and a trash enclosure, would not substantially increase noise levels in the Project area;
- construction activities would not expose local properties to excessive noise levels or result in substantial noise level increases; and,
- construction activities would not expose local properties to excessive vibration levels.

This page intentionally left blank.

1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed La Serna Townhomes ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures for transportation related CNEL traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The proposed La Serna Townhomes ("Project") is located on the southwest corner of La Serna Drive and Janine Drive in the City of Whittier. The Project's location in relation to the surrounding area is shown on Exhibit 1-A.

The Project site is generally surrounded by commercial, medical, and residential land uses, with the nearest residential land use is approximately 155 feet northeast of the Project site and the Whittier Hospital Medical Center is located the northwest of the Project site. The Project site is designated "Mixed Use 1" on the City of Whittier General Plan Land Use Map (2).

1.2 PROJECT DESCRIPTION

Exhibit 1-B illustrates the preliminary Project site plan. The proposed Project consists of the development of a 42-unit townhome development within six 3-story buildings with units ranging from 2-3 bedrooms. There is one point of access proposed on La Serna Drive and one driveway proposed on Janine Drive. Based on the Project traffic report, after considering the trips generated by the former restaurant land use, the proposed Project is anticipated to generate zero net trips per day (3).

PROJECT DESIGN FEATURE (PDF)

To meet the State and City of Whittier 45 dBA CNEL interior noise standards for residential land use the Project is committed to and shall provide the following or equivalent noise abatement measures on Buildings A through F:

- Windows & Glass Doors: Windows and glass doors will be well-fitted, well-weather-stripped assemblies and shall have minimum sound transmission class (STC) ratings of 27.
- Exterior Doors: All exterior doors will be well-fitted, well-weather stripped, and have minimum STC ratings of 27. Well-sealed perimeter gaps around the doors are essential to achieve the optimal STC rating.
- Walls: At any penetrations of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar to form an airtight seal. All exterior wall assemblies shall have a minimum STC rating of 46.

- Roof: Roof sheathing of wood construction shall be per manufacturer's specification or caulked plywood of at least one-half inch thick. Insulation with at least a rating of R-19 shall be used in the attic space.
- Ceilings: Ceilings shall be per manufacturer's specification or constructed of well-sealed gypsum board of at least one-half inch thick.
- Ventilation: Arrangements for any habitable room shall be such that any exterior door or window can be kept closed when the room is in use and still receive circulated air. A forced air circulation system (e.g., air conditioning) or active ventilation system (e.g., fresh air supply) shall be provided which satisfies the requirements of the Uniform Building Code.

EXHIBIT 1-A: LOCATION MAP

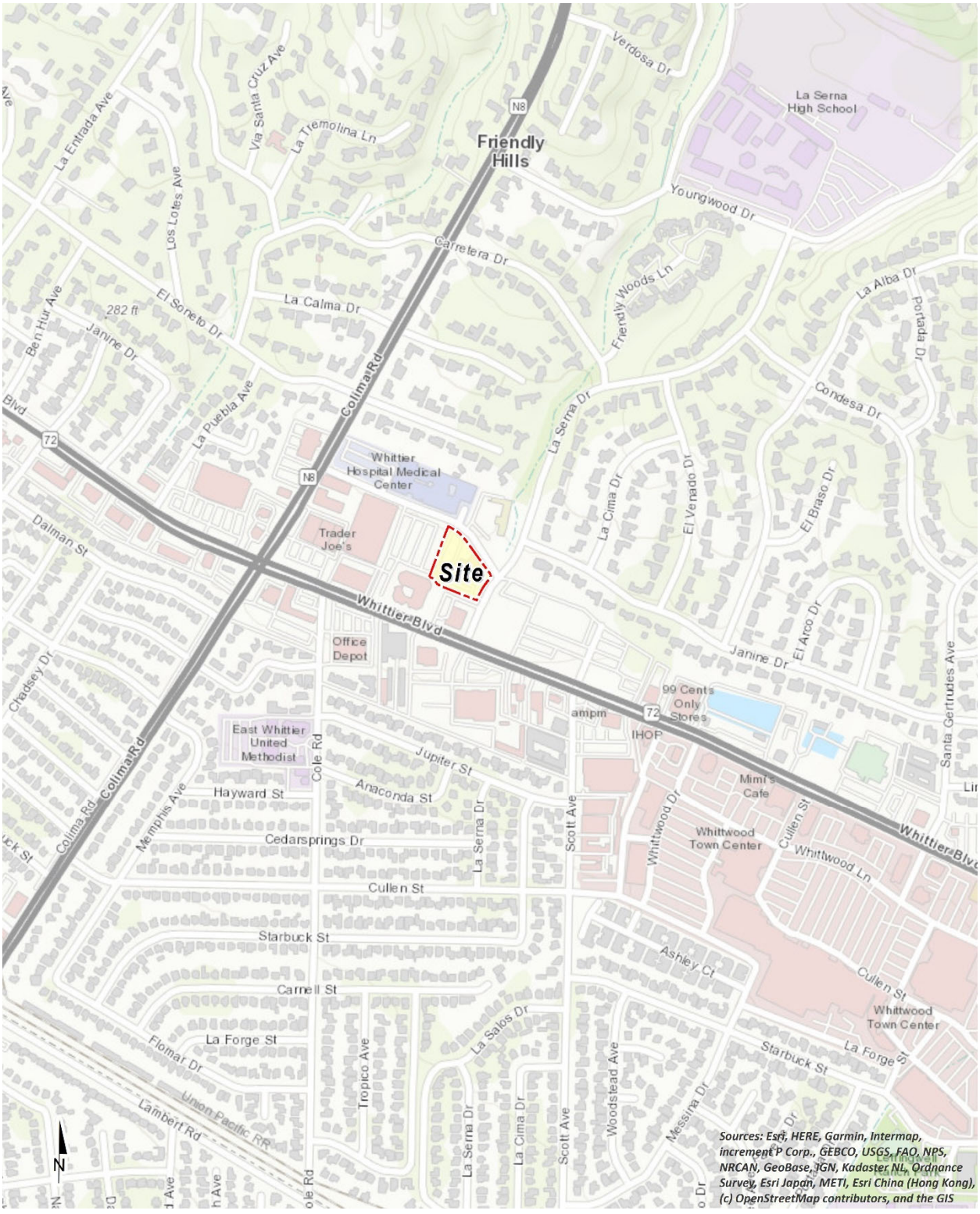


EXHIBIT 1-B: SITE PLAN

2 FUNDAMENTALS

Noise is simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud (4). The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 100 feet, which can cause serious discomfort (5). Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used figure is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period (typically one hour) and is commonly used to describe the "average" noise levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment, however. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time-of-day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Whittier relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. Based on guidance from the U.S. Department of Transportation, Federal Highway Administration (FHWA), Office of Environment and Planning, Noise and Air Quality Branch, the way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source (4).

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation

associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source (6).

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects (4).

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearest residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure (6).

2.3.5 REFLECTION

Field studies conducted by the FHWA have shown that the reflection from barriers and buildings does not substantially increase noise levels (6). If all the noise striking a structure was reflected back to a given receiving point, the increase would be theoretically limited to 3 dBA. Further, not all the acoustical energy is reflected back to same point. Some of the energy would go over the structure, some is reflected to points other than the given receiving point, some is scattered by ground coverings (e.g., grass and other plants), and some is blocked by intervening structures and/or obstacles (e.g., the noise source itself). Additionally, some of the reflected energy is lost due to the longer path that the noise must travel. FHWA measurements made to quantify reflective increases in traffic noise have not shown an increase of greater than 1-2 dBA; an increase that is not perceptible to the average human ear.

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by up to 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source (6).

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, recreation areas or buildings where people normally sleep. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized (7).

2.7 COMMUNITY RESPONSE TO NOISE

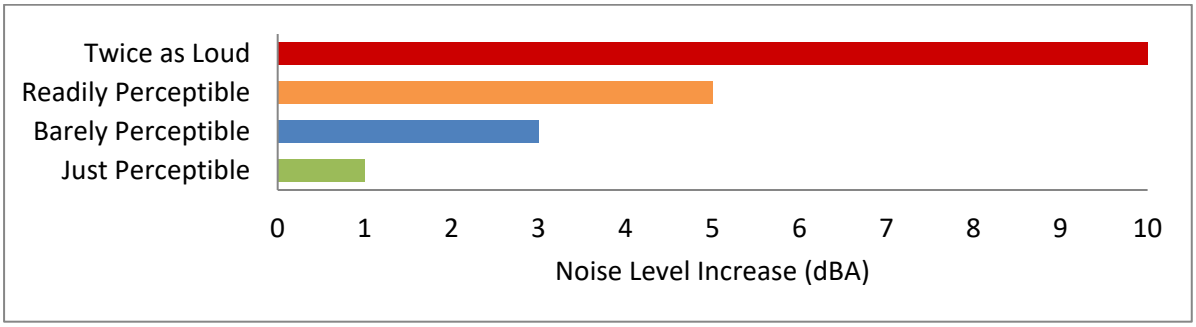
Community responses to noise varies depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Twenty-five percent of the population will not complain even in very severe noise

environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment (8). Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain (8). Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (6)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



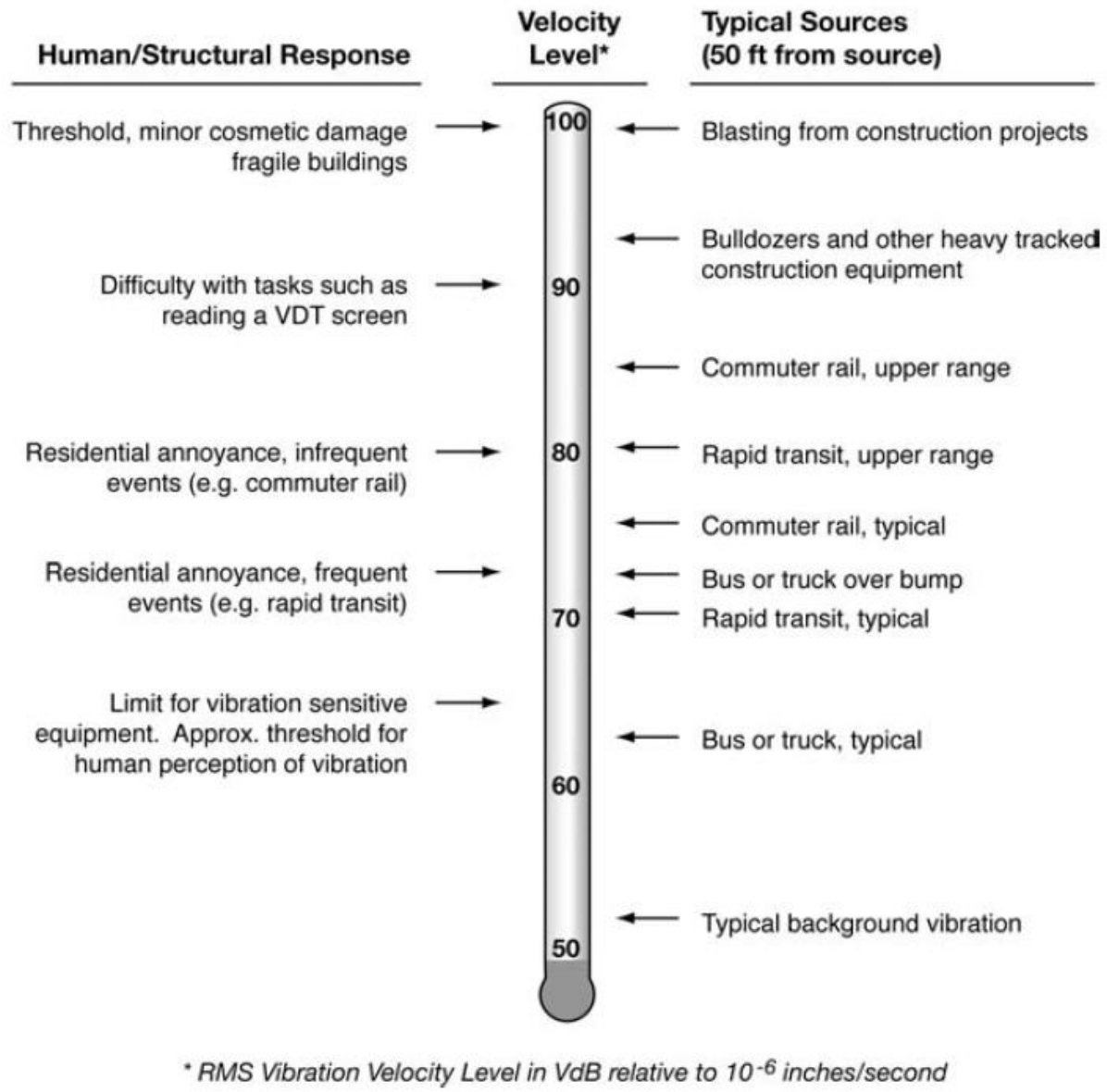
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (9), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment and/or activities.

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



Source: Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual.

3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The State of California regulates transportation noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (10) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

CALIFORNIA BUILDING CODE – TITLE 24

The State of California's interior noise standards for all new construction with habitable spaces are codified in the California Code of Regulations (CCR), Title 24, Building Standards Administrative Code, Chapter 12, Section 1206. A habitable space in a building is defines as a space used for "living, sleeping, eating, or cooking. Bathrooms, toilet rooms, closets, halls, storage, or utility spaces and similar areas are not considered habitable spaces." These noise standards are primarily applicable to all new residential construction, inns, hotels, motels, and residential care facility land uses in California for controlling interior noise levels resulting from exterior noise sources. The acceptable interior noise limit is 45 CNEL in all habitable rooms (11).

3.2 CITY OF WHITTIER

GENERAL PLAN

The City of Whittier has adopted, a *Public Safety, Noise, and Health Element* (PSNH Element), of the General Plan to control and abate environmental noise, and to protect the citizens of Whittier from excessive exposure to noise (12). The PSNH Element specifies the maximum allowable exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the PSNH Element identifies noise polices designed to protect, create, and maintain an environment free from noise that may

jeopardize the health or welfare of sensitive receivers, or degrade quality of life. To protect City of Whittier residents from excessive noise, the PSNH Element contains the following goal related to the Project:

PSNH-10.1: Work towards the separation of buffering major roadways from noise sensitive land uses such as residences, care facilities, schools, and hospitals.

PSNH-10.4: Consider noise impacts as part of the development review process, particularly the location of parking, recreational activities, crowd noises, ingress/egress/loading, and refuse collection areas relative to surrounding residential development and noise-sensitive land uses.

PSNH-10.7: Minimize new residential or other noise sensitive land use development in noise-impacted areas unless effective mitigation measures are incorporated into the project design to reduce outdoor activity area noise levels to a "normally acceptable" community noise level equivalent (CNEL).

Land Use Compatibility

The *Noise Compatibility Guidelines* (Table PSNH-11) in the City of Whittier General Plan PSNH Element provides guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown on Exhibit 3-A, provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels.

The *Noise and Land Use Compatibility Guidelines* describes categories of compatibility and not specific noise standards. The *Noise and Land Use Compatibility Guidelines* defines compatibility of land uses based on four categories: Normally Acceptable, Conditionally Acceptable, Normally Unacceptable, and Clearly Unacceptable. While, the PSNH Element does not define these categories, the *Noise and Land Use Compatibility Guidelines* of the PSNH Element are based on the California Governor's Office of Planning and Research, General Plan Guidelines (OPR Guidelines) Appendix D, Noise Element Guidelines, which do provide the interpretation of these categories.

According to these categories of compatibility, low-density residential land uses in are considered *normally compatible* with exterior noise levels below 60 dBA CNEL and *conditionally compatible* with exterior noise levels below 70 dBA CNEL. According to the OPR Guidelines, "*conditionally compatible*" means, *new construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice* (13).

EXHIBIT 3-A: NOISE AND LAND USE COMPATIBILITY GUIDELINES

Land Use Category	Community Noise Exposure Limit (CNEL or DNL, dBA)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential - Low-Density Single-Family, Duplex, Mobile Homes	60	70	75	75+
Residential - Multi-Family	65	70	75	75+
Transient Lodging - Motels, Hotels	65	70	80	80+
Schools, Libraries, Churches, Hospitals, Nursing Homes	70	70	80	80+
Auditoriums, Concert Halls, Amphitheaters	N/A	70	N/A	70+
Sports Arenas, Outdoor Spectator Sports	N/A	N/A	75	75+
Playgrounds, Neighborhood Parks	70	70	75	75+
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75	N/A	80	80+
Office Buildings, Business Commercial and Professional	70	77.5	77.5+	N/A
Industrial, Manufacturing, Utilities, Agriculture	75	80	80+	N/A
Source: OPR, 2017, Appendix D				

Source: City of Whittier General Plan, 2021.

MUNICIPAL CODE

To analyze noise impacts originating from a designated fixed location or private property such as the La Serna Townhomes Project, stationary-source (operational) noise is typically evaluated against standards established under a City's Municipal Code where available.

Chapter 8.32 of the City of Whittier Municipal Code regulates control of noise and vibration. This Chapter was updated in January 2010. The current City Municipal Code is more general in nature and does not prescribe specific noise limits. Section 8.32.030 of the City Municipal Code specifies: It shall be unlawful for any person to willfully make or continue, or cause to be made or continued, any excessive or unreasonable noise, which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. Section 8.32.060 indicates that the official's normal hearing faculties shall be the primary means of noise detection. Based on the evaluation criteria, a readily

noticeable change of ≥ 5 dBA CNEL Project increase is used to evaluate operational noise impacts. City of Whittier noise ordinance is included in Appendix 3.1.

3.3 CONSTRUCTION NOISE STANDARDS

Section 8.32.040 discusses loud, annoying, and unnecessary noises, and specifically defines horns and signaling devices (section F), erection or demolition of buildings, the grading and excavation of land, the start up and use of heavy equipment (e.g., dump trucks and graders), and the use of jack hammers. These noises would be in violation of the Municipal Code except on weekdays between the hours of 7:00 a.m. and 6:00 p.m. and on Saturdays 8:00 a.m. to 5:00 p.m.

However, neither the City of Whittier General Plan nor Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts. According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for residential land uses, 85 dBA L_{eq} for commercial land uses, and 90 dBA L_{eq} for industrial uses (9 p. 179).

3.4 CONSTRUCTION VIBRATION STANDARDS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. (9)

To analyze vibration impacts originating from the operation and construction of the La Serna Townhomes, vibration-generating activities are appropriately evaluated against standards established under a City's Municipal Code, if such standards exist. However, the City of Whittier does not identify specific vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, (14 p. 38) Table 19, vibration damage are used in this noise study to assess potential temporary construction-related impacts at adjacent building locations.

The construction vibration damage potential criteria include consideration of the building conditions. (5 p. 182) Table 3-1 describes the maximum acceptable transient and continuous vibration building damage potential levels by structure type and condition. The existing buildings

adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

TABLE 3-1: BUILDING DAMAGE VIBRATION CRITERIA

Structure and Condition	Maximum Transient Vibration Levels PPV (in/sec)	Maximum Continuous Vibration Levels PPV (in/sec)
Extremely fragile historic buildings	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 19, p. 38.

This page intentionally left blank

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (10) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

C. For a project located within the vicinity of a private airstrip or 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?

While the City of Whittier General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts, they do not define the levels at which increases are considered substantial for use under Guideline A. CEQA Appendix G Guideline C applies to nearby public and private airports, if any, and the Project's land use compatibility.

4.1 CEQA GUIDELINES NOT FURTHER ANALYZED

The Project site is not located within two miles of a public airport or within an airport land use plan. The closest airport is the Fullerton Municipal Airport located approximately 5.25 miles southeast of the Project site. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts are considered *less than significant,* and no further noise analysis is conducted in relation to Guideline C.

4.2 NOISE-SENSITIVE RECEIVERS

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (15)

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. The Federal Interagency Committee on Noise (FICON) (16) developed guidance to be used for the assessment

of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders the noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (15) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria would be exceeded. Therefore, for this analysis, FICON identifies a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the noise compatibility levels (Exhibit 3-A) for a given land use is exceeded. Per the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance.

The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (6 p. 9) and Caltrans (17 p. 2_48).

4.3 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Condition(s)	Significance Criteria	
		Daytime	**Nighttime**
Off-Site[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
	If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
	If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
On-Site[2]	Exterior Noise Compatibility	See Exhibit 3-A	
	Interior Noise Level Standard	45 dBA CNEL	
Operational[1]	Exterior Noise Level Standards	≥ 5 dBA CNEL Project increase	
Construction[3]	Residential Land Use	80 dBA L_{eq}	n/a
	Commercial Land Use	85 dBA L_{eq}	
	Industrial Land Use	90 dBA L_{eq}	
	Vibration Level Threshold	0.3 in/sec PPV	

[1] FICON, 1992.
[2] City of Whittier General Plan.
[3] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

This page intentionally left blank

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at five locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Tuesday, August 24th, 2021. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (18)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (4) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (9)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (9) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or L_{eq}. The L_{eq} represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location.

TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Measurement Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]	
		Daytime	Nighttime
L1	Located north of the Project site near Whittier Hospital Medical Center Emergency Room at 9080 Colima Road	60.3	54.6
L2	Located north of the Project site near Shepherd of the Hills Lutheran at 15215 Janine Drive	56.1	51.1
L3	Located northeast of the Project site near single-family residence at 9804 La Serna Drive	62.0	55.6
L4	Located south of the Project site near single-family residence at 9888 Cole Road	61.5	58.0
L5	Located south of the Project site near ATI College at 15141 Whittier Boulevard	57.1	53.9

[1] See Exhibit C for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix C.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with the Whittier Boulevard and other local surface streets. This includes the auto and heavy truck activities on study area roadway segments near the noise level measurement locations.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

This page intentionally left blank

6 TRAFFIC NOISE PREDICTION METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future off-site traffic noise environment. Consistent with the *Land Use Compatibility for Community Noise Exposure*, all transportation related noise levels are presented in terms of the 24-hour CNEL's.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (19) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (20) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (21)

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-2 provides the time of day (daytime, evening, and nighttime) vehicle splits and Table 6-3 presents the traffic flow distributions (vehicle mix) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA noise prediction model.

TABLE 6-1: ROADWAY PARAMETERS

Roadway	Lanes	Classification[1]	Design Capacity (ADT)[2]	Speed (MPH)[3]	Site Conditions
Whittier Boulevard	4	Major Arterial	42,000	40	Soft
La Serna Drive	2	Collector	17,500	25	Soft
Janine Drive	2	Collector	17,500	25	Soft

[1] Envision Whittier General Plan, Exhibit MI-1 Street Classification.
[2] Federal Highway Administration, 2020.
[3] Posted Speed Limit

TABLE 6-2: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	77.50%	12.90%	9.60%	100.00%
Medium Trucks	84.80%	4.90%	10.30%	100.00%
Heavy Trucks	86.50%	2.70%	10.80%	100.00%

[1] Typical Southern California vehicle mix.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-3: TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Roadway	Total % Traffic Flow[1]			Total
	Autos	Medium Trucks	Heavy Trucks	
All Roadways	97.42%	1.84%	0.74%	100.00%

[1] Typical Southern California vehicle mix.

7 OFF-SITE TRAFFIC NOISE ANALYSIS

Based on the trip generation analysis prepared for the Project, the Project would not result in an increase in regional or local traffic volumes. When compared to the trip generation from the previous restaurant land use, the Project would result in a net decrease of 372 trips being generated from the Project site (3). Therefore, the Project would not increase traffic noise off-site. Therefore, off-site traffic noise impacts would be less than significant under CEQA.

This page intentionally left blank.

8 ON-SITE TRAFFIC NOISE IMPACTS

An on-site exterior noise impact analysis has been completed to determine the traffic noise exposure and to identify potential necessary noise abatement measures for the proposed La Serna Townhomes Project that is consistent with City of Whittier noise standards. It is expected that the primary source of noise impacts to the Project site will be traffic noise from Whittier Boulevard, La Serna Drive and Janine Drive. The Project will also experience some background traffic noise from the Project's internal roadways, however, due to the low traffic volume/speeds, traffic noise from these roads will not make a significant contribution to the noise environment.

8.1 ON-SITE EXTERIOR NOISE ANALYSIS

Using the FHWA traffic noise prediction model and the parameters outlined in Section 6, the expected future exterior noise levels for the building façade were calculated. Table 8-1 presents a summary of future exterior noise levels at the building façade within the Project site. The on-site traffic noise level analysis indicates that the building facades will experience exterior noise levels ranging from 53.7 to 66.1 dBA CNEL. Buildings A through E represent residential units exposed to Whittier Boulevard, La Serna Drive and Janine Drive. See Appendix 8.1 for the on-site noise modeling.

The future exterior noise levels at the proposed buildings facades are shown to range from 53.7 to 66.1 dBA CNEL. This noise analysis shows that the future noise levels will not exceed the City of Whittier 60 dBA CNEL exterior noise level standards for residential land uses at Buildings A, B, E, or F. However, the exterior noise levels would exceed 60 dBA CNEL at the facades of Buildings C and D. Therefore, an interior noise analysis has been prepared to provide the necessary assessment for compliance with the City of Whittier Noise and Land Use Compatibility Guidelines.

TABLE 8-1: EXTERIOR NOISE LEVELS (CNEL)

On-Site Receiver Location	Roadway	Unmitigated Exterior Noise Level (dBA CNEL)[1]		
		1st Floor	2nd Floor	3rd Floor
Building A	Whittier Boulevard	60.3	60.3	60.8
Building B	Janine Drive	62.3	63.0	62.4
Building C	Janine Drive	66.1	65.4	65.8
Building D	Janine Drive	66.1	65.4	65.8
Building D	La Serna Drive	62.9	63.5	62.8
Building E	Whittier Boulevard	60.3	60.3	60.8
Building F	La Serna Drive	53.7	53.7	54.6

[1] Exterior noise calculations at the building façade are shown in Appendix 7.1.

As shown in Table 8-1, exterior noise levels at the facades of Buildings C and D will exceed the City of Whittier noise level *normally compatible* level for residential land uses but will not exceed the *conditionally compatible* standard. Therefore, based the OPR General Plan Guidelines

definition of *conditionally compatible*, *new construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.*

8.2 ON-SITE INTERIOR NOISE ANALYSIS

The future noise levels were calculated at the first-, second-, and third-floor building façades to ensure that the interior noise levels comply with the State and City of Whittier 45 dBA CNEL interior noise standards.

8.2.1 NOISE REDUCTION METHODOLOGY

The interior noise level is the difference between the predicted exterior noise level at the building façade and the noise reduction of the structure. Typical building construction will provide a Noise Reduction (NR) of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with "windows closed." However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise. Therefore, to meet the State and City of Whittier 45 dBA CNEL interior noise standards for residential land use the Project is committed to and shall provide the following or equivalent noise abatement measures on Buildings A through F:

- Windows & Glass Doors: Windows and glass doors will be well-fitted, well-weather-stripped assemblies and shall have minimum sound transmission class (STC) ratings of 27.
- Exterior Doors: All exterior doors will be well-fitted, well-weather stripped, and have minimum STC ratings of 27. Well-sealed perimeter gaps around the doors are essential to achieve the optimal STC rating.
- Walls: At any penetrations of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar to form an airtight seal. All exterior wall assemblies shall have a minimum STC rating of 46.
- Roof: Roof sheathing of wood construction shall be per manufacturer's specification or caulked plywood of at least one-half inch thick. Insulation with at least a rating of R-19 shall be used in the attic space.
- Ceilings: Ceilings shall be per manufacturer's specification or constructed of well-sealed gypsum board of at least one-half inch thick.
- Ventilation: Arrangements for any habitable room shall be such that any exterior door or window can be kept closed when the room is in use and still receive circulated air. A forced air circulation system (e.g., air conditioning) or active ventilation system (e.g., fresh air supply) shall be provided which satisfies the requirements of the Uniform Building Code.

8.2.2 INTERIOR NOISE LEVEL ASSESSMENT

Tables 8-2 to 8-4 show that the residential units require a windows-closed condition and a means of mechanical ventilation (e.g., air conditioning) to comply with the State and City 45 CNEL

interior noise standard. Table 8-2 shows that the future mitigated noise levels at the first-floor building façade are expected to range from 53.7 to 66.1 dBA CNEL. The first-floor interior noise level analysis shows that the State and City of Whittier 45 dBA CNEL with windows-closed interior noise standards can be satisfied using windows with a minimum STC rating of 27 for units facing Whittier Boulevard or adjacent to La Serna Drive and Janine Drive, based on the minimum interior noise reduction for standard construction.

Table 8-3 shows the future unmitigated noise levels at the second-floor building façade are expected to range from 53.7 to 65.4 dBA CNEL. The second-floor interior noise level analysis shows that the State and City of Whittier 45 dBA CNEL with windows closed interior noise standards can be satisfied using standard windows with a minimum STC rating of 27 for units facing Whittier Boulevard or adjacent to La Serna Drive and Janine Drive.

Table 8-4 shows the future unmitigated noise levels at the third-floor building façade are expected to range from 54.6 to 65.8 dBA CNEL. The third-floor interior noise level analysis shows that the State and City of Whittier 45 dBA CNEL with windows closed interior noise standards can be satisfied using standard windows with a minimum STC rating of 27 for units facing Whittier Boulevard or adjacent to La Serna Drive and Janine Drive.

TABLE 8-2: FIRST-FLOOR INTERIOR NOISE IMPACTS (CNEL)

Receiver Location	Noise Level at Façade[1]	Required Interior NR[2]	Minimum Calculated Interior NR	Upgraded Windows[3]	Interior Noise Level[4]	Threshold	Threshold Exceeded?
Building A	60.1	15.1	25.0	No	35.1	45	No
Building B	61.6	16.6	25.0	No	36.6	45	No
Building C	65.4	20.4	25.0	No	40.4	45	No
Building D	65.4	20.4	25.0	No	40.4	45	No
Building D	62.2	17.2	25.0	No	37.2	45	No
Buidling E	60.1	15.1	25.0	No	35.1	45	No

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).
[2] Noise reduction required to satisfy the City of Whittier General Plan 45 dBA CNEL interior noise standard for residential uses.
[3] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[4] Estimated interior noise level with minimum STC rating for all windows.
"NR" = Noise Reduction

TABLE 8-3: SECOND-FLOOR INTERIOR NOISE IMPACTS (CNEL)

Receiver Location	Noise Level at Façade[1]	Required Interior NR[2]	Minimum Calculated Interior NR	Upgraded Windows[3]	Interior Noise Level[4]	Threshold	Threshold Exceeded?
Building A	60.1	15.1	25.0	No	35.1	45	No
Building B	62.3	17.3	25.0	No	37.3	45	No
Building C	64.7	19.7	25.0	No	39.7	45	No
Building D	64.7	19.7	25.0	No	39.7	45	No
Building D	62.8	17.8	25.0	No	37.8	45	No
Buidling E	60.1	15.1	25.0	No	35.1	45	No

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).
[2] Noise reduction required to satisfy the City of Whittier General Plan 45 dBA CNEL interior noise standard for residential uses.
[3] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[4] Estimated interior noise level with minimum STC rating for all windows.
"NR" = Noise Reduction

TABLE 8-4: THIRD-FLOOR INTERIOR NOISE IMPACTS (CNEL)

Receiver Location	Noise Level at Façade[1]	Required Interior NR[2]	Minimum Calculated Interior NR	Upgraded Windows[3]	Interior Noise Level[4]	Threshold	Threshold Exceeded?
Building A	60.6	15.6	25.0	No	35.6	45	No
Building B	61.7	16.7	25.0	No	36.7	45	No
Building C	65.1	20.1	25.0	No	40.1	45	No
Building D	65.1	20.1	25.0	No	40.1	45	No
Building D	62.2	17.2	25.0	No	37.2	45	No
Buidling E	60.6	15.6	25.0	No	35.6	45	No

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).
[2] Noise reduction required to satisfy the City of Whittier General Plan 45 dBA CNEL interior noise standard for residential uses.
[3] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[4] Estimated interior noise level with minimum STC rating for all windows.
"NR" = Noise Reduction

9 SENSITIVE RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 9-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, five receiver locations (R#) in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the Project site. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

R1: R1 represents the Whittier Hospital Medical Center Emergency Room at 9080 Colima Road, approximately 71 feet north of the Project site and is placed at the nearest building façade. A 24-hour noise measurement was taken near this location, L1.

R2: R2 represents the Shepherd of the Hills Lutheran Church at 15215 Janine Drive, approximately 164 feet north east of the Project site and is placed at the nearest building façade. A 24-hour noise measurement was taken near this location, L2.

R3: R3 represents an existing single-family residence at 9804 La Serna Drive, approximately 155 feet south of the Project site and is placed at the outdoor living areas (backyards). A 24-hour noise measurement was taken near this location, L3.

R4: R4 represents an existing single-family residence at a new development along 9888 Cole Road, approximately 613 feet south of the Project site and is placed at the outdoor living areas (backyards). A 24-hour noise measurement was taken near this location, L4.

R5: R5 represents the ATI College at 15141 Whittier Boulevard, approximately 16 feet south of the Project site. Since there are no outdoor living areas (backyards) facing the Project site, R5 is placed at the building façade. A 24-hour noise measurement was taken near this location, L5.

EXHIBIT 9-A: SENSITIVE RECEIVER LOCATIONS

10 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source (i.e., on-site) operational noise impacts at the nearest receiver locations, identified in Section 9, resulting from the operation of the proposed La Serna Townhomes Project.

10.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. The proposed residential development is not expected to include any specific type of operational noise levels beyond the typical noise sources associated with residential land uses in the Project study area. However, to present a conservative approach, on-site Project-only operational noise sources are analyzed in this noise study and are expected to include: dog park, BBQ/recreational area, mechanical ventilation, and trash enclosure activity.

DOG PARK ACTIVITY

The Project includes a dog park area on the northern portion or site. The reference dog park activities are intended to describe the typical operational noise source levels associated with the Project. This includes large and small dogs barking, people calling dogs, people talking, and people opening and closing access gates. Activities within the dog park are assumed to only occur during daytime hours. At a uniform reference distance of 50 feet, Urban Crossroads collected a reference noise level of 62.8 dBA L_{eq}.

BBQ/RECREATION AREA

The BBQ/Recreation Area reference noise level measurement describes outdoor patio areas, dining, drinking, with background music etc. collected by Urban Crossroads, Inc. The outdoor activity is expected to be limited to the daytime hours of 7:00 a.m. to 10:00 p.m. The measured reference noise level at 50 feet from parking lot vehicle movements was measured at 47.4dBA L_{eq}.

ROOF-TOP AIR CONDITIONING UNITS

The primary noise sources on-site would be the ventilation for the mechanical equipment used to heat and cool living spaces. Based on the size of the dwelling units it is estimated that each unit would have an air condition similar to a Carrier model CA15NA0-24, 2-ton, air conditioning unit. Based on manufactures specifications, a model CA15NA0-24 generates a sound power level of 71 dBA L_w. This is equivalent to a continuous sound level of 39.3 dBA L_{eq} at 50 feet.

While operating at full power air conditioners would operate approximately 15-30 minutes out of an hour in multiple cycles during the nighttime as compared to the daytime where the units would typically operate 20-40 minutes in multiple cycles. To be conservative, it was assumed the air conditioners would operate 40 minutes during the daytime and 30 minutes at night. This is equivalent to the air conditioning units operating at full capacity. These sources of noise activity

will likely vary throughout the day as well as the year. For this noise analysis, the air conditioning units are expected to be located the roofs of the buildings.

TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure, Urban Crossroads collected a reference noise level measurement on May 3rd, 2018, at an existing commercial and office park trash enclosure within a parking lot on the northeast corner of Baker Street and Red Hill Avenue. The measured reference noise level at the uniform 50-foot reference distance is 49.0 dBA L_{eq} for the trash enclosure activity. The trash enclosure activity noise levels include two metal gates opening and closing, the metal gates scraping against a concrete floor, dumpster movement on metal wheels, trash dropping into the metal dumpster, and background parking lot vehicle movements. Noise associated with trash enclosure activities is expected to occur for 60 minutes per hour to represent worst-case conditions.

10.2 REFERENCE NOISE LEVELS

To estimate the operational noise impacts, reference noise levels from similar types of activities were used to represent the noise levels expected with the development of the proposed Project. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment. The reference project operational noise levels are based on the Project related noise sources shown on Exhibit 10-A. The reference Project operational sound power levels are summarized in Table 10-1.

TABLE 10-1: REFERENCE NOISE LEVELS

Noise Source[1]	Noise Source Height (Feet)	Source Type	Min./Hour[2]		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA)[3]
			Day	Night		
Dog Park	8'	Point	60	10	62.8	91.4
BBQ/Recreation Area	3'	Point	60	10	47.4	79.0
Rooftop AC	3'	Point	40	30	39.4	71.0
Trash Enclosure Activity	5'	Point	10	10	48.0	89.0

[1] As measured by Urban Crossroads, Inc.
[2] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. Numbers may vary due to size differences between point and area noise sources.

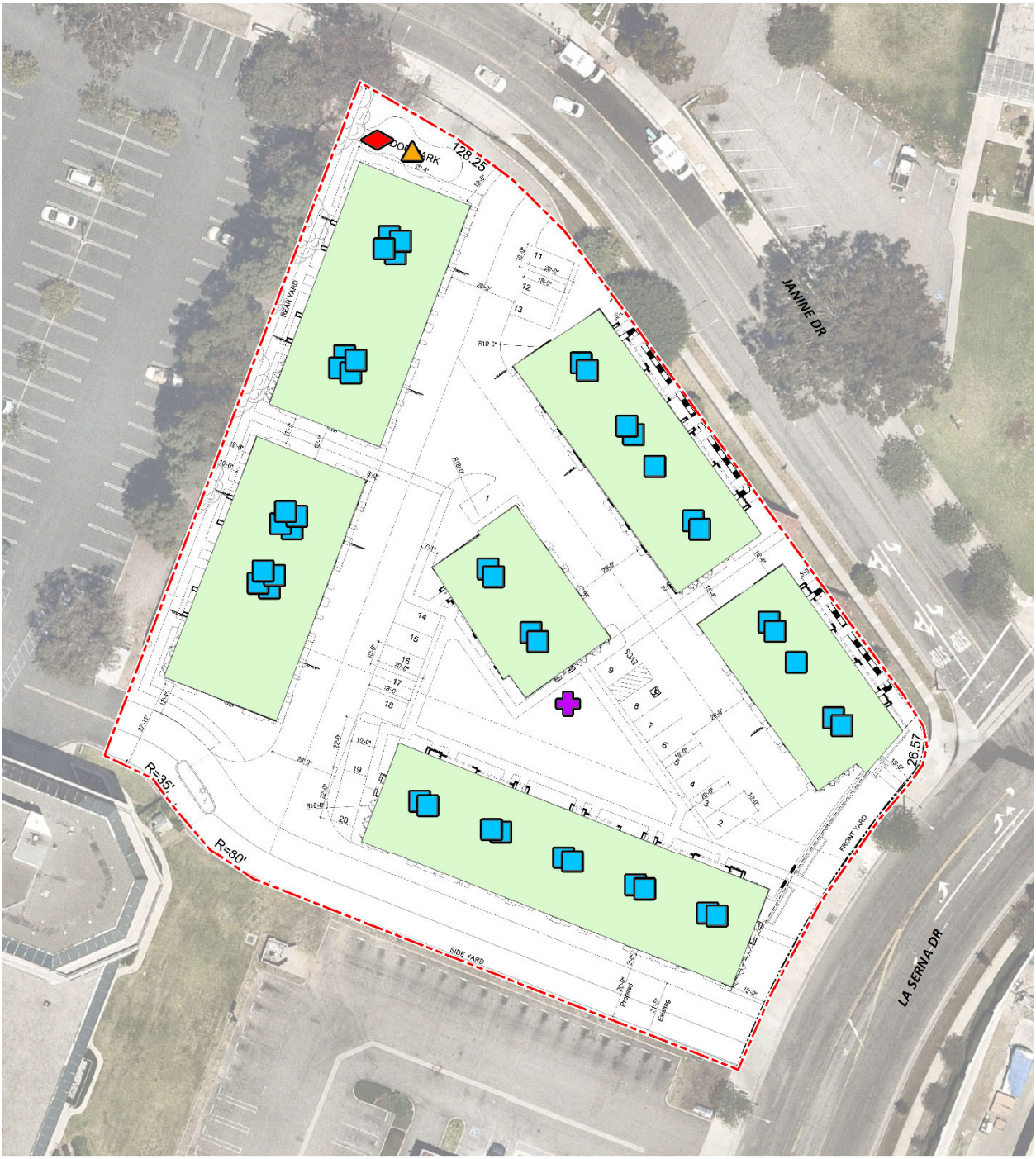
10.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels.

Using the ISO 9613 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment.

The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 10.1 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

EXHIBIT 10-A: OPERATIONAL NOISE SOURCE LOCATIONS



10.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include trash enclosure activity, air conditioning, a loading dock, and parking lot activity, Urban Crossroads, Inc. calculated the unmitigated operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 10-2 shows the Project operational daytime noise levels. The hourly noise levels at the off-site receiver locations are expected to range from 33.6 to 45.8 dBA L_{eq}. Appendix 10.1 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

TABLE 10-2: PROJECT DAYTIME OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA L_{eq})				
	R1	R2	R3	R4	R5
Dog Park	38.1	27.0	22.2	2.4	13.5
BBQ/Recreation Area	16.9	30.7	23.0	12.9	44.1
Rooftop AC	40.2	42.0	41.1	33.5	40.7
Trash Enclosure Activity	42.4	31.9	27.5	14.5	23.0
Total (All Noise Sources)	**45.4**	**42.8**	**41.4**	**33.6**	**45.8**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

Tables 10-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 31.3 to 43.3 dBA L_{eq}. The differences between the daytime and nighttime noise levels is largely related to the duration of noise activity (Table 10-1). Appendix 10.1 includes the detailed noise model inputs including the existing perimeter walls used to estimate the Project operational noise levels presented in this section.

TABLE 10-3: PROJECT NIGHTTIME OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA L_{eq})				
	R1	R2	R3	R4	R5
Dog Park	29.3	18.2	13.4	-6.3	4.8
BBQ/Recreation Area	8.1	22.0	14.3	4.1	35.4
Rooftop AC	38.0	39.7	38.9	31.2	38.4
Trash Enclosure Activity	41.5	30.9	26.5	13.5	22.1
Total (All Noise Sources)	**43.3**	**40.3**	**39.2**	**31.3**	**40.2**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

10.5 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearest receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (4) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented on Tables 10-2 and 10-3, respectively.

As indicated on Tables 10-4 and 10-5, the Project will generate an unmitigated daytime and nighttime operational noise level increases ranging from 0.0 to 0.3 dBA L_{eq} at the nearest receiver locations. In effect, the amount to which a given noise level increase is considered acceptable is reduced based on existing ambient noise conditions. Based on the significance criteria presented in Section 4.2, the Project-related operational noise level increases will satisfy the operational noise level increase criteria at the nearest sensitive receiver locations and the impact will be *less than significant.*

TABLE 10-4: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	45.4	L1	63.9	64.0	0.1	3.0	No
R2	42.8	L2	65.0	65.0	0.0	1.5	No
R3	41.4	L3	55.4	55.6	0.2	5.0	No
R4	33.6	L4	65.0	65.0	0.0	1.5	No
R5	45.8	L5	71.6	71.6	0.0	1.5	No

[1] See Exhibit 9-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 10-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] See Table 4.1.

TABLE 10-5: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	43.3	L1	54.6	54.9	0.3	5.0	No
R2	40.3	L2	51.1	51.4	0.3	5.0	No
R3	39.2	L3	55.6	55.7	0.1	5.0	No
R4	31.3	L4	58.0	58.0	0.0	5.0	No
R5	40.2	L5	53.9	54.1	0.2	5.0	No

[1] See Exhibit 9-A for the receiver locations.
[2] Total Project nighttime operational noise levels as shown on Table 10-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] See Table 4.1.

11 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 11-A shows the construction noise source locations in relation to the nearest sensitive receiver locations previously described in Section 9. To prevent high noise-levels of construction noise from impacting noise-sensitive land uses, Section 8.32.040 of the City of Whittier Municipal Code prohibits construction activities between the hours of 6:00 p.m. and 7:00 a.m. and on Saturdays 5:00 p.m. and 8:00 a.m. .

11.1 CONSTRUCTION ACTIVITIES

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The number and mix of construction equipment are expected to occur in the following stages:

- Demolition
- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

11.2 TYPICAL CONSTRUCTION REFERENCE NOISE LEVELS

To describe peak construction noise activities, this construction noise analysis was prepared using reference noise level measurements published in the *Update of Noise Database for Prediction of Noise on Construction and Open Sites* by the Department for Environment, Food and Rural Affairs (DEFRA). (22). The DEFRA database provides the most recent and comprehensive source of reference construction noise levels. Table 11-1 provides a summary of the DEFRA construction reference noise level measurements expressed in hourly average dBA L_{eq} using the estimated FHWA Roadway Construction Noise Model (RCNM) usage factors (23) to describe the typical construction activities for each stage of Project construction.

EXHIBIT 11-A: TYPICAL CONSTRUCTION NOISE SOURCE LOCATIONS

TABLE 11-1: TYPICAL CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})	Combined Reference Noise Level (dBA L_{eq})
Demolition	Loaders	71.0	73.6
	Demolition Equipment	69.0	
	Excavators	64.0	
Site Preparation	Crawler Tractors	77.0	78.8
	Loaders	71.0	
	Rubber Tired Dozers	71.0	
Grading	Crawler Tractors	77.0	77.6
	Excavators	64.0	
	Compactors	67.0	
Building Construction	Cranes	67.0	73.8
	Tractors	72.0	
	Welders	65.0	
Paving	Pavers	70.0	74.1
	Paving Equipment	69.0	
	Rollers	69.0	
Architectural Coating	Cranes	67.0	71.8
	Air Compressors	67.0	
	Generator Sets	67.0	

[1] Update of noise database for prediction of noise on construction and open site expressed in hourly average L_{eq} based on estimated usage factor.

11.3 TYPICAL CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearest sensitive receiver locations were completed. To assess the worst-case construction noise levels, the Project construction noise analysis relies on the highest noise level impacts when the equipment with the combined reference noise level is operating at the closest point from the edge of primary construction activity (Project site boundary) to each receiver location. As shown on Table 11-2, the construction noise levels are expected to range from 57.5 to 81.4 dBA L_{eq}, and the highest construction levels are expected to range from 64.5 to 81.4 dBA L_{eq} at the nearest receiver locations. Appendix 11.1 includes the detailed CadnaA construction noise model inputs.

TABLE 11-2: TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})						
	Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	69.8	74.9	73.7	69.9	70.3	67.9	74.9
R2	68.4	73.5	72.3	68.5	68.9	66.5	73.5
R3	67.3	72.4	71.2	67.4	67.8	65.4	72.4
R4	59.4	64.5	63.3	59.5	59.9	57.5	64.5
R5	76.3	81.4	80.2	76.4	76.8	74.4	81.4

[1] Construction noise source and receiver locations are shown on Exhibit 11-A.
[2] Construction noise level calculations based on distance from the project site boundaries (construction activity area) to nearby receiver locations. CadnaA construction noise model inputs are included in Appendix 11.1.

11.4 TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level thresholds based on land use as developed by the FTA are used as reasonable thresholds to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the significance thresholds during Project construction activities as shown on Table 11-3. Therefore, the noise impacts due to Project construction noise is considered *less than significant* at all receiver locations.

TABLE 11-3: TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})			
	Highest Construction Noise Levels[2]	Land Use	Threshold[3]	Threshold Exceeded?[4]
R1	74.9	Medical/Residential	80	No
R2	73.5	Religious	80	No
R3	72.4	Residential	80	No
R4	64.5	Residential	80	No
R5	81.4	Commercial	85	No

[1] Noise receiver locations are shown on Exhibit 11-A.
[2] Highest construction noise level operating at the Project site boundary to nearby receiver locations (Table 11-2).
[3] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

11.5 TYPICAL CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Ground vibration levels associated with various types of construction equipment are summarized on Table 11-4. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 11-4: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018.

Table 11-5 presents the expected typical construction equipment vibration levels at the nearest receiver locations. At distances ranging from 16 feet to 613from typical Project construction activities (at the Project site boundary), construction vibration levels are estimated to range from 0.001 to 0.174 in/sec PPV at the nearest receiver locations. The Project construction is not expected to generate vibration levels exceeding the City of Whittier maximum acceptable vibration standard of 0.01 in/sec PPV. Further, impacts at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period, but will occur rather only during the times that heavy construction equipment is operating proximate to the Project site perimeter.

Moreover, construction at the Project site will be restricted to daytime hours consistent with City requirements thereby eliminating potential vibration impact during the sensitive nighttime hours. On this basis the potential for the Project to result in exposure of persons to, or generation of, excessive ground-borne vibration is determined to be *less than significant*.

TABLE 11-5: TYPICAL CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver Location[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]					Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Highest Vibration Level		
R1	71'	0.001	0.007	0.016	0.019	0.019	0.30	No
R2	164'	0.000	0.002	0.005	0.005	0.005	0.30	No
R3	155'	0.000	0.002	0.005	0.006	0.006	0.30	No
R4	613'	0.000	0.000	0.001	0.001	0.001	0.30	No
R5	16'	0.006	0.068	0.148	0.174	0.174	0.30	No

[1] Construction receiver locations are shown on Exhibit 10-A.
[2] Distance from receiver location to Project construction boundary.
[3] Based on the Vibration Source Levels of Construction Equipment (Table 10-5).
[4] FTA Construction Noise and Vibration Manual, 2018.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

12 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2018.
2. **City of Whittier.** *Envision Whittier General Plan, Land Use and Community Character Element.* 2021.
3. **Urban Crossroads, Inc.** *La Serna Townhomes Vehicle Miles Traveled (VMT) Screening and Trip Generation Assessment.* 2022.
4. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
5. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
6. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* December 2011.
7. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
8. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
9. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual.* September 2018.
10. **Office of Planning and Research.** *State of California General Plan Guidelines.* October 2017.
11. **State of California.** California Code of Regulations, Title 24, Part 2, Volume 1, Chapter 12, Section 1206.4, Allowable Interior Noise Level. *ICC Digital Coes.* [Online] 2019. https://codes.iccsafe.org/content/CABCV12019/chapter-12-interior-environment.
12. **City of Whittier.** *Envision Whittier General Plan: Public Saftey, Noise, and Health Element.* 2021.
13. **California Governor's Office of Planning and Research.** *General Plan Guidelines, Appendix D - Noise Element Guielines.* 2017.
14. **California Department of Transportation.** *Transportation and Construction Vibration Guidance Manual.* April 2020.
15. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
16. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.
17. **California Department of Transportation.** *Technical Noise Supplement.* November 2009.
18. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
19. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.

20. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.

21. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.

22. **Department of Environment, Food and Rural Affiars (Defra).** *Update of Noise Database for Prediction of Noise on Construction and Open Sites.* 2004.

23. **FHWA.** *Roadway Construction Noise Model.* January 2006.

13 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed La Serna Townhomes Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (619) 788-1971.

William Maddux
Senior Associate
URBAN CROSSROADS, INC.
(619) 788-1971
bmaddux@urbanxroads.com

EDUCATION

Bachelor of Science in Urban and Regional Planning
California Polytechnic State University, Pomona • June 2000

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
APA – American Planning Association
AWMA – Air and Waste Management Association

PROFESSIONAL CERTIFICATIONS

Approved Acoustical Consultant • County of San Diego
FHWA Traffic Noise Model of Training • November 2004
CadnaA Basic and Advanced Training Certificate • October 2008.

This page intentionally left blank.

APPENDIX 3.1:

CITY OF WHITTIER NOISE ORDINANCE

This page intentionally left blank

Chapter 8.32 - NOISE CONTROL

Sections:

Footnotes:
*--- (**2**) ---*
***Editor's note—** Ord. No. 2943, § 1, adopted Jan. 12, 2010, repealed the former Chapter 8.32, §§ 8.32.010—8.32.120, and enacted a new Chapter 8.32 as set out herein. The former Chapter 8.32 pertained to similar subject matter and derived from Ord. 2747, § 2(part), adopted in 1999; and Ord. 2869, § 29, adopted in 2006.*

8.32.010 - Purpose.

A. The making and creation of loud, unnecessary or unusual noises within the limits of the city is a condition which has existed for some time and the extent and volume of such noises is increasing.

B. The making, creation or maintenance of such loud, unnecessary, unnatural or unusual noises which are prolonged, unusual and unnatural in their time, place and use affect and are a detriment to public health, comfort, convenience, safety, welfare and prosperity of the residents of the city; and

C. The necessity in the public interest for the provisions of this chapter is declared as a matter of legislative determination and public policy, and it is further declared that the provisions of this chapter are for the purpose of securing and promoting the public health, comfort, convenience, safety, welfare, prosperity and peace and quiet of the city and its inhabitants.

(Ord. No. 2943, § 1, 1-12-10)

8.32.020 - Definitions.

A. "City" means the city of Whittier.

B. "City manager" means the city manager of the city of Whittier, or his/her designee.

C. "Chief of police" means the chief of the Whittier Police Department.

D. "Construction" means any site preparation, assembly, erection, substantial repair, alteration, demolition, or similar action.

E. "Continuous sound" means and denotes a sound the intensity of which remains essentially constant during a given period of time.

F. "Director" means the director of community development of the city of Whittier, or his/her designee.

G. "Daytime" denotes the local time of day between the hours of seven a.m. and nine p.m. on weekdays and between the hours of nine a.m. and nine p.m. on Saturdays, Sundays and local legal holidays.

H. "Emergency" means any occurrence or set of circumstances involving actual or imminent physical trauma or property damage, which demands immediate action.

I. "Emergency signal device" means any audible warning device, such as a gong, whistle or siren or any air horn or any similar device, used for emergency purposes or alert the public or emergency personnel to the existence of an emergency.

J. "Emergency work" means any work performed for the purpose of preventing or alleviating the physical trauma or property damage threatened or caused by an emergency.

K. "Mobile source" means any moving sound source on a public right-of-way.

L. "Motor vehicle" means a vehicle that is self-propelled. "Motor vehicle" includes, but is not limited to, passenger cars, trucks, truck-trailers, semi-trailers, campers, motorcycles, minibikes, go-carts, snowmobiles, mopeds, amphibious craft on land, dune buggies, all-terrain vehicles or racing vehicles. "Motor vehicle" does not include a self-propelled wheelchair, motorized tricycle, or motorized quadricycle, if operated by a person who, by reason of physical disability, is otherwise unable to move about as a pedestrian.

1. "Motorcycle" means (1) a motor vehicle having a seat or saddle for the use of the rider, designed to travel on not more than three wheels in contact with the ground; (2) a motor vehicle that has four wheels in contact with the ground, two of which are a functional part of a sidecar, is a motorcycle if the vehicle otherwise comes within the definition of subdivision (1); (3) a farm tractor is not a motorcycle; (4) a three-wheeled motor vehicle that otherwise meets the requirements of subdivision (1), has a partially or completely enclosed seating area for the driver and passenger, is used by local public agencies for the enforcement of parking control provisions, and is operated at slow speeds on public streets, is not a motorcycle. However, a motor vehicle described in this subdivision shall comply with the applicable sections of this code imposing equipment installation requirements on motorcycles.
2. "All-terrain vehicle (ATV)" means a motor vehicle that is all of the following: (1) designed for operation off of the highway by an operator with no more than one passenger; (2) fifty inches or less in width; (3) nine hundred pounds or less unladen weight; (4) suspended on three or more low-pressure tires; (5) has a single seat designed to be straddled by the operator, or a single seat designed to be straddled by the operator and a seat for no more than one passenger; (6) has handlebars for steering control.

M. "Nighttime" means those hours excluded from the definition of "daytime."

N. "Person" means any individual, corporation, partnership firm or any legal successor, representative or agent of the foregoing.

O. "Public right-of-way" means any street, avenue, boulevard, highway, alley, sidewalk or public space which has been dedicated for use by the general public and the dedication of which has been accepted by the appropriate governmental entity.

P. "Real property boundary" means an imaginary line along the ground surface, and its vertical

extension, which separates the real property owned by one person from that owned by another person, but it does not include intra-building real property division.

Q. "Small power equipment" means any motorized or engine powered device, including but not limited to lawn mowers, lawn and garden tools, leaf blowers, riding lawn mowers and power saws, but excluding motor vehicles.

R. "Sound amplifying equipment" means any machine or device for the amplification of the human voice, music or any other sound. Sound amplifying equipment as used herein shall not be construed as including standard automobile radio when used and primarily audible only by the occupants of the vehicle in which installed or warning devices on authorized emergency vehicles or horns or other warning devices on other vehicles used only for traffic safety purposes.

S. "Special event" means assemblages, public meetings, and other special events including festivals, ceremonies, addresses, speeches, exhibits, performances, plays, circuses, musical events, athletic events that occur at a particular place and for a limited duration of time.

T. "Stadium event" means events held at a facility with permanent seating and accommodations for more than one thousand spectators.

U. "Stationary source" means any sound source operating or occurring on any public or private property.

V. "Weekday" means any day Monday through Friday, which is not a legal holiday.

(Ord. No. 2943, § 1, 1-12-10)

(Ord. No. 3112 , § 2, 2-25-20)

8.32.030 - Loud, annoying and unnecessary noises prohibited.

A. It shall be unlawful for any person to willfully make or continue, or cause to be made or continued, any excessive or unreasonable noise, which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

B. The standard that may be considered in determining whether a violation of the provisions of this section exists may include, but not be limited to, the following:

1. The level of the noise;
2. Whether the nature of the noise is usual or unusual;
3. Whether the origin of the noise is natural or unnatural;
4. The level and intensity of the background noise, if any;
5. The proximity of the noise to residential sleeping facilities;
6. The nature and zoning of the area within which the noise emanates;

7. The density of the inhabitation of the area within which the noise emanates;
8. The time of the day and night the noise occurs;
9. The duration of the noise, including whether it is of a temporary or short-term nature;
10. Whether the noise is recurrent, intermittent, or constant; and
11. Whether the noise is produced by a commercial or noncommercial activity.

(Ord. No. 2943, § 1, 1-12-10)

8.32.040 - Loud, annoying and unnecessary noises—Enumerated.

The city council finds the following to be loud, annoying and unnecessary noises, which are hereby declared to be in violation of this chapter; this list is deemed illustrative and shall not be construed in any way to be an exclusive or all-inclusive list of the noises prohibited by this chapter, it being the intent and purpose of this chapter to include and prohibit all noises of the character described in this section. Where no specific distance is set for the determination of audibility, reference to noise disturbance shall be deemed to mean plainly audible at a distance of one hundred feet from the real property boundary of the source of the sound, if the sound occurs on privately owned property, or from the source of the sound, if the sound occurs on the public right-of-way, public property, or private property open to the public. References to "adjacent" or "neighboring" residences or units in this section shall mean those residences or units located next to or in close proximity to the source of the noise, and no specific distance standard shall be required for such locations.

A. Animals and Birds. The keeping of any animal or bird that causes frequent or long continued noise plainly audible by inhabitants or occupants of any adjacent or neighboring residential properties or units, or plainly audible at a distance of fifty feet from any nonresidential building or structure, shall be presumed to disturb the comfort and repose of any person in the vicinity and shall be prima facie evidence of a violation of this chapter; however, nothing in this subsection shall be construed to apply to occasional noises emanating from a legally operated kennel, animal hospital or veterinary clinic, humane society or pound.

B. Defect in Vehicle or Load. The use of any automobile, motorcycle or other vehicle so out of repair, so loaded or in such manner as to create loud and unnecessary grating, grinding, rattling or other noise.

C. Motor Vehicle Noises. Any loud or annoying noise made by any motor vehicle and not reasonably necessary to the operation thereof under the circumstances, including, but not limited to, noise caused by screeching of tires; racing or accelerating the engine, except in the course of repair or adjustment thereof during nighttime hours; backfiring the engine; or the emission of exhaust from the engine tail pipe or muffler.

D. Domestic Power Tools. Operating or permitting the operation of any mechanically powered saw, sander, drill, grinder, lawn or garden tool, snow blower, small power equipment, or

similar device used outdoors in residential areas during nighttime hours so as to cause a noise disturbance across a residential real property boundary.

E. Engine-Repair and Testing. It shall be unlawful for any person to repair, rebuild or test any engine so as to create a noise disturbance, during nighttime hours.

F. Horns and Signaling Devices. The sounding of any horn or signaling device on any automobile, motor vehicle or any other vehicle on any street or public street except as a danger warning; the creation by means of any such signaling device of any unreasonably and unnecessarily loud or harsh sounds; the sounding of any such signaling device for an unnecessarily or unreasonably long period of time; or the use of any horn, whistle or other device operated by engine exhaust

G. Loudspeakers/Public Address System. The using, operating or playing, or permitting to be played, used or operated, of any radio receiving set, musical instrument, audio system, loudspeaker, sound amplifying equipment or other machine or device for the producing or reproducing of sound, which casts sound upon the streets for the purpose of commercial or noncommercial advertising, or attracting the attention of the public to any building, structure or attraction (1) such that the sound there from creates a loud, annoying or unnecessary noise across a residential area; or (2) on a public right-of-way or public space, except as provided in Section 8.32.080.

H. Radios, Musical Instruments and Similar Devices. The using, operating or playing, or the permitting to be played, used or operated, any stereo, radio receiving set, musical instrument, audio system, television set or any like machine or device that produces or reproduces sound, in such manner as to disturb at any time, the peace, quiet and comfort of the neighboring inhabitants, with louder volume than is necessary for convenient hearing for the person or persons who are in the room, vehicle, chamber or place in which the machine or device is operated and who are voluntarily listening thereto. The operation of any such machine or device during nighttime hours in such a manner as to be plainly audible by inhabitants or occupants of any adjacent or neighboring residential properties or units, or plainly audible at a distance of fifty feet from any nonresidential building, structure, vehicle or place in which it is located, shall be prima facie evidence of a violation of this subsection.

I. Yelling and Shouting. Loud or raucous yelling, shouting, hooting, whistling or singing in the public streets or in public places, or any other place, so as to annoy or disturb the quiet, comfort or repose of persons in any office or inhabitants or occupants of any neighboring or adjacent dwelling, hotel, apartment building or other kind of residence. The occurrence of such conduct during nighttime hours shall be prima facie evidence of a violation of this subsection.

J. Noise in Proximity to Schools, Courts, Churches or Hospitals. The creation of any excessive noise on any street adjacent to a school, institution of learning, church or court while such facilities are in use, or adjacent to any hospital which unreasonably interferes with the work

of the institution or which disturbs or unduly annoys patients of the hospital; however, this subsection shall not apply unless conspicuous signs are displayed in such streets indicating that there is located in the vicinity a school, hospital, court or church.

K. Hawkers and Peddlers. The shouting or crying of peddlers, hawkers or vendors, so as to disturb the peace and quiet of the neighborhood.

L. Erection or demolition of buildings, excluding owner resident additions or remodeling, and the grading and excavation of land including the use of blasting, the start up and use of heavy equipment such as dump trucks and graders and the use of jack hammers except on weekdays between the hours of seven a.m. and six p.m. and on Saturdays eight a.m. to five p.m. The city manager may waive any or all of the provisions of this subsection in cases of urgent necessity, or in the interest of public health and safety. The provisions of this subsection may also be waived or modified pursuant to a conditional use permit or other development entitlement processed and issued in accordance with the applicable city requirements and procedures.

M. Late night disturbances of any kind that are plainly audible by inhabitants or occupants of any adjacent or neighboring residential properties or units, or are plainly audible at a distance of fifty feet from a real property boundary, that occur during nighttime hours, shall be prima facie evidence of violation of this subsection.

(Ord. No. 2943, § 1, 1-12-10)

8.32.050 - Mixed use developments.

Due to the unique nature of mixed use developments, as are designated as such in a specific plan, violations of this chapter shall be determined pursuant to Section 8.32.030. The distance requirements of Section 8.32.040 shall not apply to mixed use neighborhoods.

(Ord. No. 2943, § 1, 1-12-10)

8.32.060 - Assessment of noise disturbance.

Any law enforcement officer, code enforcement officer, or other employee or official designated by the city manager or designee who hears a noise or sound that is plainly audible, as defined in Sections 8.32.030 and 8.32.040, in violation of this chapter, may enforce this chapter and shall assess the noise or sound according to the following standards:

A. The primary means of detection shall be by means of the official's normal hearing faculties, not artificially enhanced.

B. The official shall first attempt to have a direct line of sight and hearing to the vehicle or real property from which the sound or noise emanates so that the official can readily identify the offending source of the sound or noise and the distance involved. If the official is unable to

have a direct line of sight and hearing to the vehicle or real property from which the sound or noise emanates, then the official shall confirm the source of the sound or noise by approaching the suspected vehicle or real property until the official is able to obtain a direct line of sight and hearing, and confirm the source of the sound or noise that was heard at the place of the original assessment of the sound or noise.

C. The official need not be required to identify words, song titles, artists, or lyrics in order to establish a violation.

(Ord. No. 2943, § 1, 1-12-10)

8.32.070 - Defenses.

In any prosecution for a violation of this chapter, it shall be a sufficient defense that the noise of which complaint is made resulted from reasons beyond the control of the person charged with making the noise, unless the noise is due to a reparable or otherwise curable cause which was not diligently cured or repaired; that it was necessary to make the noise to prevent injury to persons or property or that the creation or emission of the noise was done by or with a device, such as a horn, siren or muffler, installed and operated pursuant to state law and meeting the requirements thereof.

(Ord. No. 2943, § 1, 1-12-10)

8.32.080 - Exemptions and waivers.

The following uses of any activity shall be exempt from noise level regulations:

A. Emergency Exemption. The provisions of this chapter shall not apply to: (1) the emission of sound for the purpose of alerting persons to the existence of an emergency, or (2) the emission of sound in the performance of emergency work performed by authorized personnel for the purpose of securing the immediate health and safety of the public.

B. Warning Devices. Warning devices necessary for the protection of public safety, as for example, police, fire and ambulance sirens, and train horns, shall be exempted from the provisions of this chapter.

C. Outdoor Activities. The provisions of this chapter shall not apply to outdoor gatherings, public dances, shows and sporting and entertainment events, provided such events are conducted pursuant to a permit or license issued by the city relative to the staging of the events.

D. Any noise resulting from activities of a temporary duration permitted by law and/or for which a waiver has been granted by the director.

E. The unamplified human voice, except as provided for in Section 8.32.040(I) (Yelling and Shouting).

F. Bells, chimes, carillons while being used for religious purposes or in conjunction with religious services, or for national celebrations or public holidays.

G. Scheduled stadium events, subject, however, to frequency and time limitations, parades, school activities, including band practice sessions.

H. Refuse collection trucks, provided the trucks do not collect refuse between the hours of nine p.m. and five a.m.

I. Permitted construction during daytime hours.

J. Federal or State Preempted Activities. Any other activity to the extent regulation thereof has been preempted by state or federal law shall be exempted from the regulations of this chapter.

K. Any activity by the city or any governmental entity.

L. Any activity that is protected by the First Amendment, provided that it takes place during daytime hours, except subject to time, place manner restrictions and/or any regulations imposed by a required or issued permit for such activity.

(Ord. No. 2943, § 1, 1-12-10)

8.32.090 - Thirty-day waivers.

A. Any person seeking a waiver pursuant to this section shall file an application with the director. The application shall contain information which demonstrates that bringing the source of sound or activity for which the waiver is sought into compliance with this chapter would constitute an unreasonable hardship on the applicant, on the community, or on other persons. The application shall be accompanied by a fee, as established by council resolution.

B. A separate application shall be filed for each noise source; provided, however, that several mobile sources under common ownership, or several fixed sources on a single property may be combined into one application.

C. Before a waiver application can be considered, the applicant must show proof that he/she has provided notice of the waiver application to all affected persons within a four-foot radius of the anticipated noise source.

D. Any individual who claims to be adversely affected by allowance of the waiver may file a statement with the director containing any information to support his/her claim. If at any time the director finds that a sufficient controversy exists regarding an application, a public hearing will be held.

E. In determining whether to grant or deny the application, the director shall balance denial as a hardship on the applicant against: (1) the adverse impact on the health, safety and welfare of other persons affected; (2) the adverse impact on property affected; and (3) any other adverse impacts of granting the waiver. Applicants and persons contesting the waiver shall be required to submit such information as the director may reasonably require.

F. A waiver shall be denied if the director determines that the balance of hardships weighs against

the applicant and that granting the waiver shall substantially adversely impact the health, safety and welfare of other persons affected, including the quiet enjoyment of property. The decision on the waiver application shall be in writing, explaining the reasons therefor. The notice of denial shall issue within ten days of the application.

G. Waivers shall be granted by notice to the applicant containing all necessary conditions, including a time limit on the permitted activity. Acceptance of the waiver implies acceptance of any conditions imposed. Noncompliance with any condition of the waiver shall terminate the waiver and subject the person holding it to those provisions of this chapter for which the waiver was granted. Notification that a waiver has been granted shall issue in writing within ten days of the application.

H. A waiver will not exceed thirty days from the date on which it becomes effective. Any request for extension of time to a waiver beyond the original thirty days or for modification of other material conditions of the waiver shall require a new application.

(Ord. No. 2943, § 1, 1-12-10)

8.32.100 - Special events not subject to waiver requirement.

A special event scheduled to take place either on public or private property is exempt from the requirement of obtaining a noise disturbance waiver, provided the special event is not scheduled to last more than forty-eight hours. Notwithstanding this exemption, the organizer or sponsor of an event must obtain and comply with any and all necessary city permits.

(Ord. No. 2943, § 1, 1-12-10; Ord. No. 3112 , § 2, 2-25-20)

8.32.110 - Request for appeal hearing.

Any person may contest the denial of a waiver by submitting a written request to the city manager for an appeal hearing, clearly stating the reasons for the appeal, within ten days from the date of service of the denial notice. A hearing before the city manager shall be set for a date that is not less than five, nor more than twenty days from the date the request for hearing is filed. The person requesting the hearing (the appellant) shall be notified of the time and place set for the hearing at least five days prior to the date of the hearing.

(Ord. No. 2943, § 1, 1-12-10)

8.32.120 - Appeal hearing process.

A. No hearing to contest the denial of a waiver before the city manager shall be held unless and until a written request for a hearing has been timely submitted and any applicable fines have been deposited.

B. The city manager shall only consider evidence that is relevant to whether the grounds for the

denial of the waiver are valid and supported by evidence.

C. The appellant shall be given the opportunity to testify and present witnesses and any relevant evidence concerning the denial of the waiver.

D. The formal rules of evidence shall not apply. All relevant evidence may be considered, and the city manager has the discretion to exclude evidence if he/she finds such evidence to be irrelevant or needlessly repetitive. The city manager has the authority to cut off presentation of evidence if he/she reasonably believes that the evidence being presented is irrelevant or needlessly repetitive.

E. 1. The failure of the appellant to appear at the appeal hearing shall be considered an abandonment of the appeal and consent to its denial.

2. Notwithstanding the above, upon a showing of good cause by the appellant, the city manager may excuse the appellant's failure to appear at the hearing and reschedule the hearing. Under no circumstances shall the hearing be rescheduled more than one time.

F. The notice of denial of the waiver and any additional documents submitted by the director shall constitute prima facie evidence of the respective facts contained in those documents.

G. At least five days prior to the hearing, the appellant shall be provided with copies of reports and any other documents submitted or relied upon by the director. No other discovery disclosure is required.

H. The city manager may continue the hearing and request additional information from the director or the appellant prior to issuing a written decision.

(Ord. No. 2943, § 1, 1-12-10; Ord. No. 3112 , § 2, 2-25-20)

8.32.130 - City manager's decision—Right to judicial review.

A. After considering all of the testimony and evidence submitted at the hearing, the city manager shall issue a written decision to sustain or overrule the denial of the waiver and shall list in the decision the reasons for that decision. The decision of the city manager shall be final.

B. If the decision is to overrule the denial, suspension or revocation, then the director shall issue the waiver within ten days of the service of the decision.

C. The time for a challenge to the city manager's decision in a court of law is governed by California Code of Civil Procedure Sections 1094.5 and 1094.6. Notice of the city manager's decision shall include citation to California Code of Civil Procedure Sections 1094.5 and 1094.6.

D. The city manager's written decision shall be served on the appellant within ten days from the date of the hearing by mailing to the appellant by certified mail, return receipt requested, via the U.S mail. Service of the hearing officer's decision shall be deemed to have been completed on the date of mailing.

(Ord. No. 2943, § 1, 1-12-10)

8.32.140 - Exceptions for time to comply.

A. Within ninety days following the effective date of this chapter, the owner of any commercial or industrial activity, which is the source of sound that constitute a violation of this chapter, may apply to the director for an exception to the time to comply with the provisions of this chapter. The director shall have the authority to grant an exception not to exceed one hundred eighty days from the effective date of this chapter.

B. Appeals. Appeals of an adverse decision under this section shall be made to the city manager. The city manager's review shall be limited to whether the decision is supported by substantial evidence. The appeal procedures outlined in this chapter shall apply to appeals under this section.

(Ord. No. 2943, § 1, 1-12-10)

8.32.150 - Violation—Enforcement and penalties.

A. A violation of this chapter shall be punished as prescribed in Section 1.08.010.

B. A violation of this chapter is hereby declared to be a public nuisance, which may be abated by the city in the manner provided by the laws of the State of California and the ordinances of this city for the abatement of a public nuisance, and the city shall also have all rights provided by such laws and ordinances to recover damages suffered from any such nuisance and to recover from the owner of the property upon which such nuisance is located the cost of any abatement thereof by the city.

C. Joint and Several Responsibility. In addition to the person causing the offending sound, the owner, tenant or lessee of property, or a manager, overseer or agent, or any other person lawfully entitled to possess the property from which the offending sound is emitted at the time the offending sound is emitted, shall be responsible for compliance with this chapter if the additionally responsible party knows or should have known of the offending noise disturbance. It shall not be a lawful defense to assert that some other person caused the sound. The lawful possessor or operator of the premises shall be responsible for operating or maintaining the premises in compliance with this chapter and may be cited regardless of whether or not the person actually causing the sound is also cited. Notwithstanding the foregoing, an owner, manager, overseer or agent of property from which offending sound is emitted and who does not reside on such property shall not be cited for violation of the provisions of this chapter unless such owner, manager, overseer or agent has previously been informed in writing by a law enforcement officer, code enforcement officer, or other employee or official designated by the city manager or designee of the existence of an offending noise disturbance on the property, and such disturbance continues, occurs again or is otherwise not reasonably or fully rectified or brought into compliance with this chapter.

(Ord. No. 2943, § 1, 1-12-10)

APPENDIX 5.1:

STUDY AREA PHOTOS

This page intentionally left blank

JN: 14334 Study Area Photos

L1_E
33, 56' 58.110000"118, 0' 10.080000"

L1_N
33, 56' 58.110000"118, 0' 10.030000"

L1_S
33, 56' 58.140000"118, 0' 10.080000"

L1_W
33, 56' 58.120000"118, 0' 10.110000"

L2_E
33, 56' 57.480000"118, 0' 6.920000"

L2_N
33, 56' 57.530000"118, 0' 6.980000"

JN: 14334 Study Area Photos

L2_S
33, 56' 57.530000"118, 0' 7.000000"

L2_W
33, 56' 57.520000"118, 0' 6.950000"

L3_E
33, 56' 56.800000"118, 0' 6.430000"

L3_N
33, 56' 56.620000"118, 0' 6.340000"

L3_S
33, 56' 56.640000"118, 0' 6.290000"

L3_W
33, 56' 56.720000"118, 0' 6.320000"

JN: 14334 Study Area Photos

L4_E
33, 56' 50.180000"118, 0' 18.680000"

L4_N
33, 56' 50.210000"118, 0' 18.730000"

L4_S
33, 56' 50.180000"118, 0' 18.700000"

L4_W
33, 56' 50.180000"118, 0' 18.730000"

L5_E
33, 56' 55.090000"118, 0' 12.500000"

L5_N
33, 56' 55.110000"118, 0' 12.500000"

JN: 14334 Study Area Photos

L5_S
33, 56' 55.090000"118, 0' 12.500000"

L5_W
33, 56' 55.130000"118, 0' 12.500000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

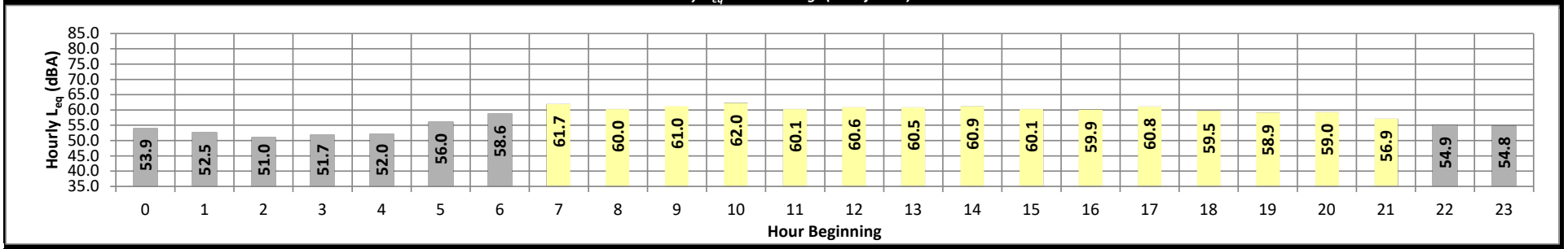
This page intentionally left blank

24-Hour Noise Level Measurement Summary

Date: Tuesday, August 24, 2021 *Location:* L1 - Located north of the Project site near Whittier Hospital *Meter:* Piccolo II *JN:* 14334

Project: La Serna Townhomes *Source:* Medical Center Emergency Room at 9080 Colima Road. *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	53.9	66.0	48.8	65.0	63.5	58.7	56.7	52.2	50.6	49.4	49.1	48.9	53.9	10.0	63.9
	1	52.5	58.9	49.9	58.6	58.1	56.4	55.0	52.5	51.5	50.3	50.1	50.0	52.5	10.0	62.5
	2	51.0	57.6	48.9	57.2	56.6	54.9	53.6	50.7	49.8	49.2	49.1	48.9	51.0	10.0	61.0
	3	51.7	72.5	48.4	72.3	72.0	68.8	67.1	57.4	49.8	48.8	48.7	48.5	51.7	10.0	61.7
	4	52.0	59.5	48.9	59.2	58.8	56.8	55.2	51.8	50.4	49.3	49.2	49.0	52.0	10.0	62.0
	5	56.0	68.7	50.6	68.5	67.9	66.3	64.2	57.3	54.0	51.1	50.9	50.7	56.0	10.0	66.0
	6	58.6	67.7	52.2	67.4	66.9	64.7	62.8	58.4	55.4	52.9	52.6	52.3	58.6	10.0	68.6
Day	7	61.7	73.0	53.8	72.4	71.5	68.7	66.8	62.2	58.6	54.7	54.3	53.9	61.7	0.0	61.7
	8	60.0	68.5	52.6	68.1	67.7	65.8	64.5	60.6	56.9	53.4	53.0	52.7	60.0	0.0	60.0
	9	61.0	71.2	54.3	70.7	70.3	68.7	67.2	61.6	58.4	55.3	55.0	54.4	61.0	0.0	61.0
	10	62.0	72.4	57.8	71.9	71.5	70.5	69.6	67.6	65.3	59.7	59.1	58.2	62.0	0.0	62.0
	11	60.1	69.3	51.6	68.8	68.2	66.3	64.7	60.3	56.6	52.6	52.1	51.7	60.1	0.0	60.1
	12	60.6	69.8	51.6	69.4	68.9	66.9	65.4	60.8	57.1	52.6	52.2	51.7	60.6	0.0	60.6
	13	60.5	70.5	52.6	69.9	69.1	67.2	65.5	61.3	57.7	53.6	53.2	52.8	60.5	0.0	60.5
	14	60.9	70.2	52.9	69.8	69.2	66.9	65.6	61.7	58.1	53.9	53.4	53.0	60.9	0.0	60.9
	15	60.1	74.0	51.9	73.0	71.8	68.2	65.4	61.3	57.2	52.9	52.5	52.0	60.1	0.0	60.1
	16	59.9	68.1	51.9	67.8	67.3	65.5	64.3	60.7	57.1	52.8	52.3	51.9	59.9	0.0	59.9
	17	60.8	69.0	53.2	68.5	68.0	66.3	65.1	61.6	58.3	54.2	53.7	53.3	60.8	0.0	60.8
	18	59.5	66.9	53.1	66.7	66.2	64.6	63.6	60.4	57.1	53.8	53.5	53.2	59.5	0.0	59.5
	19	58.9	70.2	52.2	69.8	69.3	67.0	64.7	59.8	56.4	53.0	52.6	52.3	58.9	5.0	63.9
	20	59.0	68.3	52.8	67.7	67.1	64.9	63.3	59.0	55.6	53.3	53.1	52.9	59.0	5.0	64.0
	21	56.9	65.9	51.0	65.5	65.0	62.9	61.4	56.7	53.5	51.6	51.4	51.1	56.9	5.0	61.9
Night	22	54.9	64.2	49.7	63.8	63.2	61.3	59.3	54.1	51.6	50.1	50.0	49.8	54.9	10.0	64.9
	23	54.8	63.5	51.3	62.3	61.4	59.6	58.1	54.8	53.0	51.7	51.5	51.4	54.8	10.0	64.8

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	56.9	65.9	51.0	65.5	65.0	62.9	61.4	56.7	53.5	51.6	51.4	51.1
	Max	62.0	74.0	57.8	73.0	71.8	70.5	69.6	67.6	65.3	59.7	59.1	58.2
Energy Average		60.3	Average:		69.3	68.7	66.7	65.1	61.0	57.6	53.8	53.4	53.0
Night	Min	51.0	57.6	48.4	57.2	56.6	54.9	53.6	50.7	49.8	48.8	48.7	48.5
	Max	58.6	72.5	52.2	72.3	72.0	68.8	67.1	58.4	55.4	52.9	52.6	52.3
Energy Average		54.6	Average:		63.8	63.2	60.8	59.1	54.4	51.8	50.3	50.1	49.9

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
58.9	**60.3**	**54.6**

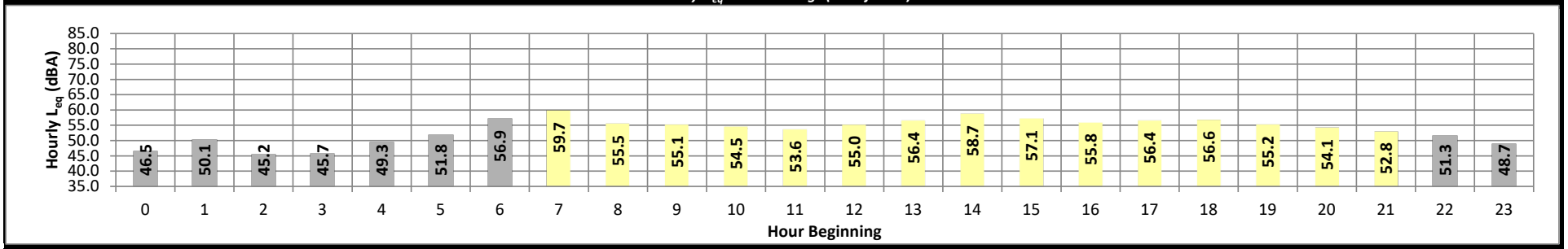
URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Date: Tuesday, August 24, 2021 *Location:* L2 - Located north of the Project site near Shepherd of the *Meter:* Piccolo II *JN:* 14334

Project: La Serna Townhomes *Source:* Hills Lutheran at 15215 janine Drive. *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	46.5	52.7	43.5	52.4	51.8	50.4	49.5	46.7	45.1	44.0	43.8	43.6	46.5	10.0	56.5
	1	50.1	53.7	48.3	53.4	53.2	52.2	51.6	50.4	49.9	48.8	48.5	48.4	50.1	10.0	60.1
	2	45.2	52.5	42.5	52.2	51.7	50.1	48.3	44.8	43.7	42.9	42.8	42.6	45.2	10.0	55.2
	3	45.7	52.9	42.5	52.5	51.9	50.6	49.3	45.7	44.0	42.9	42.8	42.6	45.7	10.0	55.7
	4	49.3	60.5	43.6	59.9	59.0	56.4	53.3	47.2	45.0	44.1	43.9	43.8	49.3	10.0	59.3
	5	51.8	61.5	46.6	61.2	60.6	59.0	57.7	52.4	49.2	47.2	47.0	46.7	51.8	10.0	61.8
	6	56.9	65.0	49.3	64.6	64.0	62.3	61.0	58.1	55.2	50.9	50.2	49.5	56.9	10.0	66.9
Day	7	59.7	70.3	52.5	70.0	69.6	68.6	66.6	61.0	58.2	54.1	53.2	52.6	59.7	0.0	59.7
	8	55.5	63.6	49.3	63.1	62.6	61.2	60.3	56.3	53.4	50.4	49.9	49.4	55.5	0.0	55.5
	9	55.1	62.0	49.6	61.6	61.1	59.7	58.6	55.7	53.7	50.8	50.3	49.7	55.1	0.0	55.1
	10	54.5	61.7	48.7	61.3	60.8	59.5	58.4	55.0	52.7	49.9	49.4	48.9	54.5	0.0	54.5
	11	53.6	61.5	47.5	61.1	60.5	58.8	57.6	53.9	51.4	48.5	48.1	47.6	53.6	0.0	53.6
	12	55.0	63.7	49.0	63.3	62.7	61.0	59.6	55.7	53.1	50.0	49.6	49.1	55.0	0.0	55.0
	13	56.4	65.1	51.0	64.7	64.2	62.6	61.0	57.4	54.8	52.0	51.6	51.2	56.4	0.0	56.4
	14	58.7	72.1	50.6	71.6	70.7	67.4	65.1	59.1	56.0	51.8	51.3	50.7	58.7	0.0	58.7
	15	57.1	70.2	48.8	69.7	69.0	66.4	63.8	58.0	54.3	50.2	49.6	49.0	57.1	0.0	57.1
	16	55.8	71.1	48.7	70.6	69.9	67.2	65.0	57.2	53.9	49.9	49.3	48.9	55.8	0.0	55.8
	17	56.4	68.3	49.6	67.6	66.7	65.1	62.9	57.2	54.2	50.7	50.2	49.7	56.4	0.0	56.4
	18	56.6	67.0	48.4	66.4	65.7	63.8	61.9	57.1	53.8	49.7	49.1	48.6	56.6	0.0	56.6
	19	55.2	69.1	47.2	68.3	67.8	65.7	63.8	56.9	52.5	48.4	47.8	47.4	55.2	5.0	60.2
	20	54.1	64.7	48.0	64.3	63.8	62.1	60.5	56.2	52.2	49.0	48.5	48.2	54.1	5.0	59.1
	21	52.8	63.8	45.6	63.3	62.6	60.1	57.7	52.6	49.6	46.5	46.1	45.8	52.8	5.0	57.8
Night	22	51.3	61.5	44.3	61.0	60.2	57.8	55.9	50.5	47.7	45.0	44.7	44.4	51.3	10.0	61.3
	23	48.7	57.9	43.3	57.5	56.8	54.9	53.1	48.2	45.5	43.8	43.6	43.4	48.7	10.0	58.7

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	52.8	61.5	45.6	61.1	60.5	58.8	57.6	52.6	49.6	46.5	46.1	45.8
	Max	59.7	72.1	52.5	71.6	70.7	68.6	66.6	61.0	58.2	54.1	53.2	52.6
Energy Average		56.1	Average:		65.8	65.2	63.3	61.5	56.6	53.6	50.1	49.6	49.1
Night	Min	45.2	52.5	42.5	52.2	51.7	50.1	48.3	44.8	43.7	42.9	42.8	42.6
	Max	56.9	65.0	49.3	64.6	64.0	62.3	61.0	58.1	55.2	50.9	50.2	49.5
Energy Average		51.1	Average:		57.2	56.6	54.9	53.3	49.4	47.3	45.5	45.3	45.0

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
54.9	**56.1**	**51.1**

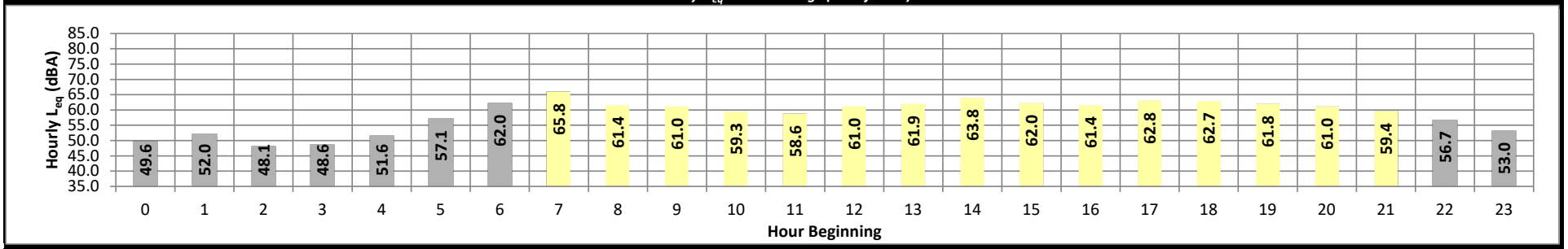
URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Date: Tuesday, August 24, 2021 *Location:* L3 - Located northeast of the Project site near single-family *Meter:* Piccolo II *JN:* 14334

Project: La Serna Townhomes *Source:* residence at 9804 La Serna Drive. *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	49.6	59.8	44.7	59.5	58.8	55.6	53.4	47.9	46.2	45.1	45.0	44.8	49.6	10.0	59.6
	1	52.0	62.3	48.1	61.8	60.8	57.2	54.5	50.9	49.8	48.5	48.3	48.1	52.0	10.0	62.0
	2	48.1	57.6	44.1	57.3	56.8	54.3	52.1	46.6	45.1	44.4	44.3	44.2	48.1	10.0	58.1
	3	48.6	57.6	43.7	57.3	56.9	54.6	53.0	47.7	45.4	44.2	44.0	43.8	48.6	10.0	58.6
	4	51.6	68.0	44.6	67.4	66.4	63.0	59.7	49.4	46.4	45.1	45.0	44.7	51.6	10.0	61.6
	5	57.1	71.6	48.5	71.1	70.5	68.2	65.3	55.9	51.8	49.1	48.8	48.6	57.1	10.0	67.1
	6	62.0	72.2	52.9	71.8	71.0	68.7	67.3	64.2	61.1	55.2	54.0	53.1	62.0	10.0	72.0
Day	7	65.8	83.3	57.4	82.8	82.5	79.8	77.9	68.0	64.4	59.6	58.3	57.6	65.8	0.0	65.8
	8	61.4	70.1	53.9	69.9	69.4	68.1	67.2	62.1	59.1	55.1	54.5	54.0	61.4	0.0	61.4
	9	61.0	69.7	56.0	69.4	68.8	66.5	65.0	61.4	59.0	56.8	56.5	56.1	61.0	0.0	61.0
	10	59.3	71.4	50.1	70.9	69.6	66.2	64.3	59.6	55.6	51.3	50.8	50.2	59.3	0.0	59.3
	11	58.6	67.0	49.2	66.7	66.2	64.3	63.4	59.3	55.5	50.8	50.0	49.4	58.6	0.0	58.6
	12	61.0	70.8	50.8	70.2	69.3	67.2	65.9	61.2	57.4	52.5	51.8	51.0	61.0	0.0	61.0
	13	61.9	74.6	52.9	74.0	73.0	69.4	67.2	62.5	59.1	54.4	53.7	53.1	61.9	0.0	61.9
	14	63.8	80.3	53.1	79.6	78.3	73.8	70.7	64.7	60.9	54.9	54.0	53.3	63.8	0.0	63.8
	15	62.0	74.3	51.5	73.9	73.3	70.5	68.2	62.9	58.7	53.3	52.5	51.7	62.0	0.0	62.0
	16	61.4	74.9	50.7	74.3	73.5	70.9	68.3	63.0	58.7	52.4	51.5	50.9	61.4	0.0	61.4
	17	62.8	78.7	52.2	78.2	77.2	73.0	70.0	63.8	60.0	54.0	53.2	52.5	62.8	0.0	62.8
	18	62.7	74.1	51.2	73.7	72.9	69.9	68.1	63.7	59.7	53.2	52.3	51.4	62.7	0.0	62.7
	19	61.8	75.0	49.6	74.7	74.1	72.1	69.6	62.7	57.9	51.3	50.4	49.8	61.8	5.0	66.8
	20	61.0	71.3	49.8	70.7	69.8	67.6	66.1	60.9	55.9	51.0	50.4	49.9	61.0	5.0	66.0
	21	59.4	72.3	47.1	71.9	71.0	67.7	64.7	58.2	53.4	48.5	47.7	47.2	59.4	5.0	64.4
Night	22	56.7	69.9	45.6	69.4	68.5	65.7	62.8	54.8	49.6	46.3	46.0	45.7	56.7	10.0	66.7
	23	53.0	63.9	44.6	63.6	63.1	60.4	57.9	50.6	47.1	45.1	44.9	44.7	53.0	10.0	63.0

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	58.6	67.0	47.1	66.7	66.2	64.3	63.4	58.2	53.4	48.5	47.7	47.2
	Max	65.8	83.3	57.4	82.8	82.5	79.8	77.9	68.0	64.4	59.6	58.3	57.6
Energy Average		62.0	Average:		73.4	72.6	69.8	67.8	62.3	58.4	53.3	52.5	51.9
Night	Min	48.1	57.6	43.7	57.3	56.8	54.3	52.1	46.6	45.1	44.2	44.0	43.8
	Max	62.0	72.2	52.9	71.8	71.0	68.7	67.3	64.2	61.1	55.2	54.0	53.1
Energy Average		55.6	Average:		64.4	63.6	60.9	58.5	52.0	49.2	47.0	46.7	46.4

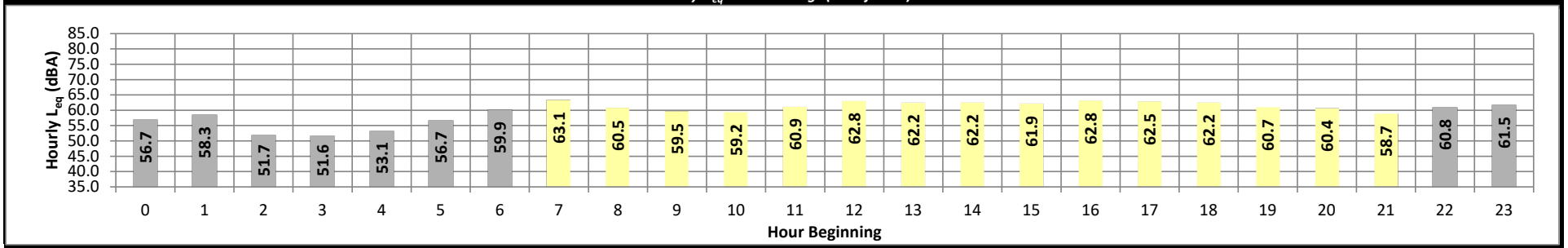
L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
60.5	**62.0**	**55.6**

24-Hour Noise Level Measurement Summary

Date: Tuesday, August 24, 2021 *Location:* L4 - Located south of the Project site near single-family *Meter:* Piccolo II *JN:* 14334

Project: La Serna Townhomes *Source:* residence at 9888 Cole Road. *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	56.7	62.0	54.5	61.6	61.2	59.8	59.1	56.9	55.9	55.0	54.9	54.7	56.7	10.0	66.7
	1	58.3	62.0	58.0	61.8	61.5	61.0	60.6	59.9	59.3	58.6	58.5	58.2	58.3	10.0	68.3
	2	51.7	57.5	48.9	57.1	56.5	55.1	54.2	52.0	50.9	49.5	49.3	49.0	51.7	10.0	61.7
	3	51.6	58.5	47.4	58.0	57.4	55.9	54.9	51.9	50.1	48.2	47.9	47.5	51.6	10.0	61.6
	4	53.1	60.3	49.3	59.8	59.1	57.4	56.1	53.5	51.7	49.9	49.7	49.4	53.1	10.0	63.1
	5	56.7	65.2	52.1	64.6	63.7	61.4	60.1	56.6	54.8	52.8	52.5	52.2	56.7	10.0	66.7
	6	59.9	68.7	54.1	68.1	67.2	65.3	63.9	60.1	57.6	54.8	54.5	54.3	59.9	10.0	69.9
Day	7	63.1	71.8	55.5	71.1	70.3	68.5	67.4	63.7	60.2	56.7	56.2	55.7	63.1	0.0	63.1
	8	60.5	70.0	54.0	69.5	68.8	67.0	65.5	60.9	58.1	55.1	54.6	54.1	60.5	0.0	60.5
	9	59.5	68.0	52.7	67.4	66.7	64.8	63.7	59.9	56.9	53.6	53.2	52.8	59.5	0.0	59.5
	10	59.2	70.5	54.1	70.0	69.3	66.4	64.1	59.4	56.9	54.8	54.5	54.2	59.2	0.0	59.2
	11	60.9	69.6	56.2	69.2	68.6	66.4	64.5	60.7	58.4	56.8	56.6	56.3	60.9	0.0	60.9
	12	62.8	77.9	54.1	76.2	74.4	71.0	69.8	65.5	60.4	55.6	55.0	54.3	62.8	0.0	62.8
	13	62.2	69.7	56.4	69.3	68.6	66.8	65.8	62.9	60.4	57.4	57.0	56.6	62.2	0.0	62.2
	14	62.2	70.3	58.8	69.7	68.7	66.4	65.1	62.3	60.6	59.3	59.1	58.9	62.2	0.0	62.2
	15	61.9	69.5	57.1	68.9	68.1	66.5	65.6	62.5	59.9	57.7	57.5	57.2	61.9	0.0	61.9
	16	62.8	72.9	58.2	72.4	71.5	68.7	66.8	62.8	60.7	58.7	58.5	58.3	62.8	0.0	62.8
	17	62.5	69.6	58.5	69.0	68.2	66.6	65.6	63.1	61.3	59.1	58.9	58.6	62.5	0.0	62.5
	18	62.2	69.7	58.3	69.1	68.3	66.5	65.7	62.6	60.4	58.8	58.6	58.4	62.2	0.0	62.2
	19	60.7	67.4	57.4	66.9	66.2	64.9	64.1	61.1	59.2	57.9	57.7	57.5	60.7	5.0	65.7
	20	60.4	70.8	64.0	70.5	70.1	69.2	68.7	66.9	66.2	64.7	64.5	64.2	60.4	5.0	65.4
	21	58.7	68.3	53.3	67.7	66.8	64.5	62.7	58.0	56.1	54.0	53.7	53.4	58.7	5.0	63.7
Night	22	60.8	68.8	63.1	68.4	67.9	66.6	66.1	64.9	64.4	63.6	63.5	63.3	60.8	10.0	70.8
	23	61.5	69.0	60.5	68.6	67.8	65.7	65.1	63.6	62.8	61.8	61.4	60.8	61.5	10.0	71.5

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	58.7	67.4	52.7	66.9	66.2	64.5	62.7	58.0	56.1	53.6	53.2	52.8
	Max	63.1	77.9	64.0	76.2	74.4	71.0	69.8	66.9	66.2	64.7	64.5	64.2
Energy Average		61.5	Average:		69.8	69.0	66.9	65.7	62.2	59.7	57.4	57.0	56.7
Night	Min	51.6	57.5	47.4	57.1	56.5	55.1	54.2	51.9	50.1	48.2	47.9	47.5
	Max	61.5	69.0	63.1	68.6	67.9	66.6	66.1	64.9	64.4	63.6	63.5	63.3
Energy Average		58.0	Average:		63.1	62.5	60.9	60.0	57.7	56.4	54.9	54.7	54.4

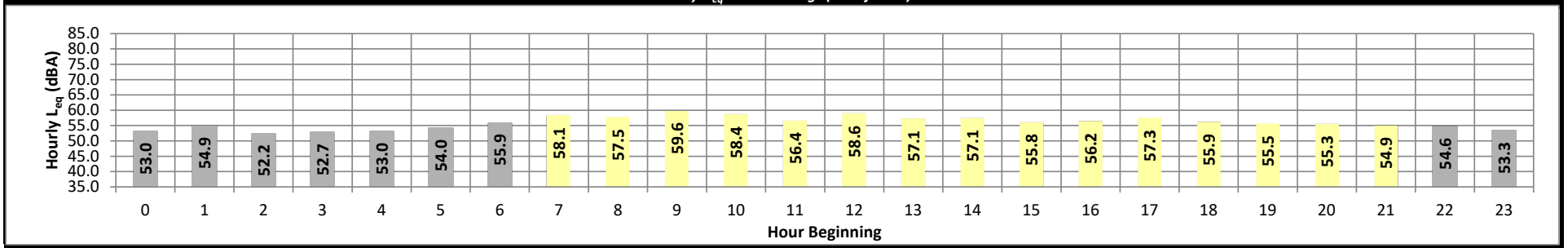
L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
60.5	**61.5**	**58.0**

24-Hour Noise Level Measurement Summary

Date: Tuesday, August 24, 2021 *Location:* L5 - Located south of the Project site near ATI College at 15141 *Meter:* Piccolo II *JN:* 14334

Project: La Serna Townhomes *Source:* Whittier Boulevard. *Analyst:* A. Khan

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	53.0	56.2	51.9	55.9	55.6	54.7	54.3	53.2	52.6	52.1	52.1	52.0	53.0	10.0	63.0
	1	54.9	57.4	53.5	57.2	56.9	56.3	56.0	55.2	54.6	54.0	53.8	53.6	54.9	10.0	64.9
	2	52.2	57.4	51.3	56.6	55.4	54.0	53.1	52.1	51.9	51.5	51.5	51.4	52.2	10.0	62.2
	3	52.7	57.2	51.1	56.8	56.5	55.6	55.0	52.5	51.7	51.4	51.3	51.2	52.7	10.0	62.7
	4	53.0	58.6	51.5	58.0	57.5	55.9	54.9	52.7	52.2	51.7	51.7	51.6	53.0	10.0	63.0
	5	54.0	58.3	52.2	58.1	57.8	56.7	55.9	54.3	53.4	52.6	52.5	52.3	54.0	10.0	64.0
	6	55.9	62.1	53.4	61.7	61.3	59.5	57.9	56.0	54.9	53.8	53.7	53.5	55.9	10.0	65.9
Day	7	58.1	65.9	54.1	65.4	64.8	63.1	61.7	58.0	56.2	54.6	54.4	54.1	58.1	0.0	58.1
	8	57.5	65.1	53.7	64.6	64.0	62.1	61.0	58.1	56.7	54.6	54.2	53.8	57.5	0.0	57.5
	9	59.6	65.5	55.3	65.1	64.7	63.7	62.8	60.7	59.0	56.3	55.8	55.4	59.6	0.0	59.6
	10	58.4	78.9	55.6	78.4	77.9	75.5	73.2	67.1	62.7	57.0	56.4	55.9	58.4	0.0	58.4
	11	56.4	71.8	52.6	70.9	69.7	66.5	64.9	59.3	55.7	53.1	52.8	52.6	56.4	0.0	56.4
	12	58.6	75.4	51.5	73.8	72.3	69.9	68.8	64.6	59.1	53.4	52.4	51.8	58.6	0.0	58.6
	13	57.1	63.9	53.6	63.4	62.8	61.3	60.1	57.4	55.6	54.2	54.0	53.7	57.1	0.0	57.1
	14	57.1	66.2	52.5	65.3	64.7	62.5	60.9	56.8	54.7	53.1	52.9	52.6	57.1	0.0	57.1
	15	55.8	65.2	52.4	64.7	63.9	61.9	60.1	56.8	54.3	52.8	52.6	52.4	55.8	0.0	55.8
	16	56.2	66.0	53.0	65.5	64.6	62.0	60.0	56.4	54.8	53.4	53.2	53.1	56.2	0.0	56.2
	17	57.3	64.7	53.7	64.4	63.9	62.3	60.7	57.2	55.5	54.1	53.9	53.7	57.3	0.0	57.3
	18	55.9	62.0	53.8	61.5	60.8	59.3	58.3	56.1	55.0	54.1	54.0	53.9	55.9	0.0	55.9
	19	55.5	60.6	53.4	60.1	59.7	58.5	57.7	55.9	54.5	53.7	53.6	53.4	55.5	5.0	60.5
	20	55.3	62.8	53.3	62.5	62.2	61.4	60.7	57.0	54.9	53.8	53.6	53.4	55.3	5.0	60.3
	21	54.9	61.6	52.8	61.1	60.8	59.0	57.2	54.6	53.9	53.1	53.0	52.9	54.9	5.0	59.9
Night	22	54.6	60.7	52.5	60.2	59.7	58.0	56.9	54.7	53.7	52.9	52.7	52.6	54.6	10.0	64.6
	23	53.3	57.7	52.0	57.2	56.7	55.7	54.9	53.3	52.7	52.3	52.2	52.1	53.3	10.0	63.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	54.9	60.6	51.5	60.1	59.7	58.5	57.2	54.6	53.9	52.8	52.4	51.8
	Max	59.6	78.9	55.6	78.4	77.9	75.5	73.2	67.1	62.7	57.0	56.4	55.9
Energy Average		57.1	Average:		65.8	65.1	63.3	61.9	58.4	56.2	54.1	53.8	53.5
Night	Min	52.2	56.2	51.1	55.9	55.4	54.0	53.1	52.1	51.7	51.4	51.3	51.2
	Max	55.9	62.1	53.5	61.7	61.3	59.5	57.9	56.0	54.9	54.0	53.8	53.6
Energy Average		53.9	Average:		58.0	57.5	56.3	55.4	53.8	53.1	52.5	52.4	52.2

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
56.2	**57.1**	**53.9**

This page intentionally left blank

APPENDIX 8.1:

ON-SITE NOISE MODEL

This page intentionally left blank

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Whittier Boulevard
Lot No: Building A

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,000 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	75 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	275.0 feet
Barrier Distance to Observer:	275.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	234.574
Medium Trucks:	277.342
Heavy Trucks:	283.051

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	4.58	-10.17	-1.20	*-73.37*	0.000	0.000
Medium Trucks:	76.31	-12.66	-11.26	-1.20	*73.48*	-19.300	-22.300
Heavy Trucks:	81.16	-16.61	-11.40	-1.20	*74.23*	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	58.7	56.9	50.8	59.5	60.1
Medium Trucks:	51.2	49.7	43.3	41.8	50.2	50.5
Heavy Trucks:	51.9	50.5	41.5	42.7	51.1	51.2
Vehicle Noise:	61.5	59.7	57.2	51.9	60.5	61.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	58.7	56.9	50.8	59.5	60.1
Medium Trucks:	31.9	30.4	24.0	22.5	30.9	31.2
Heavy Trucks:	32.6	31.2	22.2	23.4	31.8	31.9
Vehicle Noise:	60.6	58.7	56.9	50.9	59.5	60.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Janine Drive
Lot No: Building B

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	60.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	39.051
Medium Trucks:	62.505
Heavy Trucks:	68.214

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	1.51	-1.20	*-34.16*	0.000	0.000
Medium Trucks:	71.09	-14.88	-1.56	-1.20	*34.51*	-18.890	-21.890
Heavy Trucks:	77.24	-18.83	-2.13	-1.20	*36.05*	-18.921	-21.921

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.1	60.2	58.4	52.4	61.0	61.6
Medium Trucks:	53.5	51.9	45.6	44.0	52.5	52.7
Heavy Trucks:	55.1	53.7	44.6	45.9	54.2	54.4
Vehicle Noise:	63.4	61.6	58.8	53.8	62.3	62.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.1	60.2	58.4	52.4	61.0	61.6
Medium Trucks:	34.6	33.1	26.7	25.1	33.6	33.8
Heavy Trucks:	36.2	34.7	25.7	27.0	35.3	35.4
Vehicle Noise:	62.1	60.2	58.4	52.4	61.0	61.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Janine Drive
Lot No: Building C

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**4.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	48.0 feet
Barrier Distance to Observer:	48.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	25.475
Medium Trucks:	25.126
Heavy Trucks:	52.016

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	4.29	-1.20	*-34.30*	0.000	0.000
Medium Trucks:	71.09	-14.88	4.38	-1.20	*-34.22*	0.000	0.000
Heavy Trucks:	77.24	-18.83	-0.36	-1.20	*34.55*	-18.891	-21.891

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.9	63.0	61.2	55.2	63.8	64.4
Medium Trucks:	59.4	57.9	51.5	50.0	58.4	58.7
Heavy Trucks:	56.8	55.4	46.4	47.6	56.0	56.1
Vehicle Noise:	66.5	64.7	61.8	56.9	65.4	65.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.9	63.0	61.2	55.2	63.8	64.4
Medium Trucks:	59.4	57.9	51.5	50.0	58.4	58.7
Heavy Trucks:	38.0	36.5	27.5	28.7	37.1	37.2
Vehicle Noise:	66.0	64.2	61.7	56.3	64.9	65.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Janine Drive
Lot No: Building D

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**4.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	48.0 feet
Barrier Distance to Observer:	48.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	25.475
Medium Trucks:	25.126
Heavy Trucks:	52.016

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	4.29	-1.20	*-34.30*	0.000	0.000
Medium Trucks:	71.09	-14.88	4.38	-1.20	*-34.22*	0.000	0.000
Heavy Trucks:	77.24	-18.83	-0.36	-1.20	*34.55*	-18.891	-21.891

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.9	63.0	61.2	55.2	63.8	64.4
Medium Trucks:	59.4	57.9	51.5	50.0	58.4	58.7
Heavy Trucks:	56.8	55.4	46.4	47.6	56.0	56.1
Vehicle Noise:	66.5	64.7	61.8	56.9	65.4	65.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.9	63.0	61.2	55.2	63.8	64.4
Medium Trucks:	59.4	57.9	51.5	50.0	58.4	58.7
Heavy Trucks:	38.0	36.5	27.5	28.7	37.1	37.2
Vehicle Noise:	66.0	64.2	61.7	56.3	64.9	65.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: La Serna Drive
Lot No: Building D

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	57.0 feet
Barrier Distance to Observer:	57.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	35.763
Medium Trucks:	59.516
Heavy Trucks:	65.225

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	2.08	-1.20	*-34.15*	0.000	0.000
Medium Trucks:	71.09	-14.88	-1.24	-1.20	*34.51*	-18.890	-21.890
Heavy Trucks:	77.24	-18.83	-1.84	-1.20	*36.05*	-18.921	-21.921

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.7	60.8	59.0	53.0	61.6	62.2
Medium Trucks:	53.8	52.3	45.9	44.4	52.8	53.1
Heavy Trucks:	55.4	54.0	44.9	46.2	54.5	54.6
Vehicle Noise:	63.9	62.1	59.4	54.3	62.8	63.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.7	60.8	59.0	53.0	61.6	62.2
Medium Trucks:	34.9	33.4	27.0	25.5	33.9	34.2
Heavy Trucks:	36.5	35.0	26.0	27.2	35.6	35.7
Vehicle Noise:	62.7	60.8	59.0	53.0	61.6	62.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: Whittier Boulevard
Lot No: Buidling E

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,000 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	75 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	275.0 feet
Barrier Distance to Observer:	275.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	234.574
Medium Trucks:	277.342
Heavy Trucks:	283.051

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	4.58	-10.17	-1.20	*-73.37*	0.000	0.000
Medium Trucks:	76.31	-12.66	-11.26	-1.20	*73.48*	-19.300	-22.300
Heavy Trucks:	81.16	-16.61	-11.40	-1.20	*74.23*	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	58.7	56.9	50.8	59.5	60.1
Medium Trucks:	51.2	49.7	43.3	41.8	50.2	50.5
Heavy Trucks:	51.9	50.5	41.5	42.7	51.1	51.2
Vehicle Noise:	61.5	59.7	57.2	51.9	60.5	61.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	58.7	56.9	50.8	59.5	60.1
Medium Trucks:	31.9	30.4	24.0	22.5	30.9	31.2
Heavy Trucks:	32.6	31.2	22.2	23.4	31.8	31.9
Vehicle Noise:	60.6	58.7	56.9	50.9	59.5	60.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Whittier Boulevard
Lot No: Building A

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,000 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	75 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	275.0 feet
Barrier Distance to Observer:	275.0 feet
Observer Height (Above Pad):	32.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	236.694
Medium Trucks:	236.394
Heavy Trucks:	284.862

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	4.58	-10.23	-1.20	*-73.10*	0.000	0.000
Medium Trucks:	76.31	-12.66	-10.22	-1.20	*-73.45*	0.000	0.000
Heavy Trucks:	81.16	-16.61	-11.44	-1.20	*74.84*	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.5	58.6	56.8	50.8	59.4	60.0
Medium Trucks:	52.2	50.7	44.4	42.8	51.3	51.5
Heavy Trucks:	51.9	50.5	41.5	42.7	51.1	51.2
Vehicle Noise:	61.6	59.8	57.2	52.0	60.6	61.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.5	58.6	56.8	50.8	59.4	60.0
Medium Trucks:	52.2	50.7	44.4	42.8	51.3	51.5
Heavy Trucks:	32.6	31.2	22.2	23.4	31.8	31.9
Vehicle Noise:	61.1	59.3	57.1	51.4	60.0	60.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Janine Drive
Lot No: Building B

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	60.0 feet
Observer Height (Above Pad):	32.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	50.239
Medium Trucks:	48.808
Heavy Trucks:	45.560

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	-0.13	-1.20	*-31.60*	0.000	0.000
Medium Trucks:	71.09	-14.88	0.05	-1.20	*-33.07*	0.000	0.000
Heavy Trucks:	77.24	-18.83	0.50	-1.20	*-37.61*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.5	58.6	56.8	50.7	59.4	60.0
Medium Trucks:	55.1	53.6	47.2	45.7	54.1	54.3
Heavy Trucks:	57.7	56.3	47.3	48.5	56.9	57.0
Vehicle Noise:	63.1	61.4	57.7	53.5	62.1	62.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.5	58.6	56.8	50.7	59.4	60.0
Medium Trucks:	55.1	53.6	47.2	45.7	54.1	54.3
Heavy Trucks:	57.7	56.3	47.3	48.5	56.9	57.0
Vehicle Noise:	63.1	61.4	57.7	53.5	62.1	62.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Janine Drive
Lot No: Building C

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**4.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	48.0 feet
Barrier Distance to Observer:	48.0 feet
Observer Height (Above Pad):	32.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	40.596
Medium Trucks:	38.811
Heavy Trucks:	34.637

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	1.25	-1.20	*-28.68*	0.000	0.000
Medium Trucks:	71.09	-14.88	1.55	-1.20	*-29.92*	0.000	0.000
Heavy Trucks:	77.24	-18.83	2.29	-1.20	*-33.97*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.9	60.0	58.2	52.1	60.8	61.4
Medium Trucks:	56.6	55.1	48.7	47.1	55.6	55.8
Heavy Trucks:	59.5	58.1	49.0	50.3	58.6	58.8
Vehicle Noise:	64.6	62.9	59.1	55.1	63.6	64.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.9	60.0	58.2	52.1	60.8	61.4
Medium Trucks:	56.6	55.1	48.7	47.1	55.6	55.8
Heavy Trucks:	59.5	58.1	49.0	50.3	58.6	58.8
Vehicle Noise:	64.6	62.9	59.1	55.1	63.6	64.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Janine Drive
Lot No: Building D

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**4.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	48.0 feet
Barrier Distance to Observer:	48.0 feet
Observer Height (Above Pad):	32.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	40.596
Medium Trucks:	38.811
Heavy Trucks:	34.637

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	1.25	-1.20	*-28.68*	0.000	0.000
Medium Trucks:	71.09	-14.88	1.55	-1.20	*-29.92*	0.000	0.000
Heavy Trucks:	77.24	-18.83	2.29	-1.20	*-33.97*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.9	60.0	58.2	52.1	60.8	61.4
Medium Trucks:	56.6	55.1	48.7	47.1	55.6	55.8
Heavy Trucks:	59.5	58.1	49.0	50.3	58.6	58.8
Vehicle Noise:	64.6	62.9	59.1	55.1	63.6	64.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.9	60.0	58.2	52.1	60.8	61.4
Medium Trucks:	56.6	55.1	48.7	47.1	55.6	55.8
Heavy Trucks:	59.5	58.1	49.0	50.3	58.6	58.8
Vehicle Noise:	64.6	62.9	59.1	55.1	63.6	64.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: La Serna Drive
Lot No: Building D

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	57.0 feet
Barrier Distance to Observer:	57.0 feet
Observer Height (Above Pad):	32.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	47.728
Medium Trucks:	46.220
Heavy Trucks:	42.775

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	0.20	-1.20	*-31.34*	0.000	0.000
Medium Trucks:	71.09	-14.88	0.41	-1.20	*-32.87*	0.000	0.000
Heavy Trucks:	77.24	-18.83	0.91	-1.20	*-37.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.8	58.9	57.1	51.1	59.7	60.3
Medium Trucks:	55.4	53.9	47.6	46.0	54.5	54.7
Heavy Trucks:	58.1	56.7	47.7	48.9	57.3	57.4
Vehicle Noise:	63.4	61.7	58.0	53.9	62.4	62.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.8	58.9	57.1	51.1	59.7	60.3
Medium Trucks:	55.4	53.9	47.6	46.0	54.5	54.7
Heavy Trucks:	58.1	56.7	47.7	48.9	57.3	57.4
Vehicle Noise:	63.4	61.7	58.0	53.9	62.4	62.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Fourth Floor With Wall
Road Name: Whittier Boulevard
Lot No: Buidling E

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,000 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	75 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	275.0 feet
Barrier Distance to Observer:	275.0 feet
Observer Height (Above Pad):	32.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	236.694
Medium Trucks:	236.394
Heavy Trucks:	284.862

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	4.58	-10.23	-1.20	*-73.10*	0.000	0.000
Medium Trucks:	76.31	-12.66	-10.22	-1.20	*-73.45*	0.000	0.000
Heavy Trucks:	81.16	-16.61	-11.44	-1.20	*74.84*	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.5	58.6	56.8	50.8	59.4	60.0
Medium Trucks:	52.2	50.7	44.4	42.8	51.3	51.5
Heavy Trucks:	51.9	50.5	41.5	42.7	51.1	51.2
Vehicle Noise:	61.6	59.8	57.2	52.0	60.6	61.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.5	58.6	56.8	50.8	59.4	60.0
Medium Trucks:	52.2	50.7	44.4	42.8	51.3	51.5
Heavy Trucks:	32.6	31.2	22.2	23.4	31.8	31.9
Vehicle Noise:	61.1	59.3	57.1	51.4	60.0	60.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Whittier Boulevard
Lot No: Building A

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,000 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	75 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	275.0 feet
Barrier Distance to Observer:	275.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	234.938
Medium Trucks:	277.653
Heavy Trucks:	283.362

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	4.58	-10.18	-1.20	*-73.33*	0.000	0.000
Medium Trucks:	76.31	-12.66	-11.27	-1.20	*73.52*	-19.300	-22.300
Heavy Trucks:	81.16	-16.61	-11.40	-1.20	*74.48*	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	58.7	56.9	50.8	59.5	60.1
Medium Trucks:	51.2	49.7	43.3	41.8	50.2	50.5
Heavy Trucks:	51.9	50.5	41.5	42.7	51.1	51.2
Vehicle Noise:	61.5	59.7	57.2	51.9	60.5	61.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	58.7	56.9	50.8	59.5	60.1
Medium Trucks:	31.9	30.4	24.0	22.5	30.9	31.2
Heavy Trucks:	32.6	31.2	22.2	23.4	31.8	31.9
Vehicle Noise:	60.6	58.7	56.9	50.9	59.5	60.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Janine Drive
Lot No: Building B

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	60.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	41.183
Medium Trucks:	40.459
Heavy Trucks:	69.618

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	1.16	-1.20	*-33.62*	0.000	0.000
Medium Trucks:	71.09	-14.88	1.28	-1.20	*-34.42*	0.000	0.000
Heavy Trucks:	77.24	-18.83	-2.26	-1.20	*37.12*	-18.942	-21.942

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.8	59.9	58.1	52.0	60.7	61.3
Medium Trucks:	56.3	54.8	48.4	46.9	55.3	55.6
Heavy Trucks:	54.9	53.5	44.5	45.7	54.1	54.2
Vehicle Noise:	63.5	61.7	58.7	53.9	62.5	62.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.8	59.9	58.1	52.0	60.7	61.3
Medium Trucks:	56.3	54.8	48.4	46.9	55.3	55.6
Heavy Trucks:	36.0	34.6	25.5	26.8	35.2	35.3
Vehicle Noise:	62.9	61.0	58.5	53.2	61.8	62.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Janine Drive
Lot No: Building C

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**4.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	48.0 feet
Barrier Distance to Observer:	48.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	28.636
Medium Trucks:	27.586
Heavy Trucks:	53.037

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	3.53	-1.20	*-32.70*	0.000	0.000
Medium Trucks:	71.09	-14.88	3.77	-1.20	*-33.21*	0.000	0.000
Heavy Trucks:	77.24	-18.83	-0.49	-1.20	*35.12*	-18.902	-21.902

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.1	62.2	60.5	54.4	63.0	63.6
Medium Trucks:	58.8	57.3	50.9	49.4	57.8	58.1
Heavy Trucks:	56.7	55.3	46.3	47.5	55.9	56.0
Vehicle Noise:	65.8	64.1	61.1	56.2	64.8	65.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.1	62.2	60.5	54.4	63.0	63.6
Medium Trucks:	58.8	57.3	50.9	49.4	57.8	58.1
Heavy Trucks:	37.8	36.4	27.4	28.6	37.0	37.1
Vehicle Noise:	65.3	63.4	60.9	55.6	64.2	64.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Janine Drive
Lot No: Building D

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**4.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	48.0 feet
Barrier Distance to Observer:	48.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	28.636
Medium Trucks:	27.586
Heavy Trucks:	53.037

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	3.53	-1.20	*-32.70*	0.000	0.000
Medium Trucks:	71.09	-14.88	3.77	-1.20	*-33.21*	0.000	0.000
Heavy Trucks:	77.24	-18.83	-0.49	-1.20	*35.12*	-18.902	-21.902

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.1	62.2	60.5	54.4	63.0	63.6
Medium Trucks:	58.8	57.3	50.9	49.4	57.8	58.1
Heavy Trucks:	56.7	55.3	46.3	47.5	55.9	56.0
Vehicle Noise:	65.8	64.1	61.1	56.2	64.8	65.2

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.1	62.2	60.5	54.4	63.0	63.6
Medium Trucks:	58.8	57.3	50.9	49.4	57.8	58.1
Heavy Trucks:	37.8	36.4	27.4	28.6	37.0	37.1
Vehicle Noise:	65.3	63.4	60.9	55.6	64.2	64.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: La Serna Drive
Lot No: Building D

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	57.0 feet
Barrier Distance to Observer:	57.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	38.079
Medium Trucks:	37.296
Heavy Trucks:	66.700

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	1.67	-1.20	*-33.55*	0.000	0.000
Medium Trucks:	71.09	-14.88	1.81	-1.20	*-34.39*	0.000	0.000
Heavy Trucks:	77.24	-18.83	-1.98	-1.20	*37.17*	-18.943	-21.943

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	56.8	55.3	48.9	47.4	55.9	56.1
Heavy Trucks:	55.2	53.8	44.8	46.0	54.4	54.5
Vehicle Noise:	64.0	62.2	59.2	54.4	62.9	63.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	56.8	55.3	48.9	47.4	55.9	56.1
Heavy Trucks:	36.3	34.9	25.8	27.1	35.4	35.6
Vehicle Noise:	63.4	61.6	59.1	53.7	62.3	62.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Second Floor With Wall
Road Name: Whittier Boulevard
Lot No: Buidling E

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,000 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	75 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	275.0 feet
Barrier Distance to Observer:	275.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	234.938
Medium Trucks:	277.653
Heavy Trucks:	283.362

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	4.58	-10.18	-1.20	*-73.33*	0.000	0.000
Medium Trucks:	76.31	-12.66	-11.27	-1.20	*73.52*	-19.300	-22.300
Heavy Trucks:	81.16	-16.61	-11.40	-1.20	*74.48*	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	58.7	56.9	50.8	59.5	60.1
Medium Trucks:	51.2	49.7	43.3	41.8	50.2	50.5
Heavy Trucks:	51.9	50.5	41.5	42.7	51.1	51.2
Vehicle Noise:	61.5	59.7	57.2	51.9	60.5	61.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	58.7	56.9	50.8	59.5	60.1
Medium Trucks:	31.9	30.4	24.0	22.5	30.9	31.2
Heavy Trucks:	32.6	31.2	22.2	23.4	31.8	31.9
Vehicle Noise:	60.6	58.7	56.9	50.9	59.5	60.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Whittier Boulevard
Lot No: Building A

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,000 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	75 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	275.0 feet
Barrier Distance to Observer:	275.0 feet
Observer Height (Above Pad):	23.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	235.646
Medium Trucks:	235.433
Heavy Trucks:	283.966

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	4.58	-10.20	-1.20	*-73.23*	0.000	0.000
Medium Trucks:	76.31	-12.66	-10.20	-1.20	*-73.51*	0.000	0.000
Heavy Trucks:	81.16	-16.61	-11.42	-1.20	*74.68*	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.5	58.6	56.9	50.8	59.4	60.0
Medium Trucks:	52.3	50.8	44.4	42.8	51.3	51.5
Heavy Trucks:	51.9	50.5	41.5	42.7	51.1	51.2
Vehicle Noise:	61.6	59.8	57.2	52.0	60.6	61.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.5	58.6	56.9	50.8	59.4	60.0
Medium Trucks:	52.3	50.8	44.4	42.8	51.3	51.5
Heavy Trucks:	32.6	31.2	22.2	23.4	31.8	31.9
Vehicle Noise:	61.1	59.3	57.1	51.5	60.1	60.6

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Janine Drive
Lot No: Building B

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	60.0 feet
Barrier Distance to Observer:	60.0 feet
Observer Height (Above Pad):	23.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	45.044
Medium Trucks:	43.916
Heavy Trucks:	72.263

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	0.58	-1.20	*-32.71*	0.000	0.000
Medium Trucks:	71.09	-14.88	0.74	-1.20	*-33.89*	0.000	0.000
Heavy Trucks:	77.24	-18.83	-2.50	-1.20	*37.60*	-18.952	-21.952

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.2	59.3	57.5	51.5	60.1	60.7
Medium Trucks:	55.8	54.2	47.9	46.3	54.8	55.0
Heavy Trucks:	54.7	53.3	44.2	45.5	53.9	54.0
Vehicle Noise:	63.0	61.2	58.1	53.4	61.9	62.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.2	59.3	57.5	51.5	60.1	60.7
Medium Trucks:	55.8	54.2	47.9	46.3	54.8	55.0
Heavy Trucks:	35.8	34.3	25.3	26.5	34.9	35.0
Vehicle Noise:	62.3	60.5	58.0	52.6	61.2	61.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Janine Drive
Lot No: Building C

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**4.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	48.0 feet
Barrier Distance to Observer:	48.0 feet
Observer Height (Above Pad):	23.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	33.956
Medium Trucks:	32.444
Heavy Trucks:	29.135

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	2.42	-1.20	*-30.70*	0.000	0.000
Medium Trucks:	71.09	-14.88	2.71	-1.20	*-31.65*	0.000	0.000
Heavy Trucks:	77.24	-18.83	3.42	-1.20	*-34.82*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.0	61.1	59.4	53.3	61.9	62.5
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	60.6	59.2	50.2	51.4	59.8	59.9
Vehicle Noise:	65.7	64.1	60.3	56.2	64.7	65.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.0	61.1	59.4	53.3	61.9	62.5
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	60.6	59.2	50.2	51.4	59.8	59.9
Vehicle Noise:	65.7	64.1	60.3	56.2	64.7	65.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Janine Drive
Lot No: Building D

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**4.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	48.0 feet
Barrier Distance to Observer:	48.0 feet
Observer Height (Above Pad):	23.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	33.956
Medium Trucks:	32.444
Heavy Trucks:	29.135

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	2.42	-1.20	*-30.70*	0.000	0.000
Medium Trucks:	71.09	-14.88	2.71	-1.20	*-31.65*	0.000	0.000
Heavy Trucks:	77.24	-18.83	3.42	-1.20	*-34.82*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.0	61.1	59.4	53.3	61.9	62.5
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	60.6	59.2	50.2	51.4	59.8	59.9
Vehicle Noise:	65.7	64.1	60.3	56.2	64.7	65.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.0	61.1	59.4	53.3	61.9	62.5
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	60.6	59.2	50.2	51.4	59.8	59.9
Vehicle Noise:	65.7	64.1	60.3	56.2	64.7	65.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: La Serna Drive
Lot No: Building D

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,500 vehicles
Vehicle Speed:	25 mph
Near/Far Lane Distance:	35 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	57.0 feet
Barrier Distance to Observer:	57.0 feet
Observer Height (Above Pad):	23.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	42.226
Medium Trucks:	41.020
Heavy Trucks:	69.471

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	59.44	2.36	1.00	-1.20	*-32.54*	0.000	0.000
Medium Trucks:	71.09	-14.88	1.19	-1.20	*-33.77*	0.000	0.000
Heavy Trucks:	77.24	-18.83	-2.25	-1.20	*37.63*	-18.953	-21.953

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.6	59.7	57.9	51.9	60.5	61.1
Medium Trucks:	56.2	54.7	48.3	46.8	55.2	55.5
Heavy Trucks:	55.0	53.5	44.5	45.8	54.1	54.2
Vehicle Noise:	63.4	61.6	58.6	53.8	62.3	62.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.6	59.7	57.9	51.9	60.5	61.1
Medium Trucks:	56.2	54.7	48.3	46.8	55.2	55.5
Heavy Trucks:	36.0	34.6	25.6	26.8	35.2	35.3
Vehicle Noise:	62.7	60.9	58.4	53.1	61.6	62.2

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: Third Floor With Wall
Road Name: Whittier Boulevard
Lot No: Buidling E

Project Name: La Serna Townhomes
Job Number: 14334
Analyst: B. Maddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,000 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	75 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	0.0 feet
Centerline Dist. to Observer:	275.0 feet
Barrier Distance to Observer:	275.0 feet
Observer Height (Above Pad):	23.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.30		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	235.646
Medium Trucks:	235.433
Heavy Trucks:	283.966

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	4.58	-10.20	-1.20	*-73.23*	0.000	0.000
Medium Trucks:	76.31	-12.66	-10.20	-1.20	*-73.51*	0.000	0.000
Heavy Trucks:	81.16	-16.61	-11.42	-1.20	*74.68*	-19.300	-22.300

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.5	58.6	56.9	50.8	59.4	60.0
Medium Trucks:	52.3	50.8	44.4	42.8	51.3	51.5
Heavy Trucks:	51.9	50.5	41.5	42.7	51.1	51.2
Vehicle Noise:	61.6	59.8	57.2	52.0	60.6	61.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.5	58.6	56.9	50.8	59.4	60.0
Medium Trucks:	52.3	50.8	44.4	42.8	51.3	51.5
Heavy Trucks:	32.6	31.2	22.2	23.4	31.8	31.9
Vehicle Noise:	61.1	59.3	57.1	51.5	60.1	60.6

APPENDIX 10.1:

CADNAA OPERATIONAL NOISE MODEL INPUTS

This page intentionally left blank.

13679 - La Serna Townhomes - Operation

CadnaA Noise Prediction Model: 14334-02_Operation.cna
Date: 17.09.21
Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	45.4	43.3	49.9	55.0	45.0	0.0				5.00	a	6030013.67	2293639.62	5.00
RECEIVERS		R2	42.8	40.4	47.0	55.0	45.0	0.0				5.00	a	6030269.56	2293522.67	5.00
RECEIVERS		R3	41.4	39.2	45.8	55.0	45.0	0.0				5.00	a	6030376.62	2293332.02	5.00
RECEIVERS		R4	33.6	31.3	37.9	55.0	45.0	0.0				5.00	a	6029590.74	2292745.57	5.00
RECEIVERS		R5	45.8	40.2	47.7	55.0	45.0	0.0				5.00	a	6029888.69	2293276.55	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6029964.17	2293388.59	43.00
POINTSOURCE		AC02	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6029959.48	2293390.68	43.00
POINTSOURCE		AC03	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6029966.25	2293393.80	43.00
POINTSOURCE		AC04	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6029961.57	2293395.76	43.00
POINTSOURCE		AC05	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6029954.93	2293364.12	43.00
POINTSOURCE		AC06	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6029950.24	2293366.20	43.00
POINTSOURCE		AC07	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6029957.01	2293369.32	43.00
POINTSOURCE		AC08	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6029952.32	2293371.28	43.00
POINTSOURCE		AC09	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6029985.92	2293459.95	43.00
POINTSOURCE		AC10	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6029983.83	2293454.87	43.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC11	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6029988.52	2293452.79	43.00
POINTSOURCE		AC12	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6029990.60	2293458.00	43.00
POINTSOURCE		AC13	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030006.92	2293501.88	43.00
POINTSOURCE		AC14	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030004.32	2293509.04	43.00
POINTSOURCE		AC15	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030009.01	2293507.08	43.00
POINTSOURCE		AC16	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030002.23	2293503.96	43.00
POINTSOURCE		AC17	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030083.40	2293457.00	43.00
POINTSOURCE		AC18	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030086.00	2293453.74	43.00
POINTSOURCE		AC19	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030105.01	2293427.44	43.00
POINTSOURCE		AC20	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030102.32	2293431.00	43.00
POINTSOURCE		AC21	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030129.58	2293391.94	43.00
POINTSOURCE		AC22	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030132.27	2293388.38	43.00
POINTSOURCE		AC23	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030113.67	2293414.26	43.00
POINTSOURCE		AC24	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030160.90	2293350.02	43.00
POINTSOURCE		AC25	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030163.33	2293346.38	43.00
POINTSOURCE		AC26	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030172.01	2293333.53	43.00
POINTSOURCE		AC27	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030187.46	2293310.79	43.00
POINTSOURCE		AC28	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030190.93	2293307.49	43.00
POINTSOURCE		AC29	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030076.22	2293253.00	43.00
POINTSOURCE		AC30	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030079.80	2293251.37	43.00
POINTSOURCE		AC31	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030105.84	2293241.60	43.00
POINTSOURCE		AC32	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030109.64	2293239.87	43.00
POINTSOURCE		AC33	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030135.47	2293229.99	43.00
POINTSOURCE		AC34	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030139.37	2293228.80	43.00
POINTSOURCE		AC35	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030050.30	2293263.63	43.00
POINTSOURCE		AC36	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030046.50	2293264.62	43.00
POINTSOURCE		AC37	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030016.83	2293276.32	43.00
POINTSOURCE		AC38	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030020.22	2293274.61	43.00
POINTSOURCE		AC39	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030045.05	2293372.09	43.00
POINTSOURCE		AC40	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030047.33	2293368.83	43.00
POINTSOURCE		AC41	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030062.85	2293345.83	43.00
POINTSOURCE		AC42	82.0	82.0	82.0	Lw	82		600.00	0.00	270.00	0.0	3.00	g	6030065.56	2293342.03	43.00
POINTSOURCE		Trash1	89.0	89.0	89.0	Lw	89		150.00	0.00	90.00	0.0	8.00	a	6029999.32	2293548.68	8.00
POINTSOURCE		DP44	79.1	79.1	79.1	Lw	79.1		900.00	0.00	90.00	0.0	3.00	a	6030013.77	2293543.99	3.00
POINTSOURCE		BBQ1	91.5	91.5	91.5	Lw	91.5		900.00	0.00	90.00	0.0	5.00	a	6030078.01	2293316.48	5.00

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING		BUILDING00001	x	0		40.00	a	6029957.85	2293309.41	40.00	0.00
								6029911.41	2293327.42	40.00	0.00
								6029949.82	2293426.60	40.00	0.00
								6029994.74	2293408.58	40.00	0.00
BUILDING		BUILDING00002	x	0		40.00	a	6030000.38	2293422.26	40.00	0.00
								6029954.81	2293439.83	40.00	0.00
								6029992.13	2293539.66	40.00	0.00
								6030037.71	2293521.65	40.00	0.00
BUILDING		BUILDING00003	x	0		40.00	a	6030090.88	2293478.90	40.00	0.00
								6030157.72	2293386.23	40.00	0.00
								6030123.21	2293361.93	40.00	0.00
								6030055.29	2293455.68	40.00	0.00
BUILDING		BUILDING00004	x	0		40.00	a	6030166.61	2293373.86	40.00	0.00
								6030215.88	2293305.09	40.00	0.00
								6030200.77	2293287.90	40.00	0.00
								6030196.95	2293291.72	40.00	0.00
								6030180.89	2293280.44	40.00	0.00
								6030131.46	2293349.12	40.00	0.00
BUILDING		BUILDING00005	x	0		40.00	a	6030008.36	2293300.23	40.00	0.00
								6030160.79	2293239.64	40.00	0.00
								6030145.51	2293199.53	40.00	0.00
								6029992.91	2293259.60	40.00	0.00
BUILDING		BUILDING00006	x	0		40.00	a	6030056.45	2293398.15	40.00	0.00
								6030095.34	2293343.71	40.00	0.00
								6030095.60	2293343.71	40.00	0.00
								6030060.53	2293318.97	40.00	0.00
								6030053.67	2293328.26	40.00	0.00
								6030051.41	2293326.52	40.00	0.00
								6030022.16	2293372.62	40.00	0.00
								6030041.69	2293385.90	40.00	0.00
								6030040.65	2293387.29	40.00	0.00

APPENDIX 11.1:

CADNAA CONSTRUCTION NOISE MODEL INPUTS

This page intentionally left blank.

14334 - La Serna Townhomes - Construction

CadnaA Noise Prediction Model: 14334-02_Construction.cna
Date: 17.09.21
Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	74.9	74.9	81.6	0.0	0.0	0.0		x	Total	5.00	a	6030013.67	2293639.62	5.00
RECEIVERS		R2	73.5	73.5	80.2	0.0	0.0	0.0		x	Total	5.00	a	6030269.56	2293522.67	5.00
RECEIVERS		R3	72.4	72.4	79.1	0.0	0.0	0.0		x	Total	5.00	a	6030376.62	2293332.02	5.00
RECEIVERS		R4	64.5	64.5	71.2	0.0	0.0	0.0		x	Total	5.00	a	6029590.74	2292745.57	5.00
RECEIVERS		R5	81.4	81.4	88.1	0.0	0.0	0.0		x	Total	5.00	a	6029888.69	2293276.55	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
Construction_Area		Const1	123.5	123.5	123.5	85.0	85.0	85.0	Lw"	85.0					8

Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
Construction_Area	8.00	a			6029886.90	2293295.10	8.00	0.00
					6029992.18	2293572.41	8.00	0.00
					6030032.19	2293549.25	8.00	0.00
					6030054.84	2293532.59	8.00	0.00
					6030076.46	2293511.23	8.00	0.00
					6030102.16	2293476.99	8.00	0.00

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
			6030184.46	2293362.75	8.00	0.00
			6030216.30	2293319.83	8.00	0.00
			6030224.37	2293307.07	8.00	0.00
			6030225.94	2293298.99	8.00	0.00
			6030224.11	2293291.18	8.00	0.00
			6030218.90	2293283.63	8.00	0.00
			6030206.40	2293269.04	8.00	0.00
			6030181.93	2293234.15	8.00	0.00
			6030161.35	2293195.87	8.00	0.00
			6030148.07	2293165.40	8.00	0.00
			6029948.07	2293244.04	8.00	0.00
			6029930.36	2293256.28	8.00	0.00
			6029914.74	2293274.77	8.00	0.00
			6029906.66	2293285.71	8.00	0.00

Appendix I I-1: Vehicle Miles Traveled (VMT) Screening and Trip Generation Assessment
I-2: Multi-Way Stop Warrant Analysis

March 2, 2022

Mr. Jason Keller
La Serna Partners, LP
4100 Newport Place, Suite 790
Newport Beach, CA 92660

SUBJECT: LA SERNA TOWNHOMES VEHICLE MILES TRAVELED (VMT) SCREENING AND TRIP GENERATION ASSESSMENT

Dear Mr. Jason Keller:

Urban Crossroads, Inc. is pleased to provide the following Vehicle Miles Traveled (VMT) Screening and Trip Generation Assessment for La Serna Townhomes development (**Project**) which is located at 9829 La Serna Drive in the City of Whittier. The purpose of this work effort is to determine whether additional traffic analysis is necessary for the proposed Project. The following assessment is based on the City of Whittier Transportation Study Guidelines (March 2021, **City Guidelines**). (1)

PROPOSED PROJECT

The proposed Project consists of the development of a 42-unit condominium/townhome development located on the southwest corner of La Serna Drive and Janine Drive. There are 6 buildings with units ranging from 2-3 bedrooms within 3-story units. There is one point of access proposed on La Serna Drive and one driveway proposed on Janine Drive.

VEHICLE MILES TRAVELED (VMT)

BACKGROUND

Changes to California Environmental Quality Act (CEQA) Guidelines were adopted in December 2018, which require all lead agencies to adopt VMT as a replacement for automobile delay-based level of service (LOS) as the measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020. To aid in this transition, the Governor's Office of Planning and Research (OPR) released a Technical Advisory on Evaluating Transportation Impacts in CEQA (December of 2018) (**Technical Advisory**). (2) Based on OPR's Technical Advisory, the City of Whittier adopted its City Guidelines which documents the City's VMT analysis methodology and approved impact thresholds. The VMT screening evaluation presented in this report has been developed based on the adopted City Guidelines.

PROJECT SCREENING

The City Guidelines provides details on appropriate screening criteria and thresholds that can be used to identify when a proposed land use project is anticipated to result in a less than significant impact without conducting a more detailed analysis. Screening thresholds are broken into the following four types:

- TPA Screening
- Low VMT Area Screening
- Project Type

A land use project need only to meet one of the above screening thresholds to result in a less than significant VMT impact.

TPA SCREENING

Consistent with guidance identified City Guidelines, Projects that are located within a ½ mile of the Eastside Transit Corridor Phase 2 Project, or a ½ mile of where two or more 15-minute (during commute hours) bus routes intersect or within a ½ mile of a corridor served by 15-minute (during commute hours) bus service. In addition, the project should have the following characteristics:

- A Floor Area Ratio (FAR) of 0.75 or greater
- Is consistent with the applicable SCAG Sustainable Community Strategy (SCS) (as determined by the City)
- Does not provide more parking than required by the City
- Does not replace affordable housing units

The Project's location is presented in Attachment A, which based on the map provided in the City Guidelines, show existing and planned future TPA areas for both bus and rail service within the City. The Project site is located within a TPA based on bus service.

Once a project is found to be located within a TPA, additional sub criteria as noted above should also be reviewed. The Project as designed is anticipated to have a FAR of 0.80 of actual living and a FAR of 1.04 of living plus garage, which both exceed the FAR criteria of 0.75 or greater. The Project is consistent with the adopted RTP/SCS and is not replacing affordable residential units with market rate residential units. Finally, the proposed parking supplied by the Project would not exceed the City's required parking threshold of 103 spaces.

TPA screening criteria is met.

LOW VMT AREA SCREENING

As noted in the City Guidelines, a residential or office project that is located in a Traffic Analysis Zone (TAZ) that is already 15% below the City and Sphere of Influence (SOI) Baseline VMT will tend to exhibit similarly low VMT. The City Guidelines does not provide specific information for TAZs located within the City of Whittier. An appropriate determination of low VMT area cannot be made.

Low VMT Area screening criteria is not met.

PROJECT TYPE SCREENING

The City Guidelines identify that local serving retail less than 50,000 square feet or other local serving essential services (e.g., local parks, day care centers, public schools, medical/dental office buildings, etc.) are presumed to have a less than significant impact absent substantial evidence to the contrary. The City Guidelines also indicate that projects generating fewer than 110 daily vehicle trips may be presumed to have a less than significant impact. Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, 2021. (3) The proposed Project is anticipated to generate daily vehicle trips exceeding the 110 daily vehicle threshold. Detailed discussion on trip generation to follow.

Project Type screening criteria is not met.

PROJECT TRIP GENERATION

PREVIOUS USE TRIP GENERATION

The site was formerly occupied by a 9,244 square foot Marie Callender's restaurant (which has since been demolished). In order to develop the traffic characteristics of the previous use and proposed project, trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021) for the High Turnover (Sit-Down) Restaurant (ITE Land Use Code 932) land use. (3) The trip generation rates are shown in Table 1. The trip generation summary for the previous use is also shown in Table 1. As shown in Table 1, the former high-turnover sit-down restaurant use generates a net total of 564 two-way trips per day with 89 AM peak hour trips and 56 PM peak hour trips.

TABLE 1: PREVIOUS USE TRIP GENERATION SUMMARY

Land Use	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Trip Generation Rates:[1]									
High Turnover (Sit-Down) Restaurant	TSF	932	5.26	4.31	9.57	5.52	3.53	9.05	107.20

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

[2] TSF = Thousand Square Feet

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Previous Use Trip Generation Summary:									
Marie Callender's Restaurant	9.244	TSF	49	40	89	51	33	84	992
Pass-by Reduction (43% PM and Daily only)[2]			0	0	0	-14	-14	-28	-428
Total			**49**	**40**	**89**	**37**	**19**	**56**	**564**

[1] TSF = Thousand Square Feet

[2] Source: ITE Trip Generation Handbook (3rd Edition, 2017).

PROPOSED PROJECT TRIP GENERATION

In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the ITE Trip Generation Manual (11th Edition, 2021) for the Multifamily (Low-Rise) Residential (2-3 floors) (ITE Land Use Code 220) land use. The ITE Trip Generation Manual defines the Multifamily (Low-Rise) Residential land use as follows: *housing that includes apartments, townhouses and condominiums located within the same buildings with at least 3 other dwelling units and have two or three floors (levels).* The trip generation rates are shown in Table 2. The Project trip generation summary is also shown in Table 2 for the Project. As shown in Table 2, the Project is anticipated to generate a net total of 284 two-way trips per day with 17 AM peak hour trips and 21 PM peak hour trips.

The Project proposes to develop 3-story condominium/townhomes with 4-10 units within each building. As such, the proposed project best fits the description supplied by the ITE Trip Generation Manual for the Multifamily (Low-Rise) Residential land use category. Although the Project fits the Multifamily (Low-Rise) Residential land use category the best, the Single Family Attached land use (which is a new land use in the latest Trip Generation Manual) has also been reviewed in order to present the most conservative measure and that even that the use of that most conservative measure would not potentially result in any traffic deficiencies per the City's Guidelines.

TABLE 2: PROPOSED PROJECT TRIP GENERATION SUMMARY

Land Use	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Trip Generation Rates:[1]									
Multifamily (Low-Rise) Residential (2-3 Floors)	DU	220	0.10	0.30	0.40	0.32	0.19	0.51	6.74

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] DU = Dwelling Units

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Summary:									
La Serna Townhomes	42	DU	4	13	17	13	8	21	284

[1] DU = Dwelling Units

The ITE Trip Generation Manual defines the Single Family Attached land use category as: *any single family housing unit that shared a wall with an adjoining unit, whether the walls are for living space, a vehicle garage, or storage space (this land use category includes duplexes)*. If the Project were to be classified as a single family attached product type, then the trip generation based on the ITE Trip Generation Manual (11th Edition, 2021) for the Single Family Attached Housing (ITE Land Use Code 215) land use is shown on Table 3. The trip generation summary is also shown in Table 3 for the Project based on the Single Family Attached land use category. As shown in Table 3, the Project is anticipated to generate a net total of 302 two-way trips per day with 20 AM peak hour trips and 24 PM peak hour trips.

TABLE 3: ALTERNATIVE PROJECT TRIP GENERATION SUMMARY

Land Use	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Trip Generation Rates:[1]									
Single Family Attached	DU	215	0.15	0.33	0.48	0.32	0.25	0.57	7.20

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

[2] DU = Dwelling Units

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Summary:									
La Serna Townhomes	42	DU	6	14	20	14	10	24	302

[1] DU = Dwelling Units

TRIP GENERATION COMPARISON

Table 4 shows the trip generation comparison and the resulting net change in trips between the previous use and the proposed Project. As shown on Table 4, the development of the proposed Project (assuming the multifamily land use category) would result in 308 fewer two-way trips per day and a net reduction of 75 AM peak hour trips and a net reduction of 39 PM peak hour trips in comparison to the previous use. In comparison, the proposed Project (assuming the single family attached land use category) would result in 290 fewer two-way trips per day and a net reduction of 72 AM peak hour trips and a net reduction of 36 PM peak hour trips. Although the single family attached product type generates slightly more traffic, the net effect is still an overall reduction in comparison to the existing use.

TABLE 4: TRIP GENERATION COMPARISON

	AM Peak Hour			PM Peak Hour			
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Daily**
Existing Use:							
Existing Total Trips	51	41	92	41	19	60	592
Proposed Project:							
Project (Multifamily) Total Trips	4	13	17	13	8	21	284
Net Change Total Trips	**-47**	**-28**	**-75**	**-28**	**-11**	**-39**	**-308**
Proposed Project:							
Project (SFA) Total Trips	6	14	20	14	10	24	302
Net Change Total Trips	**-45**	**-27**	**-72**	**-27**	**-9**	**-36**	**-290**

SITE ACCESS

The former Marie Callender's use had a driveway on Janine Drive that aligned with the Whittier Hospital Medial Center Emergency Room access and a shared driveway on La Serna Drive. The proposed Project will continue to utilize the same shared driveway on La Serna Drive, however, the access on Janine Drive has been modified to align with the adjacent Shepherd of the Hills Lutheran Church. The Project will utilize the existing painted median along Janine Drive and turning vehicle are not anticipated to block through traffic along Janine Drive.

FINDINGS

VMT

Based on our review of applicable VMT screening criteria, the Project meets the TPA screening criteria and would therefore be presumed to result in a less than significant VMT impact; no additional VMT analysis is required.

TRIP GENERATION

The City's Guidelines indicates that peak hour operations at intersections should be evaluated in a Traffic Analysis if a proposed project will generate or add 100 or more peak hour trips during either the AM or PM weekday peak hours to any signalized intersections in close proximity to the project site. The Project is anticipated to generate fewer than 100 peak hour trips in both the AM and PM peak hours. It should also be noted that the proposed Project would generate fewer trips than the previous use (restaurant). As such, additional peak hour traffic operations analysis is not necessary based on the City's Guidelines.

If you have any questions, please contact me directly at (949) 861-0177.

Respectfully submitted,

URBAN CROSSROADS, INC.

Charlene So

Charlene So, P.E.
Principal

Alex So
Senior Analyst

REFERENCES

1. **City of Whittier.** *City of Whittier Transportation Study Guidelines.* March 2021.

2. **Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California : s.n., December 2018.

3. **Institute of Transportation Engineers.** *Trip Generation Manual.* 11th Edition. 2021.

ATTACHMENT A
VMT TPA MAP

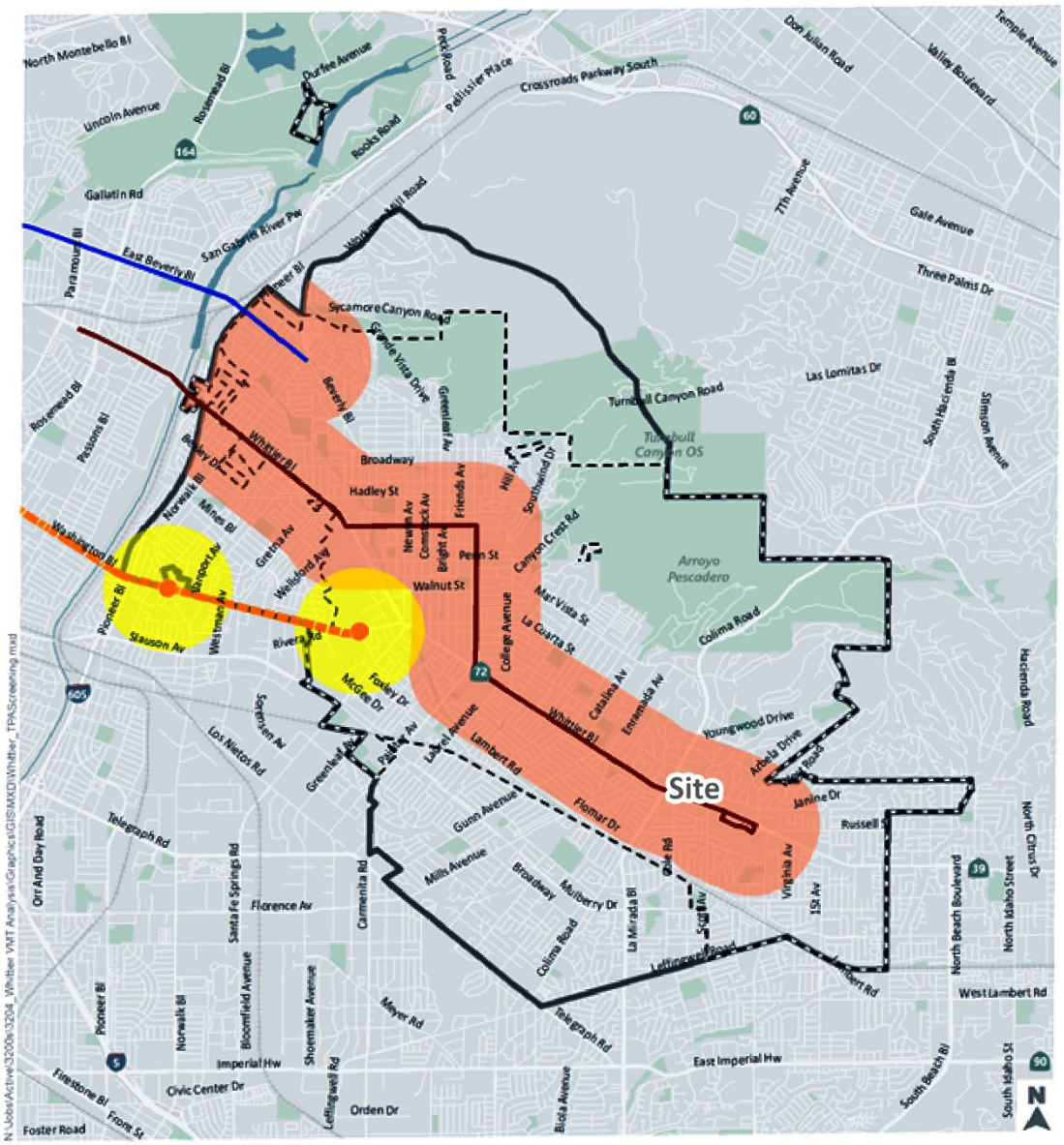


Figure 2

Future Transit Priority Areas in Whittier (With Eastside Transit Corridor Phase 2 Built Out)

January 31, 2022

Mr. Jason Keller
La Serna Partners, LP
4100 Newport Place, Suite 790
Newport Beach, CA 92660

SUBJECT: LA SERNA TOWNHOMES MULTI-WAY STOP WARRANT ANALYSIS

Dear Mr. Jason Keller:

This letter report documents the additional warrant analysis requested by City staff for the intersections of La Serna Drive at Janine Drive North and Janine Drive South in the City of Whittier. The purpose of this evaluation is to determine if a multi-way (all-way) stop warrant is met for the aforementioned intersections on La Serna Drive. This letter report utilizes the most current version of the California Manual on Uniform Traffic Control Devices (CA MUTCD) (2014 Edition, Revision 5, dated March 27, 2020) for the purposes of the analysis.

EXISTING (2020) CONDITIONS

EXISTING ROADWAY CONFIGURATIONS

La Serna Drive is currently a two-lane roadway with one lane in each direction of travel which is separated by either a painted median between Janine Drive North and Janine Drive South or painted left turn pockets south of Janine Drive South. There is a southbound left turn pocket striped on La Serna Drive north of Janine Drive North, then narrows to a two-lane, undivided roadway. La Serna Drive is classified as a collector in the City's General Plan Transportation Element, which has 40-feet of pavement and a 60-66-foot right-of-way. La Serna Drive appears to be construct with its ultimate pavement in place, with the exception of portions north of Janine Drive North. The posted speed limit on La Serna Drive is 35 miles per hour (mph).

Janine Drive North to the east and Janine Drive South to the west are not identified as General Plan Circulation System roadways but can be considered local streets. Per the City's General Plan, local streets also have 40-feet of pavement and 60-feet of right-of-way. Both alignments of Janine Drive appear to be built to their ultimate with curb and gutter and sidewalk improvements in place. Both alignments accommodate on lane of travel in each direction, where the northern alignment is an undivided roadway, and the southern alignment is separated by a painted median. Janine Drive North has a posted speed limit of 30 mph and Janine Drive South has a posted speed limit of 25 mph approaching the Whittier Hospital.

Both intersections of Janine Drive North and South on La Serna Drive are controlled by a stop sign on the minor approach (e.g., stop sign on Janine Drive). Due to the posted speed limits on the study area roadways being less than 40 mph, the urban warrant analysis criterion has been utilized (as opposed to

rural warrants).

EXISTING (2021) CONDITIONS TRAFFIC VOLUMES

24-hour approach volume traffic counts were conducted on Wednesday, October 27, 2021, at the study intersections of Janine Drive North and Janine Drive South on La Serna Drive. No adjustments have been made to the collected traffic counts as local schools with in-person instruction. The traffic count data are included in Attachment A of this letter.

MULTI-WAY STOP WARRANT ANALYSIS

The City of Whittier has requested the intersections of Janine Drive North and Janine Drive South on La Serna Drive be evaluated for the installation of a multi-way stop. Based on guidance provided in the CA MUTCD (Section 2B.07), multi-way stop control should be considered if one or more of the following conditions exists (see Attachment B):

- Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.
    - As shown in Attachment B, the intersection of La Serna Drive and Janine Drive North currently meets peak hour warrants.
    - Similarly, the intersection of La Serna Drive and Janine Drive South also currently meets peak hour warrants.
    - Although both locations meet the peak hour warrant, this is only one warrant of the five evaluated. Also note that signalization of one or both of these intersections may not be feasible given their proximity to one another (approximately 215-feet from centerline-to-centerline) and to the intersection of La Serna Drive and Whitter Boulevard (approximately 420-feet from centerline-to-centerline).
- Five or more reported crashed in a 12-month period that are susceptible to correction by implementing a multi-way stop control.
    - Based on collision history provided by City staff, there were 2 collisions in 2017 and 2 in 2019 within the last five years between October 24, 2016, to October 25, 2021, at the intersection of La Serna Drive and Janine Drive North (see Attachment C). As such, this criterion is not met.
    - Based on collision history provided by City staff, there were no collisions in the last five years between October 24, 2016, to October 25, 2021, at the intersection of La Serna Drive and Janine Drive South (see Attachment C). As such, this criterion is not met.
- Minimum volumes on the major and minor approaches are met, as defined in Section 2B.07 of the CA MUTCD.
    - Based on the adjusted existing peak hour approach volumes, both intersections do not meet the minimum volume criteria. As such, this criterion is not met.

None of the criteria above are met to warrant the implementation of a multi-way stop. The CA MUTCD also provides other options/criteria that may be considered for the implementation of a multi-way stop intersection.

- The need to control left turn conflicts;
- The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;
- Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop;
- An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.

RECOMMENDATIONS

Both intersections of Janine Drive North and Janine Drive South along La Serna Drive are two similar roadways with similar operating characteristics. The implementation of an all-way stop would likely improve the traffic operations at both locations. In addition, an all-way stop may help vehicles on Janine Drive to make turns during peak periods when there is congestion or heavier flows of traffic along La Serna Drive. However, in light of the data presented, it does not appear that an all-way stop is necessary. The Project is located on the southwest corner of La Serna Drive and Janine Drive South. The site was formerly occupied by a Marie Callender's Restaurant and Bakery until August 2019 when it closed (a more intense traffic generating land use than the proposed Project). The accident history for the intersection of La Serna Drive and Janine Drive South indicates no accidents at this location in the last five years, of which 3 years included the operations of the Marie Callender's Restaurant. Although the proposed Project may have different travel patterns from the former use, its contribution to off-site intersections is anticipated to be nominal based on the total trip generation 16 AM and PM peak hour trips.

At the City's request, it is recommended that the Project remove and replace all conflicting or damaged signing and striping along the Project frontage on both Janine Drive South and La Serna Drive.

If you have any questions, please contact me directly at (949) 861-0177.

Respectfully submitted,

URBAN CROSSROADS, INC.

Charlene So, P.E.
Associate Principal

ATTACHMENT A

TRAFFIC COUNT DATA FROM OCTOBER 2021

Wednesday, October 27, 2021 CITY: Whittier PROJECT: SC3153

ADT5 La Serna north of Janine.

Suhsduhg#e|#Dlp WG#DOF#Whd#:47#586#;;;

AM Period	SB			PM Period	SB		
0:00	3			12:00	57		
0:15	2			12:15	32		
0:30	2			12:30	42		
0:45	0	7	7	12:45	35	166	166
1:00	0			13:00	51		
1:15	1			13:15	31		
1:30	0			13:30	38		
1:45	1	2	2	13:45	33	153	153
2:00	0			14:00	129		
2:15	0			14:15	49		
2:30	0			14:30	45		
2:45	1	1	1	14:45	69	292	292
3:00	1			15:00	145		
3:15	1			15:15	62		
3:30	0			15:30	54		
3:45	1	3	3	15:45	59	320	320
4:00	1			16:00	30		
4:15	1			16:15	64		
4:30	1			16:30	51		
4:45	2	5	5	16:45	50	195	195
5:00	1			17:00	46		
5:15	3			17:15	44		
5:30	1			17:30	42		
5:45	6	11	11	17:45	50	182	182
6:00	6			18:00	70		
6:15	11			18:15	32		
6:30	34			18:30	39		
6:45	87	138	138	18:45	28	169	169
7:00	44			19:00	26		
7:15	60			19:15	15		
7:30	107			19:30	18		
7:45	167	378	378	19:45	10	69	69
8:00	91			20:00	19		
8:15	23			20:15	14		
8:30	25			20:30	12		
8:45	33	172	172	20:45	13	58	58
9:00	22			21:00	19		
9:15	22			21:15	6		
9:30	17			21:30	7		
9:45	37	98	98	21:45	5	37	37
10:00	26			22:00	8		
10:15	29			22:15	6		
10:30	25			22:30	2		
10:45	31	111	111	22:45	7	23	23
11:00	35			23:00	5		
11:15	32			23:15	2		
11:30	25			23:30	2		
11:45	29	121	121	23:45	2	11	11
Total Vol.	1047		**1047**		1675		**1675**

	Daily Totals	
	SB	**Combined**
	2722	**2722**

	AM		PM	
Split %	100.0%	**38.5%**	100.0%	**61.5%**
Peak Hour	7:15	**7:15**	14:45	**14:45**
Volume	425	**425**	330	**330**
P.H.F.	0.64	**0.64**	0.57	**0.57**

cs@aimtd.com Tell. 714 253 7888

Wednesday, October 27, 2021 CITY: Whittier PROJECT: SC3153

ADT4 Janine east of La Serna.

Suhsduhg# | #Dlp WG#DOF#Whd#:47#586#;;;

AM Period	WB			PM Period	WB		
0:00	0			12:00	27		
0:15	3			12:15	26		
0:30	1			12:30	32		
0:45	3	7	7	12:45	27	112	112
1:00	0			13:00	32		
1:15	0			13:15	37		
1:30	1			13:30	22		
1:45	1	2	2	13:45	38	129	129
2:00	0			14:00	51		
2:15	1			14:15	27		
2:30	1			14:30	50		
2:45	0	2	2	14:45	57	185	185
3:00	1			15:00	73		
3:15	0			15:15	38		
3:30	2			15:30	42		
3:45	1	4	4	15:45	40	193	193
4:00	4			16:00	44		
4:15	2			16:15	38		
4:30	5			16:30	48		
4:45	2	13	13	16:45	35	165	165
5:00	8			17:00	41		
5:15	4			17:15	34		
5:30	11			17:30	32		
5:45	11	34	34	17:45	31	138	138
6:00	12			18:00	35		
6:15	8			18:15	30		
6:30	10			18:30	34		
6:45	22	52	52	18:45	25	124	124
7:00	20			19:00	30		
7:15	40			19:15	19		
7:30	31			19:30	13		
7:45	53	144	144	19:45	16	78	78
8:00	65			20:00	9		
8:15	26			20:15	17		
8:30	30			20:30	17		
8:45	27	148	148	20:45	12	55	55
9:00	31			21:00	9		
9:15	25			21:15	12		
9:30	21			21:30	5		
9:45	20	97	97	21:45	6	32	32
10:00	20			22:00	6		
10:15	23			22:15	8		
10:30	27			22:30	3		
10:45	21	91	91	22:45	4	21	21
11:00	20			23:00	3		
11:15	43			23:15	1		
11:30	29			23:30	1		
11:45	33	125	125	23:45	0	5	5
Total Vol.		719	**719**			1237	**1237**

Daily Totals	
WB	**Combined**
1956	**1956**

	AM		PM	
Split %	100.0%	**36.8%**	100.0%	**63.2%**
Peak Hour	7:15	**7:15**	14:30	**14:30**
Volume	189	**189**	218	**218**
P.H.F.	0.73	**0.73**	0.75	**0.75**

cs@aimtd.com Tell. 714 253 7888

Wednesday, October 27, 2021 CITY: Whittier PROJECT: SC3153

ADT3 La Serna between Janine.

Suhsduhg# | #Dlp WG#DOF#Whd#:47#586#;;;

AM Period	NB		SB			PM Period	NB		SB		
0:00	3		1			12:00	49		64		
0:15	4		4			12:15	47		35		
0:30	2		2			12:30	50		54		
0:45	1	10	3	10	20	12:45	36	182	36	189	371
1:00	1		0			13:00	49		54		
1:15	1		1			13:15	44		37		
1:30	4		1			13:30	56		33		
1:45	1	7	1	3	10	13:45	77	226	35	159	385
2:00	1		0			14:00	84		139		
2:15	0		0			14:15	64		48		
2:30	2		0			14:30	77		56		
2:45	0	3	1	1	4	14:45	97	322	86	329	651
3:00	0		2			15:00	112		154		
3:15	0		1			15:15	76		62		
3:30	1		1			15:30	77		68		
3:45	1	2	1	5	7	15:45	68	333	55	339	672
4:00	1		2			16:00	64		47		
4:15	0		2			16:15	70		58		
4:30	2		4			16:30	74		60		
4:45	3	6	4	12	18	16:45	66	274	41	206	480
5:00	2		7			17:00	50		46		
5:15	6		6			17:15	69		34		
5:30	1		7			17:30	69		42		
5:45	6	15	16	36	51	17:45	65	253	52	174	427
6:00	4		13			18:00	60		56		
6:15	6		17			18:15	71		37		
6:30	69		35			18:30	35		42		
6:45	66	145	93	158	303	18:45	47	213	34	169	382
7:00	29		50			19:00	38		30		
7:15	75		65			19:15	44		21		
7:30	155		115			19:30	28		16		
7:45	117	376	176	406	782	19:45	37	147	13	80	227
8:00	46		118			20:00	24		22		
8:15	24		32			20:15	24		17		
8:30	25		27			20:30	21		15		
8:45	27	122	36	213	335	20:45	29	98	17	71	169
9:00	23		38			21:00	20		24		
9:15	32		31			21:15	13		7		
9:30	15		21			21:30	14		8		
9:45	24	94	30	120	214	21:45	15	62	6	45	107
10:00	20		28			22:00	12		9		
10:15	24		27			22:15	12		8		
10:30	37		29			22:30	7		4		
10:45	33	114	29	113	227	22:45	6	37	6	27	64
11:00	37		30			23:00	2		10		
11:15	37		44			23:15	6		1		
11:30	37		27			23:30	4		3		
11:45	53	164	38	139	303	23:45	4	16	2	16	32
Total Vol.	1058		1216		**2274**		2163		1804		**3967**

Daily Totals

NB	SB	Combined
3221	3020	**6241**

	AM			PM		
Split %	46.5%	53.5%	**36.4%**	54.5%	45.5%	**63.6%**
Peak Hour	7:15	7:15	**7:15**	14:30	14:45	**14:45**
Volume	393	474	**867**	362	370	**732**
P.H.F.	0.63	0.67	**0.74**	0.89	0.60	**0.69**

cs@aimtd.com Tell. 714 253 7888

Wednesday, October 27, 2021 CITY: Whittier PROJECT: SC3153

ADT1 Janine west of La Serna.

Suhsduhg#e|#Dlp WG#DOF#Whd#:47#586#;;;

AM Period	EB			PM Period	EB		
0:00	5			12:00	43		
0:15	2			12:15	36		
0:30	4			12:30	45		
0:45	0	11	11	12:45	40	164	164
1:00	0			13:00	35		
1:15	2			13:15	41		
1:30	2			13:30	39		
1:45	0	4	4	13:45	48	163	163
2:00	2			14:00	56		
2:15	0			14:15	38		
2:30	1			14:30	49		
2:45	0	3	3	14:45	61	204	204
3:00	2			15:00	79		
3:15	0			15:15	59		
3:30	2			15:30	51		
3:45	2	6	6	15:45	53	242	242
4:00	1			16:00	57		
4:15	1			16:15	60		
4:30	3			16:30	57		
4:45	4	9	9	16:45	45	219	219
5:00	2			17:00	65		
5:15	1			17:15	47		
5:30	4			17:30	55		
5:45	12	19	19	17:45	61	228	228
6:00	4			18:00	45		
6:15	16			18:15	46		
6:30	15			18:30	30		
6:45	21	56	56	18:45	36	157	157
7:00	17			19:00	37		
7:15	19			19:15	31		
7:30	31			19:30	18		
7:45	36	103	103	19:45	17	103	103
8:00	30			20:00	11		
8:15	32			20:15	20		
8:30	29			20:30	12		
8:45	35	126	126	20:45	18	61	61
9:00	33			21:00	19		
9:15	28			21:15	15		
9:30	25			21:30	8		
9:45	30	116	116	21:45	11	53	53
10:00	29			22:00	9		
10:15	31			22:15	12		
10:30	40			22:30	10		
10:45	36	136	136	22:45	7	38	38
11:00	39			23:00	3		
11:15	34			23:15	6		
11:30	30			23:30	5		
11:45	50	153	153	23:45	2	16	16
Total Vol.		742	**742**			1648	**1648**

Daily Totals

EB	0	**Combined**
2390		**2390**

	AM		**PM**	
Split %	100.0%	**31.0%**	100.0%	**69.0%**
Peak Hour	11:45	**11:45**	14:45	**14:45**
Volume	174	**174**	250	**250**
P.H.F.	0.87	**0.87**	0.82	**0.79**

cs@aimtd.com Tell. 714 253 7888

Wednesday, October 27, 2021 CITY: Whittier PROJECT: SC3153

ADT2 La Serna south of Janine.

Suhsduhg#e|#Dlp WG#DOF#Whd#:47#586#;;;

AM Period	NB			PM Period	NB		
0:00	3			12:00	44		
0:15	2			12:15	56		
0:30	2			12:30	54		
0:45	2	9	9	12:45	47	201	201
1:00	1			13:00	56		
1:15	0			13:15	45		
1:30	3			13:30	61		
1:45	1	5	5	13:45	75	237	237
2:00	1			14:00	88		
2:15	0			14:15	63		
2:30	2			14:30	82		
2:45	0	3	3	14:45	95	328	328
3:00	0			15:00	104		
3:15	1			15:15	74		
3:30	1			15:30	69		
3:45	3	5	5	15:45	71	318	318
4:00	4			16:00	55		
4:15	2			16:15	55		
4:30	1			16:30	68		
4:45	3	10	10	16:45	52	230	230
5:00	6			17:00	37		
5:15	7			17:15	65		
5:30	6			17:30	76		
5:45	11	30	30	17:45	62	240	240
6:00	8			18:00	44		
6:15	14			18:15	66		
6:30	77			18:30	41		
6:45	68	167	167	18:45	44	195	195
7:00	32			19:00	36		
7:15	77			19:15	38		
7:30	151			19:30	25		
7:45	120	380	380	19:45	37	136	136
8:00	47			20:00	26		
8:15	27			20:15	25		
8:30	27			20:30	22		
8:45	38	139	139	20:45	27	100	100
9:00	25			21:00	18		
9:15	38			21:15	14		
9:30	24			21:30	15		
9:45	36	123	123	21:45	18	65	65
10:00	30			22:00	8		
10:15	32			22:15	12		
10:30	45			22:30	2		
10:45	46	153	153	22:45	4	26	26
11:00	39			23:00	3		
11:15	52			23:15	2		
11:30	42			23:30	2		
11:45	59	192	192	23:45	3	10	10
Total Vol.		1216	**1216**			2086	**2086**

Daily Totals

NB	0	**Combined**
3302		**3302**

	AM		**PM**	
Split %	100.0%	**36.8%**	100.0%	**63.2%**
Peak Hour	7:15	**7:15**	14:30	**14:30**
Volume	395	**395**	355	**355**
P.H.F.	0.65	**0.65**	0.93	**0.85**

cs@aimtd.com Tell. 714 253 7888

ATTACHMENT B

MULTI-WAY STOP WARRANT ANALYSIS

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet Summary

Jurisdiction:	**City of Whittier**	Count Date:	10/27/21	
Major Street:	**La Serna Drive**	Critical Approach Speed (Major)	35	mph
Minor Street:	**Janine Drive North**	Critical Approach Speed (Minor)	30	mph

Major Street Approach Lanes = **1**
Minor Street Approach Lanes = **1**

WARRANT 1 - Eight Hour Vehicular Volume	**SATISFIED =**	**NO**
WARRANT 2 - Four Hour Vehicular Volume	**SATISFIED =**	**NO**
WARRANT 3 - Peak Hour	**SATISFIED =**	**YES**
WARRANT 7 - Crash Experience Warrant	**SATISFIED =**	**NO**
WARRANT 8 - Roadway Network	**SATISFIED =**	**NO**

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 3)

DIST	CO	RTE	PM
___	___	___	___

COUNT DATE 10/27/21
CALC CS DATE 11/04/21
CHK - DATE

Jurisdiction: **City of Whittier**
Major Street: **La Serna Drive** — Critical Approach Speed (Major) 35 mph
Minor Street: **Janine Drive North** — Critical Approach Speed (Minor) 30 mph

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ..... [X]
or
In built up area of isolated community of < 10,000 population ..... [ ]

URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED = NO**
(Condition A or Condition B or combination of A and B must be satisifed)

Condition A - Minimum Vehicle Volume **100% SATISFIED = NO**
80% SATISFIED = NO

Minimum Requirements (80% shown in Brackets)
Minimum Major Approach Volume = 500
Minimum Minor Approach Volume = 150

	U	R	U	R	Hr 1	Hr 2	Hr 3	Hr 4	Hr 5	Hr 6	Hr 7	Hr 8	%
Approach Lanes	1		2 or More		**7**	**15**	**14**	**16**	**17**	**13**	**18**	**8**	Satisfy
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	**754**	**653**	**614**	**469**	**435**	**379**	**382**	**294**	**59%**
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	**144**	**193**	**185**	**165**	**138**	**129**	**124**	**148**	**83%**

Condition B - Interruption of Continuous Traffic **100% SATISFIED = NO**
80% SATISFIED = NO

Minimum Requirements (80% shown in Brackets)
Minimum Major Approach Volume = 750
Minimum Minor Approach Volume = 75

	U	R	U	R	Hr 1	Hr 2	Hr 3	Hr 4	Hr 5	Hr 6	Hr 7	Hr 8	%
Approach Lanes	1		2 or More		**7**	**15**	**14**	**16**	**17**	**13**	**18**	**8**	Satisfy
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	**754**	**653**	**614**	**469**	**435**	**379**	**382**	**294**	**39%**
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	**144**	**193**	**185**	**165**	**138**	**129**	**124**	**148**	**100%**

Combination of Conditions A & B **SATISFIED = NO**

REQUIREMENT	CONDITIONS	√	FULFILLED
TWO CONDITIONS 80% SATISFIED	A. MINIMUM VEHICULAR VOLUME AND,		**NO**
	B. INTERRUPTION OF CONTINUOUS TRAFFIC		**NO**
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			**NO**

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 3)

Major Street: **La Serna Drive** Minor Street: **Janine Drive North**

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* = NO**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	Number of Lanes	7	15	14	16
Both Approaches - Major Street	1	754	653	614	469
Highest Approach - Minor Street	1	144	193	185	165

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	NO
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	NO

WARRANT 3 - Peak Hour **SATISFIED = YES**

(Part A or Part B must be satisfied)

PART A **SATISFIED = YES**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES

PART B **SATISFIED = NO**

APPROACH LANES	Number of Lanes	7
Both Approaches - Major Street	1	754
Highest Approach - Minor Street	1	144

The plotted points fall above the curve in Figure 4C-3. (URBAN AREAS)	NO
OR, The plotted point falls above the curves in Figure 4C-4. (RURAL AREAS)	YES

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 3 of 3)

Major Street: **La Serna Drive** Minor Street: **Janine Drive North**

WARRANT 7 - Crash Experience Warrant **SATISFIED = NO**

(All parts must be satisfied)

Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency.			NO
REQUIREMENTS	Number of crashes within a 12 month period susceptible to correction by a traffic signal, and involving injury or damage exceeding the requirements for a reportable crash.		NO
5 OR MORE	Number Accidents = 0		
REQUIREMENTS	CONDITIONS	√	
ONE CONDITION SATISFIED 80%	Warrant 1, Condition A - Minimum Vehicular Volume	NO	NO
	OR, Warrant 2, Condition B - Interruption of continuous traffic	NO	
	OR, Warrant 4, Pedestrian Volume Conditions Ped Vol ≥ 152 for any hour OR, ped Vol ≥ 80 for any 4 hours	NO	

WARRANT 8 - Roadway Network **SATISFIED = NO**

(All parts must be satisfied)

MINIMUM VOLUME REQUIREMENT	ENTERING VOLUMES - ALL APPROACHES		√	FULFILLED
1000 VEH/HR	During typical weekday peak hour 898 veh/hr and has 5-year projected traffic volumes that meet one or more of Warrants 1, 2, and 3 during an average weekday.			NO
	OR, During Each of Any 5 Hrs. of a Sat. and/or Sun Veh/hr			
CHARACTERISTICS OF MAJOR ROUTES	MAJOR ROUTE A	MAJOR ROUTE B		
Hwy. System Serving as Principal Network for Through Traffic	No	No		
Rural or Suburban Highway Outside of, Entering, or Traversing a Cit	No	No		
Appears as Major Route on an Official Plan	Yes	No		
Any Major Route Characteristics Met, Both Streets				NO

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet Summary

Jurisdiction:	**City of Whittier**	Count Date:	10/27/21	
Major Street:	**La Serna Drive**	Critical Approach Speed (Major)	35	mph
Minor Street:	**Janine Drive South**	Critical Approach Speed (Minor)	25	mph

Major Street Approach Lanes = **1**
Minor Street Approach Lanes = **1**

WARRANT 1 - Eight Hour Vehicular Volume	**SATISFIED =**	**NO**
WARRANT 2 - Four Hour Vehicular Volume	**SATISFIED =**	**NO**
WARRANT 3 - Peak Hour	**SATISFIED =**	**YES**
WARRANT 7 - Crash Experience Warrant	**SATISFIED =**	**NO**
WARRANT 8 - Roadway Network	**SATISFIED =**	**NO**

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 3)

___ DIST	___ CO	___ RTE	___ PM				
				COUNT DATE		10/27/21	
				CALC	CS	DATE	11/04/21
Jurisdiction:	**City of Whittier**			CHK	-	DATE	
Major Street:	**La Serna Drive**			Critical Approach Speed (Major)		35	mph
Minor Street:	**Janine Drive South**			Critical Approach Speed (Minor)		25	mph

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ..... [X]

or **URBAN (U)**

In built up area of isolated community of < 10,000 population ..... [ ]

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED = NO**

(Condition A or Condition B or combination of A and B must be satisifed)

Condition A - Minimum Vehicle Volume **100% SATISFIED = NO**

80% SATISFIED = NO

Minimum Requirements (80% shown in Brackets)

Minimum Major Approach Volume = 500

Minimum Minor Approach Volume = 150

	U	R	U	R	Hr 1	Hr 2	Hr 3	Hr 4	Hr 5	Hr 6	Hr 7	Hr 8	%
Approach Lanes	1		2 or More		**14**	**7**	**14**	**16**	**17**	**13**	**12**	**8**	Satisfy
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	**657**	**786**	**657**	**436**	**414**	**396**	**390**	**352**	**70%**
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	**242**	**103**	**204**	**219**	**228**	**163**	**164**	**126**	**69%**

Condition B - Interruption of Continuous Traffic **100% SATISFIED = NO**

80% SATISFIED = NO

Minimum Requirements (80% shown in Brackets)

Minimum Major Approach Volume = 750

Minimum Minor Approach Volume = 75

	U	R	U	R	Hr 1	Hr 2	Hr 3	Hr 4	Hr 5	Hr 6	Hr 7	Hr 8	%
Approach Lanes	1		2 or More		**14**	**7**	**14**	**16**	**17**	**13**	**12**	**8**	Satisfy
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	**657**	**786**	**657**	**436**	**414**	**396**	**390**	**352**	**47%**
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	**242**	**103**	**204**	**219**	**228**	**163**	**164**	**126**	**100%**

Combination of Conditions A & B **SATISFIED = NO**

REQUIREMENT	CONDITIONS	√	FULFILLED
TWO CONDITIONS 80% SATISFIED	A. MINIMUM VEHICULAR VOLUME AND,		**NO**
	B. INTERRUPTION OF CONTINUOUS TRAFFIC		**NO**
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			**NO**

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 3)

Major Street: **La Serna Drive** Minor Street: **Janine Drive South**

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* = NO**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	Number of Lanes	14	7	14	16
Both Approaches - Major Street	1	657	786	657	436
Highest Approach - Minor Street	1	242	103	204	219

*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)	NO
OR, All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)	NO

WARRANT 3 - Peak Hour **SATISFIED = YES**
(Part A or Part B must be satisfied)

PART A **SATISFIED = YES**
(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	YES
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES

PART B **SATISFIED = NO**

APPROACH LANES	Number of Lanes	14
Both Approaches - Major Street	1	657
Highest Approach - Minor Street	1	242

The plotted points fall above the curve in Figure 4C-3. (URBAN AREAS)	NO
OR, The plotted point falls above the curves in Figure 4C-4. (RURAL AREAS)	YES

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 3 of 3)

Major Street: **La Serna Drive** Minor Street: **Janine Drive South**

WARRANT 7 - Crash Experience Warrant **SATISFIED = NO**

(All parts must be satisfied)

Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency.			NO
REQUIREMENTS	Number of crashes within a 12 month period susceptible to correction by a traffic signal, and involving injury or damage exceeding the requirements for a reportable crash.		NO
5 OR MORE	Number Accidents = 0		
REQUIREMENTS	CONDITIONS	√	
ONE CONDITION SATISFIED 80%	Warrant 1, Condition A - Minimum Vehicular Volume	NO	NO
	OR, Warrant 2, Condition B - Interruption of continuous traffic	NO	
	OR, Warrant 4, Pedestrian Volume Conditions Ped Vol ≥ 152 for any hour OR, ped Vol ≥ 80 for any 4 hours	NO	

WARRANT 8 - Roadway Network **SATISFIED = NO**

(All parts must be satisfied)

MINIMUM VOLUME REQUIREMENT	ENTERING VOLUMES - ALL APPROACHES		√	FULFILLED
1000 VEH/HR	During typical weekday peak hour 899 veh/hr and has 5-year projected traffic volumes that meet one or more of Warrants 1, 2, and 3 during an average weekday.			NO
	OR, During Each of Any 5 Hrs. of a Sat. and/or Sun Veh/hr			
CHARACTERISTICS OF MAJOR ROUTES	MAJOR ROUTE A	MAJOR ROUTE B		
Hwy. System Serving as Principal Network for Through Traffic	No	No		
Rural or Suburban Highway Outside of, Entering, or Traversing a Cit	No	No		
Appears as Major Route on an Official Plan	Yes	No		
Any Major Route Characteristics Met, Both Streets				NO

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

ATTACHMENT C

OCTOBER 2016 THROUGH OCTOBER 2021 ACCIDENT REPORTS

City of Whittier
Police Department

From 10/25/2016 to 10/25/2021

Total Collisions: 4
Injury Collisions: 3
Fatal Collisions: 0

Collision Summary Report

10/25/21

JANINE DR & LA SERNA DR (N)

17-004596 6/7/2017 22:00 Wednesday LA SERNA DR - JANINE DR (N) 0' Direction: Not Stated Dark - Street Ligh Clear Pty at Fault:1
Head-On Other Motor Vehicle Auto R/W Violation 21801A Hit & Run: No Property Damage Only # Inj: 0 # Killed: 0

Party 1 Driver South Making Left Turn Male Age: 22 Passenger Car, Station Wagon, Jeep No Injury
Veh Type: Passenger Car Sobriety: HNBD Assoc Factor: Violation Lap/Shoulder Harness Used Cell Phone Not In Use
Party 2 Driver North Proceeding Straight Male Age: 19 Passenger Car, Station Wagon, Jeep No Injury
Veh Type: Passenger Car Sobriety: HNBD Assoc Factor: None Apparent Lap/Shoulder Harness Used Cell Phone Not In Use

17-007974 10/9/2017 14:24 Monday JANINE DR - LA SERNA DR (N) 0' Direction: Not Stated Daylight Clear Pty at Fault:1
Broadside Other Motor Vehicle Auto R/W Violation 21802A Hit & Run: No Complaint of Pain # Inj: 1 # Killed: 0

Party 1 Driver West Making Left Turn Female Age: 38 Passenger Car, Station Wagon, Jeep Complaint of Pain
Veh Type: Passenger Car Sobriety: HNBD Assoc Factor: None Apparent Lap/Shoulder Harness Used Cell Phone Not In Use
Party 2 Driver North Proceeding Straight Female Age: 36 Sport Utility Vehicle No Injury
Veh Type: Passenger Car Sobriety: HNBD Assoc Factor: None Apparent Lap/Shoulder Harness Used Cell Phone Not In Use

19-003728 5/22/2019 11:30 Wednesday LA SERNA DR - JANINE DR (N) 0' Direction: Not Stated Daylight Clear Pty at Fault:1
Broadside Other Motor Vehicle Auto R/W Violation 21802A Hit & Run: No Other Visible Injury # Inj: 1 # Killed: 0

Party 1 Driver West Making Left Turn Male Age: 64 Sport Utility Vehicle No Injury
Veh Type: Passenger Car Sobriety: HNBD Assoc Factor: None Apparent Lap/Shoulder Harness Used Cell Phone Not In Use
Party 2 Driver North Proceeding Straight Male Age: 39 Passenger Car, Station Wagon, Jeep Other Visible Injury
Veh Type: Passenger Car Sobriety: HNBD Assoc Factor: None Apparent Lap/Shoulder Harness Used Cell Phone Not In Use

19-007336 10/24/2019 08:12 Thursday JANINE DR - LA SERNA DR (N) 0' Direction: Not Stated Daylight Clear Pty at Fault:1
Broadside Other Motor Vehicle Auto R/W Violation 21802A Hit & Run: No Other Visible Injury # Inj: 2 # Killed: 0

Party 1 Driver West Making Left Turn Female Age: 42 Sport Utility Vehicle Other Visible Injury
Veh Type: Passenger Car Sobriety: HNBD Assoc Factor: None Apparent Lap/Shoulder Harness Used Cell Phone Not In Use
Party 2 Driver North Proceeding Straight Male Age: 38 Passenger Car, Station Wagon, Jeep Complaint of Pain
Veh Type: Passenger Car Sobriety: HNBD Assoc Factor: None Apparent Lap/Shoulder Harness Used Cell Phone Not In Use

Settings for Query:

Street: JANINE DR
Cross Street: LA SERNA DR (N)
Intersection Related: True
City: Whittier
Sorted By: Date and Time

City of Whittier
Police Department

From 10/25/2016 to 10/25/2021

Total Collisions: 0
Injury Collisions: 0
Fatal Collisions: 0

Collision Summary Report

10/25/21

JANINE DR & LA SERNA DR (S)

Settings for Query:

Street: JANINE DR
Cross Street: LA SERNA DR (S)
Intersection Related: True
City: Whittier
Sorted By: Date and Time

Appendix J Sanitary Sewer Analysis

SANITARY SEWER ANALYSIS

TTM No. 83435
PC 4078 & DWG 18-P-57
City of Whittier Sewer Atlas Map page H12

Prepared for:
Mission Pacific
4100 Newport Place, Suite 790
Newport Beach, CA 92660

Property:
TTM No. 83435
APN 8224-017-022, 8224-017-023
9829 La Serna Drive
Whittier, California

Prepared by:
C&V Consulting, Inc.
9830 Irvine Center Drive
Irvine, CA 92618
Contact: Ryan J. Bittner, P.E.
(949) 916-3800

Ryan J. Bittner R.C.E. 68167

January 2022

Table of Contents

SECTION	PAGE
INTRODUCTION	3
SITE DESCRIPTION	4
PROJECT DESCRIPTION	5
METHODOLOGY	6
SEWER PIPE CAPACITY ANALYSIS	7-8
CONCLUSION	9

Appendices

A. SEWER MONITORING STUDY EXHIBIT

B. SEWER MONITORING STUDY TABLE & DEPTH OF FLOW CALCULATIONS

C. FLOW MONITORING DATA

D. SEWER AS-BUILTS

E. REFERENCES

INTRODUCTION

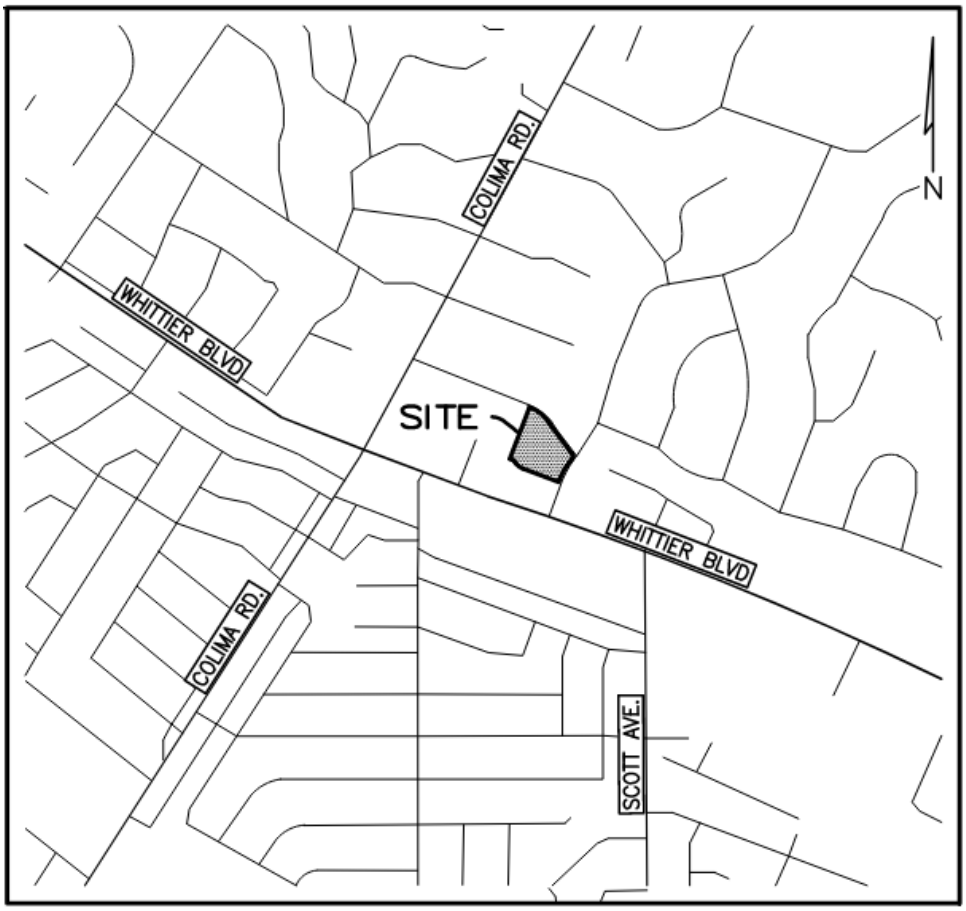
The following study has been prepared by C&V Consulting, Inc. to determine and illustrate:

- ***A.*** The capacity of the existing sewer segments from the proposed development site to the City maintained 8" sewer main in La Serna Drive.
- ***B.*** The capacity of the existing sewer segments from the proposed development site to the City maintained 8" sewer main in Scott Ave.
- ***C.*** If the existing sewer facilities will adequately service the proposed development.

Based on City of Whittier Sewer Master Plan, the City of Whittier provides sewer service throughout the City in a service area that collects and conveys wastewater from the service area for treatment by the Los Angeles County Sanitation Districts (LACSD). This study utilizes a sewer monitoring method to determine the result. The existing sewer system was analyzed to determine the sewer capacity and its ability to adequately service the proposed development. The analysis includes all existing tributary flows to the sewer system and future flow from the proposed development to the existing system, located in La Serna Drive. Additionally, this report will include an analysis of the sewer segment located in Scott Ave. There has been recent development that has been contributing to an increase of sewage flow to the system in Scott Ave. and there has been concerns if the sewer flow levels meet LA County standards. This report will analyze the existing capacity and how the future flow from the proposed development will impact the sewer segment in Scott Ave.

SITE DESCRIPTION

The project site comprises a gross total of 1.842 acres and is located at 9829 La Serna Drive, at the southwest corner of Janine Drive and La Serna Drive, in the City of Whittier, California (APN: 8224-017-022 and 8224-017-023). The site is bounded by Janine Drive to the north, La Serna Drive to the east, commercial office/retail buildings to the south, and a paved parking lot to the west.



VICINITY MAP
NOT TO SCALE

PROJECT DESCRIPTION

The development proposes the construction of 42 total units (townhomes) with private garages, private drive aisles, sidewalks, guest parking areas, and common landscaped areas.

According to the City of Whittier Sewer Atlas, there is one 8" sewer line that flows through Janine Drive and La Serna Drive along the project frontage. This existing sewer mains flows easterly along Janine Drive approximately 6' south of Janine Drive's centerline and turns south flowing southerly along La Serna Drive. The main is approximately 36' west of the La Serna's centerline underneath the existing sidewalk and flows towards Whittier Blvd. The proposed project site is designed to contribute sewer flow to the 8" VCP sewer line in La Serna Drive.

Project Site	**Size (ac)**
Total Project Area (APN: 8224-017-022 and 8224-017-023)	1.842

METHODOLOGY/EXISTING CONDITIONS

The study will investigate the sewerage discharge route along La Serna Drive and Scott Avenue from the proposed development (TTM No. 83435) to the existing 8" sewer mains.

Sewer Monitoring Method

La Serna Drive

As part of this study for the sewer monitoring analysis, the project was conditioned to flow monitor the existing conditions at La Serna Manhole #3987 on the 8" local main, located in La Serna Drive by US3. The City of Whittier selected this manhole to be flow-monitored which is in the immediate vicinity of the Project's proposed Point of Connection for sewer by 40'. The flow monitoring took place from 12/09/21 to 12/27/2021. Proposed peak project flows were calculated and added to the existing site peak flows to obtain the proposed development conditions.

Scott Avenue

As part of this study for the sewer monitoring analysis, the project was conditioned to flow monitor the existing conditions at Scott MH SD 68 the 8" local main, located in Scott Avenue by US3. The City of Whittier selected an additional manhole approximately 1300' downstream of our Project site in Scott Avenue to be flow-monitored. The flow monitoring took place from 12/09/21 to 12/27/2021. Proposed peak project flows were calculated and added to the existing site peak flows to obtain the proposed development conditions.

SEWER PIPE CAPACITY ANALYSIS

Sewer Monitoring Method

La Serna Drive

The existing sewer pipes were analyzed per LA County Standard S-C4 for a maximum design depth at half-full for pipes less than 15" and three-fourths full for pipes 15" and greater. Based on the monitoring data collected by US3, existing peak flow for La Serna Manhole # 3987 was measured at 95.995 gpm (0.2139cfs), with a peak depth flow of 1.55 inches (d/D = 0.1938). The data shows that the 8" sewer pipe system capacity is capable of maintaining an adequate flow well below 50% of its flow depth capacity with the additional flow from the proposed development. Refer to the field data enclosed in Appendix C.

The "Loadings for each Class of Land Use" per the Los Angeles County Department of Public Works was utilized for this method to obtain the peak flow generated from the proposed residential project site. It was determined from the architectural plans for the 42 residential unit project to be a total peak flow output of 0.0127 cfs of effluent. With a 2.5 factor of safety applied to the peak flow output, the result of the proposed development contributes an output of 0.03175 cfs of effluent.

To approximate the real-world conditions of the pipe, a new Manning's n-value was calculated based on the existing max flow rate and depth of flow observed. This new Manning's n-value was used to calculate the depth of flow for the combined proposed flow rate and the existing flow rate.

The project site will contribute 0.03175 cfs to the trunk main, which results in a 7.7% increase (2.5 factor of safety included) to the sewer main with a total flowrate of 0.2456 cfs. The existing 8" sewer main will then flow with a projected d/D =0.21, which is below the d/D=0.50 criteria and indicates that the proposed development will not have a significant impact on the existing condition of its' capacity. Refer to the Sewer Monitoring Study Table in Appendix B for calculation details.

Scott Avenue

The existing sewer pipes were analyzed per LA County Standard S-C4 for a maximum design depth at half-full for pipes less than 15" and three-fourths full for pipes 15" and greater. Based on the monitoring data collected by US3, existing peak flow for Scott MH # SD68 was measured at 404.846 gpm (0.9020cfs), with a peak depth flow of 5.220 inches (d/D = 0.6525). The infield data shows that the 8" sewer pipe system is at 65.25% of full capacity which is above the LA County Standard. Refer to the field data enclosed in Appendix C.

The "Loadings for each Class of Land Use" per the Los Angeles County Department of Public Works was utilized for this method to obtain the peak flow generated from the proposed residential project site. It was determined from the architectural plans for the 42 residential unit project to be a total peak flow output of 0.0127 cfs of effluent. With a 2.5 factor of safety applied to the peak flow output, the result of the proposed development contributes an output of 0.03175 cfs of effluent.

To approximate the real-world conditions of the pipe, a new Manning's n-value was calculated based on the existing max flow rate and depth of flow observed. This new Manning's n-value was used to calculate the depth of flow for the combined proposed flow rate and the existing flow rate.

The project site will contribute 0.03175 cfs to the trunk main, which results in a 3.3% increase (2.5 factor of safety included) to the sewer main with a total flowrate of 0.9338 cfs. The existing 8" sewer main will then flow with a projected d/D=0.6750, however it should be noted that the existing d/D is currently 0.6525, which indicates that the proposed development will not have a significant impact on the existing condition of its capacity. Refer to the Sewer Monitoring Study Table in Appendix B for calculation details.

CONCLUSION

La Serna Drive

The results from this study using methods provided by the Uniform Plumbing Code and Manning's equation demonstrate that the proposed flows, in addition to the observed flows, create a proposed depth of flow that does not impact the existing surrounding sanitary sewer systems. Based on sewer monitoring data collected by US3, the sewer systems located in La Serna Drive indicated good flow, along with hydraulics and relatively low depths. Refer to Appendix B for calculations and tabulated results.

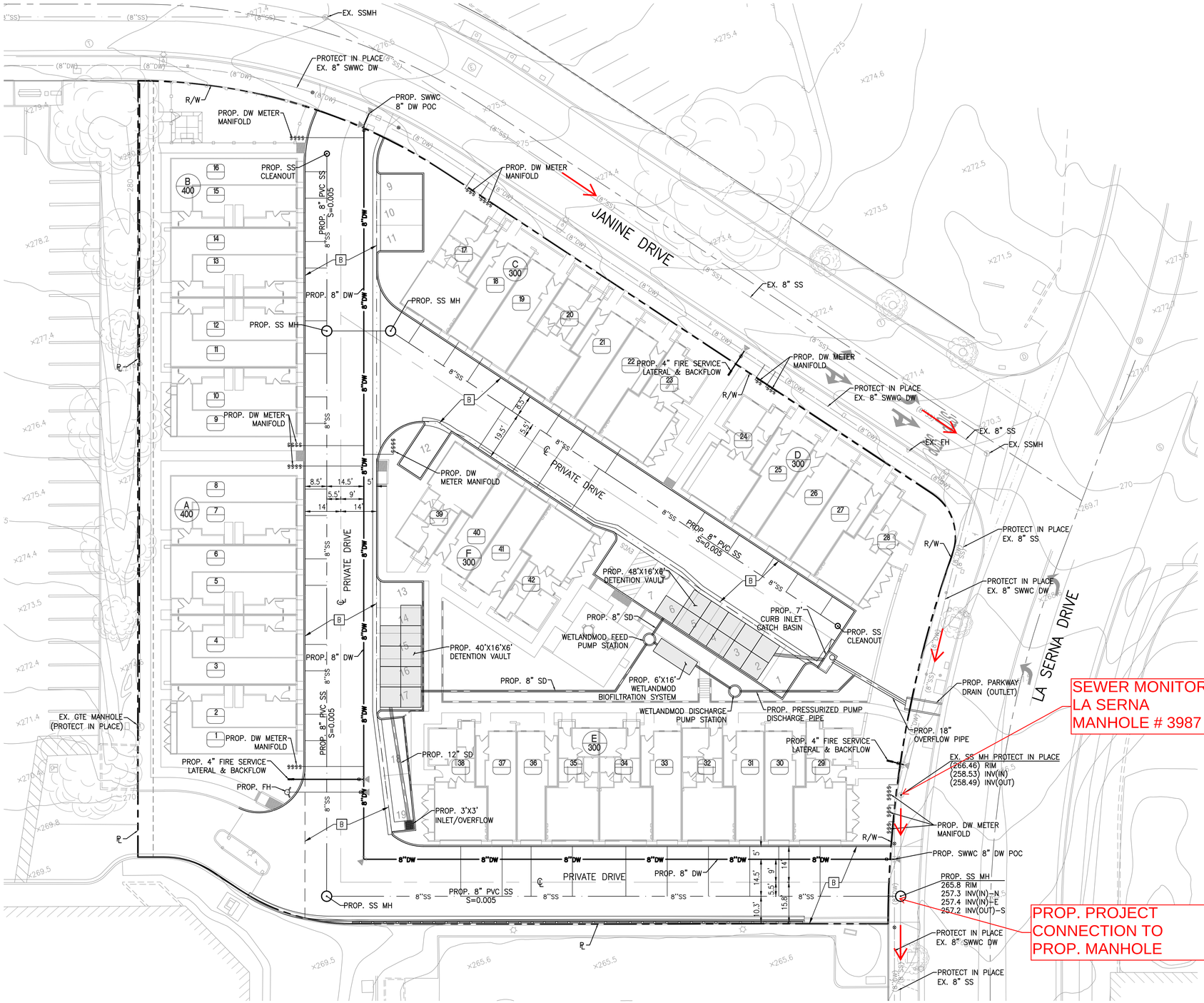
The proposed residential development project onsite system flows will increase the overall downstream system of the local main by approximately 7.7% at peak flow and the volume of flow does not exceed 50% of the capacity of the pipes (d/D<0.50). Based on the analysis above, we conclude that effluent volumes produced by the proposed development should not significantly impact or exceed the existing sewer capacity in the public system, and that the existing sewer system along La Serna Drive has adequate capacity for the proposed development.

Scott Avenue

The existing level of flow of the 8" sewer main in Scott Avenue already exceeds LA County standard capacity (d/D=0.6525) at its' peak. Although the average flow level of the study was 3.544 in (which meets county standards), based on the graphs provided by US3, it displays that the existing daily peak flow level exceeds the 4" flow level capacity (d/D=0.50) on most days of the sewer flow study. Refer to Appendix C for the flow study graphs. The existing peak flow measured was at 5.22 inches, which is 1.22 inches above standard. The proposed residential development project onsite system flows will increase the overall downstream system of the local main by approximately 3.3% at peak flow. This concludes that the proposed project site only increases the flow slightly and can be considered negligible.

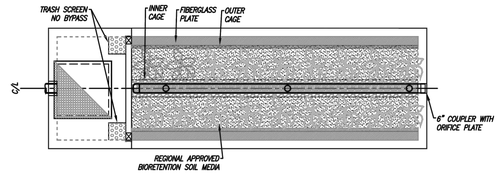
Appendix A

SEWER MONITORING STUDY EXHIBIT

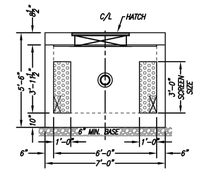


PROPOSED EASEMENTS:

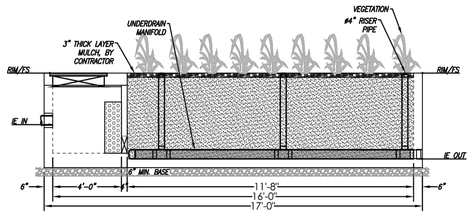
B INDICATES AN EASEMENT FOR PUBLIC UTILITIES (PUE)



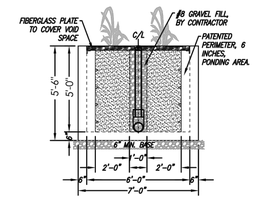
PLAN VIEW



INLET VIEW



ELEVATION VIEW



OUTLET VIEW

WETLANDMOD STORMWATER BIOFILTRATION SYSTEM

TO BE MAINTAINED BY THE HOA
N.T.S.

NOTE: FOR ADDITIONAL DETAILS, SPECIFICATIONS, AND CALCULATIONS PLEASE REFER TO LOW IMPACT DEVELOPMENT (LID) PLAN

CITY OF WHITTIER

PUBLIC WORKS DEPARTMENT

13230 PENN STREET
WHITTIER, CA 90602-1716
TEL. (562) 567-9500

NO.	DATE	BY	DESCRIPTION	APPROVED

REVISIONS

CONSULTANT INFORMATION :

C&V CONSULTING, INC.
9830 IRVINE CENTER DR.
IRVINE, CA., 92618
949-916-3800

C&V CONSULTING, INC. CIVIL ENGINEERING LAND PLANNING & SURVEYING

REVIEWED BY : DATE : _____

CONSULTANTS

PREPARED BY :

REGISTERED PROFESSIONAL ENGINEER RYAN J. BITTNER No. 68167 CIVIL STATE OF CALIFORNIA

10/27/2021
DATE

ENGINEER

REFERENCE:
WF- S-
P- SD-

PROJECT FILE:

APPROVED BY:

KYLE CASON
INTERIM DIRECTOR

DATE

ENGINEERING DIVISION

PRELIMINARY UTILITY PLAN
TENTATIVE TRACT NO. 83435
9829 LA SERNA DRIVE.
WHITTIER, CALIFORNIA

DESIGNED BY : MM
DRAWN BY : DA
CHECKED BY : RB
CONSULTANT JOB/SHEET NO.
DWG. NO.
SHT 3 OF 4 SHTS

DATE PLOTTED: October-27-2021

P:\MM\MISS-001\dwg\Sheets\TTM\TTM-03-UTIL.dwg

Appendix B

SEWER MONITORING STUDY TABLE & DEPTH OF FLOW CALCULATIONS

Sewer Monitoring Study Table

TTM 83435

9829 La Serna Drive

		Averaged Metered Flow		Existing Peak Flow		Downstream Pipeline		Existing Peak Flow Depth		Calculated	With Project Peak Flow (cfs)				% Increase
Monitor	CSD MH	MGD	cfs	Metered (MGD)	Calc (cfs)	Diameter (in)	Slope (ft/ft)	Metered (in)	d/D	Manning's n	Delta (cfs)	Future (cfs)	Calc (in)	d/D	
La Serna MH 3987		0.044	0.0681	0.1382	0.2139	8	0.0220	**1.55**	0.1938	0.009	0.03175	0.2456	1.68	**0.2100**	**7.7%**
											(2.5 F.S.)				

Project Peak Flow Calculations

12/10/2021

	Total Each Plan Unit Types	LA Sanitation Load @ 195 gpd/unit	
Plan 1	8	1560	
Plan 2	8	1560	
Plan 3	14	2730	
Plan 4	7	1365	
Plan 4x (3-ADA)	3	585	
Plan 4Y (1-ADA)	1	195	
Plan 4Z (1-ADA)	1	195	
Total	**42**	**8190**	**0.0127 CFS**

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Jan 19 2022

MISS-001 Existing Peak Flow - La Serna Drive

Circular

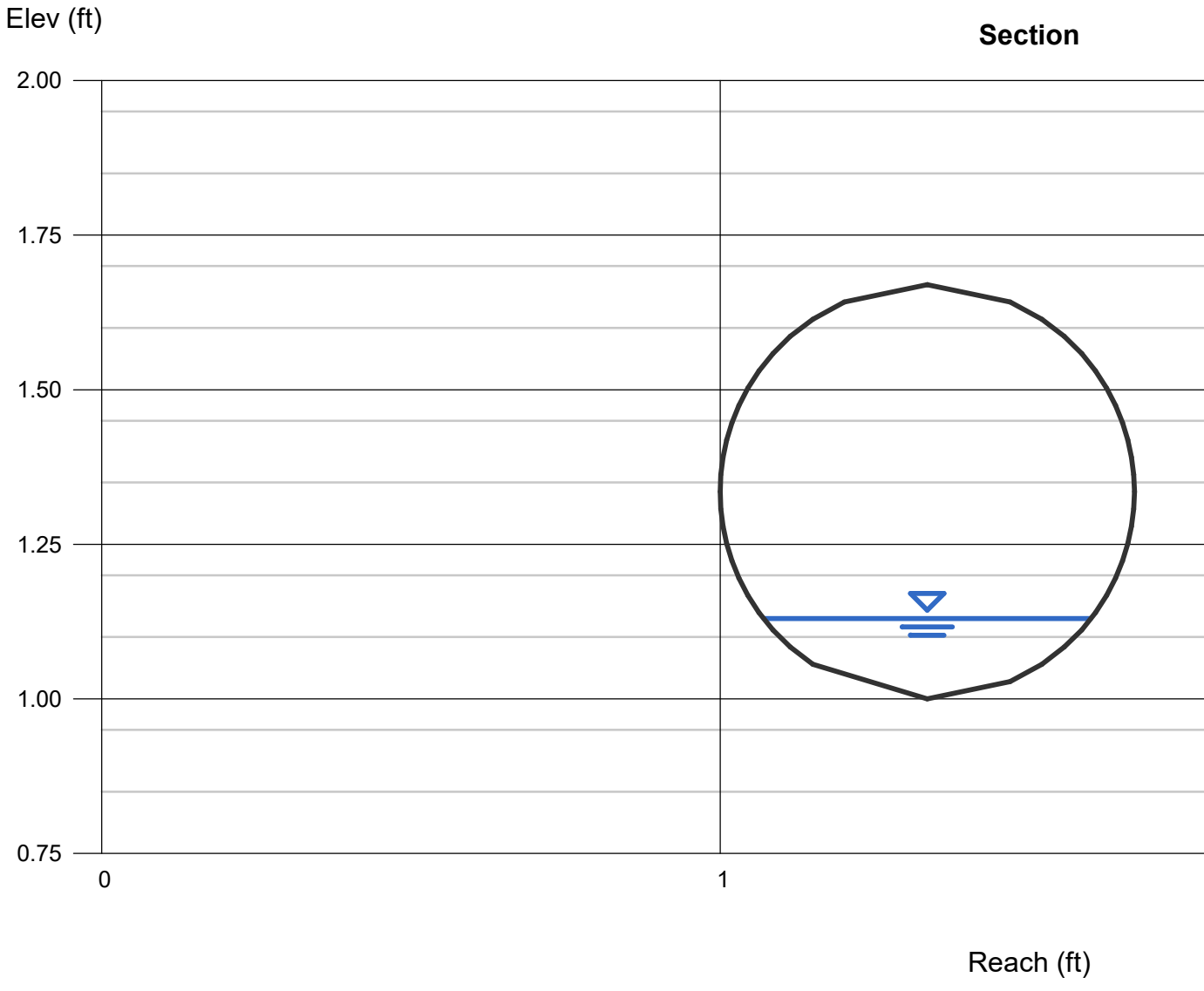
Diameter (ft)	= 0.67
Invert Elev (ft)	= 1.00
Slope (%)	= 2.20
N-Value	= 0.009

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.21

Highlighted

Depth (ft)	= 0.13
Q (cfs)	= 0.210
Area (sqft)	= 0.05
Velocity (ft/s)	= 4.33
Wetted Perim (ft)	= 0.61
Crit Depth, Yc (ft)	= 0.22
Top Width (ft)	= 0.53
EGL (ft)	= 0.42



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Jan 19 2022

MISS-001 Future Peak Flow - La Serna Drive

Circular

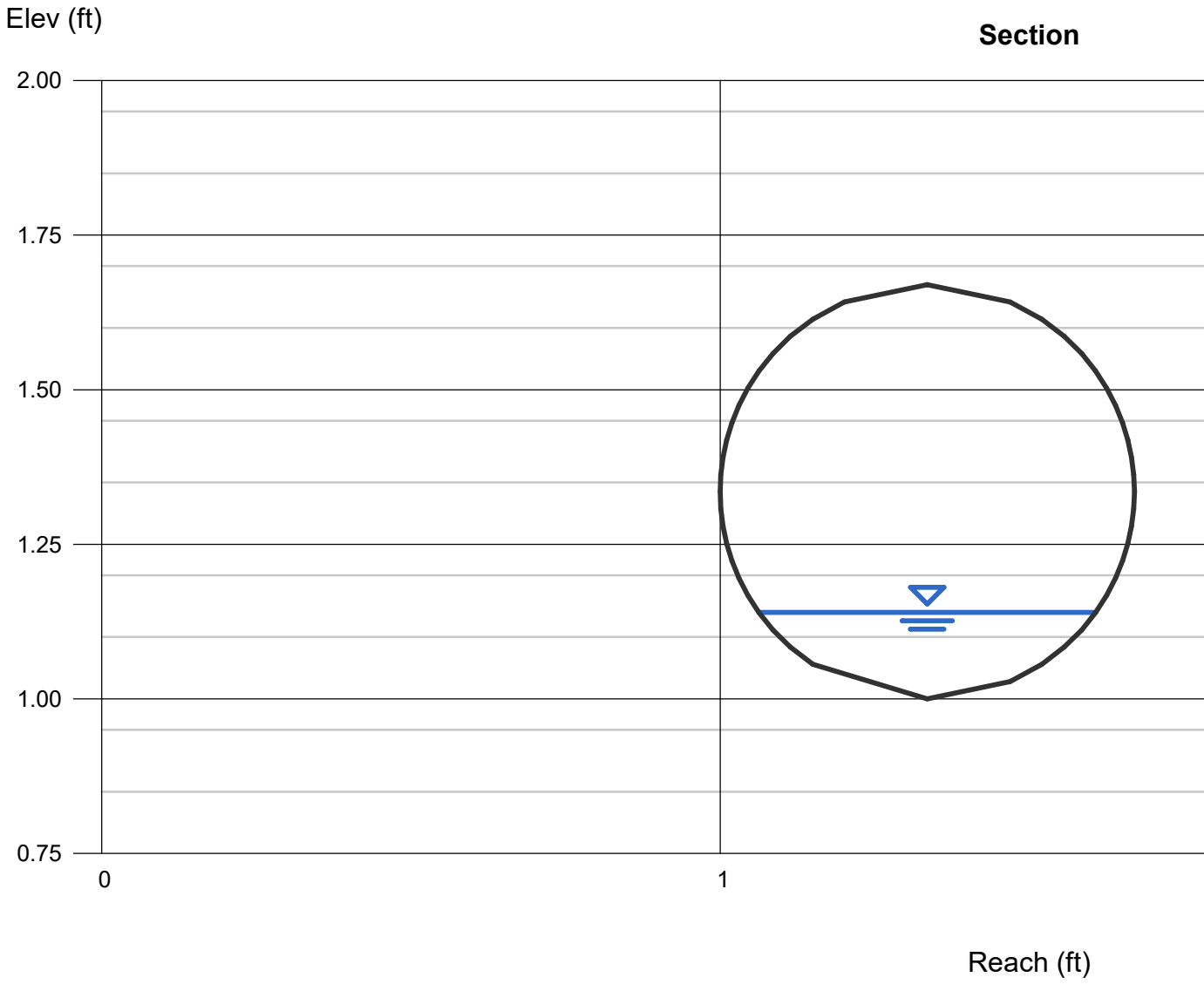
Diameter (ft)	= 0.67
Invert Elev (ft)	= 1.00
Slope (%)	= 2.20
N-Value	= 0.009

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.25

Highlighted

Depth (ft)	= 0.14
Q (cfs)	= 0.250
Area (sqft)	= 0.05
Velocity (ft/s)	= 4.67
Wetted Perim (ft)	= 0.64
Crit Depth, Yc (ft)	= 0.23
Top Width (ft)	= 0.54
EGL (ft)	= 0.48



Sewer Monitoring Study Table

TTM 83435

9829 La Serna Drive

		Averaged Metered Flow		Existing Peak Flow		Downstream Pipeline		Existing Peak Flow Depth		Calculated	With Project Peak Flow (cfs);				% Increase
Monitor	CSD MH	MGD	cfs	Metered (MGD)	Calc (cfs)	Diameter (in)	Slope (ft/ft)	Metered (in)	d/D	Manning's n	Delta (cfs)	Future (cfs)	Calc (in)	d/D	
Scott MH SD68		0.262	0.4054	0.5830	0.9020	8	0.0110	**5.22**	0.6525	0.014	0.03175	0.9338	5.4	**0.6750**	**3.3%**
											(2.5 F.S.)				

Project Peak Flow Calculations

12/14/2021

	Total Each Plan Unit Types	LA Sanitation Load @ 195 gpd/unit	
Plan 1	8	1560	
Plan 2	8	1560	
Plan 3	14	2730	
Plan 4	7	1365	
Plan 4x (3-ADA)	3	585	
Plan 4Y (1-ADA)	1	195	
Plan 4Z (1-ADA)	1	195	
Total	**42**	**8190**	**0.0127 CFS**

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Jan 19 2022

MISS-001 Existing Peak Flow - Scott Avenue

Circular

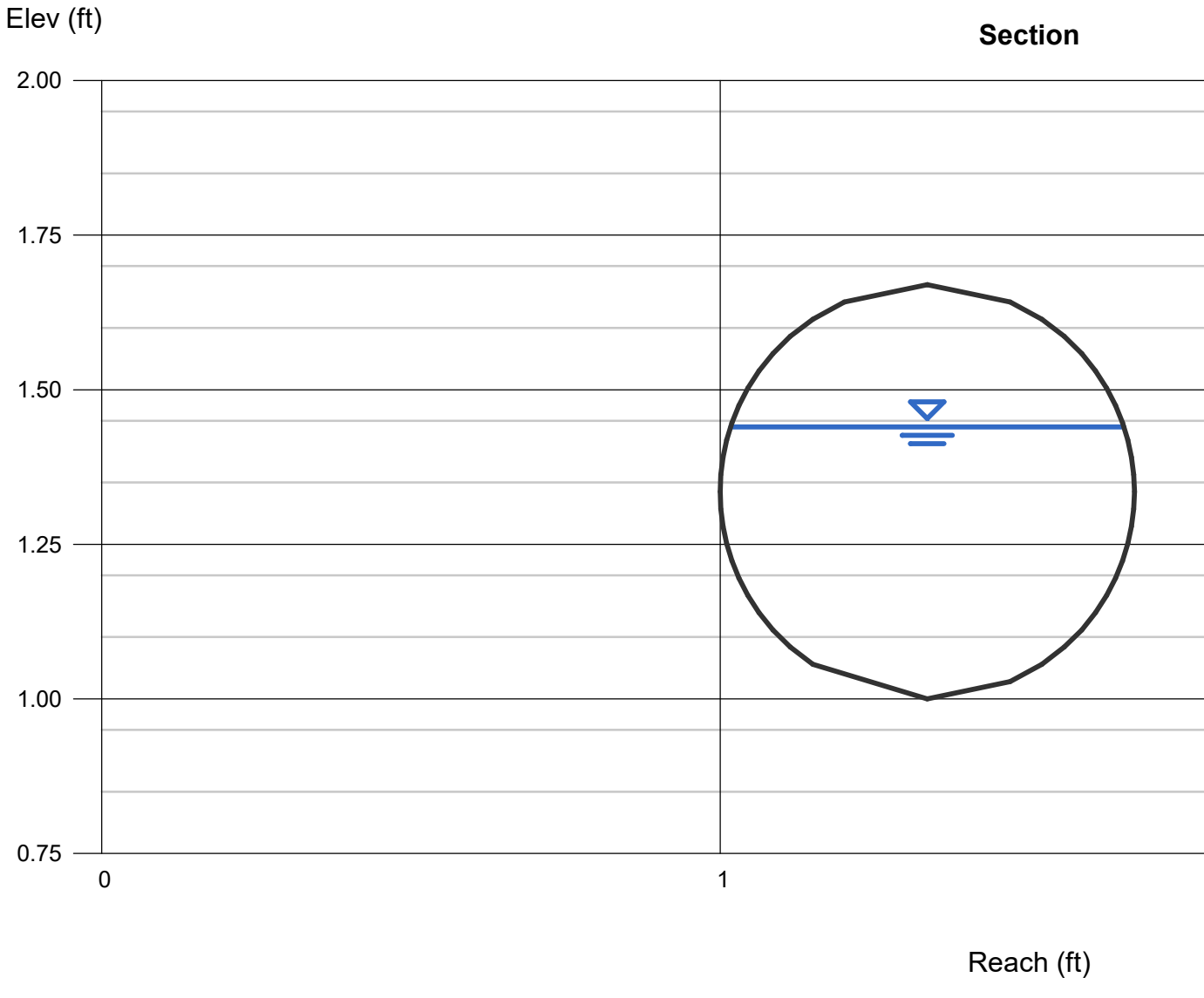
Diameter (ft)	= 0.67
Invert Elev (ft)	= 1.00
Slope (%)	= 1.10
N-Value	= 0.014

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.90

Highlighted

Depth (ft)	= 0.44
Q (cfs)	= 0.900
Area (sqft)	= 0.25
Velocity (ft/s)	= 3.67
Wetted Perim (ft)	= 1.27
Crit Depth, Yc (ft)	= 0.45
Top Width (ft)	= 0.64
EGL (ft)	= 0.65



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Jan 19 2022

MISS-001 Future Peak Flow - Scott Avenue

Circular

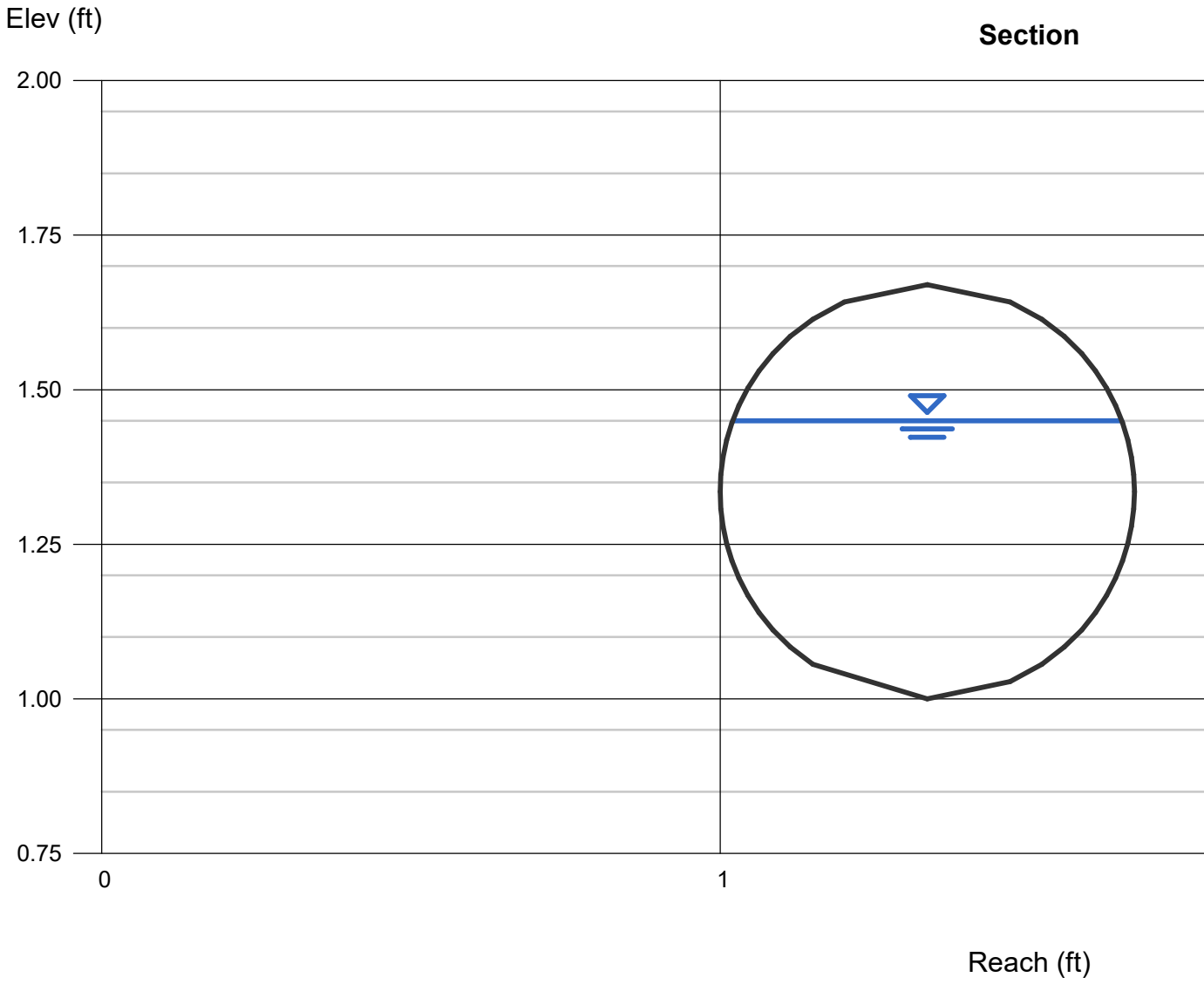
Diameter (ft)	= 0.67
Invert Elev (ft)	= 1.00
Slope (%)	= 1.10
N-Value	= 0.014

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.93

Highlighted

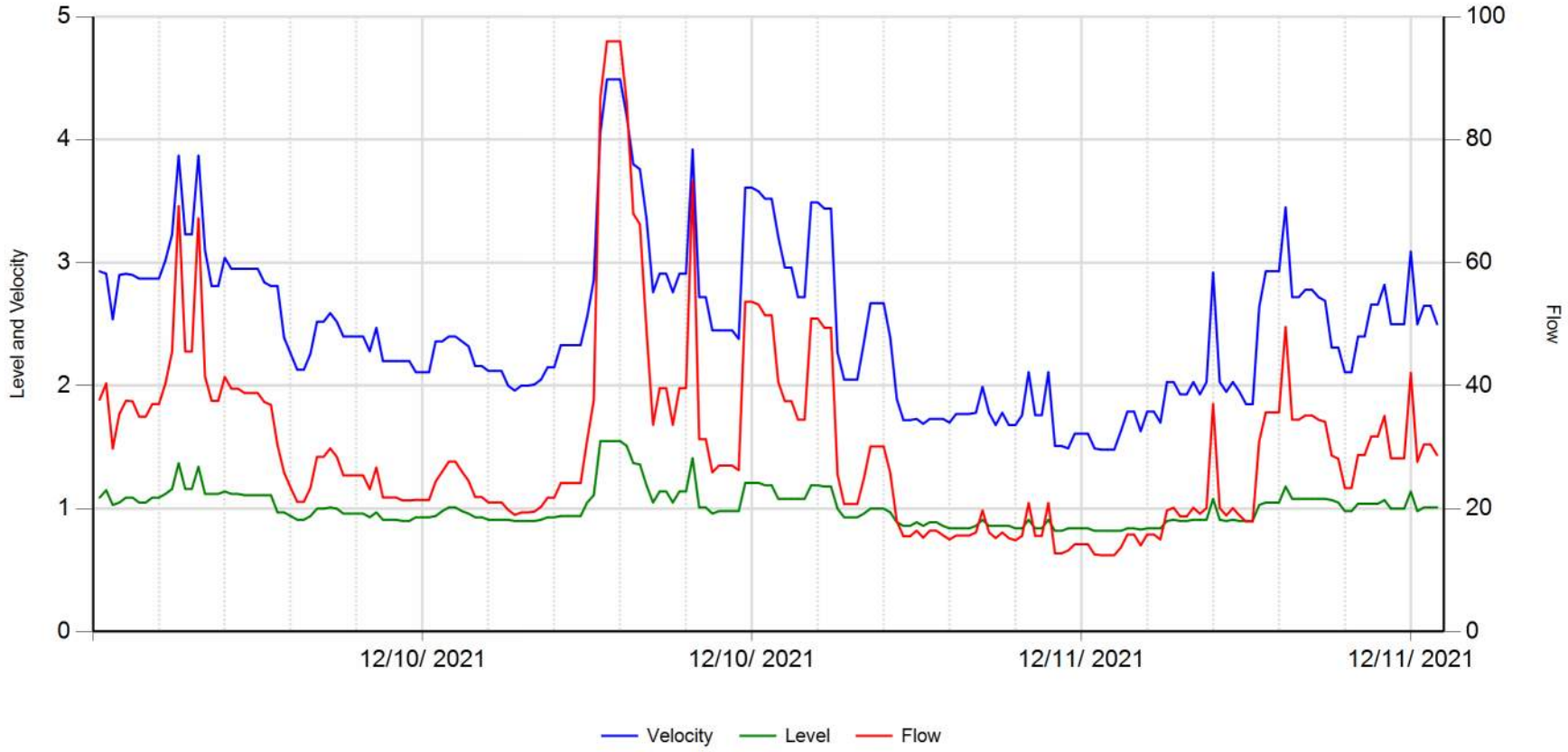
Depth (ft)	= 0.45
Q (cfs)	= 0.930
Area (sqft)	= 0.25
Velocity (ft/s)	= 3.68
Wetted Perim (ft)	= 1.29
Crit Depth, Yc (ft)	= 0.46
Top Width (ft)	= 0.63
EGL (ft)	= 0.66



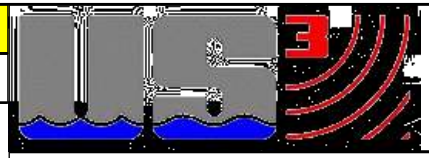
Appendix C

FLOW MONITORING DATA

2021.12 La Serna MH 3987

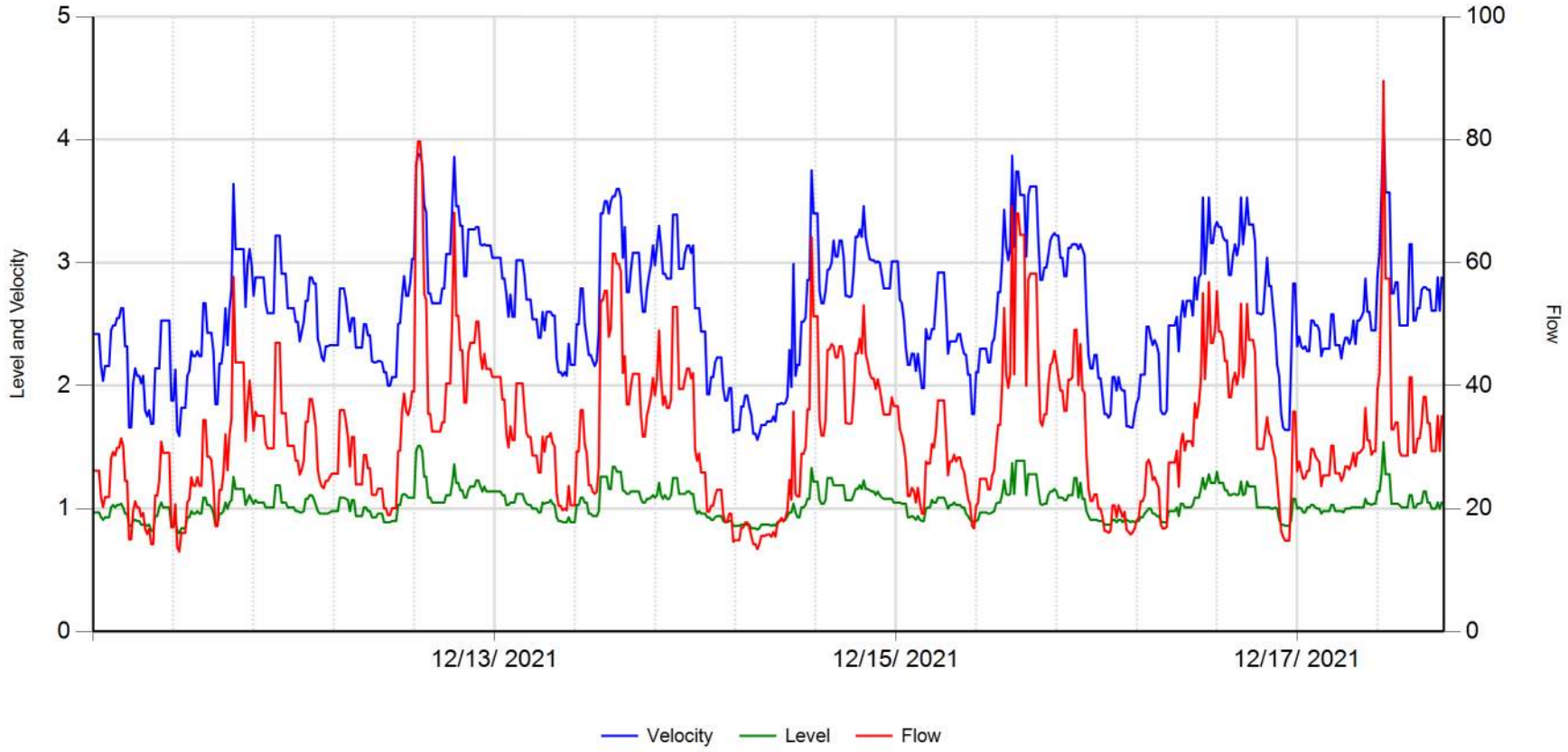


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.472	1.006	29.949	**RainFall**	Inches
Maximum	4.490	1.550	95.995		
Minimum	1.480	0.820	12.437		

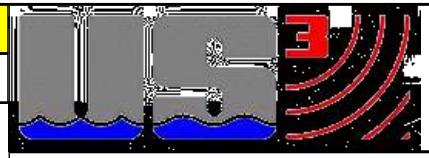


12/28/2021

2021.12 La Serna MH 3987

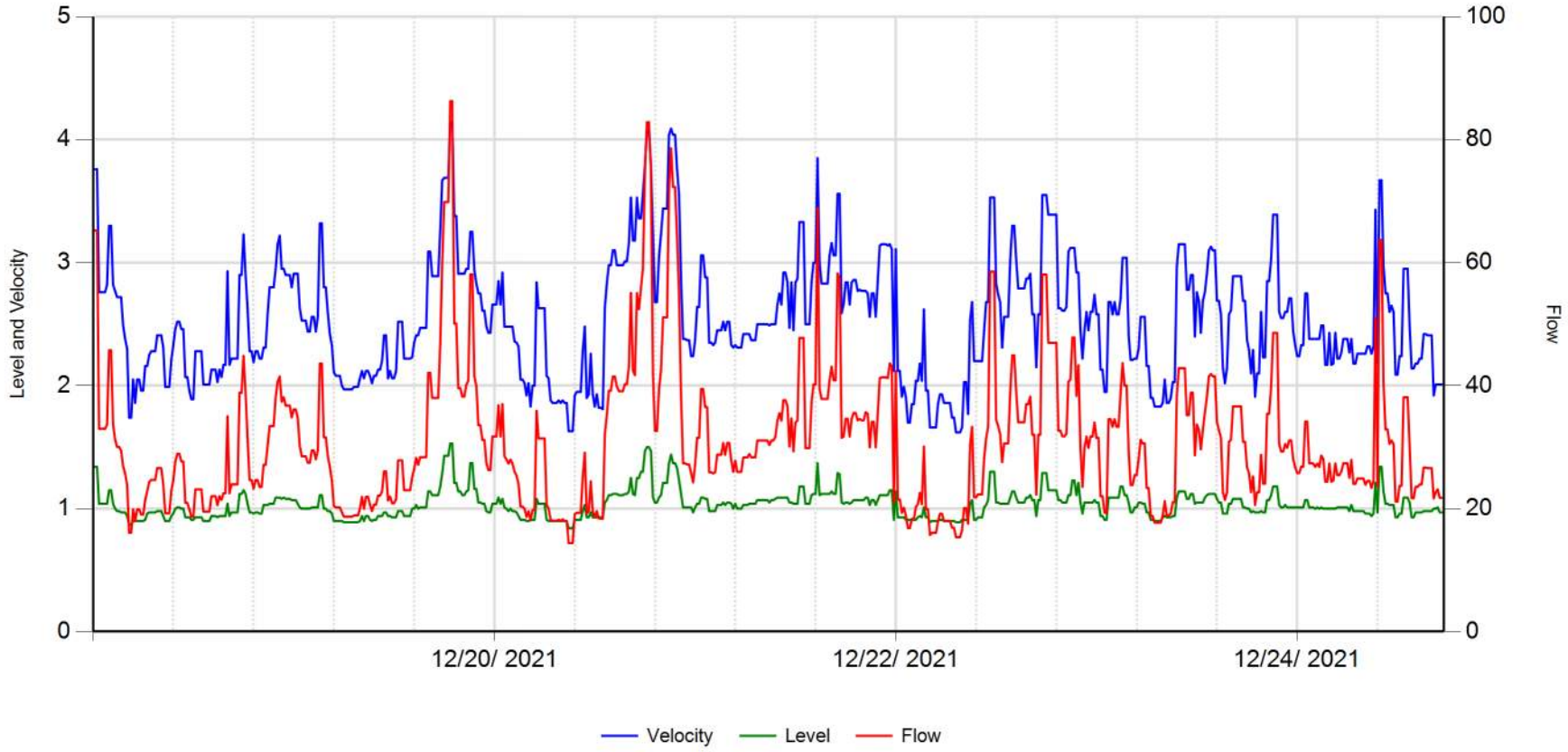


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.613	1.040	32.392	**RainFall**	Inches
Maximum	4.240	1.540	89.550		
Minimum	1.560	0.800	13.017		

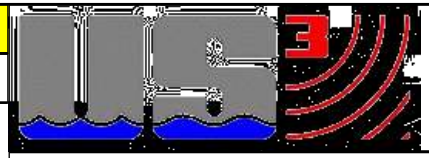


12/28/2021

2021.12 La Serna MH 3987

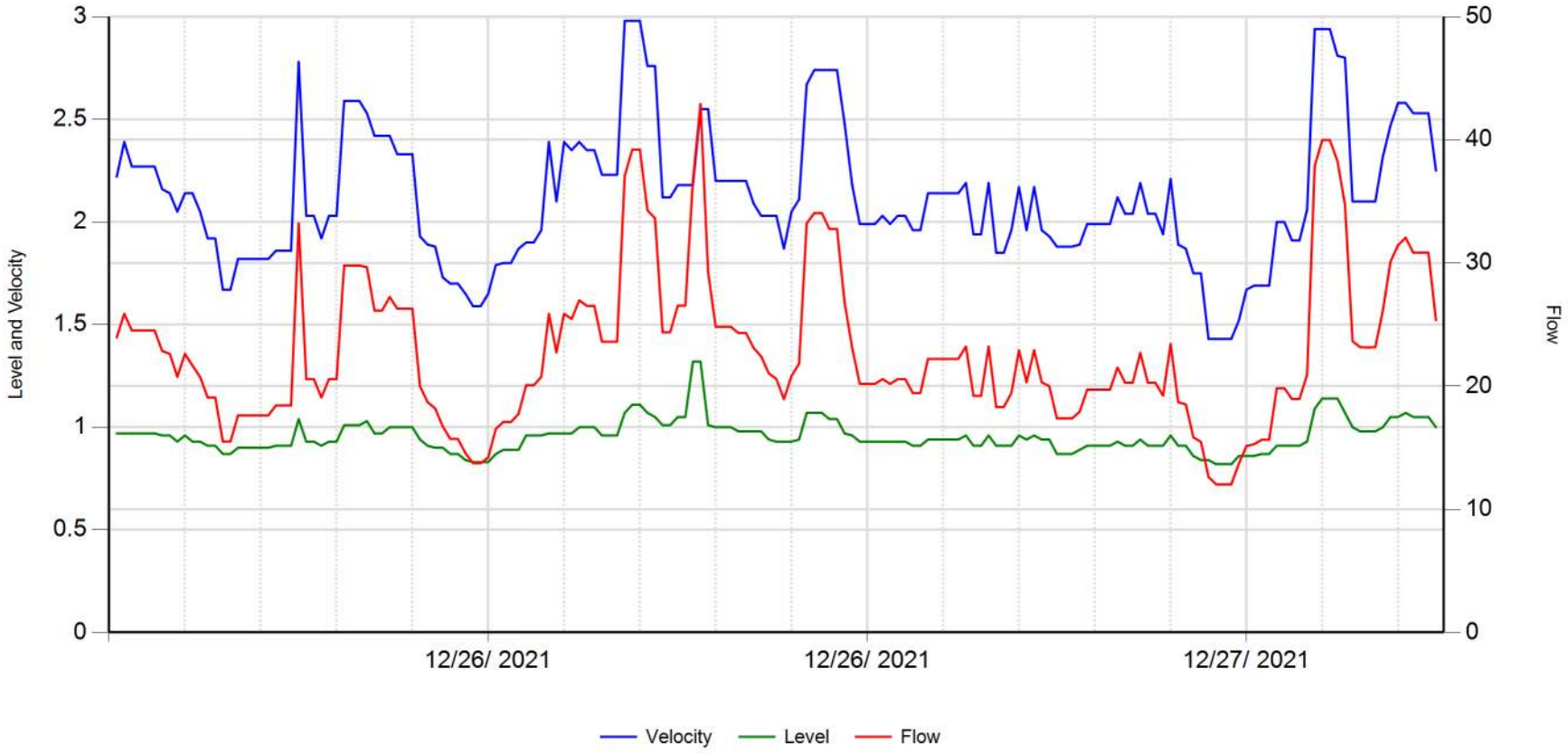


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.541	1.032	31.076	**RainFall**	Inches
Maximum	4.140	1.530	86.264		
Minimum	1.620	0.840	14.410		

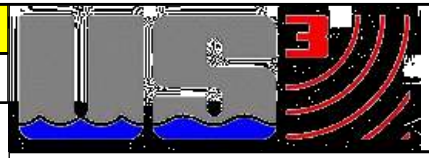


12/28/2021

2021.12 La Serna MH 3987

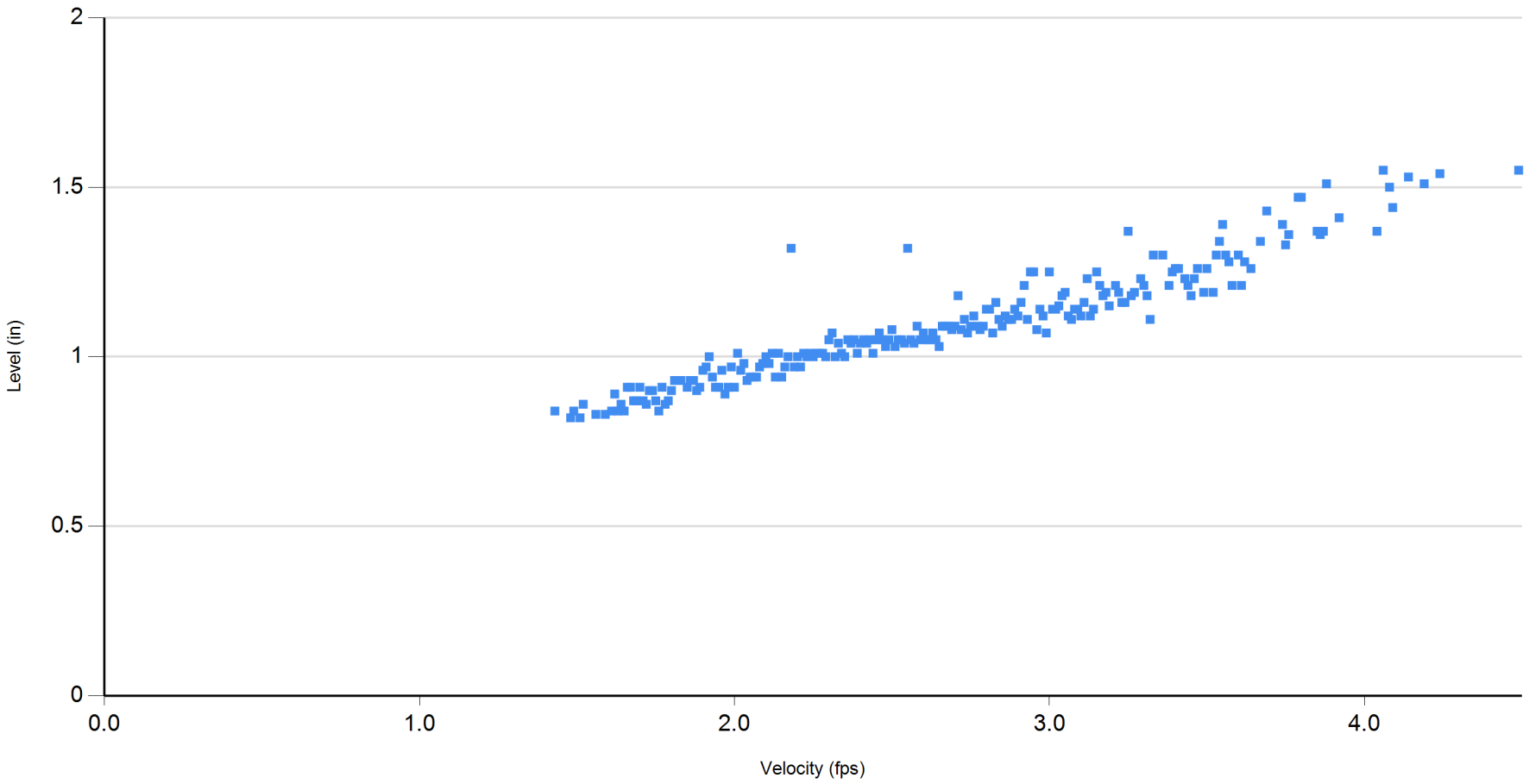


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.122	0.955	22.845	**RainFall**	Inches
Maximum	2.980	1.320	42.916		
Minimum	1.430	0.820	12.026		



12/28/2021

2021.12 La Serna MH 3987



12/9/2021 thru 12/27/2021

12/28/2021 4:18:15 PM

Site Report 12/28/2021

Confidential Proprietary Information

Mission Pacific

2021.12 La Serna MH 3987

MH at ~9829 La Serna Dr
Whittier, CA 90605
MH # 3987

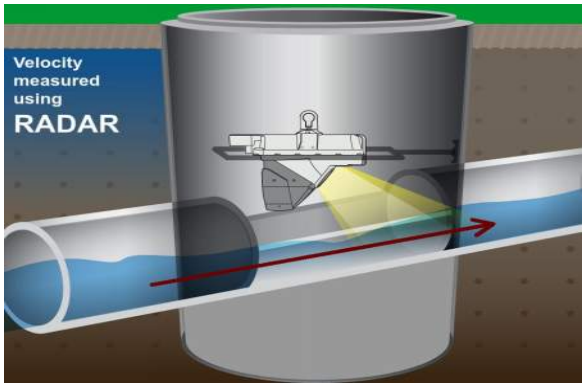
Access:
MH on sidewalk adjacent to address, between Janine Dr & Whittier Blvd

System Type:
Sanitary [X] Storm [ ]

Install Date: 12/09/2021

Map

Technology



Sewer Plan

Flow Meter			
Meter Depth: 78"			
MH Coordinates: 33.948460, -118.002569			
Moderate open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
2.5 fps	1.0"		1.0
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
No laterals; monitored the downstream line as it provided the best hydraulics during inspection.			
Traffic Safety			
Used cones to delineate work zone.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	94"
Monitored Pipe Size	8"
Inner Pipe Size (In/Out)	8"/8"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Brick
Silt	None observed
Velocity Profile Data	Passed
Velocity Profile Taken	0.4 2-D
Sensor Offset	16.1"
Sensor Dist. to Crown	8.1"
Sensor Direction	Downstream
Flow Heading	South

Meter Site Document

2021.12 La Serna MH 3987

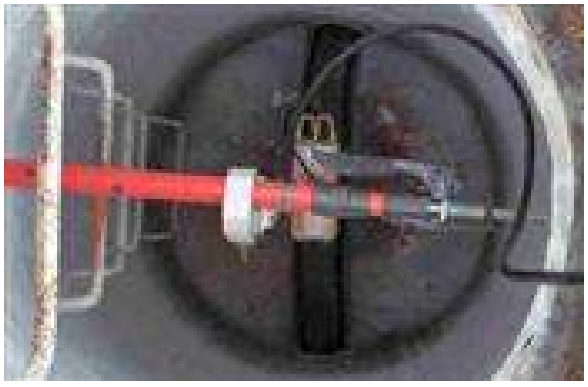
MH at ~9829 La Serna Dr

Whittier, CA 90605

Site

Manhole Before Install

Installation Process



Installed

Downstream Pipe Size

Downstream

Temporary Flow Study

Mission Pacific

2021.12 La Serna MH 3987

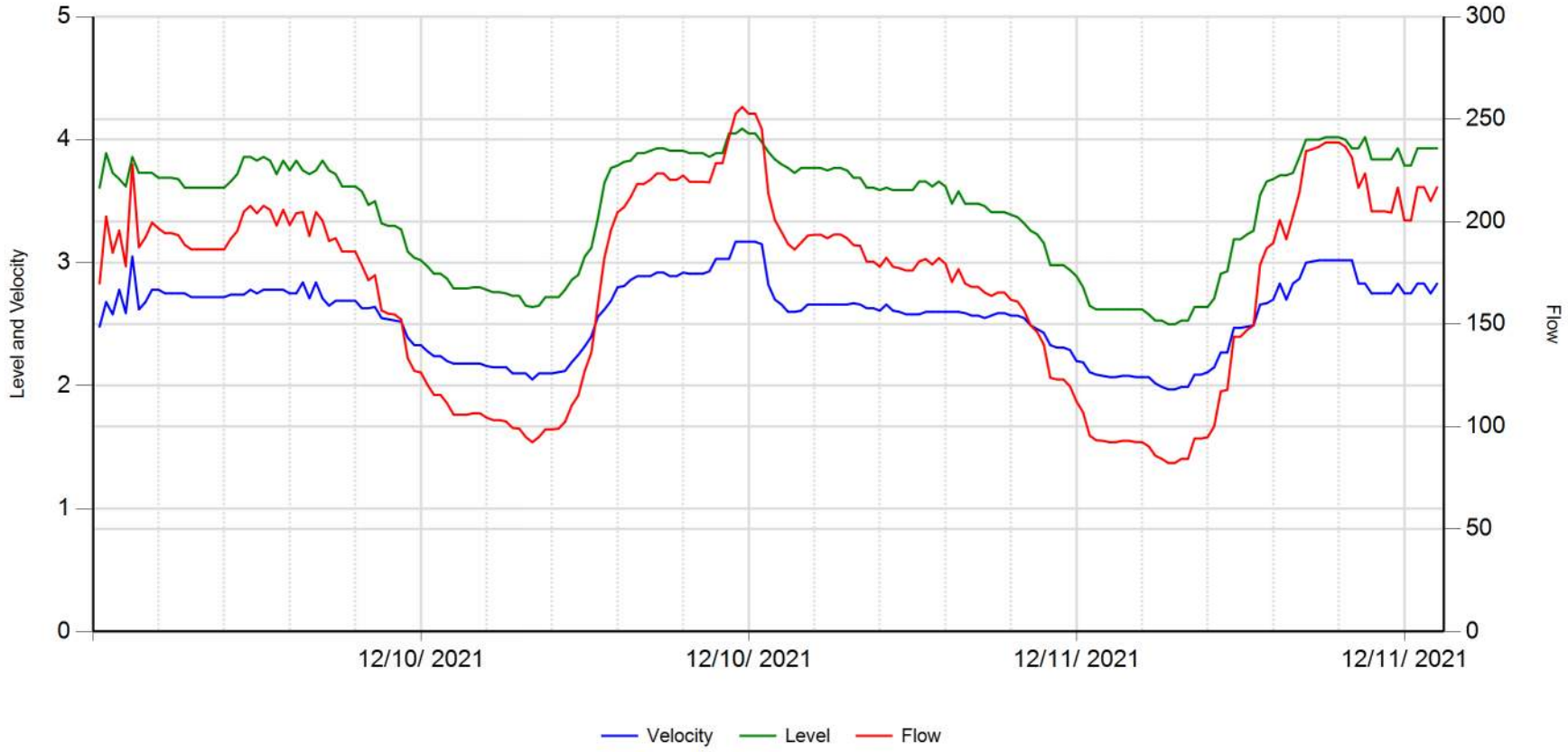
Meter Start Date		From	12/9/2021
Meter Stop Date		To	12/27/2021
Velocity (fps)		Level (in)	Flow (mgd)
Average	2.531	1.026	0.044
Maximum	4.490	1.550	0.138
Minimum	1.480	0.800	0.018
Pipe Size		8.000	
Estimated Capacity (mgd)		Not Calculated	
Capacity Used		Not Calculated	
Sensor Type		Hach - Flodar	

Utility Systems, Science and Software

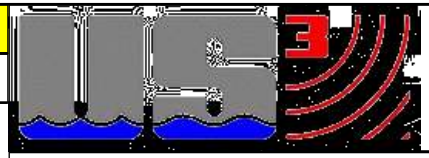
9314 Bond Av, Suite A
El Cajon, CA 92021

601 N. Parkcenter Dr, Suite 209
Santa Ana, CA 92705

2021.12 Scott MH SD68

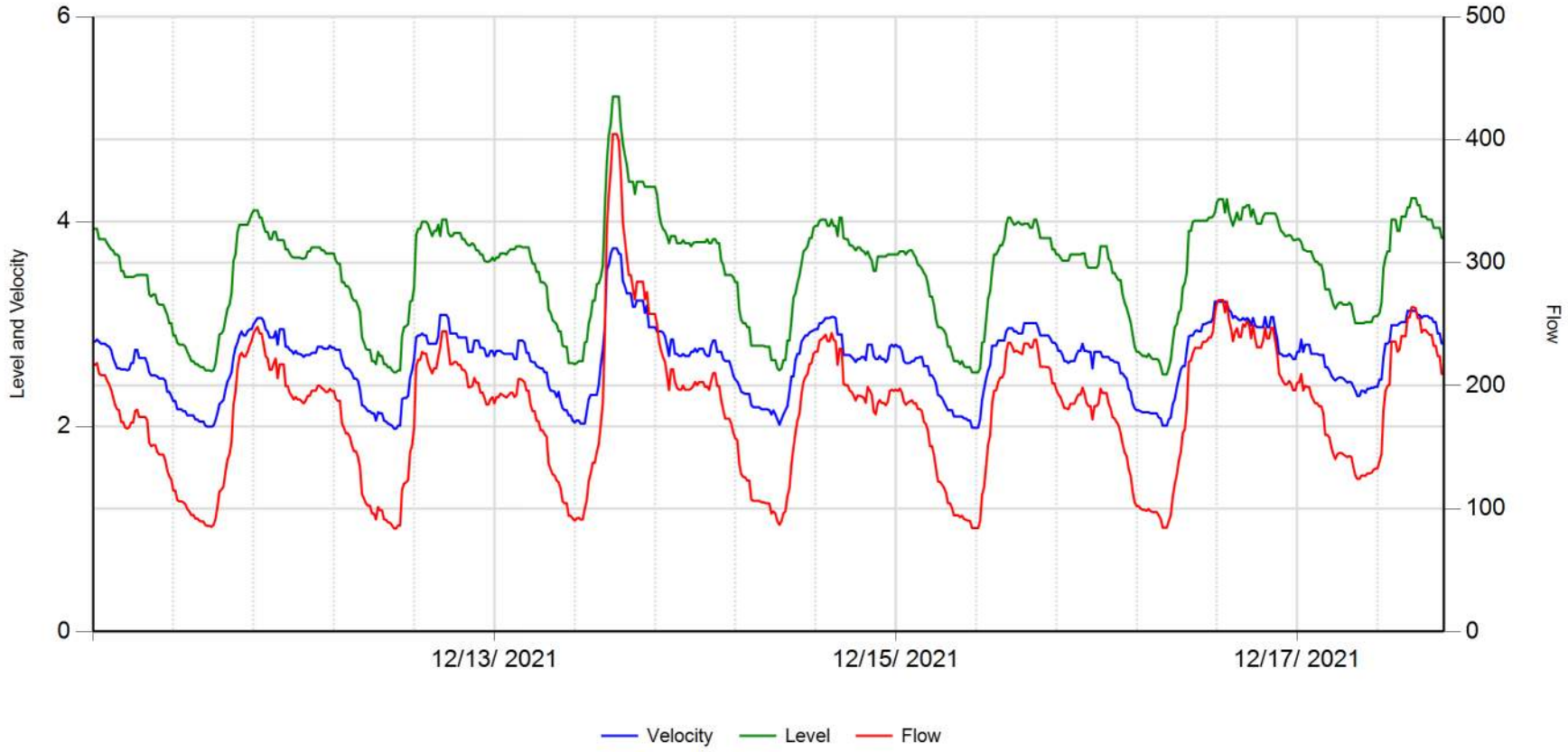


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.575	3.448	170.059	**RainFall**	Inches
Maximum	3.170	4.090	255.962		
Minimum	1.970	2.500	82.280		

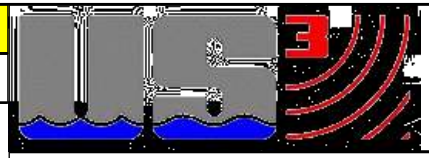


12/28/2021

2021.12 Scott MH SD68

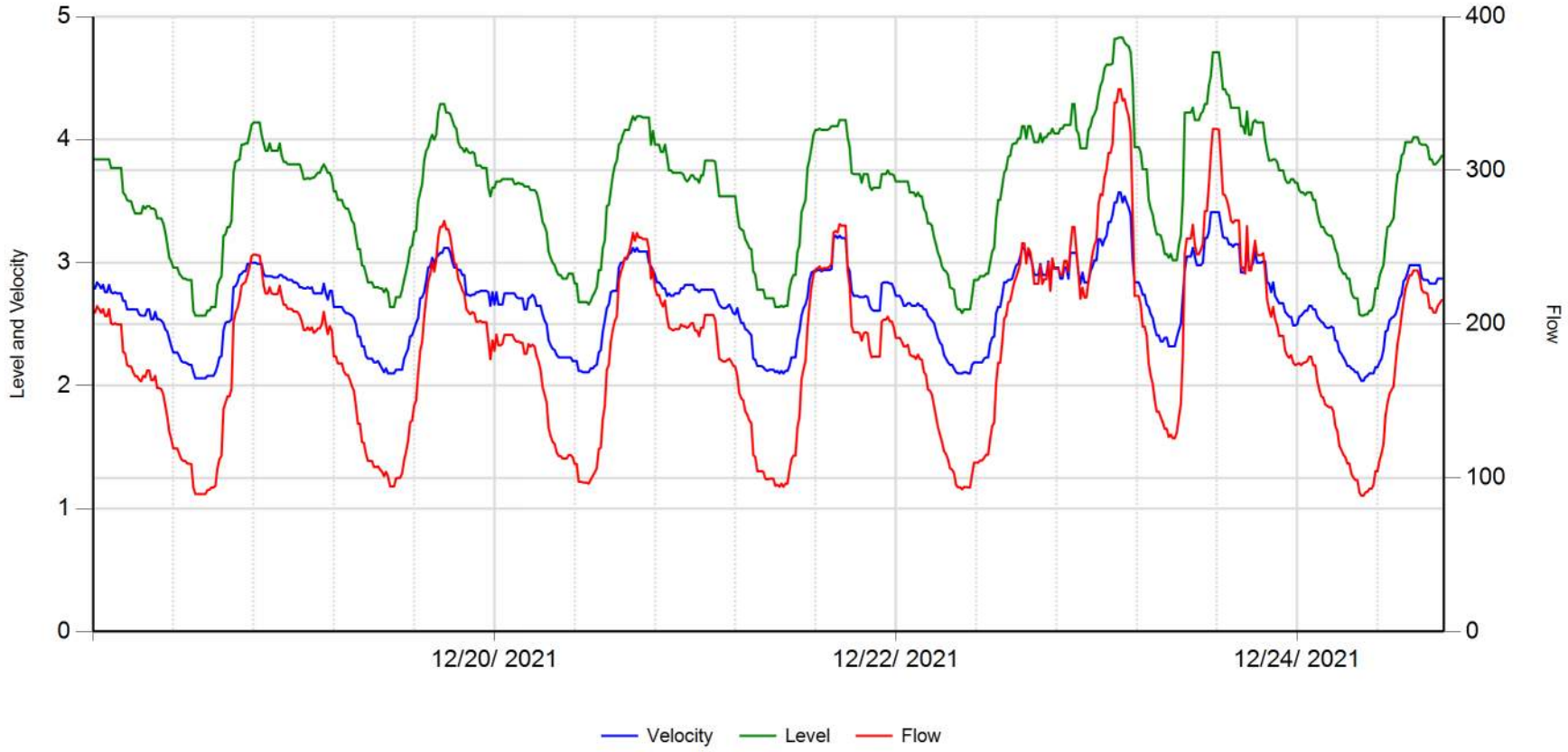


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.650	3.528	181.044	**RainFall**	Inches
Maximum	3.740	5.220	404.540		
Minimum	1.980	2.510	83.935		

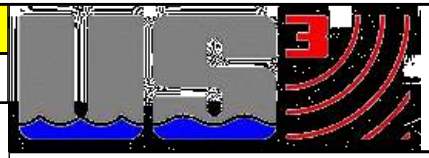


12/28/2021

2021.12 Scott MH SD68

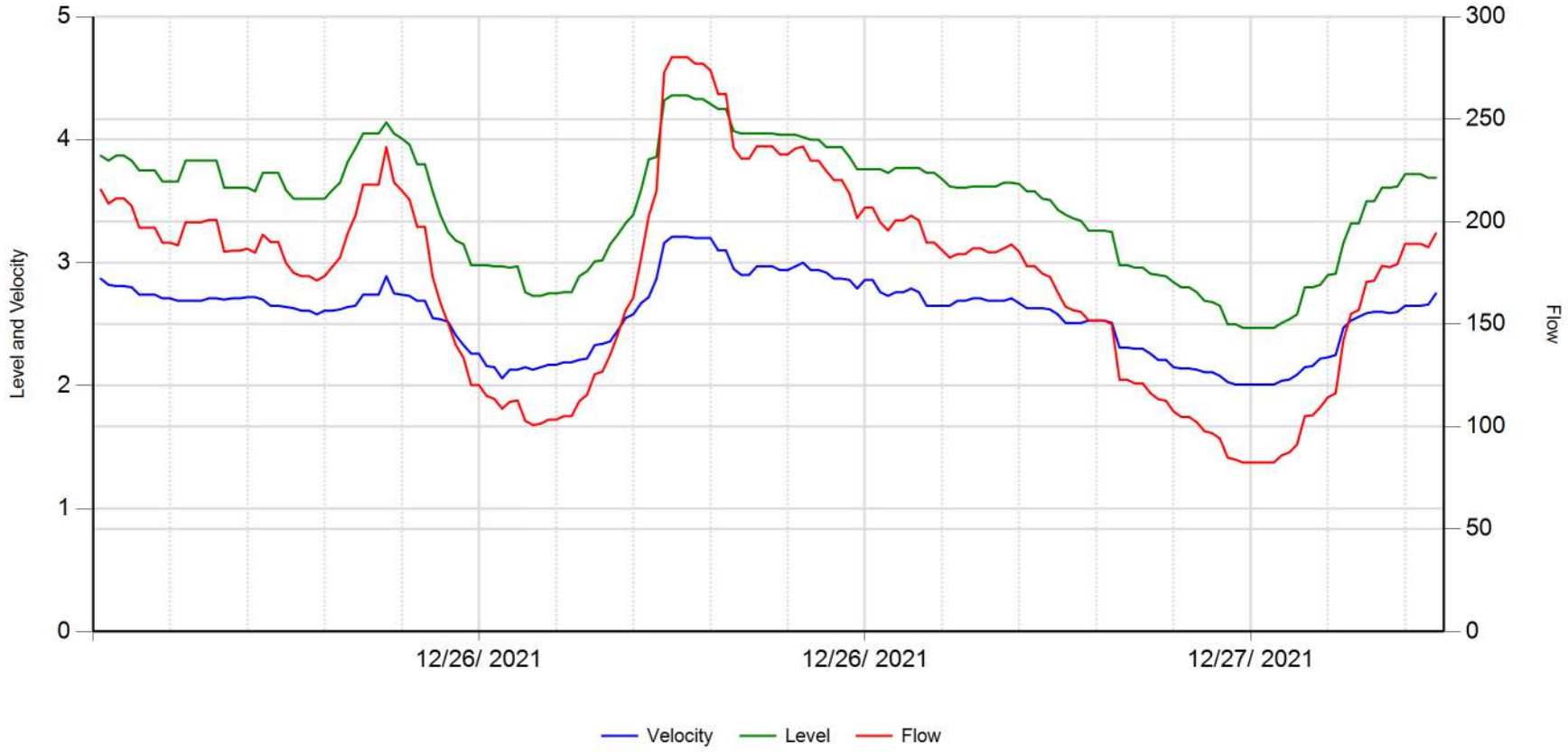


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.665	3.570	184.841	**RainFall**	Inches
Maximum	3.570	4.830	352.786		
Minimum	2.040	2.570	88.498		

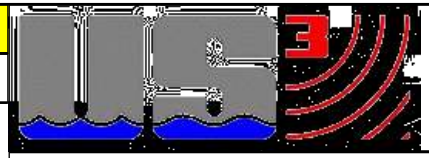


12/28/2021

2021.12 Scott MH SD68

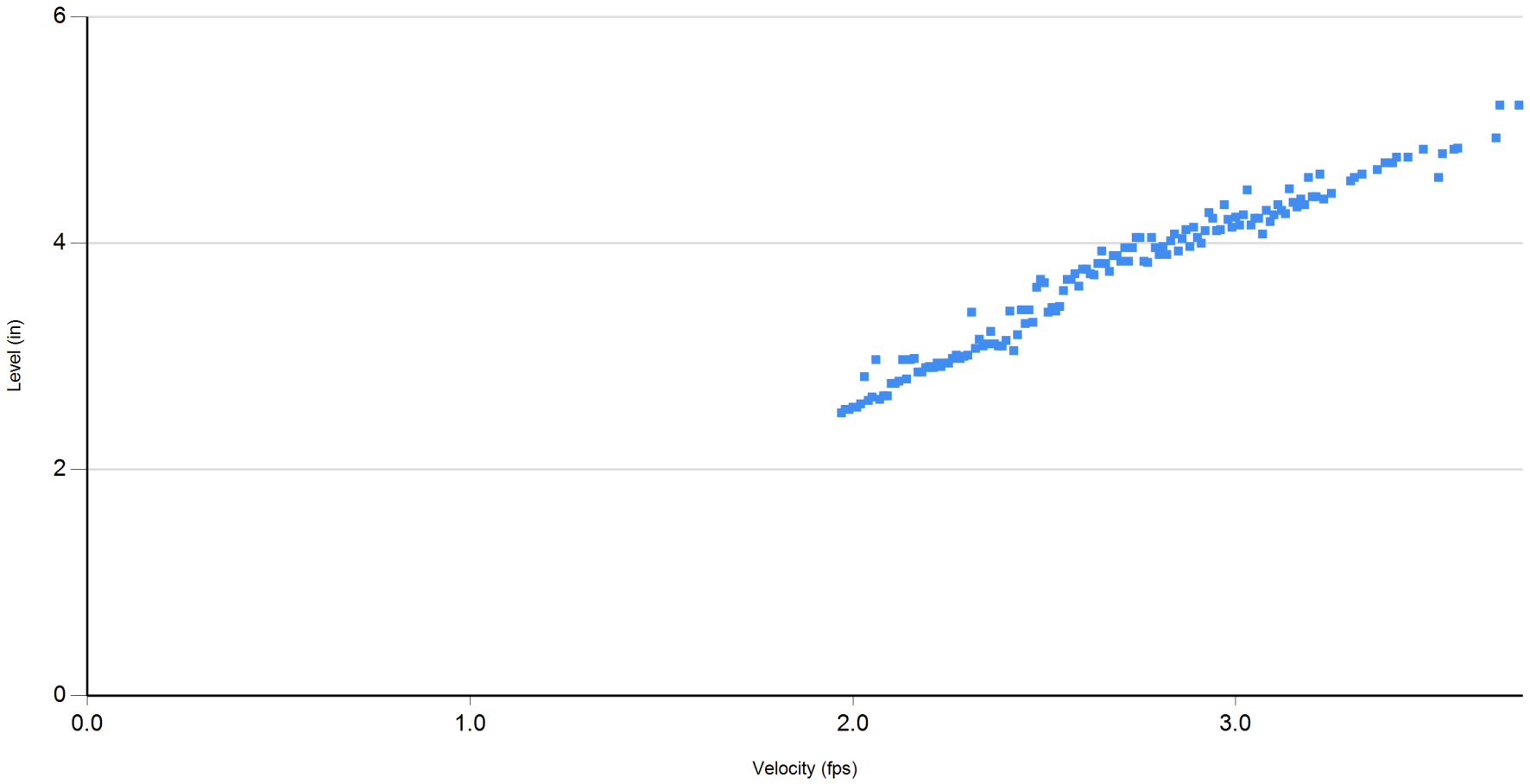


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.577	3.477	172.220	**RainFall**	Inches
Maximum	3.210	4.360	280.257		
Minimum	2.010	2.470	82.524		



12/28/2021

2021.12 Scott MH SD68



12/9/2021 thru 12/27/2021

12/28/2021 4:19:01 PM

Site Report 12/28/2021

Confidential Proprietary Information

Mission Pacific

2021.12 Scott MH SD68

MH at ~10041 Scott Av
Whittier, CA 90603
MH # SD68

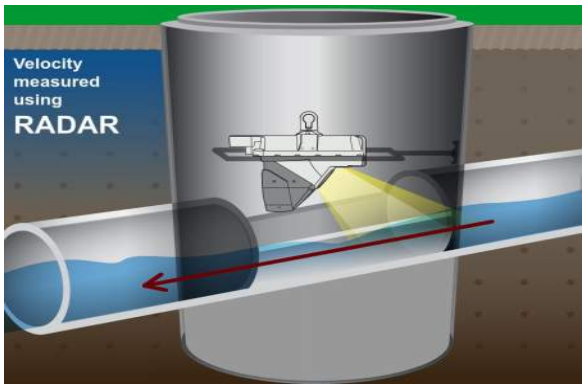
Access:
MH in SB lane, east of address

System Type:
Sanitary [X] Storm [ ]

Install Date: 12/09/2021

Map

Technology



Sewer Plan

Flow Meter			
Meter Depth: 116"			
MH Coordinates: 33.946174, -118.000818			
Moderate open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
2.6 fps	3.5"		1.0
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Three inlets from east, west & north; monitored upstream north line from project site.			
Traffic Safety			
Used arrow board, cones & signs in accord w/site-specific CATTCH requirements.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	131"
Monitored Pipe Size	8"
Inner Pipe Size (In/Out)	8"/8"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Brick
Silt	None observed
Velocity Profile Data	Passed
Velocity Profile Taken	0.4 2-D
Sensor Offset	14.7"
Sensor Dist. to Crown	6.7"
Sensor Direction	Upstream
Flow Heading	South

Meter Site Document

2021.12 Scott MH SD68

MH at ~10041 Scott Av

Whittier, CA 90603

Site

Manhole Before Install

Installation Process

Installed

Upstream

Upstream Pipe Size

Temporary Flow Study

Mission Pacific

2021.12 Scott MH SD68

Meter Start Date		From	12/9/2021
Meter Stop Date		To	12/27/2021
Velocity (fps)		Level (in)	Flow (mgd)
Average	2.649	3.544	0.262
Maximum	3.740	5.220	0.583
Minimum	1.970	2.500	0.118
Pipe Size		8.000	
Estimated Capacity (mgd)		Not Calculated	
Capacity Used		Not Calculated	
Sensor Type		Hach - Flodar	

Utility Systems, Science and Software

9314 Bond Av, Suite A
El Cajon, CA 92021

601 N. Parkcenter Dr, Suite 209
Santa Ana, CA 92705

Appendix D

SEWER AS-BUILTS

See Page H11

SITE

SEWER MONITORING
LA SERNA
MANHOLE # 3987

SEWER
MONITORING
SCOTT
MANHOLE # SD68

County MH
Alarm - Call
Mr Balas (626)
962-8605 x6215

La Serna Dr
La Cima Dr
El Venado Dr
La Alba Dr
El Arco Dr
Janine Dr
Portada Dr
Santa Gertrudes Ave
Scott Ave
Jupiter St
Cullen St
Whittwood Dr
Whittwood Ln
Whittier Blvd

See Page G12
See Page H13
See Page I12

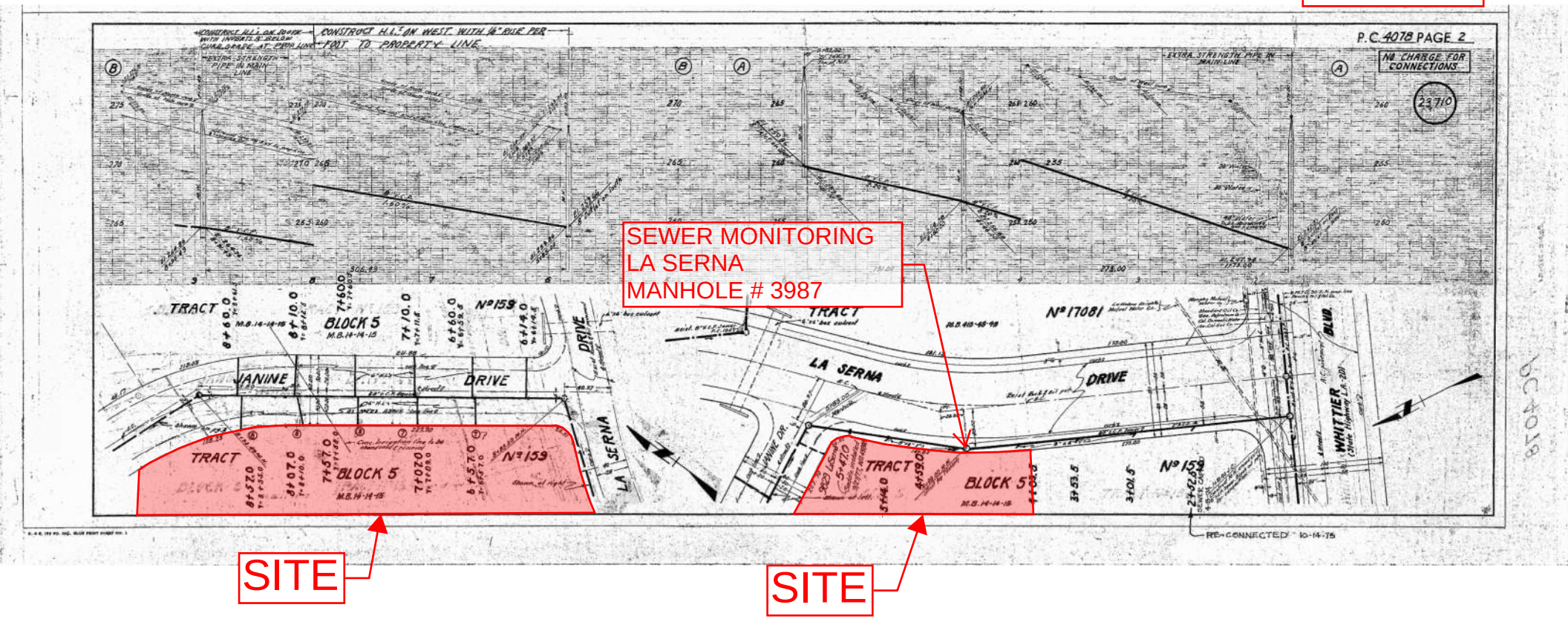
N

Index

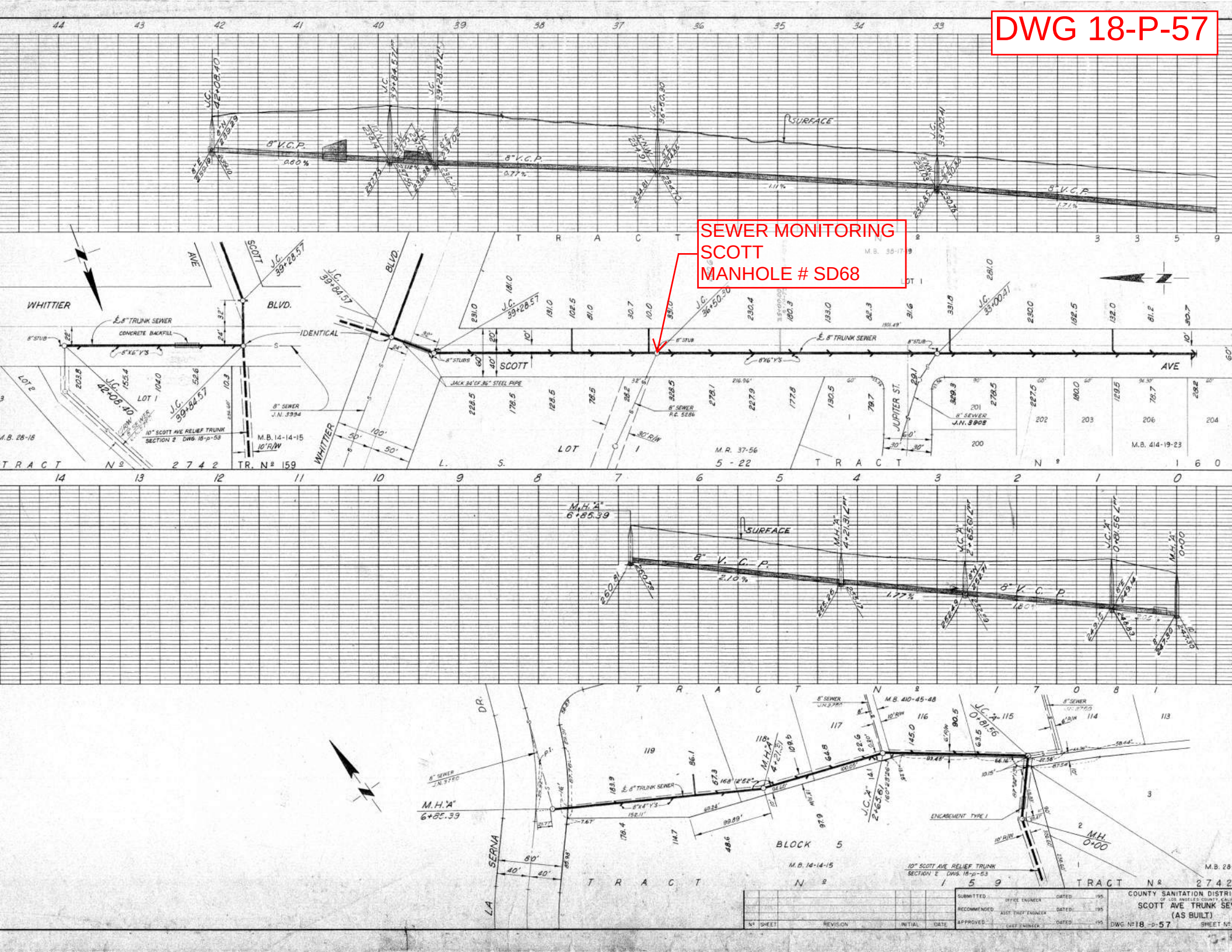
City of Whittier Sewer System
January 2020

0 100 200 Feet

PC 4078



P.C. 4078 PAGE 2
NO CHARGE FOR CONNECTIONS
CONSTRUCT H.L.'S ON WEST WITH 1/4" RISE PER FOOT TO PROPERTY LINE
SEWER MONITORING
LA SERNA
MANHOLE # 3987
TRACT
BLOCK 5
JANINE
DRIVE
LA SERNA
DRIVE
WHITTIER
BLVD.
Nº 159
Nº 17081
RE-CONNECTED 10-14-75
SITE
SITE


DWG 18-P-57
SEWER MONITORING
SCOTT
MANHOLE # SD68
SURFACE
8" V.C.P.
WHITTIER
BLVD.
SCOTT
AVE
IDENTICAL
JUPITER ST.
TRACT Nº 2742
TR. Nº 159
TRACT Nº 160
TRACT Nº 1708
TRACT Nº 159
TRACT Nº 2742
BLOCK 5
LA SERNA DR.
M.H. "A" 6+85.39
M.H. 0+00
10" SCOTT AVE RELIEF TRUNK SECTION 2 DWG. 18-p-53
ENCASEMENT TYPE I
COUNTY SANITATION DISTRI
SCOTT AVE TRUNK SE
(AS BUILT)
DWG Nº 18-p-57

Appendix E

REFERENCES

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

AREA STUDY

An area study must be made for all private contract sewer projects. See attached sample. The area study must include the following items:

1. Area being served - In Acres
2. Determined Tributary area to main line being designed (incl. areas of future devel.)- In Acres
3. Existing and Land Use Zoning
4. Anticipated Sewer Discharge in cfs of total area based on zoning, and/or heavy water users
5. Existing or proposed utilities if in conflict
6. Existing and proposed sewers showing pipe size and grade leading up to the trunk line in order for you to evaluate the impact of your proposed development on the existing system
7. Direction of sewer flow
8. Contour lines
9. Scale not to be less than 1"=600'
10. North arrow pointing up or to the left

ZONING COEFFICIENTS

ZONE	COEFFICIENT (cfs/Acre)
Agriculture	0.001
Residential	
R-1	0.004
R-2	0.008
R-3	0.012
R-4	0.016 *
Commerical	
C-1 through C-4	0.015 *
Heavy Industrial	
M-1 through M-4	0.021 *

* Individual building, commercial or industrial plant capacities shall be the determining factor when they exceed the coefficients shown.

The coefficient to be used for any zoned areas not listed will be determined by the County based upon the intended development and use.

The County shall determine which of the coefficients or combination of coefficients shall be used for design as determined by the established or proposed zoning in the study area. Any modifications to these coefficients due to topography, development, or hazard areas, shall be approved by the Department of Public Works.

Estimated Average Daily Sewage Flows for Various Occupancies

Occupancy	Abbreviation	*Average daily flow	
Apartment Buildings:			
Bachelor or Single dwelling units	Apt	100	gal/D.U. → 150
1 bedroom dwelling units	Apt	150	gal/D.U. → 200
2 bedroom dwelling units	Apt	200	gal/D.U. → 250
3 bedroom or more dwelling units	Apt	250	gal/D.U. → use 300 GPD per SMD
Auditoriums, churches, etc.	Aud	5	gal/seat
Automobile parking	P	25	gal/1000 sq ft gross floor area
Bars, cocktails lounges, etc.	Bar	20	gal/seat
Commercial Shops & Stores	CS	100	gal/1000 sq ft gross floor area
Hospitals (surgical)	HS	500	gal/bed
Hospitals (convalescent)	HC	85	gal/bed
Hotels	H	150	gal/room
Medical Buildings	MB	300	gal/1000 sq ft gross floor area
Motels	M	150	gal/unit
Office Buildings	Off	200	gal/1000 sq ft gross floor area
Restaurants, cafeterias, etc.	R	50	gal/seat
Schools:			
Elementary or Jr. High	S	10	gal/student
High Schools	HS	15	gal/student
Universities or Colleges	U	20	gal/student
College Dormitories	CD	85	gal/student

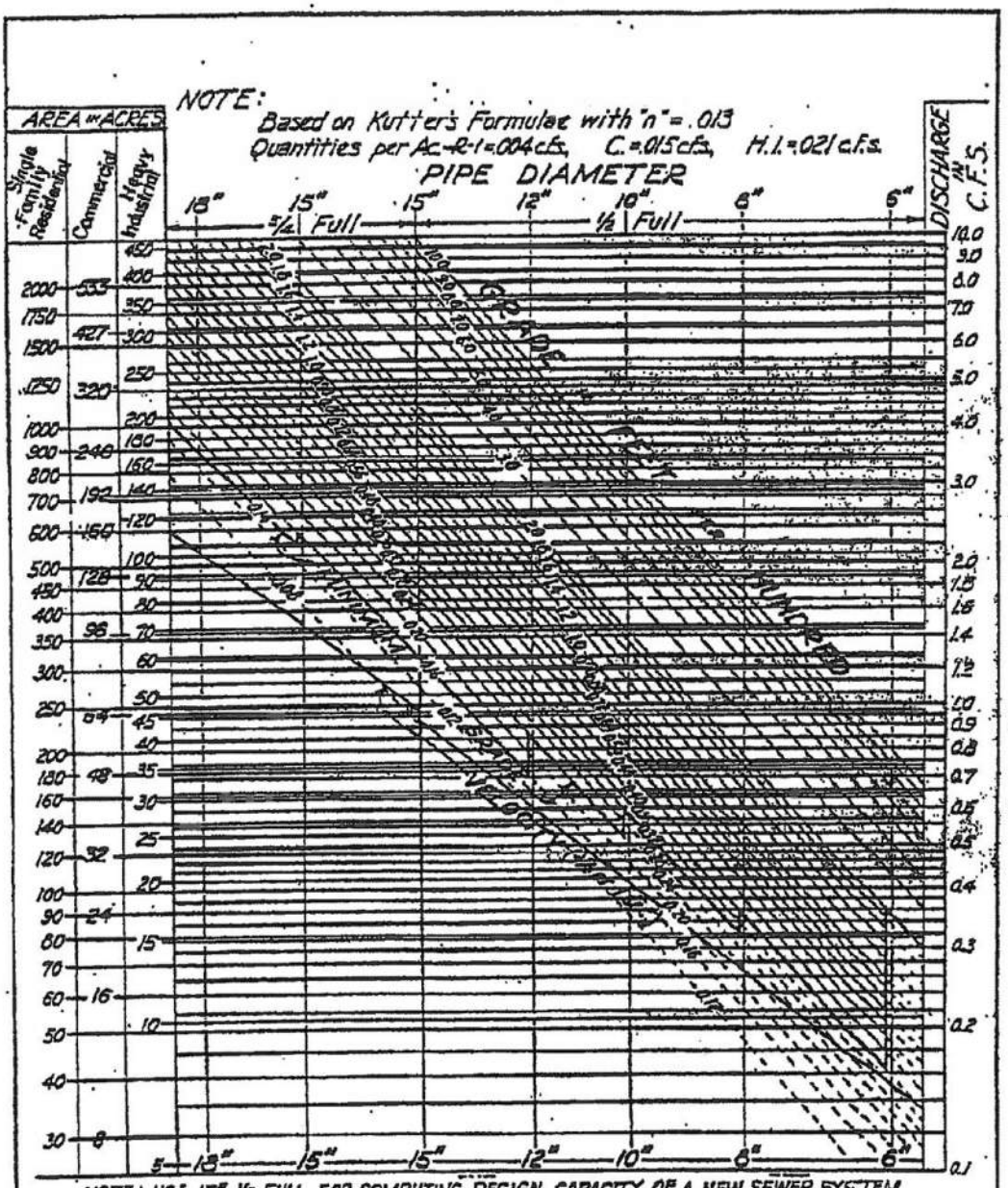
*Multiply the average daily flow by 2.5 to obtain the peak flow

Zoning Coefficients

Zone	Coefficient (cfs/Acre)
Agriculture	**0.001**
Residential+:	
R-1	**0.004**
R-2	**0.008**
R-3	**0.012**
R-4	**0.016***
Commercial:	
C-1 through C-4	**0.015***
Heavy Industrial:	
M1 through M-4	**0.021***

***Individual building, commercial or industrial plant capacities shall be the determining factor when they exceed the coefficients shown**

+ Use 0.001 (cfs/unit) for condominiums only



FLOW DIAGRAM FOR THE DESIGN OF CIRCULAR SANITARY SEWERS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

ASSISTANT DEPUTY

COUNTY ENGINEER

COUNTY ENGINEER STANDARD S-C4

DATE: 3/80

DESIGN RCE 10443

TABLE 1

LOADINGS FOR EACH CLASS OF LAND USE

DESCRIPTION	UNIT OF MEASURE	FLOW (Gallons Per Day)	COD (Pounds Per Day)	SUSPENDED SOLIDS (Pounds Per Day)
R E S I D E N T I A L				
Single Family Home	Parcel	260	1.22	0.59
Duplex	Parcel	312	1.46	0.70
Triplex	Parcel	468	2.19	1.05
Fourplex	Parcel	624	2.92	1.40
Condominiums	Parcel	195	0.92	0.44
Single Family Home (reduced rate)	Parcel	156	0.73	0.35
Five Units or More	No. of Dwlg. Units	156	0.73	0.35
Mobile Home Parks	No. of Spaces	156	0.73	0.35
C O M M E R C I A L				
Hotel/Motel/Rooming House	Room	125	0.54	0.28
Store	1000 ft^2	100	0.43	0.23
Supermarket	1000 ft^2	150	2.00	1.00
Shopping Center	1000 ft^2	325	3.00	1.17
Regional Mall	1000 ft^2	150	2.10	0.77
Office Building	1000 ft^2	200	0.86	0.45
Professional Building	1000 ft^2	300	1.29	0.68
Restaurant	1000 ft^2	1,000	16.68	5.00
Indoor Theatre	1000 ft^2	125	0.54	0.28
Car Wash				
Tunnel - No Recycling	1000 ft^2	3,700	15.86	8.33
Tunnel - Recycling	1000 ft^2	2,700	11.74	6.16
Wand	1000 ft^2	700	3.00	1.58
Financial Institution	1000 ft^2	100	0.43	0.23
Service Shop	1000 ft^2	100	0.43	0.23
Animal Kennels	1000 ft^2	100	0.43	0.23
Service Station	1000 ft^2	100	0.43	0.23
Auto Sales/Repair	1000 ft^2	100	0.43	0.23
Wholesale Outlet	1000 ft^2	100	0.43	0.23
Nursery/Greenhouse	1000 ft^2	25	0.11	0.06
Manufacturing	1000 ft^2	200	1.86	0.70
Dry Manufacturing	1000 ft^2	25	0.23	0.09
Lumber Yard	1000 ft^2	25	0.23	0.09
Warehousing	1000 ft^2	25	0.23	0.09
Open Storage	1000 ft^2	25	0.23	0.09
Drive-in Theatre	1000 ft^2	20	0.09	0.05

TABLE 1
(continued)
LOADINGS FOR EACH CLASS OF LAND USE

DESCRIPTION	UNIT OF MEASURE	FLOW (Gallons Per Day)	COD (Pounds Per Day)	SUSPENDED SOLIDS (Pounds Per Day)
C O M M E R C I A L				
Night Club	1000 ft^2	350	1.50	0.79
Bowling/Skating	1000 ft^2	150	1.76	0.55
Club	1000 ft^2	125	0.54	0.27
Auditorium, Amusement	1000 ft^2	350	1.50	0.79
Golf Course, Camp, and Park (Structures and Improvements	1000 ft^2	100	0.43	0.23
Recreational Vehicle Park	No. of Spaces	55	0.34	0.14
Convalescent Home	Bed	125	0.54	0.28
Laundry	1000 ft^2	3,825	16.40	8.61
Mortuary/Cemetery	1000 ft^2	100	1.33	0.67
Health Spa, Gymnasium				
With Showers	1000 ft^2	600	2.58	1.35
Without Showers	1000 ft^2	300	1.29	0.68
Convention Center, Fairground, Racetrack, Sports Stadium/Arena	Average Daily Attendance	10	0.04	0.02
I N S T I T U T I O N A L				
College/University	Student	20	0.09	0.05
Private School	1000 ft^2	200	0.86	0.45
Church	1000 ft^2	50	0.21	0.11

Appendix K Will Serve Letters

City of Whittier
13230 Penn Street, Whittier, California 90602-1772
(562) 567-9500 Fax (562) 567-2874 www.cityofwhittier.org

August 4, 2021

Mark Rael
Mission Pacific Land Company
4100 Newport Place, Suite 790
Newport Beach, CA 92660

Subject: 9829 La Serna Drive – Sewer Will Serve

A City-owned 8-inch sewer exists on Janine Drive and La Serna Drive. This system will receive sewage flow generated by a said development pending the following:

The developer shall conduct a flow study to determine if the existing sewer system has sufficient capacity to accept increased sewage from the proposed project. Any deficiencies caused by the proposed development shall be mitigated by the developer as approved by the Director of Public Works. In the case where sewer deficiencies are already identified in the City of Whittier's Sewer Master Plan, and the deficient segment of sewer main has been planned for sewer upgrade, the developer shall determine and pay the City approved fair-share cost for the sewer upgrade project.

If you have questions regarding sewer, please contact Alex Loayza at (562) 567-9508.

Sincerely,

Kyle Cason, P.E.
Director of Public Works

LOS ANGELES COUNTY
SANITATION DISTRICTS
Converting Waste Into Resources

Robert C. Ferrante
Chief Engineer and General Manager

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
(562) 699-7411 • www.lacsd.org

February 17, 2022

Ref. DOC 6462672

Mr. Greg Fick, Director of Planning
Mission Pacific Land Company
4100 Newport Place, Suite 790
Newport Beach, CA 90226

Dear Mr. Fick:

Will Serve Letter for 9289 La Serna Townhomes

The Los Angeles County Sanitation Districts (Districts) received your will serve letter request for the subject project on February 15, 2022. The proposed project is located within the jurisdictional boundary of District No. 18. We offer the following comments regarding sewerage service:

1. The wastewater flow originating from the proposed project will discharge to a local sewer line, which is not maintained by the Districts, for conveyance to the Districts' Scott Avenue Trunk Sewer, located in Scott Avenue at Whittier Boulevard. The Districts' 8-inch diameter trunk sewer has a capacity of 0.8 million gallons per day (mgd) and conveyed a peak flow of 0.3 mgd when last measured in 2012.

2. The wastewater generated by the proposed project will be treated at the Joint Water Pollution Control Plant located in the City of Carson, which has a capacity of 400 mgd and currently processes an average flow of 249.8 mgd, or the Los Coyotes Water Reclamation Plant located in the City of Cerritos, which has a capacity of 37.5 mgd and currently processes an average flow of 23.1 mgd.

3. The expected average wastewater flow from the project, described in the application as 42 residential townhomes, is 8,190 gallons per day. For a copy of the District's average wastewater generation factors, go to www.lacsd.org, Wastewater & Sewer Systems, click on Will Serve Program, and click on the Table 1, Loadings for Each Class of Land Use link.

4. The Districts are empowered by the California Health and Safety Code to charge a fee to connect facilities (directly or indirectly) to the Districts' Sewerage System or to increase the strength or quantity of wastewater discharged from connected facilities. This connection fee is used by the Districts for its capital facilities. Payment of a connection fee may be required before this project is permitted to discharge to the Districts' Sewerage System. For more information and a copy of the Connection Fee Information Sheet, go to www.lacsd.org, under Services, then Wastewater (Sewage) and select Rates & Fees. In determining the impact to the Sewerage System and applicable connection fees, the Districts will determine the user category (e.g. Condominium, Single Family home, etc.) that best represents the actual or anticipated use of the parcel(s) or facilities on the parcel(s) in the development. For more specific information regarding the connection fee application procedure and fees, the developer should contact the Districts' Wastewater Fee Public Counter at (562) 908-4288, extension 2727.

5. In order for the Districts to conform to the requirements of the Federal Clean Air Act (CAA), the capacities of the Districts' wastewater treatment facilities are based on the regional growth forecast adopted by the Southern California Association of Governments (SCAG). Specific policies included in the development of

the SCAG regional growth forecast are incorporated into clean air plans, which are prepared by the South Coast and Antelope Valley Air Quality Management Districts in order to improve air quality in the South Coast and Mojave Desert Air Basins as mandated by the CAA. All expansions of Districts' facilities must be sized and service phased in a manner that will be consistent with the SCAG regional growth forecast for the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The available capacity of the Districts' treatment facilities will, therefore, be limited to levels associated with the approved growth identified by SCAG. As such, this letter does not constitute a guarantee of wastewater service, but is to advise the developer that the Districts intend to provide this service up to the levels that are legally permitted and to inform the developer of the currently existing capacity and any proposed expansion of the Districts' facilities.

If you have any questions, please contact the undersigned at (562) 908-4288, extension 2708 or at dcurry@lacsd.org.

Very truly yours,

Donna J. Curry

Donna J. Curry
Customer Service Specialist
Facilities Planning Department

DC:dc

REPUBLIC SERVICES

2531 E. 67th St., Long Beach CA 90805
(800) 299-4898 republicservices.com

September 16,2021

Mark Rael
Mission Pacific
4100 Newport Place, Suite 790
Newport Beach, CA 92660

RE: Site Plan - 9829 La Serna Drive

Dear Mr. Rael,

Republic Services has reviewed the attached site plan for the residential development at 9829 La Serna Drive in the City of Whittier and can service the site only on the condition that residents in Building C, Building D, and Building F roll their carts to the private road that goes through the property, placing the carts in front of Building A and B. Due to the safety concern of backing-up long distances, **Republic will not be able to service the carts for Building C, Building D, and Building F if the carts are not relocated by the resident as directed**. Please ensure the residents will be comfortable with moving their carts far away from their home for trash, recycling, and green waste collection on a weekly basis.

Standard residential trash service is billed quarterly, current rates are available on the City of Whittier website. Each residential unit will be provided 3 containers (64-gallon trash, 64 or 96-gallon recycling, 64 or 96-gallon green waste) to be collected by separate collection vehicles.

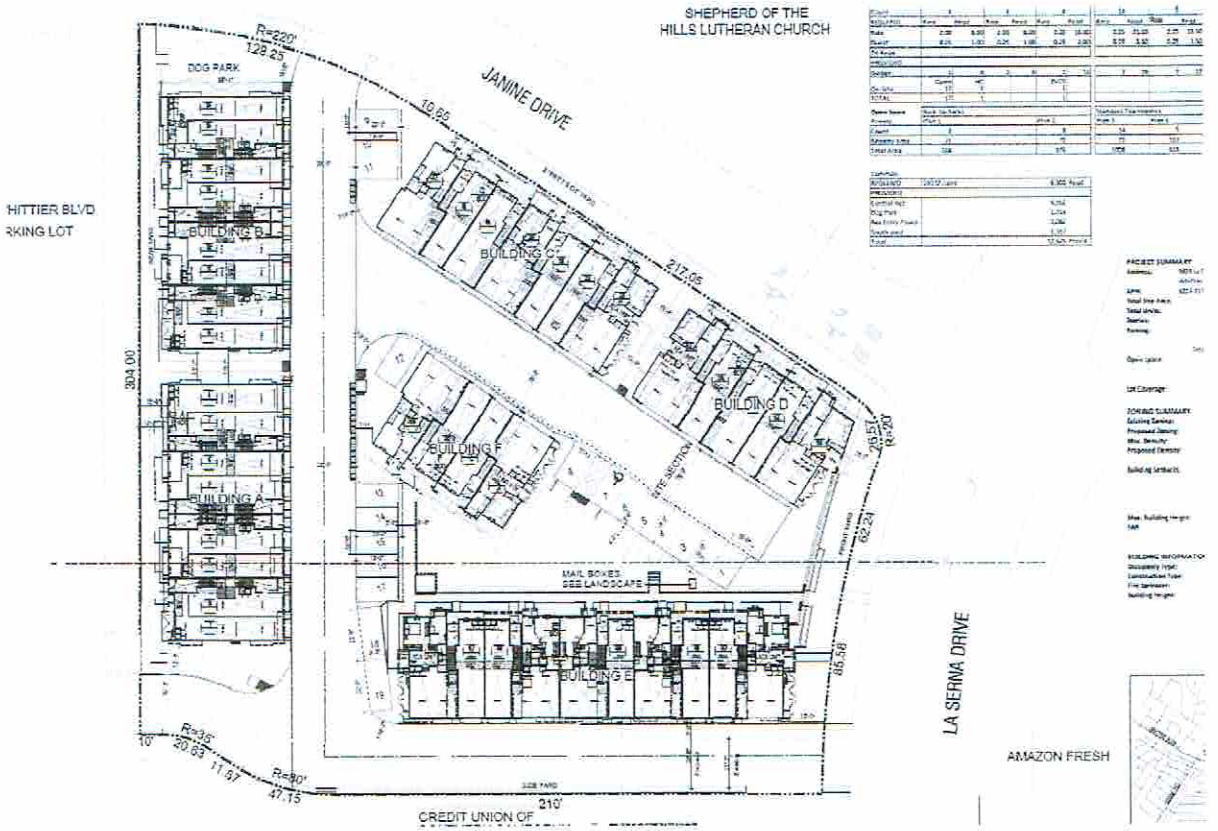
Based on the layout of the site plan attached, some areas would have carts grouped for service on collection day. For these areas, Republic recommends the following:

1) Carts are labeled with addresses when residents receive them;
2) Housing association has rules in place to address parking on service day to ensure cart blockages do not occur;
3) Grouped areas are incorporated into the association rules; and
4) Trash service requirement is clearly communicated to all residents.

Please let me know if you have further questions. (818) 262-7388 or tragland@republicservices.com. Site plan enclosed.

Respectfully,

Tania Castaneda
Municipal Relationship Manager


SHEPHERD OF THE
HILLS LUTHERAN CHURCH
JANINE DRIVE
DOG PARK
HITTIER BLVD
RKING LOT
BUILDING A
BUILDING B
BUILDING C
BUILDING D
BUILDING E
BUILDING F
MAIL BOXES
SEE LANDSCAPE
LA SERNA DRIVE
AMAZON FRESH
CREDIT UNION OF
R=220'
128.25
16.65
217.05
304.00
26.51
R=20'
62.24
85.58
R=35'
20.83
11.67
R=80'
47.15
10'
210'

Suburban
Water Systems
A SouthWest Water Company

1325 N. Grand Avenue
Suite 100
Covina, CA 91724-4044
Phone 626.543.2500
Fax 626.331.4848
www.swwc.com

February 23, 2021

Mr. Jason Keller
Mission Pacific Land Company
4100 Newport Place, Suite 790
Newport Beach, CA 92660

RE: Conditional Statement of Water Service
9829 La Serna Dr., Whittier; SWS P-1596

This is to certify that the subject development is within the certificated service area of Suburban Water Systems. Suburban will operate the proposed water system and will serve water to the proposed unit, subject to, but not limited to the following.

Suburban requires a separate metered service for each dwelling on a lot. If you serve two or more dwellings from one meter Suburban will consider this an illegal connection and this could lead to an interruption to the service that you currently have.

Additional water utility infrastructure will have to be installed at the developer's expense to serve this new tract. Also, Suburban does not know if major modifications will be needed to meet the Fire Department's fire flow requirements for the project until the Developer submits the Fire Department approved plan that shows the required hydrant locations and fire flow demand and duration. If system modifications are required the developer will be responsible for these costs.

Please be advised that a water service commitment in no way constitutes approval of any development proposal. This Conditional Statement of Water Service expires one year after the date of issuance.

Should you have any questions or need further assistance please feel free to contact Laura Sainz at (626)543-2565.

Regards,
SUBURBAN WATER SYSTEMS

Laura Sainz

Laura Sainz
Water Service Planner

cc: SWS P-1596