

Habitat Redwood Boulevard Project

Draft Initial Study – Mitigated Negative Declaration

prepared by

City of Novato
Community Development Department
922 Machin Avenue
Novato, California 94945
Contact: Brett Walker, Senior Planner

prepared with the assistance of

Rincon Consultants, Inc.
4825 J Street, Suite 200
Sacramento, California 95819

September 2021

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

Habitat Redwood Boulevard Project

Draft Initial Study – Mitigated Negative Declaration

prepared by

City of Novato
Community Development Department
922 Machin Avenue
Novato, California 94945
Contact: Brett Walker, Senior Planner

prepared with the assistance of

Rincon Consultants, Inc.
4825 J Street, Suite 200
Sacramento, California 95819

September 2021

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

This report prepared on 50% recycled paper with 50% post-consumer content.

Table of Contents

Initial Study 1
1. Project Title 1
2. Lead Agency Name and Address 1
3. Contact Person and Phone Number 1
4. Project Location 1
5. Project Sponsor's Name and Address 1
6. General Plan Designation 1
7. Zoning 4
8. Description of Project 4
9. Surrounding Land Uses and Setting 9
10. Other Public Agencies Whose Approval is Required 9
11. Have California Native American Tribes Traditionally and Culturally Affiliated with the Project Area Requested Consultation Pursuant to Public Resources Code Section 21080.3.1? 10
12. Project Consistency with General Plan 2035 Mitigation Measures 10
Environmental Factors Potentially Affected 19
Determination 19
Environmental Checklist 21
1 Aesthetics 21
2 Agriculture and Forestry Resources 27
3 Air Quality 29
4 Biological Resources 43
5 Cultural Resources 51
6 Energy 55
7 Geology and Soils 63
8 Greenhouse Gas Emissions 69
9 Hazards and Hazardous Materials 75
10 Hydrology and Water Quality 83
11 Land Use and Planning 89
12 Mineral Resources 91
13 Noise 93
14 Population and Housing 105
15 Public Services 107
16 Recreation 111
17 Transportation 113
18 Tribal Cultural Resources 117

19 Utilities and Service Systems 121
20 Wildfire 127
21 Mandatory Findings of Significance 131
References 133
Bibliography 133
List of Preparers 136

Tables

Table 1 Proposed Building and Unit Summary 4
Table 2 Proposed Unit Size Summary 4
Table 3 General Plan 2035 Mitigation Consistency 11
Table 4 Health Effects Associated with Non-Attainment Criteria Pollutants 30
Table 5 BAAQMD Air Quality Thresholds of Significance 31
Table 6 Construction Period Emissions 35
Table 7 Operational Period Emissions 36
Table 8 Maximum Buildout Construction Period Emissions 37
Table 9 Maximum Buildout Operational Period Emissions 37
Table 10 Individual and Cumulative Cancer Risk and Particulate Matter Concentrations 40
Table 11 2019 Electricity and Natural Gas Consumption 56
Table 12 2019 Annual Gasoline and Diesel Consumption 56
Table 13 Estimated Fuel Consumption during Construction 57
Table 14 Estimated Project Annual Operational Energy Consumption 58
Table 15 Maximum Buildout Estimated Fuel Consumption during Construction 59
Table 16 Maximum Buildout Estimated Annual Operational Energy Consumption 59
Table 17 Project Compliance with Energy Efficiency Goals and Policies 59
Table 18 Project Consistency with the Novato Climate Action Plan 73
Table 19 AASHTO Maximum Vibration Levels for Preventing Damage 95
Table 20 Vibration Annoyance Potential Criteria 96
Table 21 Project Site Vicinity Sound Level Monitoring Results- Short-Term 97
Table 22 City of Novato Municipal Code Table 3-5: Allowable Exterior Noise Levels[1] 98
Table 23 Increase in Traffic Noise Levels from the Project 102
Table 24 Vibration Levels at Sensitive Receivers 103
Table 25 NMWD Water Supply and Demand in Acre-Feet for Normal, Single Dry, and Multiple Dry Year 124

Figures

Figure 1 Regional Location 2
Figure 2 Project Site 3
Figure 3 Proposed Project Building Configuration 5
Figure 4 Proposed Project Site Plans 6

Figure 5 Existing Conditions on Project Site from Redwood Boulevard, Looking West 22
Figure 6 View Across Project Site from Redwood Boulevard, Looking Northwest..... 24

Appendices

Appendix A Air Quality and Greenhouse Gas Analysis Documentation
Appendix B Biological Resources Assessment and Approved Jurisdiction Determination
Appendix C Cultural Resources Assessment
Appendix D Energy Calculations
Appendix E Geotechnical Investigation Report
Appendix F Phase I Environmental Site Assessment
Appendix G Stormwater Control Plan
Appendix H Preliminary Existing Sewer Capacity Calculations
Appendix I Preliminary Drainage Report
Appendix J Environmental Noise Study
Appendix K Traffic Impact Study

This page intentionally left blank.

Initial Study

1. Project Title

Habitat Redwood Boulevard Project

2. Lead Agency Name and Address

City of Novato
Community Development Department
922 Machin Avenue
Novato, California 94945

3. Contact Person and Phone Number

Brett Walker, AICP
Senior Planner
(415) 493-4711
bwalker@novato.org

4. Project Location

Novato is located in the greater North Bay region of the San Francisco Bay Area and is the northernmost city in Marin County. The city is located northwest of San Pablo Bay approximately 29 miles north of San Francisco, 37 miles northwest of Oakland, and approximately 35 miles north of the San Francisco International Airport.

The project site is located in the northern portion of the City of Novato. The approximately 13.6-acre site is at 8161 Redwood Boulevard (Assessor's Parcel Number 125-180-49), west of and adjacent to the Novato Days Inn and Redwood Boulevard approximately 100 feet west of Highway 101. Figure 1 shows the regional location of the project area, and Figure 2 shows the project location and surrounding uses.

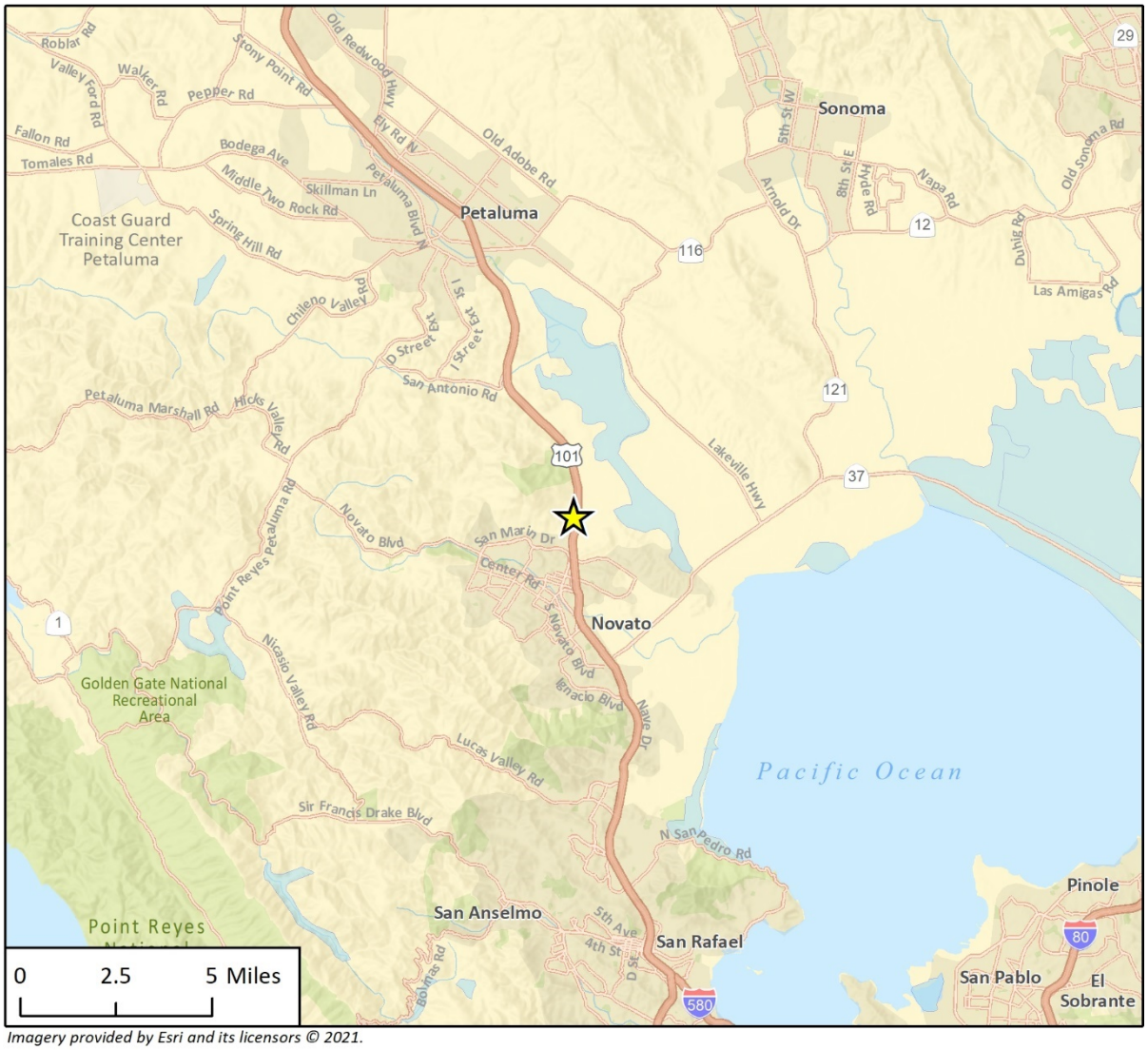
5. Project Sponsor's Name and Address

Maureen Sedonaen
Habitat for Humanity Greater San Francisco, Inc.
500 Washington Street, Suite 250
San Francisco, California 94111

6. General Plan Designation

The project site is designated as Business and Professional Office (BPO) in the City's 2035 General Plan.

Figure 1 Regional Location



Imagery provided by Esri and its licensors © 2021.

Project Location

N

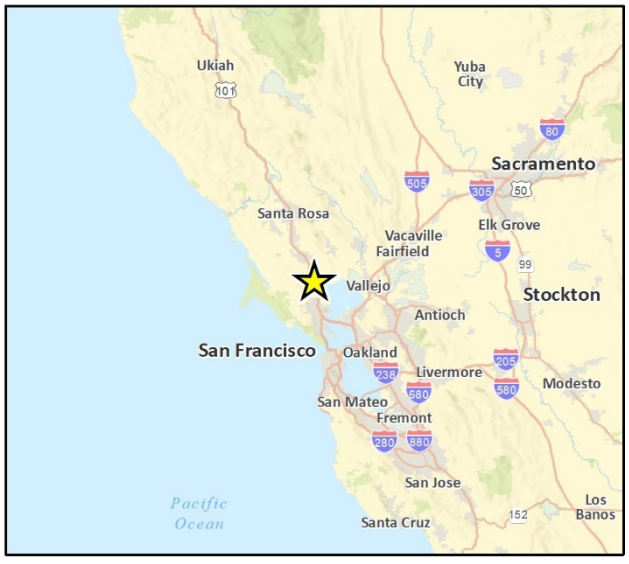


Figure 2 Project Site



Imagery provided by Microsoft Bing and its licensors © 2021.

7. Zoning

The project site is zoned Planned District in the City's Zoning Code.

8. Description of Project

The project would involve construction of 80 affordable housing units in 23 residential buildings on an approximately 13.6-acre vacant site at 8161 Redwood Boulevard, Assessor's Parcel Number 125-180-49. The buildings would be made up of five different building types, ranging in size from one to six units and set around common greens and courtyards, as shown in Figure 3. Table 1 and Table 2 include the proposed unit count and type of unit for each building. The site would be designed in an oval pattern around a central open space and crossed by pathways and gathering areas. On-site amenities would include play areas, a small amphitheater for events, dog park, trails, seating areas, benches, tables, community garden, and a community meeting area. The project would be designed to integrate with the existing landscape to the extent possible by using building materials in a natural color pallet. The proposed site plan is shown in Figure 4.

Table 1 Proposed Building and Unit Summary

Building Type	Units per Building	Building Count	Total Units
Building 1	4	6	24
Building 2	6	3	18
Building 3	4	4	16
Building 4	4	4	16
Building 5	1	6	6
Total		**23**	**80**

Table 2 Proposed Unit Size Summary

Unit Type	Total Units	Total Bedrooms	Average Square Feet
2 Bedroom	18	36	870
3 Bedroom	37	111	1,300
4 Bedroom	25	100	1,430
Total	**80**	**247**	**1,266 (average square feet)**

The project would also include a commercial building on a separate legal parcel to be retained by Habitat for Humanity Greater San Francisco, Inc. (HGSF) on a 0.5±-acre portion of the 13.6-acre site. The approximately 2,154-square foot commercial building would be single-story and contain an approximately 700-square foot conference room, two office spaces of approximately 380 and 280 square feet respectively, and a lobby. The office building would be located on the northern portion of the site, north of and adjacent to the existing Novato Days Inn.

The project site has a land use designation of Business and Professional Office (BPO) and the project therefore requires a General Plan Amendment to Medium Density Multi-Family Residential (R10) for the 13-acre portion of the site proposed for residential use. The proposed 0.5-acre commercial lot would retain the existing BPO land use designation. The project also includes a Master Plan, Precise Development Plan, Vesting Tentative Map (Condominium), and Design Review for the development.

Figure 3 Proposed Project Building Configuration



Source: Dorman Associates, 2021.

Figure 4 Proposed Project Site Plans



Source: Dorman Associates, 2021.

Access and Circulation

The site would be accessible from Redwood Boulevard north of the Novato Days Inn. A one-way loop road would circulate the site providing access to the residential buildings and on-site amenities. The roadway would be designed to meet the City's requirements for emergency access and waste hauling. A second private drive aisle would bisect the middle of the site allowing vehicles to avoid driving the entire loop and improving emergency ingress and egress on the site. A total of 185 parking spaces would be spread around the site along the loop road in a mix of parallel, angled, and pull-in 90-degree spaces. One-hundred sixty-two (162) parking spaces are for the residential portion and 23 parking spaces are for the commercial portion of the project. The project would include a total of 45 bicycle parking spaces throughout the site. Of the total 45 bicycling parking spaces, 40 bicycle parking spaces would be for the proposed residential development and the remaining five spaces would be for the office building. Redwood Blvd. frontage improvements would include curb, gutter, and sidewalk a distance of 500± feet on the north side of the Novato Days Inn, 100± feet on the south side of the Novato Days Inn, and off-site a distance of approximately 0.25 mile between Buck Center Drive and Pinkston Road. The off-site sidewalk improvements would connect to an existing sidewalk located on the south side of Pinkston Road.

Stormwater Management

The project would include a stormwater system designed to maintain historical flows on the project site. Stormwater would be captured by a system of swales, pipes, and inlets on the site directed to bioretention areas. The bioretention areas would serve to detain, filter, and clean collected stormwater and meter flows back onto the western portion of the site through percolation and subsurface drainage facilities. There would be a total of four bioretention areas. Release of excessive water flows would be handled by piped systems that connect stormwater outlets that cross beneath Redwood Boulevard.

Landscape Design

The project site would be landscaped with drought tolerant and low water use species designed to be compatible with the existing landscape and surrounding habitats. No trees would be removed and instead the project would include the planting of approximately 107 trees along the internal pathways near the residential buildings and in the outdoor common space areas. As discussed in more detail in Section 4, *Biological Resources*, the project would include purple needlegrass plantings and streambed plantings to address impacts to sensitive species and water features.

Utilities

The project would be all electric and would not extend natural gas infrastructure to the site. The project site is served by an eight-inch sewer line along Redwood Boulevard, which terminates at a pump station near the southern edge of the project site. A private sewer system would be designed and built to serve the site. Potable water would be available for the project from an existing 12-inch water main in Redwood Boulevard north of the project site. The water main would be extended about 700 feet south to serve the project site. An existing recycled water distribution pipeline is located along Redwood Boulevard south of the project site, which is currently being extended to a site (7711 Redwood Boulevard) approximately a half mile to the south. The North Marin Water District (NMWD) would require an extension to the project site, approximately 0.25 mile; on-site irrigation would use recycled water.

Sustainability Features

The project would include several green building features with the major feature being an all-electric energy structure with no natural gas connection. Other specific features include installing a rooftop solar photovoltaics (PV) system (size of system to be determined) that would offset approximately 75 percent of the energy onsite consumption, installing low-flow plumbing fixtures, and providing light emitting diode (LED) lighting. Also, a total of six parking spaces would be reserved for and equipped with electric vehicle (EV) chargers. Furthermore, the development would be GreenPoint rated and would be certified at the Gold level standard or above.

Construction

Construction is anticipated to commence in March 2022. The project would be constructed in two phases with Phase 1 completion in December 2024 and Phase 2 completed in September 2026.

- Phase 1 construction would begin in March 2022. The following would be developed on 4.2 acres: 42 dwelling units (approximately 55,427 square feet), 2,154 square feet of office space, and 108 parking lot spaces. The construction stages would include site preparation, foundational work, office building construction, and residential building construction. Completion of Phase 1 is anticipated in December 2024.
- Phase 2 construction would begin in April 2023 and would overlap with Phase 1 in 2023 and 2024. This phase would include the development of 38 dwelling units (approximately 50,148 square feet) and 77 parking lot spaces on approximately 3.8 acres. Construction would involve site preparation, foundational work, and residential building construction. Construction would be completed in May 2026.

Based on these estimates, construction would occur over approximately four and a half years. The project would implement the Bay Area Air Quality Management District Basic Construction Mitigation Measures as a project design feature.

Maximum Site Buildout

The project site has a land use designation of Business and Professional Office (BPO) and requires a General Plan Amendment to Medium Density Multi-Family Residential (R10) for 13 acres of the 13.6-acre site. The R10 designation allows multi-family housing at a density of 10.1 to 20.0 dwelling units per acre. The proposed project would build out the site with a density of 10.1 dwelling units per acre. Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard Project not developed, the approximately eight developable acres of the project site would remain available for uses allowed under the R10 designation. Therefore, this Initial Study will also examine an alternative land use to the proposed project at a programmatic level. The alternative land use discussion analyzes buildout of the approximately eight buildable acres of project site at a density of 20.0 units per acre or 160 multi-family housing units. This would be the maximum possible residential density under the proposed land use designation of R10. Although this maximum use is not currently proposed, because this use would represent the greatest environmental impacts, this document will address the potential impacts of this alternative use. An alternative higher development intensity for the 0.5-acre commercial portion of the project is not anticipated due to lot size and site constraints, such as the FEMA flood zone and parking requirements. Therefore, the maximum site buildout only includes the residential portion of the project site. Environmental impacts related to maximum buildout project are analyzed on a

programmatic level throughout this document where applicable, under the heading *Maximum Buildout*.

9. Surrounding Land Uses and Setting

The project site is mostly undeveloped land to be donated by Pacific Gas & Electric (PG&E), the current owner of the site. PG&E uses the site as a surplus property that contains a pair of active 16-inch steel gas transmission mains and a 2-inch gas service lateral. The site has also been used as a staging area for PG&E. There are no other existing structures on the project site.

Elevations on the project site range from 7 feet above mean sea level (amsl) near the northeastern portion of the site to 72 feet amsl at the western portion of the property. Vegetation consists of non-native annual grassland, purple needle grass, and coast live oak woodland. A seasonal wetland, drainage ditch, and ephemeral stream are present on the site.

As shown in Figure 2, the project site is bordered by the Novato Days Inn, Redwood Boulevard, and Highway 101 to the east and by vacant land to the north, south, and west. The Buck Center is located further south of the site and the Birkenstock facility, slated for light industrial development, is located to the north.

Sonoma-Marin Area Rail Transit (SMART) uses the railroad tracks located on the east side of Highway 101 and south of the project site, and a SMART station (Novato San Marin) is located 0.9 mile south of the site on Redwood Boulevard. The rail line also serves overnight freight rail service operated by Northwestern Pacific Railroad Company (NWPR) between the City of Windsor in Sonoma County to the north and Schellville, an unincorporated Sonoma County community, east of Novato. There are no bus stations within the vicinity of the project site. Marin Transit route 49 serves the Novato San Marin SMART station, with service to downtown Novato (Redwood Boulevard and Grant Avenue) and continuing service to the San Rafael Transit Center.

Surrounding General Plan land use designations include light industrial/office (LIO) to the north and Research/Education Institutional to the south and west; the adjacent hotel is designated General Commercial (CG). The land use designation for parcels east of the highway is LIO, with Open Space (OS) further east of the site.

10. Other Public Agencies Whose Approval is Required

The City of Novato is the sole agency with the authority to approve the proposed project's land use entitlements, including:

- General Plan land use amendment from BPO to R10
- Master Plan
- Precise Development Plan
- Vesting Tentative Map (Condominium)
- Design Review

The following service districts require their own permits to approve various aspects of project construction and various project-serving utilities:

- **Novato Fire Protection District (NFPD)** would determine compliance with local fire code requirements for emergency access, life safety systems (e.g., fire sprinklers), and Wildland Urban Interface (WUI) building standards.
- **Novato Sanitary District (NSD)** is the wastewater utility at the fuel facility site. The sanitary district will review the project design and construction of new wastewater infrastructure associated with the project.
- **North Marin Water District (NMWD)** is the domestic and recycled water provider at the site. New domestic and recycled water connections will need to be designed to NMWD standards and approved by NMWD.

The following regional, state, and federal agencies may require their own permits, inspections, reporting and/or certifications prior to construction and/or completion of the project:

- **Regional Water Quality Control Board.** A waste discharge requirement permit (NPDES Construction General Permit) may be required.
- **California Department of Fish and Wildlife (CDFW)**. A Fish and Game Code Section 1602 Lake and Streambed Alteration Permit may be required.

11. Have California Native American Tribes Traditionally and Culturally Affiliated with the Project Area Requested Consultation Pursuant to Public Resources Code Section 21080.3.1?

On March 2, 2021, the City of Novato emailed consultation letters to two (Federated Indians of Graton Rancheria and the Guidiville Indian Rancheria) Native American tribes under the provisions of Assembly Bill 52. The City did not receive any responses. Consultation with local tribes is further detailed in Section 18, *Tribal Cultural Resources*.

12. Project Consistency with General Plan 2035 Mitigation Measures

Mitigation measures from General Plan 2035 would be conditions of approval for the project. Table 3 outlines the project's consistency with mitigation measures included in General Plan 2035 and outlines where applicable mitigation measures are discussed in the IS-MND and the project's consistency with the mitigation measure.

Table 3 General Plan 2035 Mitigation Consistency

General Plan 2035 Mitigation Measure	Project Consistency	IS-MND Section and Page Number
MM AQ-1 Construction Emissions Measures. New discretionary projects in the Plan Area that exceed the construction screening criteria of the Bay Area Air Quality Management District (BAAQMD) shall be conditioned to reduce construction emissions of reactive organic gases, nitrogen oxides, and particulate matter (PM_{10} and $PM_{2.5}$) by implementing the BAAQMD's Basic Construction Mitigation Measures (described below) or equivalent, expanded, or modified measures based on project and site-specific conditions. Basic Construction Mitigation Measures 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day, with priority given to the use of recycled water for this activity when feasible. 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. 4. All vehicle speeds on unpaved roads shall be limited to 15 mph. 5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. 7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator. 8. A publicly visible sign shall be posted with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.	During the construction phase, the proposed project would implement all listed basic construction mitigation measures as a condition of approval for the project. CALEEMOD emission estimates can be found in Appendix A, which includes the construction emissions measures and shows that the project would not exceed BAAQMD thresholds. Therefore, the project is consistent with Mitigation Measure AQ-1.	3 – *Air Quality*, pages 30 through 42
Mitigation Measure AQ-2 Health Risk Assessments. Projects that may result in additional toxic air contaminants that are located within 1,000 feet of a sensitive receptors(s) or would place sensitive receptors within 1,000 feet of uses generating toxic air contaminants, such as roadways with volumes of 10,000 average annual daily trips or greater, shall implement Bay Area Air Quality Management District Guidelines and State Office of Environmental Health Hazard Assessment policies and procedures requiring health risk assessments (HRAs) for residential development and other sensitive receptors; screening area distances may be increased on a case-by-case basis if an unusually large source or sources of hazardous emissions are proposed or currently exist. Based on the results of the HRA, identify and implement measures (such as air filtration systems) to reduce potential exposure to particulate matter, carbon monoxide, diesel fumes, and other potential health hazards. Measures identified in HRAs shall be included into the site development plan as a component of a proposed project.	The closest sensitive receptor, single-family homes, is approximately 1,100 feet south of the project site. Illingworth and Rodkin, Inc prepared a Health Risk Assessment for the project in January 2020, which found that risks and hazards would not exceed thresholds. Please see Appendix A. Therefore, the project is consistent with Mitigation Measure AQ-2.	3 – *Air Quality*, pages 30 through 42

General Plan 2035 Mitigation Measure	Project Consistency	IS-MND Section and Page Number
AQ-3 Odor Reduction. Require new manufacturing and laboratory development to be designed and constructed in a way that reduces the potential for future odors. Ensure prompt response to complaints about odors reported by residences and businesses by developing a website link that directs users to BAAQMD's odor reporting and inspection program.	The project would not generate substantial operational odors. As a residential development, Mitigation Measure AQ-3 does not apply to the proposed project.	3 – *Air Quality*, pages 30 through 42
BIO-2 Biological Studies for New Development. Project applicants shall be required to provide a biological resources assessment for projects on parcels with potentially suitable habitat or potential for the occurrence of special status species. The biological resources assessment shall be conducted by a qualified biologist and will include a data review and habitat assessment prior to project activities to identify whether any special-status plant or animal species habitat or sensitive natural communities occur on-site. The data reviewed shall include the biological resources setting, Appendix C species list, and best available, current data for the area, including current review of the California Natural Diversity Database. Habitat assessments shall be completed at an appropriate time of year for identifying potential habitat and no more than one year prior to commencement of project activity. The purpose of these biological resources assessments is to identify appropriate measures to avoid or minimize harm to sensitive biological resources and to incorporate the recommended measures as conditions of approval for the project. Based on the results of the biological resources assessment, the qualified biologist will provide site-specific mitigation measures to avoid special status species or reduce impacts to a less than significant level.	A biological resources assessment (BRA) was prepared by WRA, Inc. in May 2021, please see Appendix B. The assessment identifies three mitigation measures included in the IS-MND, Mitigation Measure BIO-1, BIO-2, and BIO-3, to mitigate impacts to burrowing owl habitat, nesting birds, and purple needlegrass grassland. Therefore, the project is consistent with Mitigation Measure BIO-2.	4 – *Biological Resources*, pages 44 through 50
BIO-3 Biological Resources Inventory for New Development. A detailed inventory of biological resources conducted by an independent, professionally qualified biologist, plant ecologist, arborist, or appropriately qualified specialist shall be required for projects in sensitive and vulnerable habitats, as identified in Mitigation Measure BIO-2. If there are seasonal constraints with performing surveys, presence of such special status species shall be assumed and measures to reduce impacts to special status species and avoidance shall be implemented in accordance with a biological resources assessment and/or project specific California Environmental Quality Act documentation. If sensitive resources are identified on the project site, recommendations to protect the sensitive resources shall conform with applicable State and federal regulations regarding their protection and may include avoidance of the resource, providing setbacks, clustering development onto less sensitive areas, preparing restoration plans, off-site mitigation, and/or other similar measures as determined on a project specific basis.	The BRA prepared by WRA, Inc. maps vegetation, aquatic communities, and unvegetated land and documents plant and wildlife species present on the project site. All Mitigation Measures outlined in the biological resources section of the IS-MND (BIO-1 through BIO-4) would be implemented to protect sensitive resources identified in the BRA. Therefore, the project is consistent with Mitigation Measure BIO-3.	4 – *Biological Resources*, pages 44 through 50
BIO-4 Nesting Bird Protection. All discretionary projects shall retain the services of a qualified biologist(s) to conduct a pre-construction nesting bird survey during the nesting season (February 1 through August 31) at most 14 days prior to any and all development that may remove trees or vegetation that may provide suitable nesting habitat for migratory birds or other special-status bird species. If nests are found the qualified biologist(s) shall identify and the project sponsor shall implement appropriate avoidance measures, such as fenced buffer areas or staged tree removal periods.	Mitigation Measures BIO-1 and BIO-2 in the IS-MND call for protection of burrowing owls and other avian species during nesting. Therefore, the project is consistent with Mitigation Measure BIO-4.	4 – *Biological Resources*, pages 44 through 50

General Plan 2035 Mitigation Measure	Project Consistency	IS-MND Section and Page Number
BIO-6 Biological Studies for Wildlife Movement Corridors. All discretionary projects on parcels with indicators of wildlife movement corridors shall retain the services of a qualified biologist(s) to conduct a biological assessment prior to any and all development that may impact wildlife movement. If movement corridors are potentially impacted by the proposed project, the qualified biologist(s) shall identify appropriate mitigation measures to avoid or minimize the impact. Such measures shall be a condition of approval and implemented by the project sponsor.	The project is not located within a designated wildlife corridor nor would it constrain wildlife movement. Therefore, Mitigation Measure BIO-6 does not apply to the project.	4 – *Biological Resources*, pages 44 through 50
CUL-1 Historical Resources Study Program. All discretionary projects shall investigate the potential to impact historical resources. A historical resources evaluation shall be performed to confirm the presence of historical resources within the project site when there is a structure(s) or feature of a type, period, and/or method of construction that could be qualified as having historic status. The study shall, at a minimum, be conducted by a qualified professional meeting the Secretary of the Interior's (SOI) Professional Qualification Standard (PQS) for architectural history (NPS 1983). The study shall include a pedestrian survey of the project site and background research including a records search at the Northwest Information Center (NWIC), building permit research, and/or research with the local historical society(ies). The subject property(ies) shall be evaluated for federal, state, and local designation on California Department of Parks and Recreation 523 series forms, included as an appendix to the study. If historical impacts are identified, the study shall include recommendations to avoid or reduce impacts on historical resources and the project sponsor shall implement the recommendations or conduct additional environmental review.	A cultural resources study was conducted by LSA in January 2021, see Appendix C. The study includes the results of a California Historical Resource Information System records search, a historic-period map review, a cultural resources geoarchaeological sensitivity assessment, and a pedestrian field survey. No historical impacts were identified on the site. To address impacts to archeological resources Mitigation Measures CUL-1 (archaeological monitoring) and CUL-2 (unanticipated discovery of archaeological resources) in the IS-MND would be implemented if any unanticipated resources are uncovered. Therefore, the project is consistent with Mitigation Measure CUL-1.	5 – *Cultural Resources*, pages 52 through 55
CUL-2 Archaeological Resources Study Program. All discretionary projects shall investigate the potential to disturb archaeological resources. If preliminary reconnaissance suggests that cultural resources may exist, a Phase I cultural resources study shall be performed by a qualified professional meeting the Secretary of the Interior's (SOI) Professional Qualification Standard (PQS) for archaeology (NPS 1983). A Phase I cultural resources study shall include a pedestrian survey of the project site and sufficient background research and, as necessary, field sampling to determine whether archaeological resources may be present. Archival research shall include a records search at the Northwest Information Center (NWIC) and a Sacred Lands File (SLF) search with the Native American Heritage Commission (NAHC), and coordination with Native American tribes listed by the NAHC. The Phase I technical report documenting the study shall include recommendations to avoid or reduce impacts on archaeological resources. The project sponsor shall implement the recommendations.	The cultural resources study conducted for the project concluded that cultural resources are unlikely to exist on the project site. Therefore, a Phase 1 cultural resources study is not required and Mitigation Measure CUL-2 does not apply to the project.	5 – *Cultural Resources*, pages 52 through 55

General Plan 2035 Mitigation Measure	Project Consistency	IS-MND Section and Page Number
CUL-3 Paleontological Resource Studies. Avoidance and/or mitigation for potential impacts to paleontological resources shall be required for any development in Novato that occurs within high sensitivity geologic units (Pleistocene alluvium [Qpa] and Pleistocene alluvium [Qoa] deposits), whether they are mapped at the surface or occur at the subsurface. When paleontological resources are uncovered during site excavation, grading, or construction activities, work on the site will be suspended until the significance of the fossils can be determined by a qualified paleontologist. If significant resources are determined to exist, the paleontologist shall make recommendations for protection or recovery of the resource. The City shall require the following specific measures for projects that could disturb geologic units with high paleontological sensitivity: ▪ **Retain a Qualified Paleontologist to Prepare a PMMP.** Prior to initial ground disturbance, the project applicant shall retain a Qualified Paleontologist, as defined by the SVP (2010), to direct all mitigation measures related to paleontological resources and design a Paleontological Mitigation and Monitoring Program (PMMP) for the project. The PMMP shall include measures for a preconstruction survey, a training program for construction personnel, paleontological monitoring, fossil salvage, curation, and final reporting, as applicable.	The proposed project is not located in an area with high sensitivity geologic units. Although Mitigation Measure CUL-3 does not apply to the project, the applicant would implement Mitigation Measure GEO-2 in the IS-MND related to paleontological resources.	5 – *Cultural Resources*, pages 52 through 55
GEO-1 Soil Investigation Report. New development projects not connected to the municipal sewer system and requiring the use of septic tanks or alternative wastewater disposal systems shall complete a soil investigation report to be submitted to the City of Novato for review and approval prior to issuance of grading and building permits. The study shall demonstrate the capability of the underlying soils to support the use of septic tanks or alternative wastewater disposal systems. Such report shall be prepared by a registered professional geologist and shall include soil type characteristics, percolation rates, and design recommendations.	The proposed project would be connected to the municipal sewer system and does not require the use of a septic tank or alternative wastewater disposal system. Therefore, Mitigation Measure GEO-1 does not apply to the project.	7 – *Geology and Soils*, pages 64 through 68

General Plan 2035 Mitigation Measure	Project Consistency	IS-MND Section and Page Number
N-1 Construction Noise Reduction Measures. The following measures to minimize exposure to construction noise shall be included as standard conditions of approval for applicable projects involving construction: 1. *Mufflers*. During excavation and grading construction phases, all construction equipment, fixed or mobile, shall be operated with closed engine doors and shall be equipped with properly operating and maintained mufflers consistent with manufacturers' standards. 2. *Stationary Equipment*. All stationary construction equipment shall be placed so that emitted noise is directed away from the nearest sensitive receptors. 3. *Equipment Staging Areas*. Equipment staging shall be located in areas that will create the greatest distance feasible between construction-related noise sources and noise-sensitive receptors. 4. *Smart Back-up Alarms*. Mobile construction equipment shall have smart back-up alarms that automatically adjust the sound level of the alarm in response to ambient noise levels. Alternatively, back-up alarms shall be disabled and replaced with human spotters to ensure safety when mobile construction equipment is moving in the reverse direction.	All construction equipment used for the project would be operated in accordance with manufacturer's standards. RGD Acoustics conducted a construction noise analysis for the project (see Appendix J), and considered stationary equipment and staging areas, and determined noise impacts to be less than significant. Therefore, the proposed project is consistent with Mitigation Measure N-1 and would implement construction noise reduction measures as a condition of approval for the project to further reduce construction noise.	13 – *Noise*, pages 94 through 105
N-2 Construction Vibration Reduction Measures. The following measures to minimize exposure to construction vibration shall be included as standard conditions of approval for applicable projects involving construction: 1. *Building Examination*. The pre-existing condition of any buildings within 25 feet of any construction activities shall be recorded in order to evaluate damage from project-related construction. Fixtures and finishes within a 25-foot radius of construction activities susceptible to damage will be documented (photographically and in writing) prior to construction. All damage will be repaired back to its pre-existing condition. 2. *Stationary Equipment*. All vibratory stationary construction equipment shall be placed as far as possible from the nearest sensitive receptors. 3. *Equipment Staging Areas*. Equipment staging shall be located in areas that will create the greatest distance feasible between construction-related vibration sources and noise-sensitive receptors.	There existing Novato Days Inn Hotel is further than 25 feet from proposed constructions activities and there are no other existing buildings in the vicinity. All stationary equipment would be placed as far as possible from the nearest sensitive receptors per part two of the construction vibration reduction measures condition of approval. Therefore, the proposed project would be consistent with Mitigation Measure N-2.	13 – *Noise*, pages 94 through 105

General Plan 2035 Mitigation Measure	Project Consistency	IS-MND Section and Page Number
T-1 Intersection Delay Mitigations. The following additional intersection improvements are necessary to maintain acceptable operation under Existing plus Project and Cumulative conditions with the proposed project. ▪ San Marin Drive/Simmons Lane (Intersection #1) ▫ Signalize the intersection; restripe both San Marin Drive approaches to include separate left-turn, through, and right-turn lanes. ▫ Alternative Mitigation: install a roundabout; the westbound approach would have two lanes, one serving through/right movements and one serving left-turn movements, and the remaining three approaches would have single lanes. ▫ The alternative roundabout mitigation may require minor right-of-way acquisitions on one or more intersection corners. ▪ Redwood Boulevard/San Marin Drive (Intersection #4) ▫ Widen the SMART railroad overpass to provide space on the westbound approach for two left-turn lanes, two through lanes, and one right-turn lane, as well as bike lanes and a widened sidewalk on the south side of the overpass. ▫ Widen the southbound Redwood Boulevard approach to include a left-turn lane, shared left-turn/through lane, and right-turn lane. ▫ Restripe the northbound Redwood Boulevard to include a left-turn lane, left-turn/through lane, and two right-turn lanes. ▫ Add right-turn overlap signal phasing on the northbound and westbound approaches. ▫ This mitigation would entail roadway and overpass widening that could require right-of-way acquisition. ▫ To make this intersection function acceptably, additional improvements would be needed at the Highway 101 South Ramps/San Marin Drive intersection, as described in the next bullet. ▪ Highway 101 South Ramps/San Marin Drive (Intersection #5) ▫ Modify the eastbound San Marin Drive approach (the SMART railroad overpass) to include a through lane, a shared through/right-turn lane, and a right-turn lane. ▫ Provide an enhanced bicycle-pedestrian crossing at the on-ramp entrance, including modified signal phasing to include protected pedestrian and bicyclist movements across the ramp. ▫ This mitigation would entail roadway and overpass widening that could require right-of-way acquisition, and potentially affect areas that appear to be wetlands between the SMART rail corridor and the off-ramp. ▪ Highway 101 North Ramps/Atherton Avenue (Intersection #6) ▫ Widen the northbound off-ramp to include two left-turn lanes and a shared through/right-turn lane. ▪ Novato Boulevard/San Marin Drive-Sutro Avenue (Intersection #9) ▫ Signalize the intersection.	Since adoption of the General Plan 2035 Environmental Impact Report vehicle miles traveled has replaced level of service as the metric to determine a transportation impact under CEQA pursuant to Senate Bill 743. Therefore, Mitigation Measure T-1 from the General Plan EIR would no longer apply to the project under CEQA. However, the following transportation condition of approval related to pedestrian access would apply to the project: The project would extend the new curb, gutter, and five-foot-wide sidewalk south of the site along the west side of Redwood Boulevard for approximately 1,300 linear feet and connect it to the existing sidewalk fronting 7711 Redwood Boulevard. The alignment of the curb face shall be parallel to the edge of Caltrans' right-of-way and located to provide a minimum Redwood Boulevard half-width (centerline to face of curb) of 18-feet. Road widening would also be required. These improvements would require a Caltrans encroachment permit as they would be within the Caltrans right-of-way.	17 – *Transportation*, pages 114 through 118

General Plan 2035 Mitigation Measure	Project Consistency	IS-MND Section and Page Number
▫ Alternative Mitigation: install a single-lane roundabout with a southbound right-turn "slip" lane. ▫ The alternative roundabout mitigation may require minor right-of-way acquisition on one or more intersection corners. ▪ Diablo Avenue/Novato Boulevard (Intersection #14) ▫ Restripe the eastbound and westbound Diablo Avenue approaches to include separate left-turn, through, and right-turn lanes. ▫ Restripe the northbound Novato Boulevard Approach to include a left-turn lane, through lane, and through/right-turn lane. ▫ Widen and modify southbound Novato Boulevard to include dual left-turn lanes and a shared through/right-turn lane. ▫ Modify the signal phasing to protected left-turns on all approaches plus a westbound right-turn overlap phase. ▫ The mitigation may require minor right-of-way acquisition on Novato Boulevard to the northwest of the intersection. ▪ South Novato Boulevard/Redwood Boulevard (Intersection #30) ▫ Signalize the intersection. ▫ Alternative Mitigation: install a single-lane roundabout with an eastbound right-turn "slip" lane. ▫ The alternative roundabout mitigation may require minor right-of-way acquisition on one or more intersection corners. ▪ Highway 101 South Ramps/Ignacio Boulevard-Enfrente Road (Intersection #32) ▫ On the southbound Highway 101 "loop" off-ramp, extend the length of the dual right-turn pockets to 500 feet. ▫ Optimize signal timing on the coordinated Ignacio Boulevard-Bel Marin Keys Boulevard corridor. ▪ Bel Marin Keys Boulevard/Digital Drive (Intersection #35) ▫ Restripe the westbound approach to include a left-turn lane and a left-turn/through/right-turn lane, and modify the signal to operate with split phasing in the eastbound and westbound directions.		

This page intentionally left blank.

Environmental Factors Potentially Affected

This project would potentially affect the environmental factors checked below, involving at least one impact that is "Potentially Significant" or "Less than Significant with Mitigation Incorporated" as indicated by the checklist on the following pages.

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

Determination

Based on this initial evaluation:

☐ 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 to 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 "less than significant with mitigation incorporated" 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 potential 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.



Signature	Date
Brett Walker	Senior Planner
Printed Name	Title

Environmental Checklist

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. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	■	☐
d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	■	☐

a. Would the project have a substantial adverse effect on a scenic vista?

A scenic vista can generally be defined as a public viewpoint that provides expansive views of a highly valued landscape for the benefit of the public. The City of Novato General Plan identifies hillsides and ridgelines surrounding the city as scenic resources that generally enhance the community's visual character, including views of Mt. Burdell. Other scenic resources the City has identified include the Bay plains and Bay shorelines (City of Novato 2014a). The General Plan also requires preservation of views between Highway 101 and Mount Burdell, which is visible in the distance from portions of roadways near the site, as shown in in Figure 5. The General Plan also includes a designation for "Scenic Hills and Ridges" (see General Plan Figure ES-6, Ridgelines and Scenic Resources, City of Novato 2020a); however, the project site is not within that zone.

From Highway 101 or Redwood Road looking west towards the project site, the landscape consists of rolling hills with annual grasses and oak woodland in the foreground and middle ground and higher ridgelines beyond (Figure 5). These hillsides are designated by the city as a scenic resource,

but views from Redwood Boulevard and U.S. 101 in this corridor are not specifically designated as scenic vista points.

Figure 5 Existing Conditions on Project Site from Redwood Boulevard, Looking West



Source: Google Earth 2021

The project would not block views of Mt. Burdell but would obstruct some views of the hillsides to the west of the site from adjacent roadways. However, as the project would be built on the flatter areas of the project site, buildings would not break a substantial portion of the ridgeline from most of these viewpoints and views of hillsides would still be visible over and between most buildings. Since the project would only partially block some views of hillsides from Highway 101 and Redwood Boulevard, impacts would be less than significant. In addition, the project would be designed to integrate with the landscape to the extent possible by limiting grading, using building materials in a natural color palette, and including varied building heights. Finally, development of low height and high quality is anticipated by the General Plan for the area on and around the project site.

LESS THAN SIGNIFICANT IMPACT

b. Would the project substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

There are no officially designated State Scenic Highways in Marin County (California Department of Transportation [Caltrans] 2019). Highway 101 is eligible for State designation for a four-mile stretch in Marin City, nearly 4.3 miles away from the project site, near SR 37 where it terminates at the transition to Highway 101. These eligible stretches of eligible highway are too distant from the project site to be affected by project implementation. Additionally, no trees, buildings or rock outcroppings would be damaged or removed from the project site. Therefore, the project would not damage scenic resources within a state scenic highway. There would be no impact.

NO IMPACT

c. Would the project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

The project site is in a non-urbanized area that is adjacent to existing development, with views of the hills, oak woodland, and ridgelines that form a scenic resource and sense of place throughout Novato. North of the project site is the Birkenstock warehouse, a sprawling, single-story structure with a zig-zag roofline designed by a notable Modernist architect in the early 1960s (Bevk 2012). East and adjacent to the site is a less iconic but similarly low-rise hotel (Days Inn at Novato). The hotel has a roadside sign that presumably is lighted at night. Along the east side of Redwood Boulevard, electricity transmission lines are above ground and the roadway is separated from Highway 101 by a grass median and a chain-linked fence. On the east side of Highway 101, light industrial structures and supporting equipment are visible from the roadway. The Buck Institute borders the project site on the west and features another prominent work of architecture in Novato by I.M. Pei. However, the hills along the western border prevent the project site from being visible from the Buck Institute.

As show in Figure 6, a prominent ridgeline is visible across the project site looking northwest, with the hotel sign and parking lot in the middle and foreground. On the distant, northern horizon, the Sonoma Mountains can be seen below the cloud cover. Industrial features, including development on the east side of the freeway, are visible to persons traveling northbound on Redwood Boulevard and on Highway 101.

Figure 6 View Across Project Site from Redwood Boulevard, Looking Northwest



Source: Google Earth 2021

The General Plan states that "ridgelines and hillsides contribute to Novato's identity by creating a sense of separation for developed areas. These natural features establish physical boundaries for the community that are more recognizable than the jurisdictional boundaries created by the city limit" (City of Novato 2014b, Page 3-15). Hillsides and ridgelines visible across the project site contribute to the sense of place in Novato. Existing nearby development, however, already contrasts with the natural landscape, integrating to varying degrees based on design and allowing those natural features to be seen by virtue of their low heights. In this way, existing development occurs without completely disrupting the beauty and sense of place in the project vicinity. Furthermore, the General Plan anticipates increased commercial and office development along this stretch of Redwood Boulevard.

The hills in the middle ground have between 10 and 25 percent slope, according to the project plans. Most development would be situated in the area with zero to 10 percent slope, although some structures are proposed for the 10 to 25 percent sloped area. Grading would be limited and would retain the topography of the landscape to the extent feasible, thus retaining the distinctive ridgelines and hillsides while accommodating development on the site.

The project architectural design references the hilly topography in its rooflines, building massing, and arrangement. The color palette of the project draws on the hues found in the natural environment, with the browns, greens, and yellows evident in the landscape. The project would also include landscaping, with trees, shrubs, and small grassy areas around which the buildings would be situated and which would continue onto the base of the slopes, increasing vegetation throughout the site, but particularly closer to the roadway.

Furthermore, existing development adjacent to the south and east edge of the project site consists of a single-story hotel (Novato Days Inn) situated adjacent to Redwood Boulevard. This low building does not obscure views of the more distant landscape, except if the viewer is directly in front of the building. The project would change the visual character of the site from undeveloped open space to

residential development. However, a change in landscape does not necessarily create a substantial degradation of the visual quality on the site. The proposed design for the project is aligned with those described in the General Plan and would include perimeter landscaping to soften the effects of new development. Furthermore, because increased development is anticipated in this area by the General Plan, design review during the permitting process would ensure impacts would be less than significant.

While the project would change the visual character of the site from relatively undeveloped open space, periodically used for utility repair staging, to a residential development with medium density and office use, this change would not substantially degrade the visual character of the site or its surroundings.

With adherence to City of Novato regulations that govern visual quality and design review of the project as it is currently designed, it would not degrade the visual quality on the site substantially. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

d. Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

For purposes of this analysis, light refers to light emissions (brightness) generated by a source of light. Stationary sources of light include exterior parking lot and building security lighting, and interior lights emanating through windows. Moving sources of light include the headlights of vehicles driving on roadways within the project site. Streetlights and other security lighting also serve as sources of light in the evening hours.

Glare is defined as focused, intense light emanated directly from a source or indirectly when light reflects from a surface. Daytime glare is caused in large part by sunlight shining on highly reflective surfaces at or above eye level. Reflective surfaces area associated with buildings that have expanses of polished or glass surfaces, light-colored pavement, and the windshields of parked cars.

The project site is in a less developed area of the city and has limited lighting. Temporary night lighting may be present when PG&E uses the site as a work staging area. Adjacent uses generate moderate levels of light from exterior building and parking lot lighting. Streetlights are present along Redwood Boulevard, and other existing light sources include headlights from vehicles traveling on Redwood Boulevard and Highway 101 at night. The primary source of glare in the project area is from the sun reflecting from light colored building materials and finishes and metallic and glass surfaces of parked vehicles at adjacent uses.

The project would generate new sources of light from windows associated with the residences and office building, exterior safety lighting, and parking area lights. Cars entering and exiting the site at night would temporarily increase light. When implemented, the project could generate glare from sunlight reflected on west-facing windows during certain times of the day. Light-colored or reflective exterior finishes could generate glare, as could the sun shining on the windshields of cars parked on site.

Lighting installed on the project site would be required to comply with City of Novato regulations that include shielding or modification on outdoor lighting to prevent emission of light or glare beyond the property line and requirements to direct light sources to prevent lighting adjacent streets and shielding light sources (Novato Zoning Code Section 19.22.060). The project is designed with color schemes that blend with the natural environment. While pale siding colors include two

shades of white, glare would be prevented by the amount of eave overhang, the variation in siting, and by the density of the vegetation that is proposed in the landscape design. Windows would feature awnings and other shading structures that would alleviate glare. Headlights of vehicles entering and exiting the project site at night would be downcast and shielded by both existing and proposed buildings, fencing, and vegetation. Vehicle headlights would not affect light-sensitive receptors at the hotel on the south and east side of the project site.

The project would generate more light and glare than are currently on the undeveloped site, but with compliance with the City ordinances regulating light and glare, the project would not introduce substantial light or glare that would adversely affect daytime or nighttime views in the area. Therefore, impacts related to light and glare would be less than significant.

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the 80-unit residential development not be built, the project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development including up to approximately 160 units. The project site is not identified as a scenic resource and denser development on the site would not interfere with scenic vistas. To meet City design standards included in General Plan 2035, views of a proposed 160-unit development from surrounding areas would be softened by landscaping, including trees. Therefore, the 160-unit development would have no impact on a scenic vista.

The project site is not visible from State or locally designated scenic roadways, and, therefore, a 160-unit development would not damage scenic resources within a State scenic highway. Although the project site would include increased massing for additional units most development would be situated in the area with zero to 10 percent slope per the City's hillside ordinance. Pursuant to General Plan design criteria the alternative project would be required to include landscaping, which would protect the visual character of the site.

Although housing units would be designed differently than the proposed project, project approvals would include submittal of a lighting plan that would reduce the impact of new light sources to less than significant. As with the proposed project, the architectural design would include exterior materials in natural colors and that do not include reflective surfaces, in accordance with the General Plan design criteria. The potential number of parked cars would have to be estimated during specific project proposals and car ports or increased parking area trees could be required as part of design review to reduce glare impacts. Therefore, impacts related to light and glare would be less than significant under maximum buildout.

2 Agriculture and Forestry 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 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?	☐	☐	☐	■

a. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

b. Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

c. Would the project 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. Would the project result in the loss of forest land or conversion of forest land to non-forest use?

e. Would the project 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?

There are no areas of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance within Novato (California Department of Conservation 2021), and the project site is not under a Williamson Act contract (California Department of Conservation 2016). The site is designated as Business and Professional Office in the Novato General Plan and zoned Planned District (City of Novato 2001). The site does not contain forestland or timberland. Therefore, the project would not result in the conversion of agriculture use to non-agriculture uses, conflict with a Williamson Act contract, or existing zoning for agriculture, forest or timberland or result in the loss of such lands and there would be no impact on agricultural and forestry resources.

NO IMPACT

3 Air Quality

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☐	☐	■

Overview of Air Pollution

The federal and State Clean Air Acts (CAA) mandate the control and reduction of certain air pollutants. Under these laws, the U.S. Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (CARB) have established the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS) for "criteria pollutants" and other pollutants. Some pollutants are emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory, etc.) into the atmosphere, including carbon monoxide, volatile organic compounds (VOC)/reactive organic gases (ROG),[1] nitrogen oxides (NO_X), particulate matter with diameters of ten microns or less (PM_{10}) and 2.5 microns or less ($PM_{2.5}$), sulfur dioxide, and lead. Other pollutants are created indirectly through chemical reactions in the atmosphere, such as ozone, which is created by atmospheric chemical and photochemical reactions primarily between ROG and NO_X. Secondary pollutants include oxidants, ozone, and sulfate and nitrate particulates (smog).

Air pollutant emissions are generated primarily by stationary and mobile sources. Stationary sources can be divided into two major subcategories:

- Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat.

[1] CARB defines VOC and ROG similarly as, "any compound of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate," with the exception that VOC are compounds that participate in atmospheric photochemical reactions. For the purposes of this analysis, ROG and VOC are considered comparable in terms of mass emissions, and the term ROG is used in this IS-MND.

- Area sources are widely distributed and include such sources as residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and some consumer products.

Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and can also be divided into two major subcategories:

- On-road sources that may be legally operated on roadways and highways.
- Off-road sources include aircraft, ships, trains, and self-propelled construction equipment.

Air pollutants can also be generated by the natural environment, such as when high winds suspend fine dust particles.

Air Quality Standards and Attainment

The project site is located in the San Francisco Bay Area Air Basin, which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). BAAQMD has jurisdiction over much of the nine-county Bay Area, including Marin County. As the local air quality management agency, the BAAQMD is required to monitor air pollutant levels to ensure that the NAAQS and CAAQS are met and, if they are not met, to develop strategies to meet the standards. Depending on whether the standards are met or exceeded, the San Francisco Bay Area Air Basin is classified as being in "attainment" or "nonattainment." In areas designated as non-attainment for one or more air pollutants, a cumulative air quality impact exists for those air pollutants, and the human health impacts associated with these criteria pollutants, presented in Table 4, are already occurring in that area as part of the environmental baseline condition. Under state law, air districts are required to prepare a plan for air quality improvement for pollutants for which the district is in non-compliance. The San Francisco Bay Area Air Basin is designated a nonattainment area for the federal 8-hour ozone standard, federal $PM_{2.5}$ 24-hour standard, state 8-hour and 1-hour ozone standards, state PM_{10} annual and 24-hour standards, and the state $PM_{2.5}$ 24-hour standard. (BAAQMD 2017a). This nonattainment status is a result of several factors, such as mobile sources, wood burning, industrial combustion, and dust, in the San Francisco Bay Area Air Basin.

Table 4 Health Effects Associated with Non-Attainment Criteria Pollutants

Pollutant	Adverse Effects
Ozone	(1) Short-term exposures: (a) pulmonary function decrements and localized lung edema in humans and animals and (b) risk to public health implied by alterations in pulmonary morphology and host defense in animals; (2) long-term exposures: risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (3) vegetation damage; and (4) property damage.
Suspended particulate matter (PM_{10})	(1) Excess deaths from short-term and long-term exposures; (2) excess seasonal declines in pulmonary function, especially in children; (3) asthma exacerbation and possibly induction; (4) adverse birth outcomes including low birth weight; (5) increased infant mortality; (6) increased respiratory symptoms in children such as cough and bronchitis; and (7) increased hospitalization for both cardiovascular and respiratory disease (including asthma).[1]
Suspended particulate matter ($PM_{2.5}$)	(1) Excess deaths from short- and long-term exposures; (2) excess seasonal declines in pulmonary function, especially in children; (3) asthma exacerbation and possibly induction; (4) adverse birth outcomes, including low birth weight; (5) increased infant mortality; (6) increased respiratory symptoms in children, such as cough and bronchitis; and (7) increased hospitalization for both cardiovascular and respiratory disease, including asthma.

Source: United States Environmental Protection Agency 2018

Air Quality Management

Because the San Francisco Bay Area Air Basin currently exceeds the federal ozone and $PM_{2.5}$ standards and the state ozone, PM_{10}, and $PM_{2.5}$ standards, the BAAQMD is required to implement strategies to reduce pollutant levels to achieve attainment of the NAAQS and CAAQS. BAAQMD adopted the 2017 Clean Air Plan (2017 Plan) as an update to the 2010 Clean Air Plan. The 2017 Plan provides a regional strategy to protect public health and the climate. Consistent with the greenhouse gas (GHG) reduction targets adopted by the state, the 2017 Plan lays the groundwork for a long-term effort to reduce Bay Area GHG emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. To fulfill state ozone planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of ozone precursors (ROG and NO_X) and reduce transport of ozone and its precursors to neighboring air basins. In addition, the 2017 Plan builds upon and enhances the BAAQMD's efforts to reduce emissions of fine particulate matter and toxic air contaminants (TAC) (BAAQMD 2017a).

Air Pollutant Emission Thresholds

The BAAQMD has adopted guidelines for quantifying and determining the significance of air quality emissions in its *California Environmental Quality Act Air Quality Guidelines* (BAAQMD 2017b). BAAQMD recommends that lead agencies determine appropriate air quality emissions thresholds of significance based on substantial evidence in the record. The BAAQMD's significance thresholds in the updated May 2017 *CEQA Air Quality Guidelines* for project operations within the San Francisco Bay Area Air Basin are the most appropriate thresholds for use in determining air quality impacts of the project. BAAQMD developed screening criteria to provide lead agencies and project applicants with a conservative indication of whether a project could result in potentially significant air quality impacts.

Table 5 presents the significance thresholds for construction and operational-related criteria air pollutant and precursor emissions used for the purposes of this analysis. These represent the levels at which a project's individual emissions of criteria air pollutants or precursors would result in a cumulatively considerable contribution to the San Francisco Bay Area Air Basin's existing air quality conditions. For the purposes of this analysis, the project would result in a significant impact if construction or operational emissions would exceed any of the thresholds shown in Table 5.

Table 5 BAAQMD Air Quality Thresholds of Significance

Pollutant/Precursor	Construction: Average Daily Emissions (lbs/day)	Operation: Maximum Annual Emissions (tpy)	Operation: Average Daily Emissions (lbs/day)
ROG	54	10	54
NO_X	54	10	54
PM_{10}	82 (exhaust)	15	82
$PM_{2.5}$	54 (exhaust)	10	54

lbs/day = pounds per day; tpy = tons per year; ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less.; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less

Source: BAAQMD 2017b, Table 2-1.

The BAAQMD does not have quantitative thresholds for fugitive dust emissions during construction. Instead, the BAAQMD recommends Best Management Practices (BMPs) be implemented to reduce fugitive dust emissions. The project would implement the BAAQMD *Basic Construction Mitigation Measures* as a project design feature. The best management practices include the following:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered or maintain at least two feet of freeboard.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. Enclose, cover, water daily or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.)
6. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
7. Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
8. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.
9. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
10. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The air district's phone number shall also be visible to ensure compliance with applicable regulations.

In the absence of a qualified Community Risk Reduction Plan, BAAQMD has established the following *Thresholds of Significance* for local community risks and hazards associated with TACs and $PM_{2.5}$ for assessing individual source impacts at a local level. Impacts would be significant if:

- The project would result in an increased cancer risk of > 10 in one million
- The project would result in an increased non-cancer (i.e., Chronic or Acute) risk of > 1.0 Hazard Index
- The project would result in an ambient $PM_{2.5}$ concentration increase of > 0.3 $\mu g/m^3$ annual average

A project would be considered to have a cumulatively considerable impact if the aggregate total of current and proposed TAC sources within a 1,000 feet radius of the project fence-line in addition to the project would exceed the *Cumulative Thresholds of Significance*. Impacts would be significant if:

- The project would result in an increased cancer risk of > 100 in one million
- The project would result in an increased non-cancer (i.e., Chronic or Acute) risk of > 10 Hazard Index

- The project would result in an ambient $PM_{2.5}$ concentration increase of > 0.8 µg/m^3 annual average

Excess cancer risks are defined as those occurring in excess of or above and beyond those risks that would normally be associated with a location or activity if toxic pollutants were not present. Non-carcinogenic health effects are expressed as a hazard index, which is the ratio of expected exposure levels to an acceptable reference exposure level.

BAAQMD defines sensitive receptors as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and the chronically ill. These facilities include residences, school playgrounds, child-care centers, retirement homes, and convalescent homes.

Methodology

Air pollutant emissions generated by project construction and operation were estimated using the California Emissions Estimator Model (CalEEMod), version 2016.3.2.[2] CalEEMod uses project-specific information, including the project's land uses, square footages for different uses (e.g., apartments low-rise and general office), and location, to model a project's construction and operational emissions. The analysis reflects the construction and operation of the project as described in the project description. The following discussion is based on an air quality and greenhouse gas assessment prepared for the project by Illingworth & Rodkin, Inc. dated January 2020, included as Appendix A, and peer reviewed by Rincon Consultants. The modeling was based on the construction schedule provided in the project description.

Operational emissions modeled include mobile source emissions (i.e., vehicle emissions), energy emissions, and area source emissions. Mobile source emissions are generated by vehicle trips to and from the project site. The daily trip generation rates were sourced from the project Traffic Study (Appendix K).[3] Emissions attributed to energy use include natural gas consumption by appliances as well as for space and water heating. Area source emissions are generated by landscape maintenance equipment, consumer products and architectural coatings. The project would not have any natural gas infrastructure, but the modeling in Appendix A included natural gas inputs and assumed there would be natural gas hearths, thus providing a conservative assumption.

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

Project Consistency

The California Clean Air Act requires that air districts create a Clean Air Plan that describes how the jurisdiction will meet air quality standards. The most recently adopted air quality plan is the BAAQMD 2017 Plan. The 2017 Plan updates the most recent Bay Area plan, the 2010 Clean Air Plan, pursuant to air quality planning requirements defined in the California Health and Safety Code. To fulfill state ozone planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of ozone precursors—ROG and NO_X—and reduce transport of ozone and its precursors to neighboring air basins. The CAP builds upon and enhances the BAAQMD's efforts to reduce emissions of fine particulate matter and TACs. The 2017 Plan does not include control

[2] The air quality and GHG assessment was completed in January 2020 prior to the release of CalEEMod version 2020.4.0. The use of the older version of the model is acceptable and aligns with the modeling approach recommended by BAAQMD.
[3] Note that at the time of the analysis only daily trips were provided, thus Illingworth & Rodkin, Inc. calculated the trip generation rates using the total daily trips and proposed residential square footage. The rates calculated differ slightly from the daily trip generation rate provided in the Traffic Study, but the results would not change due to this difference.

measures that apply directly to individual development projects. Instead, the control strategy includes control measures related to stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super-GHG pollutants.

The 2017 CAP focuses on two paramount goals:

- Protect air quality and health at the regional and local scale by attaining all national and state air quality standards and eliminating disparities among Bay Area communities in cancer health risk from TACs
- Protect the climate by reducing Bay Area GHG emissions to 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050

Under BAAQMD's methodology, a determination of consistency with the 2017 Plan should demonstrate that a project:

- Supports the primary goals of the air quality plan
- Includes applicable control measures from the air quality plan
- Does not disrupt or hinder implementation of any air quality plan control measures

A project that would not support the 2017 Plan's goals would not be considered consistent with the 2017 Plan. On an individual project basis, consistency with BAAQMD quantitative thresholds is interpreted as demonstrating support for the clean air plan's goals. As discussed under criterion (b) below, the project would not exceed BAAQMD significance thresholds related to air quality emission), the project would not result in exceedances of BAAQMD thresholds for criteria air pollutants and thus would not conflict with the 2017 Plan's goal to attain air quality standards. The 2017 Clean Air Plan includes goals and measures to increase the use of electric vehicles, promote the use of on-site renewable energy, and encourage energy efficiency. The project includes features that are consistent with these goals and measures, including meeting California Green Building Standards, being a fully electrified development, and providing 45 spaces of bicycle parking. Therefore, the project would not conflict with or obstruct the implementation of an applicable air quality plan and the project would have a less than significant impact.

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units. Although these units would be designed differently than the project, a larger project would likewise be consistent with the 2017 Plan since emissions generated by the construction and operation of the maximum buildout scenario would similarly not exceed the BAAQMD thresholds (see Table 8 and Table 9), and developments under this scenario would need to incorporate sustainable project features in accordance with the latest California Green Building Standards as well as the Building Energy Efficiency Standards. Therefore, impacts would be less than significant.

b. Would the project 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?

The San Francisco Bay Area Air Basin is designated nonattainment for the NAAQS for ozone and $PM_{2.5}$ and the CAAQS for ozone, $PM_{2.5}$, and PM_{10}. The following subsections discuss emissions associated with construction and operation of the project.

Construction Emissions

Project construction would generate temporary air pollutant emissions associated with fugitive dust (PM_{10} and $PM_{2.5}$) and exhaust emissions from heavy construction equipment and construction vehicles in addition to ROG emissions that would be released during the drying phase of architectural coating. Table 6 summarizes the estimated annualized daily emissions of pollutants during project construction. As shown therein, construction-related emissions would not exceed BAAQMD thresholds. Therefore, project construction would not 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. Impacts would be less than significant.

Table 6 Construction Period Emissions

Construction Year	ROG	NO_x	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Emissions Per Year (tons)				
2022 (Phase 1)	0.18	1.62	0.08	0.07
2023 (Phase 1 & 2)	0.56	2.87	0.15	0.13
2024 (Phase 1 & 2)	0.61	2.35	0.12	0.11
2025 (Phase 2)	0.41	1.58	.07	0.06
2026 (Phase 2)	0.11	0.26	0.01	0.01
Annualized Daily Construction Emissions (pounds/day)				
2022 (202 construction workdays)	1.78	16.06	0.81	0.71
2023 (260 construction workdays)	4.28	22.06	1.14	1.01
2024 (262 construction workdays)	4.68	17.93	0.93	0.81
2025 (261 construction workdays)	3.10	12.10	0.54	0.49
2026 (95 construction workdays)	2.23	5.45	0.27	0.22
BAAQMD Thresholds	54	54	82	54
Threshold Exceeded?	**No**	**No**	**No**	**No**

lbs/day = pounds per day; ROG = reactive organic gases, NO_x = nitrogen oxides, PM_{10} = particulate matter 10 microns in diameter or less, $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

Notes: All emissions modeling was completed using CalEEMod and prepared by Illingworth and Rodkin, Inc. See Appendix A for modeling results.

Operational Emissions

Operation of the project would generate criteria air pollutant emissions associated with area sources (e.g., fireplaces, architectural coatings, consumer products, and landscaping equipment), energy sources (i.e., use of natural gas for space and water heating and cooking), and mobile sources (i.e., vehicle trips to and from the project site). Table 7 summarizes the project's annual and average daily emissions. Operational emissions account for natural gas infrastructure, which would not be included for the project. Thus, in actuality, emissions would be lower than estimated in Table 7 because the project would be an all-electric development. As shown therein, even with natural gas infrastructure, operational emissions would not exceed BAAQMD regional thresholds for criteria pollutants. Therefore, project operation would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment, and impacts would be less than significant.

Table 7 Operational Period Emissions

Emissions Source	ROG	NO_X	PM_{10}	$PM_{2.5}$
2026 Annual Emissions (tons/year)	0.85	0.37	0.52	0.15
BAAQMD Threshold (tons/year)	10	10	15	10
Threshold Exceeded?	**No**	**No**	**No**	**No**
2026 Average Daily Emissions (lbs/day)	4.66	2.02	2.83	0.81
BAAQMD Thresholds (lbs/day)	54	54	82	54
Threshold Exceeded?	**No**	**No**	**No**	**No**

lbs/day = pounds per day; ROG = reactive organic gases, NO_X = nitrogen oxides, PM_{10} = particulate matter 10 microns in diameter or less, $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

Notes: All emissions modeling was completed using CalEEMod and prepared by Illingworth and Rodkin, Inc. See Appendix A for modeling results.

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development including up to approximately 160 units.

The maximum buildout scenario was modeled using CalEEMod as 160 mid-rise apartment dwelling units, 2,154 square feet of general office building, and 185 parking lot spaces (Appendix A). The default construction schedule and equipment list were used since specific project details are not available at this time. Similar to the project a proposed, it was also assumed construction under the maximum buildout scenario would adhere to the BAAQMD's best construction practices to control fugitive dust emissions. Default assumptions for project operation (mobile, energy, and area sources) were used.

Table 8 and Table 9 show the modeled construction and operational emissions from the maximum buildout, respectively. The construction and operational criteria pollutant emissions would not exceed the BAAQMD thresholds Therefore, maximum buildout-related emissions would not result in

a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment, and impacts would be less than significant.

Table 8 Maximum Buildout Construction Period Emissions

Construction Year	ROG	NO_x	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Emissions Per Year (tons)				
Total Emissions	1.69	4.57	0.23	0.21
Annualized Daily Construction Emissions (pounds/day)				
Average Daily Emissions	10.59	28.57	1.43	1.29
BAAQMD Thresholds	54	54	82	54
Threshold Exceeded?	**No**	**No**	**No**	**No**

lbs/day = pounds per day; ROG = reactive organic gases, NO_X = nitrogen oxides, PM_{10} = particulate matter 10 microns in diameter or less, $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

Notes: All emissions modeling was completed using CalEEMod and prepared by Illingworth and Rodkin, Inc. See Appendix A for modeling results.

Table 9 Maximum Buildout Operational Period Emissions

Emissions Source	ROG	NO_X	PM_{10}	$PM_{2.5}$
2024 Annual Emissions (tons/year)	1.79	0.64	0.99	0.33
BAAQMD Threshold (tons/year)	10	10	15	10
Threshold Exceeded?	**No**	**No**	**No**	**No**
2026 Average Daily Emissions (lbs/day)	9.79	3.52	5.42	1.81
BAAQMD Thresholds (lbs/day)	54	54	82	54
Threshold Exceeded?	**No**	**No**	**No**	**No**

lbs/day = pounds per day; ROG = reactive organic gases, NO_X = nitrogen oxides, PM_{10} = particulate matter 10 microns in diameter or less, $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

Notes: All emissions modeling was completed using CalEEMod and prepared by Illingworth and Rodkin, Inc. See Appendix A for modeling results.

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

Certain population groups, such as children, the elderly, and people with health problems, are particularly sensitive to air pollution. Therefore, the majority of sensitive receptor locations are schools, hospitals, and residences. The closest sensitive receptors to the project site are single-family homes located approximately 1,100 feet south. The project also includes the siting of new sensitive receptors. Localized air quality impacts to sensitive receptors typically result from CO hotspots and TACs, which are discussed in the following subsections.

Carbon Monoxide Hotspots

A CO hotspot is a localized concentration of CO that is above a CO ambient air quality standard. Localized CO hotspots can occur at intersections with heavy peak hour traffic. Specifically, hotspots can be created at intersections where traffic levels are sufficiently high such that the local CO

concentration exceeds the federal one-hour standard of 35.0 ppm or the federal and state eight-hour standard of 9.0 ppm (CARB 2016).

BAAQMD recommends comparing project's attributes with the following screening criteria as a first step to evaluating whether the project would result in the generation of CO concentrations that would substantially contribute to an exceedance of the *Thresholds of Significance*. The project would result in a less than significant impact to localized CO concentrations if:

1. The project is consistent with an applicable congestion management program for designated roads or highways, regional transportation plan, and local congestion management agency plans
2. The project would not increase traffic volumes at affected intersections to more than 44, 000 vehicles per hour
3. the project traffic would not increase traffic volumes at the affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage).

The project would include 80 residential units and 2,154 square feet of office development. Based on the project Traffic Study, the residences would generate 564 trips and the office use would generate 35 trips for a total of 599 trips (Appendix K). The project trip generation is far below the screening thresholds listed above. Therefore, the impact of localized CO emissions would not be significant.

Toxic Air Contaminants

TACs are defined by California law as air pollutants that may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health. The following subsections discuss the project's potential to result in impacts related to TAC emissions during construction and operation.

Construction

Construction-related activities would result in temporary project-generated emissions of diesel particulate matter (DPM) exhaust emissions from off-road, heavy-duty diesel equipment for site preparation, grading, building construction, and other construction activities. DPM was identified as a TAC by CARB in 1998 (CARB 2021).

For assessing community risks and hazards, BAAQMD recommends a 1,000-footinfluence area around the project site boundary. No sensitive receptors were identified within 1,000 feet of the project site, and the closet sensitive receptors are approximately 1,100 south of the project site. Therefore, given the distance of receptors and temporary nature of construction, risks and hazards from construction activities would not expose sensitive receptors to substantial TAC concentrations. Impacts would be less than significant.

Operation

Sources of operational TACs include, but are not limited to, land uses such as freeways and high-volume roadways, truck distribution centers, ports, rail yards, refineries, chrome plating facilities, dry cleaners using perchloroethylene, and gasoline dispensing facilities. The project does not include construction of new gas stations, dry cleaners, highways, roadways, or other sources that could be considered new permitted or non-permitted source of TAC or $PM_{2.5}$ in proximity to receivers. In addition, the project would not introduce a new stationary source of emissions and the mobile

emissions generated from the project would be minimal and spread over a broad geographical area. Furthermore, there are no sensitive receptors within 1,000 feet of the project. Therefore, the operation of the project would not expose nearby sensitive receivers to substantial pollutant concentrations. Impacts would be less than significant.

HEALTH RISK ASSESSMENT OF TAC IMPACTS TO PROJECT RESIDENTS

A Health Risk Assessment (HRA) for the project site was prepared by Illingworth and Rodkin, Inc and peer reviewed by Rincon Consultants. The HRA analyzed the possible health effects associated with TAC emissions from Highway 101 stationary sources within 1,000 feet of the project site, and the nearby major streets and the Sonoma Marin Area Rail Transit (SMART) line (Appendix A).

U.S. 101

The HRA conducted site-specific air dispersion modeling to determine whether health risks to future residents from U.S. 101 exceed the BAAQMD health risk criteria for residences. BAAQMD has health risk criteria for cancer risk, non-cancer risk (i.e., chronic and acute), and annual average $PM_{2.5}$ concentration. Cancer risk is expressed as the maximum number of new cancer cases projected to occur in a population of one million people due to exposure to a cancer-causing substance. Typically, cancer risk is analyzed over a specific exposure duration, such as the average residency. Thirty years is the exposure duration scenario recommended by BAAQMD for residential receptors in the *Air Toxics NSR Program Health Risk Assessment Guidelines* (BAAQMD 2016). Potential acute health risks include severe symptoms that develop rapidly and lead quickly to a health issue due to exposure to a harmful substance, whereas chronic health risks include health crises, such as lung inflammation, immune suppression, and immune sensitization, which develop due to exposure to low levels of a harmful substance over a long period of time.

The HRA analyzed the primary source of TACs near the project site, which is diesel exhaust particulates from heavy duty traffic traveling on U.S. 101. In addition to diesel exhaust particulates from U.S. 101, this analysis also examined total organic compounds (TOG), running evaporative losses for TOG, $PM_{2.5}$, tire and brake wear, and fugitive road dust from $PM_{2.5}$ (Appendix A). The refined modeling accounted for Minimum Efficiency Reporting Value (MERV) 13 filters in the residential buildings. The modeled risks and hazards are reported in Table 10.

BAAQMD Permitting Stationary Sources

A screening-level health risk assessment in accordance with BAAQMD guidelines was conducted to identify major sources within 1,000 feet of the project site. One source was identified with the source being a gas dispensing facility. The screening risk and hazards for the source were adjusted for distance using the BAAQMD *Distance Adjustment Multiplier Tool for Gasoline Dispensing Facilities*. The screened risks and hazards are reported in Table 10.

SUMMARY OF INDIVIDUAL AND CUMULATIVE TAC IMPACTS

The maximum cancer risks were found to be below the BAAQMD cancer risk of 10 per million. Potential acute and chronic health risks for on-site residential units were determined to be below the BAAQMD hazard index of 1.0 and $PM_{2.5}$ would be below the BAAQMD threshold of 0.3 µg/m3. Furthermore, the aggregate total of all sources, including nearby major streets, rail, and stationary sources, would not exceed BAAQMD cumulative thresholds. Therefore, impacts would be less than significant.

Table 10 Individual and Cumulative Cancer Risk and Particulate Matter Concentrations

Source ID[1]	Description	Distance to Project Site (feet)	Cancer Risk (per million)	$PM_{2.5}$ Concentration (µg/m3)	Increased Non-Cancer Risk (Chronic Hazard Index)
N/A	U.S. 101 – Highway[2]	100	5	0.15	<0.01
N/A	SMART Train Line – Rail Line	250	3	<0.01	<0.01
109028	Cagwin and Dorward – Gas Station	900	<1	–	–
Combined Total			<9	<0.16	<0.02
BAAQMD Individual Source Screening Threshold			10	0.3	1
Individual Source Threshold Exceeded?			No	No	No
BAAQMD Cumulative Screening Threshold			100	0.8	10
Cumulative Threshold Exceeded?			No	No	No

[1] Source IDs presented here are those used in the Stationary Source Screening Analysis Tool.

[2] Includes MERV13 filtration in the residential building

N/A: not applicable; data was not provided

Source: Appendix A, Health Risk Screening Assessment

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development including up to approximately 160 units. Construction of the 160 dwelling unit residential development would not expose sensitive receptors to substantial pollutant concentrations since the closest sensitive receptors for TACs are located over 1,100 feet south of the project site. The housing development would also not be a source of TACs nor would it include a permitted source of TACs. In addition, since the project site boundaries would not change with the maximum buildout the individual and cumulative health impacts from exiting, off-site TAC sources would remain the same and health risks would be below the BAAQMD thresholds. Thus, the construction and operation of the housing development would not expose on-site sensitive receptors to substantial cancerous or non-cancerous risks. Impacts would be less than significant.

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

During construction activities, heavy equipment and vehicles would emit odors associated with vehicle and engine exhaust and during idling. However, these odors would be intermittent and temporary and would cease upon completion, and odors disperse with distance. Overall, project construction would not generate other emissions, such as those leading to odors, affecting a substantial number of people. Construction-related impacts would be less than significant.

Table 3-3 in the BAAQMD 2017 *CEQA Air Quality Guidelines* provides screening distances for land uses that have the potential to generate substantial odor complaints. The uses in the table include wastewater treatment plants, landfills or transfer stations, refineries, composting facilities, confined animal facilities, food manufacturing, smelting plants, and chemical plants (BAAQMD 2017b). Multi-

family residential development and office uses are not included in this list, and operation of the project would not generate other emissions, such as those leading to odors, that would affect a substantial number of people. No operational impacts would occur.

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development including up to approximately 160 units. No land uses that have been identified by BAAQMD as potential sources of objectionable odors would be included in the housing development. Construction of the maximum buildout scenario would still result in temporary and intermittent odors from heavy equipment and vehicles. Impacts related to potential odors would be less than significant.

This page intentionally left blank.

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, or 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?	☐	☐	☐	■

Methods

A Biological Resources Assessment (BRA) was prepared for the project on May 2021 by WRA, Inc. and a Jurisdictional Delineation Report was prepared by WRA, Inc. on October 2021, both peer reviewed by Rincon Consultants (Appendix B). The BRA mapped vegetation, aquatic communities, and unvegetated land; documented plant and wildlife species present; and evaluated habitats on-site for the potential to support special-status species. A targeted protocol-level survey was conducted on April 19, 2019. The results and project impacts summarized below are based on findings from the BRA.

a. Would the project 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?

The project site is a vacant parcel covered in non-native annual grasslands with patches of purple needlegrass (*Stipa pulchra*) and coast oak woodlands at the southeastern boundary. Purple needlegrass is considered a sensitive native community and discussed further under Item b. The vegetation on the site also provides potential habitat for nesting bird species. The project site is not suitable habitat for species listed under the Federal Endangered Species Act or California Endangered Species Act. There is medium to high potential for some special status species to occur on-site. During the protocol survey in April 2019, no special status plants were observed, and during a site visit in May 2018 no special status wildlife species were observed.

Special Status Plants

A review of resource agency databases and lists for known special status plant species occurrences in the nine United States Geological Survey (USGS) quadrangles containing and surrounding the project site identified 28 special status plant species (Appendix B). Based on the disturbed nature of the site and each species' specific habitat requirements, 27 of these species were eliminated from the evaluation. The project site contains potentially suitable habitat for one special status plant species, Fragrant fritillary (*Fritillaria liliacea*), which was determined to have a high potential to occur on the project site. This species typically occurs in open, grassy areas in valley and foothill grassland, coastal scrub, and coastal prairie habitat at elevations ranging from 10 to 1,345 feet. Fragrant fritillary has a California Rare Plant Rank (CRPR) of 1B.2, which indicates that the plant is rate, threatened, or endangered in California and elsewhere and it is moderately threatened in California with a 20 to 80 percent chance of being threatened (California Native Plant Society 2021). A protocol-level rare plant survey of the site was conducted on April 19, 2019. The fragrant fritillary was not observed on-site during the survey. Impacts to CRPR 1B.1 or 1B.2 species would only be considered significant under CEQA if the loss of individuals on the project site represented a population-level impact that resulted in a loss of or risk to the entire regional population. Since the Fragrant fritillary was not detected during the rare plant survey and no other special-status plants have a moderate or high potential to occur, impacts to special-status plant species would be less than significant.

Special Status Wildlife and Nesting Birds

A review of resource agency databases for known special status wildlife species occurrences in the nine USGS quadrangles containing and surrounding the project site identified potential for 21 special status wildlife species (Appendix B). Based on the disturbed nature of the site and species-

specific habitat requirements, 15 of these species could be eliminated from the evaluation. Six special status species were identified to have moderate potential to be present on the project site. The species include pallid bat (*Antrozous pallidus*), fringed myotis (*Myotis thysanodes*), hoary bat (*Lasirus cinerus*), burrowing owl (*Athene cunicularia*), white-tailed kite (*Elanus leucurus*), and grasshopper sparrow (*Ammodramus savannarum*). Project construction activities could impact these species.

During a site visit on May 29, 2018, no suitable maternity or hibernation roost habitat were found for the pallid bat, fringed myotis, nor the hoary bat. Common bats may still roost within the project site, but the roosts would not be affected since no trees would be removed. Given the limited amount of suitable habitat and the fact that no tree removal would occur during construction, temporary noise generated during construction would not significantly impact special status bats species.

The project site contains suitable habitat for burrowing owls and nesting bird species (white-tailed kite and grasshopper sparrow). Vegetation removal and ground disturbance during construction has the potential to damage suitable burrows, make burrows inaccessible, and/or harm burrowing owl individuals. Additionally, construction activities, if occurring during nesting season (February 1st through August 31st), have the potential to impact nests of the native nesting birds or lead to the abandonment of active nests by causing auditory, vibratory and/or visual disturbance. Therefore, the project would have potentially significant impacts related to burrowing owls and nesting birds. Implementation of Mitigation Measure BIO-1 would be required to reduce impacts to burrowing owls and implementation of Mitigation Measure BIO-2 would reduce significant impacts for nesting birds. Impacts on burrowing owls and nesting birds would be less than significant with mitigation.

Mitigation Measures

The following mitigation measures would be required to avoid or reduce the project's potentially significant impacts to nesting birds and burrowing owls.

BIO-1 Burrowing Owl Mitigation

A pre-construction survey shall be performed in accordance with the Staff Report on Burrowing Owl Mitigation (CDFG 2012) within 14 days of initial ground disturbance associated with the project. The pre-construction survey shall include suitable habitat within the project site and areas up to 656 feet (200 meters) from the project site. The pre-construction survey shall be conducted prior to the start of staging and construction, regardless of the time of year. If burrowing owls are detected within the project site proposed limits of grade (i.e., where ground-disturbing activities would occur) during the non-nesting season and the burrow cannot be avoided, a burrowing owl exclusion plan shall be prepared and implemented. Mitigation may be required by the CDFW as part of the exclusion plan. If burrowing owl is detected within the project site, but outside of the proposed limits of grade during the non-nesting season, vehicular traffic, construction noise and visual disturbance will be minimized to the extent feasible to minimize the potential for flushing overwintering owls from protective burrows. Occupied burrows will not be disturbed during the nesting season (February 1 through August 31) unless, after consultation with the CDFW, a qualified biologist verifies that either: (1) burrowing owls have not begun egglaying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and capable of independent survival.

BIO-2 Nesting Bird Surveys and Avoidance

Initiation of construction activities during the avian nesting season (February 1 through August 31) shall be avoided to the extent feasible. If the commencement of construction activities begins during the nesting season, pre-construction nesting bird surveys shall be conducted within 14 days of initial ground disturbance or vegetation removal to avoid disturbance to active nests, eggs, and/or young of nesting birds. Surveys can be used to detect the nests of special-status, as well as non-special-status birds. Surveys will occur throughout the limits of grade portion of the project site and the surrounding 500 feet. If any active avian nests are found, an exclusion zone where no construction would be allowed will be established around any active nests until a qualified biologist has determined that all young have fledged and are independent of the nest. Suggested exclusion zone distances differ depending on species, location, and placement of nest, and will be at the discretion of the biologist. These surveys will remain valid as long as construction activity is consistently occurring in a given area and will be completed again if there is a lapse in construction activities of more than 14 consecutive days during the breeding bird season.

Implementation of Mitigation Measure BIO-1 and BIO-2 would reduce impacts to special status species to a less than significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

b. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

CDFW provides protection for sensitive vegetation and aquatic natural communities. Any impacts to CDFW defined sensitive natural communities or communities identified in local or regional plans must be evaluated. Purple needlegrass (*Stipa pulchra*), a sensitive natural community, occurs in patches on the east and northeast facing hillslopes of the project site. The project would result in removal of 1.17 acres of purple needlegrass grassland. However, with implementation of Mitigation Measure BIO-3, the project design would include hydroseeding of approximately 1.17 acres of purple needlegrass grassland in the western section of the project site that would remain undeveloped, to offset impacts to existing purple needlegrass on the project site. The proposed purple needlegrass community would replace purple needlegrass at a 1:1 ratio and result in a more contiguous habitat in the western portion of the project site. To ensure new and existing purple needlegrass is monitored, maintained, and protected, a maintenance and monitoring program would be adopted as part of the project. Therefore, sensitive natural community impacts would be less than significant with mitigation incorporated.

Mitigation Measures

BIO-3 Hydroseeding of Purple Needlegrass Grassland

The project shall include the hydroseeding of approximately 1.17 acres of purple needlegrass grassland (*Stipa pulchra*) to replace the 1.17 acres of purple needlegrass that would be removed by the project. Replacement of purple needlegrass grassland shall occur at a 1:1 ratio and western portion of the site where hydroseeding would occur shall remain undeveloped. A maintenance and monitoring program shall be prepared by a qualified biologist to ensure that new and existing purples needlegrass is monitored, maintained, and protected.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

c. Would the project 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?

Wetlands are sensitive environmental resources that are protected at federal, state, and local levels. The State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCB) issue permits for the discharge of fill material into surface waters. As discussed in the formal wetland delineation conducted for the project in May 2018 by WRA Environmental Consultants, the project site contains one seasonal wetland, two ephemeral streams, and three manmade drainage ditches (Appendix B). Construction of the project would result in filling and grading of one ephemeral stream and two manmade drainage ditches, which would result in approximately 0.07 acre of wetland impacts. Mitigation Measure BIO-4 therefore requires construction of an 856-linear foot stream on the western portion of the project site that would tie into the off-site portion of the existing ephemeral stream. The stream would convey flows directly into a culvert located south of the Novato Days Inn and improve the on-site hydrologic conditions compared to the impacted existing ephemeral stream, which dissipates after 151 linear feet and results in sheet flow across the site. The stream would mimic existing stream conditions and connect to a drainage ditch at an angle to avoid overbank flow and erosion. A maintenance and monitoring program would also be required.

The project applicant has applied for a Waste Discharge Requirements permit from the RWQCB and a Section 1602 Lake and Streambed Alteration Agreement from CDFW. An application for a jurisdictional determination to disclaim all aquatic features on the project site from the CWA regulation under the Navigable Waters Protection Rule was submitted in October 2020. If the aquatic features are not exempt, then the project applicant would also be required to apply for a Section 404 nationwide permit from the United States Army Corps of Engineers (Corps) and a Section 401 quality certification from the RWQCB. An approved jurisdiction determination was completed by the Corps on February 20, 2021. It was concluded that the seasonal wetland, the two ephemeral streams, and two of the three manmade drainage ditches do not qualify as waters of the United States. The northernmost drainage ditch would be regulated by the Corps but the ditch would be avoided by the project (Appendix B). Therefore, with the construction of the new linear stream under Mitigation Measure BIO-4 and obtainment of the applicable aquatic resource permits, the impacts to aquatic resources would be less than significant.

Mitigation Measures

BIO-4 Stream Channel

The project shall include the construction of an 856-linear foot stream on the southwestern portion of the project site that shall tie into the off-site portion of the existing ephemeral stream. The stream shall convey flows directly into a culvert located south of the Novato Days Inn. The proposed stream shall mimic existing stream conditions and connect to a drainage ditch at an angle to avoid overbank flow and erosion. There must be at a minimum a 30-footbuffer between the stream channel and the residential buildings. The stream design shall be approved by the City of Novato Department of public works and constructed prior to grading and excavation for the residential project. The project proponent is responsible for all costs associated with the City's review of plans, reports, and/or monitoring associated with this mitigation measure, including costs associated with a City-hired consultant for peer review, if necessary.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

d. Would the project 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?

Wildlife movement includes migration (i.e., usually one way per season), inter-population movement (i.e., long-term genetic flow) and small travel pathways (i.e., daily movement corridors within an animal's territory). While small travel pathways usually facilitate movement for daily home range activities such as foraging or escape from predators, they also provide connection between outlying populations and the main corridor, permitting an increase in gene flow among populations. Redwood Boulevard and Highway 101 border the project site to the east and Buck Center Drive borders the project to the south. Undeveloped grassland and woodland border the project site to the west and north. The surrounding roadways act as barriers to movement for terrestrial species, thus eliminating connectivity between blocks of core habitat and constraining wildlife movement in the immediate vicinity of the project site. Furthermore, the project is not located within a designated wildlife corridor (Appendix B). Therefore, the impacts on the movement of native resident or migratory species would be less than significant.

LESS THAN SIGNIFICANT IMPACT

e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

General Plan 2035 and the Novato Municipal Code contain policies, development standards, and permitting procedures applicable to sites containing wetlands, waterways and riparian habitat, hillsides, and woodland resources. Applicable ordinances are as follows: City of Novato Wetland Protection Ordinance, City of Novato Waterways and Riparian Protection Ordinance, and City of Novato Woodland and Tree Preservation Ordinance.

The project site contains one seasonal wetland that would be avoided by the project. Additionally, the wetland was determined to be exempt from regulation under the CWA per the February 2021 approved jurisdiction determination., which disqualifies the wetland under the City's definition. The City defines wetlands as any wetland delineated by the Corps under provision of the CWA. Therefore, the project would not conflict with the City of Novato Wetland Protection Ordinance. Novato defines a Stream Protection Zone as part of the City of Novato Waterways and Riparian Protection Ordinance. The project site is located outside the boundaries of an area that requires a Stream Protection Zone as shown in 1996 General Plan EN Map 1 (City of Novato 1996).[4] Thus, the project would not conflict with the City of Novato Waterways and Riparian Protection Ordinance. Lastly, the project would not involve removal or trimming of trees and the City of Novato Woodland and Tree Preservation Ordinance would not apply to the project. Therefore, the project would not conflict with local policies and ordinances. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

[4] Consistent with the City of Novato Municipal Code Section 19.35.020, the EN Map 1 from the 1996 General Plan is used to identify the steam protection zone.

f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The project site is not located within the boundaries of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. As such, the project would not conflict with the provisions of an applicable plan, and no impact would occur.

NO IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not be developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The remaining five acres would not be developed due to the sloped topography of the site, existing biological communities on site, including the purple needlegrass grassland, the three manmade drainage ditches, the two ephemeral streams, and the seasonal wetland. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units. Construction of a 160-unit housing development would not be significantly different from the project as proposed in terms of area of disturbance, and would therefore have generally similar impacts to biological resources. Assuming that biological conditions on the site would not be significantly different if such a project were proposed, the same mitigation measures would be required for an alternative project and impacts to biological resources under this alternative would be generally the same as for the proposed project.

This page intentionally left blank.

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?	☐	■	☐	☐

This section provides an analysis of the project's impacts on cultural resources, including historical and archaeological resources, as well as human remains, and is based on the cultural resource study attached as Appendix C.

CEQA requires a lead agency determine whether a project may have a significant effect on historical resources (Public Resources Code [PRC] Section 21084.1) and tribal cultural resources (PRC Section 21074 [a][1][A]-[B]). A historical resource is a resource listed in, or determined to be eligible for listing, in the California Register of Historical Resources (CRHR), a resource included in a local register of historical resources, or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant (*CEQA Guidelines* Section 15064.5[a][1-3]).

A resource shall be considered historically significant if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
2. Is associated with the lives of persons important in our past
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values
4. Has yielded, or may be likely to yield, information important in prehistory or history

In addition, if it can be demonstrated that a project would cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC Section 21083.2[a-b]).

PRC Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

A Cultural Resources Study was competed for the project by LSA in January 2021 and peer reviewed by Rincon Consultants. The study includes the results of a California Historical Resource Information System (CHRIS) records search, a historic-period map review, a cultural resources geoarchaeological sensitivity assessment, and a pedestrian field survey.

The cultural resources records search was conducted on October 28, 2020 at the Northwest Information Center (NWIC) located at Sonoma State University. The search was performed to identify previously conducted cultural resources studies, as well as previously recorded cultural resources within the project sites and a 0.25-mile radius. The CHRIS search included a review of the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), the Office of Historic Preservation Historic Properties Directory, the California Inventory of Historic Resources, and the Archaeological Determinations of Eligibility list. The NWIC records search identified that four previously conducted cultural resources studies have been performed within a 0.25-mile radius of the project site, all within the current project site (Appendix C). Additionally, four cultural resources are recorded within a 0.25-mile radius of the project site with two within 1,000 feet of the site but no resources were identified onsite. The historic map and aerial photography identified structures in the northeast corner that have since been removed and are no longer present. The geoarchaeological sensitivity assessment, which was part of geoarchaeological study for U.S. 101, concluded that based on Holocene-age alluvial fan deposits and the sites proximity to fresh water that there is potential for buried archaeological resources onsite. Lastly, a pedestrian field survey was conducted on October 9, 2020 with no observations or identification of cultural resources.

The City of Novato initiated consultation with the Native American Heritage Commission (NAHC) on February 4, 2021. A Sacred Lands File (SLF) search was completed by the NAHC with positive results for the project vicinity, who then recommended contacting the Federated Indians of Graton Rancheria (FIGR) and the Guidiville Indian Rancheria (GIR) for additional details. The City of Novato provided project details to the FIGR and GIR on March 2, 2021 with no response from either tribe. The presence of any Native American resources within the project site was not indicated.

a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Based on the results of the cultural resources records search, Native American scoping, and pedestrian field survey, no cultural resources were identified within the project site. Although the Sacred Lands File search returned with positive results, the FIGR and GIR did not indicate the presence of Native American resources within the project site. However, the unanticipated discovery of archaeological resources, that may also be considered historical resources, during construction of the project remains a possibility and impacts to unanticipated resources are potentially significant. The following mitigation measures would reduce archaeological impacts to less than significant levels by requiring halting construction in the vicinity of any cultural resources found during construction and requiring evaluation and treatment of resources determined to be significant.

Mitigation Measure

CUL-1 Archaeological Monitoring

A qualified archaeological monitor shall be retained by the Project Applicant to observe all project-related ground disturbing activities. Ground disturbing activities include, but are not limited to, asphalt removal, hand excavation, clearing, grubbing, and removing and/or recompacting unconsolidated soils near the ground surface. Archaeological monitoring shall be performed under the direction of an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for archaeology (National Park Service 1983). Monitoring shall occur within limits of the grading and project footprint and only where alluvial fan deposits may be buried.

If suspected archaeological resources are encountered at any point during project construction on either project site, work within a minimum of 60 feet of the suspected resource must halt and the find evaluated for listing in the CRHR. If a resource is determined to be a tribal cultural resource, then the provisions of Mitigation Measures TCR-1 shall control. The 60-foot radius may be reduced or expanded at the discretion of the qualified archaeologist if the potential resource is not determined to be a tribal cultural resource subject to Mitigation Measures TCR-1. Archaeological monitoring may be reduced to spot-checking or eliminated at the discretion of the monitor, in consultation with the qualified archaeologist, Native American monitor required pursuant to TCR-1, and lead agency, as warranted by conditions such as encountering bedrock, sediments being excavated are fill, or negative findings during the first 60 percent of rough grading. If monitoring is reduced to spot-checking, spot-checking shall occur when ground-disturbance moves to a new location within the project sites and when ground disturbance will extend to depths not previously reached (unless those depths are within bedrock).

CUL-2 Unanticipated Discovery of Archaeological Resources

If archaeological resources are encountered during ground-disturbing activities, work within a minimum of 60 feet shall be halted and an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for archaeology (National Park Service 1983) shall be contacted immediately to evaluate the find. If necessary, the evaluation may require preparation of a treatment plan and archaeological testing for CRHR eligibility. If the discovery proves to be eligible for the CRHR and cannot be avoided by the project, additional work, such as data and/or heritage

recovery excavation, may be required. Treatment of the resource(s) shall be determined on a case-by-case basis based on the nature of the find between the qualified archaeologist, and lead agency. If a resource is determined to be a tribal cultural resource, then the provisions of Mitigation Measures TCR-1 shall control.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

c. Would the project disturb any human remains, including those interred outside of formal cemeteries?

No human remains have been identified within the project sites; however, the discovery of human remains is always a possibility during ground disturbing activities. If human remains are found, the State of California Health and Safety Code Section 7050.5 states no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be prehistoric, the Coroner would notify the Native American Heritage Commission, which would determine and notify a most likely descendant (MLD). The MLD has 48 hours from being granted site access to make recommendations for the disposition of the remains. If the MLD does not make recommendations within 48 hours, the landowner shall reinter the remains in an area of the property secure from subsequent disturbance. With adherence to State law and incorporation of Mitigation Measure CUL-1 and CUL-2, impacts related to the discovery of human remains would be less than significant.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not be developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units. Construction of a 160-unit housing development would not be significantly different from the project as proposed in terms of area and depth of disturbance and would therefore have similar impacts to cultural resources. Assuming that conditions on the site would not be significantly different if such a project were proposed, the same mitigation measures would be required and impacts to cultural resources under this alternative would be generally the same as the project.

6 Energy

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Result in a 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?	☐	☐	■	☐

As a state, California is one of the lowest per capita energy users in the United States, ranked 48th in the nation, due to its energy efficiency programs and mild climate (United States Energy Information Administration 2021). Electricity and natural gas are primarily consumed by the built environment for lighting, appliances, heating and cooling systems, fireplaces, and other uses such as industrial processes in addition to being consumed by alternative fuel vehicles. Most of California's electricity is generated in state with approximately 28 percent imported from the Northwest and Southwest in 2019. However, the state relies on out-of-state natural gas imports for nearly 90 percent of its supply (California Energy Commission [CEC] 2021a and 2021b). In addition, approximately 32 percent of California's electricity supply comes from renewable energy sources, such as wind, solar photovoltaic, geothermal, and biomass (CEC 2021a). In 2018, Senate Bill 100 accelerated the state's Renewable Portfolio Standards Program, codified in the Public Utilities Act, by requiring electricity providers to increase procurement from eligible renewable energy and zero-carbon resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045. Electricity and natural gas service would be provided to the project by Pacific Gas and Electric (PG&E). Marin Clean Energy (MCE) is another electricity provider in the City of Novato and would be available for future residents to join. MCE is a community choice aggregation program in Northern California that provides consumers to the choice to utilize electricity that is sourced from a higher percentage of eligible renewables. Table 11 summarizes the electricity and natural gas consumption for Marin County, in which the project site would be located, and for PG&E, as compared to statewide consumption.

Table 11 2019 Electricity and Natural Gas Consumption

Energy Type	Marin County	PG&E	California	Proportion of PG&E Consumption	Proportion of Statewide Consumption[1]
Electricity (GWh)	1,355	78,071	279,402	1.7%	0.5%
Natural Gas (millions of therms)	70	4,942	13,158	1.4%	0.5%

GWh = gigawatt-hours

[1] For reference, the population of Marin County (257,774 persons) is approximately 0.7 percent of the population of California (39,466,855 persons) (California Department of Finance 2021).

Source: CEC 2021c

Petroleum fuels are primarily consumed by on-road and off-road equipment in addition to some industrial processes, with California being one of the top producers of petroleum in the nation (CEC 2021d). Gasoline, which is used by light-duty cars, pickup trucks, and sport utility vehicles, is the most used transportation fuel in California with 15.4 billion gallons sold in 2019 (CEC 2020). Diesel, which is used primarily by heavy duty-trucks, delivery vehicles, buses, trains, ships, boats and barges, farm equipment, and heavy-duty construction and military vehicles, is the second most used fuel in California with 1.8 billion gallons sold in 2019 (CEC 2020). Table 12 summarizes the petroleum fuel consumption for Marin County, in which the project site would be located, as compared to statewide consumption.

Table 12 2019 Annual Gasoline and Diesel Consumption

Fuel Type	Marin County (millions of gallons)	California (millions of gallons)	Proportion of Statewide Consumption[1]
Gasoline	96	15,365	0.6%
Diesel	4	1,756	0.2%

[1] For reference, the population of Marin County (257,774 persons) is approximately 0.7 percent of the population of California (39,466,855 persons) (California Department of Finance 2021).

Source: CEC 2020

Energy consumption is directly related to environmental quality in that the consumption of nonrenewable energy resources releases criteria air pollutant and greenhouse gas (GHG) emissions into the atmosphere. The environmental impacts of air pollutant and GHG emissions associated with the project's energy consumption are discussed in detail in Section 3, *Air Quality*, and Section 8, *Greenhouse Gas Emissions*, respectively.

a. Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

The project would use nonrenewable and renewable energy resources for construction and operation of the project. The anticipated use of these resources is detailed in the following subsections. Applicant-provided information, the CalEEMod outputs for the air pollutant and GHG emissions modeling (Appendix A) were used to estimate energy consumption associated with the project.

Construction Energy Demand

The project would require site preparation and grading, including hauling material off-site; pavement and asphalt installation; building construction; architectural coating; and landscaping and hardscaping. During project construction, energy would be consumed in the form of petroleum-based fuels used to power off-road construction vehicles and equipment on the project site, construction worker travel to and from the project site, and vehicles used to deliver materials to the site. As shown in Table 13, project construction would require approximately 29,874 gallons of gasoline and approximately 221,130 gallons of diesel fuel.

Table 13 Estimated Fuel Consumption during Construction

	Fuel Consumption (gallons)	
Source	**Gasoline**	**Diesel**
Construction Equipment & Hauling Trips	N/A	221,130
Construction Worker Vehicle Trips	29,874	N/A

N/A = not applicable

See Appendix D for energy calculation sheets.

Energy use during construction would be temporary in nature, and construction equipment used would be typical of similar-sized construction projects in the region. In addition, construction contractors would be required to comply with the provisions of California Code of Regulations Title 13 Sections 2449 and 2485, which prohibit diesel-fueled commercial motor vehicles and off-road diesel vehicles from idling for more than five minutes and would minimize unnecessary fuel consumption. Construction equipment would be subject to the U.S. EPA Construction Equipment Fuel Efficiency Standard, which would also minimize inefficient, wasteful, or unnecessary fuel consumption. Furthermore, per applicable regulatory requirements such as 2019 CALGreen, the project would comply with construction waste management practices to divert a minimum of 65 percent of construction debris. These practices would result in efficient use of energy necessary to construct the project. In the interest of cost-efficiency, construction contractors also would not utilize fuel in a manner that is wasteful or unnecessary. Overall, project construction would be temporary and typical of similar types of projects. Therefore, the project would not involve the inefficient, wasteful, and unnecessary use of energy during construction, and the construction-phase impact related to energy consumption would be less than significant.

Operational Energy Demand

Operation of the project would contribute to regional energy demand by consuming electricity, and gasoline and diesel fuels. The proposed development would be 100 percent electric and not use natural gas. Electricity would be used for heating and cooling systems, lighting, appliances, and water and wastewater conveyance, among other purposes. Gasoline and diesel consumption would be associated with vehicle trips generated by residents and employees. Note that the CalEEMod output in Appendix A assumed natural gas usage in the model. Therefore, the natural gas consumption in the CalEEMod output was converted into electricity consumption to account for the increased electricity use. Table 14 summarizes estimated operational energy consumption for the project. As shown therein, project operation would require approximately 59,719 gallons of gasoline and 10,294 gallons of diesel for transportation fuels, and 0.88 GWh of electricity. Vehicle trips

associated with future residents and employees would represent the greatest operational use of energy associated with the project.

Table 14 Estimated Project Annual Operational Energy Consumption

Source	Energy Consumption[1]	
Transportation Fuels		
Gasoline	59,719 gallons	6,556 MMBtu
Diesel	10,294 gallons	1,312 MMBtu
Electricity	0.88 GWh	3,018 MMBtu

MMBtu = million metric British thermal units; GWh = gigawatt-hours

[1] Energy consumption is converted to MMBtu for each source

See Appendix D for energy calculation sheets and Appendix A for CalEEMod output results for electricity usage.

The project would be required to comply with all standards set in the latest iteration of the California Building Standards Code (California Code of Regulations Title 24), which would minimize the wasteful, inefficient, or unnecessary consumption of energy resources by the built environment during operation. California's CALGreen standards (California Code of Regulations Title 24, Part 11) require implementation of energy-efficient light fixtures and building materials into the design of new construction projects. Furthermore, the 2019 Building Energy Efficiency Standards (California Code of Regulations Title 24, Part 6) require newly constructed buildings to meet energy performance standards set by the CEC. These standards are specifically crafted for new buildings to result in energy efficient performance so that the buildings do not result in wasteful, inefficient, or unnecessary consumption of energy. In addition, per CALGreen, all plumbing fixtures used for the project would be high-efficiency fixtures, which would minimize the potential the inefficient or wasteful consumption of energy related to water and wastewater.

Furthermore, the project would increase housing density in proximity to the Novato San Marin SMART station (1 mile south), which would facilitate the use of transit and alternative transportation modes such as walking and biking. Therefore, project operation would not result in potentially significant environmental effects due to the wasteful, inefficient, or unnecessary consumption of energy. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not be developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units. As shown in Table 15 and Table 16, the construction and operational fuel consumption would be not be significantly different from the project as proposed. The alternative project would also be required to adhere to the same state regulations for construction and energy efficiency standards as the proposed project for new developments. Therefore, the alternative project would not result in potentially significant environmental effects due to the wasteful, inefficient, or unnecessary consumption of energy during construction or operation. Impacts would be less than significant.

Table 15 Maximum Buildout Estimated Fuel Consumption during Construction

Source	Fuel Consumption (gallons)	
	Gasoline	Diesel
Construction Equipment & Hauling Trips	N/A	85,861
Construction Worker Vehicle Trips	19,166	N/A

N/A = not applicable

See Appendix [X] for energy calculation sheets.

Table 16 Maximum Buildout Estimated Annual Operational Energy Consumption

Source	Energy Consumption[1]	
Transportation Fuels		
Gasoline	106,928 gallons	11,739 MMBtu
Diesel	18,310 gallons	2,334 MMBtu
Electricity	0.75 GWh	2,573 MMBtu
Natural Gas	15,472 U.S. Therms	1,439 MMBTU

MMBtu = million metric British thermal units; GWh = gigawatt-hours

[1] Energy consumption is converted to MMBtu for each source

See Appendix D for energy calculation sheets and Appendix A for CalEEMod output results for electricity and natural gas usage.

b. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Table 17 lists applicable Novato Climate Change Action Plan Greenhouse Gas Reduction Measures that are included as Appendix E to the City's General Plan 2035 energy efficiency goals and policies and summarizes the project's compliance with these policies. As shown in Table 17, the project would be compliant with applicable energy efficiency goals and policies from the Novato Climate Change Action Plan (included as Appendix E to the City's General Plan). Therefore, potential impacts associated with renewable energy and energy efficiency would be less than significant.

Table 17 Project Compliance with Energy Efficiency Goals and Policies

Energy Efficiency Goal or Policy	Project Consistency
RM 4: *Energy Efficient Programs (Community)*. Continue and expand residential and commercial energy efficiency programs.	**Consistent.** The project would be served by PG&E and residential developments would include LED lighting. The project would not utilize natural gas as a source of energy and would be an all-electric development.
RM 6: *Clean Electricity.* Encourage residences and businesses to switch to GHG-free electricity and encourage MCE Clean Energy to reach its goal to provide 100 percent GHG-free by 2025.	**Consistent.** The project would utilize electricity provided by PG&E, which is subject to requirements per SB 100 and required to procure more electricity from renewable energy sources over time. MCE is also available and could be opted into.

Energy Efficiency Goal or Policy	Project Consistency
RM 9. *Renewable Energy*: Identify and remove barriers to small-scale, distributed renewable energy production within the community. This can be accomplished through: 1) adoption of incentives, such as permit streamlining and fee waivers, as feasible; 2) amendments to development codes, design guidelines, and zoning ordinances, as necessary; 3) installation of solar panels on carports and over parking areas on municipal facilities, commercial projects, and new large-scale residential developments, and; 4) implementation of Property Assessed Clean Energy (PACE) financing programs for residential and commercial projects	**Consistent.** The project would include rooftop solar panels with the goal to offset approximately 75 percent of the energy consumption.
RM 12: *Urban Forest.* Increase tree cover and increase shade of structures and other improvements within the City.	**Consistent.** The project would not remove existing trees and proposes to plant 107 new trees. The new trees would be planted along the new internal pathways, by the residential buildings, and in the outdoor common space areas (dog park and play areas).
RM 17: *Low-Emissions Vehicle Infrastructure* Improve infrastructure for low emission vehicles.	**Consistent**. The project would provide a total of six EV parking spaces onsite.
RM 21. *Affordable Housing*. Reduce community vehicles miles traveled through development of affordable housing for lower-income households.	**Consistent.** The project is a 100 percent affordable housing project that would provide residences for lower-income households. The project is located in proximity to public transit options and approximately two miles north of downtown Novato. The Novato San Marin SMART station is approximately 1 mile south of the project. The Marin Transit Route 49 bus service and Golden gate Transit Route 54 commuter bus route both provide services from this station. Compared to the office land use assumed in the General Plan EIR, this residential development would generate fewer trips.
RM 22: *Pedestrian Infrastructure.* Promote walking through design standards and amenities that concentrate uses, reduce the need for vehicular travel, and enhance the pedestrian experience.	**Consistent.** Approximately 45 bike parking spaces would be provided for residences and office employees. There would also be a dog park, trails and pathways, community garden, and playgrounds onsite for resident use. Sidewalks would be provided along the private roadway loops proposed in the project, allowing residents to walk within the development.
RM 23-24: *Bicycle Infrastructure (Commercial and Residential).* Increase the number of Novato workers who commute by bicycle. Increase the number of multi-family residents who bike to work and for other utilitarian purposes.	**Consistent.** The project would provide 40 bicycle parking spaces for residents and 5 bicycle parking spaces for office employees, which exceeds the City's parking code requirements. Providing bicycle parking spaces would allow residents and employees to store their bicycles onsite and encourage people to travel by bike, which would reduce VMT and transportation fuel consumption.

Source: City of Novato 2020

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not be developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units. Although these units would be designed differently than the proposed project, it likewise would be required to be consistent with the Novato Climate Change Action Plan Greenhouse Gas Reduction Measures and impacts would be less than significant.

This page intentionally left blank.

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:				
1. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	■	☐
2. Strong seismic ground shaking?	☐	☐	■	☐
3. Seismic-related ground failure, including liquefaction?	☐	☐	■	☐
4. 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 wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	■
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	■	☐	☐

A geotechnical investigation report was prepared for the project by Miller Pacific Engineering Group in January 2021 (Appendix E). The report summarized the current geologic site conditions, identified geologic hazards, and recommended specific project-design features that would need to be incorporated to reduce risk from geological hazards. The contents of this investigation inform the following discussions.

a.1. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

a.2. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

The project site is located in a seismically active region due to its proximity to the active margin of the North American and Pacific Plates. The nearest fault is the Burdell Mountain fault, located approximately 0.6 miles northeast of the project site (USGS 2019). No known active faults run through the project site; therefore, the potential for surface rupture resulting from the movement of nearby major faults is low.

Ground shaking refers to movement of the Earth's surface during a seismic event. Ground shaking is normally the major cause of damage in earthquakes. To address the threat from earthquakes and ground shaking, all new developments must conform to current City and State seismic and geotechnical codes. The California Building Code (CBC), which the City of Novato has adopted under Municipal Code Section 4-1.3, includes seismic regulations that would be enforced during the design and construction phases of the project. Adherence to these requirements during development would help ensure integrity and safety during seismic activity. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

a.3. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

Liquefaction is the process by which soil is temporarily transformed to fluid form during intense and prolonged ground shaking or because of a sudden shock or strain. Liquefaction typically occurs in areas where the groundwater is less than 30 feet from the surface and where the soils are composed of poorly consolidated fine to medium sand. The project site is located in an area with low liquefaction potential (City of Novato 2020a). The Geotechnical Investigation prepared for the project also indicated that the site does not lie within a zone of high liquefaction potential (Appendix E). Therefore, impacts regarding liquefaction hazards would be less than significant.

LESS THAN SIGNIFICANT IMPACT

a.4. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

The project site is relatively flat in the eastern portion and increases in slope towards the west with an average slope of 9.8 percent. The southwestern, western, and northwestern portions of the project site have slopes that range up to 25 percent. Therefore, the project site is located in a high landslide potential hazard zone (City of Novato 2020a). The area has experienced landslides in the past with a small landslide occurring in 2017 on the eastern side of the access road to the Buck Institute. The Geotechnical Investigation indicated that that there is potential for slope instability since the hillside is susceptible to soil creep or shallow landsliding. In addition, soils near the drainage channels have the potential for bank instability. Natural weathering and cuts into the hillside would further increase the potential for slope instability (Appendix E). The following mitigation measure would reduce the potential for landslides by specifying design and construction criteria to avoid accelerating soil creep or induce shallow landsliding.

Mitigation Measure

GEO-1 Geotechnical Recommendation

The Geotechnical Investigation produced by Miller Pacific Engineering Group (prepared on January 6, 2021) provides recommendations that would ensure the project is suitable from a geotechnical standpoint and would increase the safety and integrity of the project. All recommendations in the Geotechnical Investigation as described in Sections 4 and 5 of the Geotechnical Investigation shall be included as conditions of approval and shall be implemented during construction and prior to occupancy of the project. The recommendations address but are not limited to: Grading, Surface and Subsurface Drainage, Foundations, Miscellaneous Concrete Flatwork, Retaining Walls and Foundations, Pavement Areas, Utility Trenches, and project review and construction monitoring.

Implementation of Mitigation Measure GEO-1 would reduce potential landslide impacts to less than significant levels; in particular, Item 4.3 of the Geotechnical Investigation includes setbacks, excavation requirements, retaining wall support, and cut requirements, and Item 5.4 lists design criteria for the deep foundation design to ensure stability to prevent landslides.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

b. Would the project result in substantial soil erosion or the loss of topsoil?

Implementation of the project includes grading and drainage improvements, including bioretention basins, and associated hardscaping. The project site is relatively flat across the eastern section of the site with slopes of 10 to greater than 25 percent along the west and southwest and northwestern portions of the site. The average slope of the entire project site is 9.8 percent. A majority of the project site would require grading, which would increase the potential for erosion on site. Incorporation of Mitigation Measure GEO-1 would include erosion control measures during and after construction to reduce risk of erosion, specifically measures that conform the most recent version of the Erosion and Sediment Control Field Manual as described in Item 4.8 of the Geotechnical Report. In addition, the proposed construction activities would be required to comply with Novato Municipal Code 7-4.10(c), which requires construction plans to include erosion control BMPs, such as silt fences, straw waddles, and hydroseeding. Therefore, impacts would be less than significant with mitigation incorporated.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

c. Would the project 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?

As discussed under threshold *a.4* of this section, the project is located in a known high landslide potential zone. Landslides have occurred along the western side of the project site within the Buck Institute property. The western hillside has higher potential for landslides because the soils are more susceptible to soil creep or shallow landsliding. Impacts would be less than significant with incorporation of Mitigation Measure GEO-1 as described above, including Item 4.8, that requires usage of deep foundations to reduce on site erosion; and Items 5.3 and 5.4, that would ensure that the foundations can tolerate soil criteria.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

d. Would the project 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?

Expansive soils are soils that due to their composition and moisture content have a potential to undergo significant changes in volume, in the form of either shrinking or swelling. Periodic shrinking and swelling of expansive soils can cause extensive damage to buildings, other structures and roads. Additionally, the Geotechnical Report indicated the presence of expansive soils at the project site. A near-surface soils exploration discovered soils with low to medium expansion potential and high to very high expansion potential (Appendix E). Therefore, there is a moderate risk that the expansive soil could affect the project. To avoid and reduce potential adverse impacts on life or property, implementation of Mitigation Measure GEO-1, as described above, including Item 4.3, requiring usage of non-expansive materials for fill on site and avoiding deep unsupported excavation, would be required. Impacts would be less than significant with mitigation.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No septic tanks or alternative wastewater disposal systems are proposed as part of the project. No impact would occur.

NO IMPACT

f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The project site is in an area of low paleontological sensitivity (City of Novato 2020b). As the project sites are located in a low sensitivity geologic unit, the project is unlikely to encounter paleontological resources. However, the possibility exists that construction may uncover previously undiscovered paleontological resources. Impacts would be less than significant with incorporation of Mitigation Measure GEO-2.

Mitigation Measure

GEO-2 Discovery of Previously Unidentified Paleontological Resources

In the event a previously unknown paleontological resource is uncovered during construction, all work shall cease until a certified paleontologist can investigate the find(s) and make appropriate recommendations. Any artifacts uncovered shall be recorded and removed for storage at a location to be determined by the paleontologist.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not be developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units. Construction of a 160-unit housing development would not be significantly different from the project as proposed in terms of overall footprint on the site and would be built within similar parameters with regards to the geologic components discussed above. Assuming that geology and soil conditions on the site would not be significantly different if such a project were proposed, the same mitigation measures would be required for an alternative project and geologic impacts under this alternative would be similar to those of the proposed project.

This page intentionally left blank.

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?	☐	☐	■	☐

Overview of Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. Climate change is the result of numerous, cumulative sources of GHG emissions contributing to the "greenhouse effect," a natural occurrence which takes place in Earth's atmosphere and helps regulate the temperature of the planet. The majority of radiation from the sun hits Earth's surface and warms it. The surface, in turn, radiates heat back towards the atmosphere in the form of infrared radiation. Gases and clouds in the atmosphere trap and prevent some of this heat from escaping into space and re-radiate it in all directions.

GHG emissions occur both naturally and as a result of human activities, such as fossil fuel burning, decomposition of landfill wastes, raising livestock, deforestation, and some agricultural practices. GHGs produced by human activities include carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Different types of GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emitted, referred to as "carbon dioxide equivalent" (CO_2e), which is the amount of GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 28, meaning its global warming effect is 28 times greater than CO_2 on a molecule per molecule basis (IPCC 2014).[5]

Anthropogenic activities since the beginning of the industrial revolution (approximately 250 years ago) are adding to the natural GHG effect by increasing the concentration of GHGs in the atmosphere that trap heat. Since the late 1700s, estimated concentrations of CO_2, methane, and nitrous oxide in the atmosphere have increased by over 43 percent, 156 percent, and 17 percent, respectively, primarily due to human activity (U.S. EPA 2020). Emissions resulting from human

[5] The IPCC's (2014b) *Fifth Assessment Report* determined that methane has a GWP of 28. However, the 2017 Climate Change Scoping Plan published by the California Air Resources Board uses a GWP of 25 for methane, consistent with the IPCC's (2007) *Fourth Assessment Report*. Therefore, this analysis utilizes a GWP of 25.

activities are thereby contributing to an average increase in Earth's temperature. Potential climate change impacts in California may include loss of snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (State of California 2018).

Regulatory Framework

In response to climate change, California implemented Assembly Bill (AB) 32, the "California Global Warming Solutions Act of 2006." AB 32 required the reduction of statewide GHG emissions to 1990 emissions levels (essentially a 15 percent reduction below 2005 emission levels) by 2020 and the adoption of rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions. On September 8, 2016, the Governor signed Senate Bill (SB) 32 into law, extending AB 32 by requiring the State to further reduce GHG emissions to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, the California Air Resources Board (CARB) adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program and the Low Carbon Fuel Standard, and implementation of recently adopted policies and legislation, such as SB 1383 (aimed at reducing short-lived climate pollutants including methane, hydrofluorocarbon gases, and anthropogenic black carbon) and SB 100 (discussed further below). The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends local governments adopt policies and locally-appropriate quantitative thresholds consistent with a statewide per capita goal of six metric tons (MT) of carbon dioxide equivalents (CO_2e) by 2030 and two MT of CO_2e by 2050 (CARB 2017).

Other relevant state laws and regulations include:

- SB 375: The Sustainable Communities and Climate Protection Act of 2008 (SB 375), signed in August 2008, enhances the state's ability to reach AB 32 goals by directing the CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. Metropolitan Planning Organizations are required to adopt a Sustainable Communities Strategy (SCS), which allocates land uses in the Metropolitan Planning Organization's Regional Transportation Plan (RTP). On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. The Metropolitan Transportation Commission (MTC)/Association of Bay Area Governments (ABAG) was assigned targets of a 10 percent reduction in per capita GHG emissions from passenger vehicles from 2005 levels by 2020 and a 19 percent reduction in per capita GHG emissions from passenger vehicles from 2005 levels by 2035. MTC/ABAG adopted Plan Bay Area 2040 in July 2017, which meets the requirements of SB 375. An update to the RTP/SCS is currently underway (Plan Bay Area 2050) with the draft EIR; the public comment period was from June 4, 2021, and July 20, 2021. The draft EIR is available for review at: https://www.planbayarea.org/draftEIR.
- SB 100: Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the state's Renewables Portfolio Standard Program. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.
- California Building Standards Code (California Code of Regulations Title 24): The California Building Standards Code consists of a compilation of several distinct standards and codes

related to building construction including plumbing, electrical, interior acoustics, energy efficiency, and handicap accessibility for persons with physical and sensory disabilities. The current iteration is the 2019 Title 24 standards. Part 6 is the Building Energy Efficiency Standards, which establishes energy-efficiency standards for residential and non-residential buildings in order to reduce California's energy demand. Part 12 is the California Green Building Standards Code (CALGreen), which includes mandatory minimum environmental performance standards for all ground-up new construction of residential and non-residential structures.

City of Novato Climate Change Action Plan

The City of Novato's Climate Action Plan (CAP) is incorporated into General Plan 2035 and Appendix E to the General Plan includes the specific GHG reduction measures. General Plan 2035 provides goals and associated measures, also referred to as climate change mitigation measures, in the sectors of energy use, transportation, water conservation, land use, and solid waste. In addition, Appendix E of General Plan 2035 includes reduction measures and an emissions reduction summary with the anticipated reduction in emissions for each local action. The intent of the CAP is to guide Novato towards achieving or exceeding the State's emissions reductions targets. The CAP documents and forecasts 2015, 2020, and 2035 GHG emissions (City of Novato 2020a).

Methodology

GHG emissions associated with project construction and operation were estimated using CalEEMod, version 2016.3.2, with the assumptions described under Section 3, *Air Quality*, in addition to the following:

- **Utility Energy Intensity Factors.** The project was assumed to be served by both Marin Clean Energy (MCE) and PG&E.[6] Therefore, specific energy intensity factors (i.e., the amount of CO_2e per megawatt-hour) for both providers were used in the calculations of GHG emissions. The 2017 CO_2 intensity provided for MCE (123 pounds of CO_2 per megawatt-hour [lbs/MWhr]) and for PG&E (210 lbs/MWhr) were used. It was assumed that 86 percent of participants would enroll with MCE and 14 percent would enroll with PG&E. The adjusted CO_2 intensity rate used was 123 lbs/MWhr .[7] The energy intensity factors do not account for the continuing effects of the statewide RPS Program per SB 100, which requires utility providers to increase the percent of electricity procured from renewable sources. Therefore, the GHG emissions from energy sources are higher since the modeling did not adjust the intensity factors for the RPS program.
- **Service Population.** The project's per person GHG emissions were calculated by dividing total GHG emissions by the project's service population (residents plus employees). Based on applicant provided information there would be a total of 327 future residents and approximately four to five full-time employees. The project's service population would be 331 persons.

Significance Thresholds

Individual projects do not generate sufficient GHG emissions to influence climate change directly. However, physical changes caused by a project can contribute incrementally to significant cumulative effects, even if individual changes resulting from a project are limited. The issue of climate change typically involves an analysis of whether a project's contribution towards an impact

[6] The air quality and greenhouse gas assessment prepared for the project by Illingworth & Rodkin, Inc. dated January 2020 assumed that the project would have some MCE participation, but the project would use electricity from PG&E

[7] The adjusted rate was calculated using the following formula: ([109 lbs/MWhr* 0.86] + [210 lbs/MWhr * 0.14]) = 123 lbs/MWhr

would be cumulatively considerable. "Cumulatively considerable" means the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (*CEQA Guidelines* Section 15064[h][1]).

According to *CEQA Guidelines* Section 15183.5(b), projects can tier from a qualified GHG reduction plan, which allows for project-level evaluation of GHG emissions through the comparison of the project's consistency with the GHG reduction policies included in a qualified GHG reduction plan. This approach is considered by the Association of Environmental Professionals (2016) in its white paper, *Beyond Newhall and 2020*, to be the most defensible approach presently available under CEQA to determine the significance of a project's GHG emissions.

The Novato CAP is considered a qualified GHG reduction strategy per Section 15183.5(b)(1) of the *CEQA Guidelines* and the May 2017 BAAQMD CEQA Air Quality Guidelines. A qualified GHG reduction strategy is one that includes the following elements:

1. Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area.
2. Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable.
3. Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area.
4. Specify measures or a group of measures, including performance standards that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level.
5. Monitor the plan's progress.
6. Adopt the GHG Reduction Strategy in a public process following environmental review.

As discussed above, General Plan 2035 serves as the City's CAP and quantifies 2005, 2015, 2020, and 2035 GHG emissions for all sectors in the City. Figure ES-9 of General Plan 2035 shows projected community emissions through the year 2035. Appendix E of General Plan 2035 includes an emissions reduction summary including local and state actions. Additionally, Appendix E establishes a community wide emissions level of 191,003 MT CO_2e per year as the City's cumulative contribution to GHG emissions in 2035. An emissions level of 191,003 MT CO_2e per year in 2035 is a 48 percent reduction from the City's 2005 emissions baseline. This reduction would be achieved through actions 1 through 30 in Appendix E: Greenhouse Gas Reduction Measures of the 2035 General Plan. These measures would reduce emissions by approximately 48,408 MT CO_2e per year by 2035. Compliance with specific GHG reduction policies in General Plan 2035, denoted with a leaf symbol in the General Plan, would ensure compliance and monitoring of the local GHG reduction actions. Finally, General Plan 2035, the incorporated CAP, and Environmental Impact Report for the General Plan were adopted and certified at the October 27, 2020, City Council hearing. Therefore, the Novato CAP is considered a qualified CAP and project consistency with the Novato CAP is used to determine project GHG impacts. Project construction and operational GHG emissions are provided for informational purposes.

a. Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

b. Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Table 18 evaluates the project's consistency with the applicable GHG reduction actions outlined in General Plan 2035 and CAP and shows that the project would be consistent with relevant measures. The CAP includes specific actions to meet estimated reductions for compliance with state GHG reduction goals, and the project complies with these local actions and reduction measures.

Table 18 Project Consistency with the Novato Climate Action Plan

Novato CAP Reduction Measures (RM)	Project Consistency
RM 1: *Energy Efficient Streetlights*. Minimize energy used for streetlights.	**Consistent.** The project would use exterior street and circulation lighting that would be dark sky compliant per Title 24 and Green Point Rating requirements
RM 4: *Energy Efficient Programs (Community)*. Continue and expand residential and commercial energy efficiency programs.	**Consistent.** The project would be served by PG&E and residential developments would include LED lighting. The project would not utilize natural gas as a source of energy and would be an all-electric development.
RM 6: *Clean Electricity.* Encourage residences and businesses to switch to GHG-free electricity and encourage MCE Clean Energy to reach its goal to provide 100 percent GHG-free by 2025.	**Consistent.** The project would utilize electricity provided by PG&E, which is subject to requirements per SB 100 and required to procure more electricity from renewable energy sources over time. MCE is also available and could be opted into.
RM 12: *Urban Forest.* Increase tree cover and increase shade of structures and other improvements within the City.	**Consistent.** The project would not remove existing trees and proposes to plant 107 new trees. The new tress would be planted along the internal pathways near the residential buildings and in the outdoor common space areas.
RM 13: *Water Conservation.* Conserve water through improved efficiency.	**Consistent.** The project would install low-use water fixtures to conserve water use. Additionally, landscaping at the project site would include primarily low-water use plants, irrigation with recycled water and compliance with North Marin Water District Regulation No. 15 addressing water use efficiency.
RM 17: *Low-Emissions Vehicle Infrastructure* Improve infrastructure for low emission vehicles.	**Consistent**. The project would provide a total of six EV parking spaces on site.
RM 21. *Affordable Housing*. Reduce community vehicles miles traveled through development of affordable housing for lower-income households.	**Consistent.** The project is a 100 percent affordable housing project and provide homes for lower-income households. The project is located in proximity to public transit options and approximately two miles north of downtown Novato. The SMART station is approximately 1 mile south of the project site and the Marin Transit Route 49 bus service and Golden gate Transit Route 54 commuter bus route both provide services from the SMART station.
RM 22: *Pedestrian Infrastructure.* Promote walking through design standards and amenities that concentrate uses, reduce the need for vehicular travel, and enhance the pedestrian experience.	**Consistent.** Approximately 45 bike parking spaces would be provided for residences and office employees. There would also be a dog park, trails and pathways, community garden, and playgrounds on the site for resident use. Sidewalks would be provided along the private roadway loops, allowing residents to walk within the development.

Novato CAP Reduction Measures (RM)	Project Consistency
RM 23-24: *Bicycle Infrastructure (Commercial and Residential).* Increase the number of Novato workers who commute by bicycle. Increase the number of multi-family residents who bike to work and for other utilitarian purposes.	**Consistent.** The project would provide 40 bicycle parking spaces for residents and 5 bicycle parking spaces for office employees. The proposed amount exceeds parking code requirements.
RM 30: *Zero Waste.* Achieve Zero Waste diversion goals.	**Consistent.** The project would comply with state and local statues and regulations related to solid waste regarding increased recycling efforts per Assembly Bill 341 and the City's General Plan Policy ES-27f by providing recycling services.

RM = Reduction Measure

Source: City of Novato 2020a, Appendix E

In addition to the emissions reduction measures discussed in Table 17, the project would be required to comply with Chapter 4 of the NMC, which incorporates the California Green Building Standards Code. This code includes specific requirements related to recycling, construction materials, and energy efficiency standards that would apply to project construction to minimize wasteful, inefficient, and unnecessary energy consumption.

The project would also comply with General Plan 2035 goals and policies. Specifically, the project would comply with Program PF-3a that encourages water conservation measures and various mobility policies by providing access to alternate modes of transportation, including transit (SMART station within 1 mile), bicycling (parking), and pedestrian facilities (walkways provided on the site).

Therefore, the project would be consistent with the Novato CAP and would not conflict with state regulations intended to reduce GHG emissions statewide. Impacts related to GHG emissions would be less than significant.

Project-Generated GHG Emissions

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not be developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units. A 160-unit housing development would be required to comply with the Novato CAP. GHG impacts under this alternative would be the similar to impacts as discussed for the project and compliance with the Novato CAP would ensure GHG emissions would not exceed regulatory standards.

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 reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	■	☐	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	☐	☐	■	☐
d. Be located on a site that is included on a list of hazardous material 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 in 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, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	■	☐

Methods

A Phase I Environmental Site Assessment (ESA) was prepared for the project on June 2021 by Arcadis U.S., Inc. (Appendix F), and peer reviewed by Rincon Consultants. The Phase I ESA summarized the current and historical uses of the project site; described the records of hazardous waste incidents from federal, state, and local regulatory databases; and identified potential hazardous risks. A site reconnaissance was conducted on September 18, 2020. The results and project impacts summarized below are based on findings from the Phase I ESA.

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

b. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Construction

Project construction may include the temporary transport, storage, and use of potentially hazardous materials including fuels, lubricating fluids, cleaners, or solvents. As the project may involve the disturbance of soil, grading and excavation could also result in the upset of hazardous materials at the site. Project construction would also require heavy construction equipment, the operation of which could result in a spill or accidental release of hazardous materials, including fuel, engine oil, engine coolant, and lubricants.

According to the Phase I ESA report, there is potential for contaminated soil on site due to the previous uses that could be disturbed and released during construction. The site was a gasoline service station from 1973 to 1994 and then utilized as a staging area for PG&E from June 2020 to the end of 2020. There is potentially elevated concentrations of aerially deposited lead (ADL) due to the historical usage of leaded gasoline in motor vehicles. In addition, during a site reconnaissance of PG&E's staging area, the Phase I ESA observed sealed roll-off bins on site with some areas of spilled soils from these bins that was characterized as non-hazardous waste by PG&E. However, since PG&E did store hazardous waste on the project site during their tenure and Arcadis was unable to characterize the soil, the soil could be contaminated with hazardous waste from the previous bins. Thus, construction workers on the site could be exposed to hazardous materials that may be uncovered during ground disturbing activities. Therefore, implementation of Mitigation Measure HAZ-1, which requires soil sampling assessment and potential remediation, Mitigation Measure HAZ-2, which requires a soil management plan for impacted soils, and HAZ-3, which requires remediation for hazardous materials, would be required to avoid hazardous impacts during project construction. Construction impacts would be less than significant with mitigation.

Operation

Residential uses such as those proposed typically do not use or store large quantities of hazardous materials other than those typically used for household cleaning, maintenance, and landscaping. Therefore, the project would not involve the use, storage, transportation, or disposal of hazardous materials in significant quantities. Operational impacts would be significant impact.

Mitigation Measure

HAZ-1 Soil Assessment

Prior to construction, the project site shall be thoroughly assessed for the possible presence of contaminated materials through soil sampling under the oversight of a qualified environmental consultant (PG or PE). The sampling program outlined below shall be implemented prior to issuance of grading permits for areas suspected of being contaminated:

- Soil samples shall be collected in the areas where spilled soil from PG&E storage bins were identified in the Phase I ESA. The investigation shall include soil borings to a minimum depth of 2.5 feet below ground surface (bgs) using hand auger sampling methods. All soil samples shall be analyzed for the presence of total petroleum hydrocarbons (TPH) by EPA Method 8015B, volatile organic compounds (VOC) by EPA Method 8260B, polychlorinated biphenyls (PCB) by EPA Method 8082, pesticides by EPA Method 8081A, and total metals by EPA method 6010B/7471A.
- Soil gas samples shall be collected adjacent to the natural gas transmission pipeline on the 8161 Redwood Boulevard property. Soil gas samples shall be analyzed for the presence of TPH and VOCs, by EPA Method 8260 or TO-15.
- Soil samples shall be collected along the eastern boundary of the site adjacent to the road to identify the presence of Aerially Deposited Lead (ADL). The investigation shall include soil borings to a minimum depth of 2.5 feet bgs using hand auger sampling methods. All soil samples from the ADL investigation shall be analyzed for the presence of total lead by EPA Method 6010.

As part of the soil assessment, analytical results shall be screened against the San Francisco Bay Regional Water Quality Control Board (SFB RWQCB) environmental screening levels (ESLs). These ESLs are risk-based screening levels for direct exposure of residents, commercial workers or construction workers under various depth and land use scenarios.

If contamination exceeding regulatory action levels is found in any of the above locations, appropriate remediation shall be undertaken prior to issuance of grading permits for the contaminated area. This may include the preparation of a Soil Management Plan for Impacted Soils (see Mitigation Measure HAZ-2) prior to issuance of a grading permit. If contaminants are detected in the subsurface at the project site at concentrations exceeding SFB RWQCB ESLs or hazardous waste screening thresholds for contaminants in soil (California Code of Regulations [CCR] Title 22, Section 66261.24 Characteristics of Toxicity), appropriate steps shall be taken to protect site workers during project construction. This may include the completion of remediation (see Mitigation Measure HAZ-3) at the project site prior to on site construction. Any remedial activity shall be conducted to the satisfaction of the appropriate regulatory oversight agency (for example, the County Environmental Health Department, Regional Water Quality Control Board, Department of Toxic Substances Control). The results of the soil assessment shall be documented in a soil investigation report and provided to the City of Novato. The City of Novato Public Works Department shall be responsible for monitoring compliance with this requirement. The project proponent is responsible for all costs associated with the City's review of plans, reports, and/or monitoring associated with this mitigation measure, including costs associated with a City-hired consultant for peer review, if necessary.

HAZ-2 Soil Management Plan for Impacted Soils

If impacted soils or other impacted wastes are present at the project site, a Soil Management Plan (SMP) or equivalent document shall be prepared by a qualified environmental consultant (PG or PE) prior to construction. The SMP, or equivalent document, shall be prepared to address on site handling and management of impacted soils, and reduce hazards to construction workers and off-site receptors during construction. The plan shall establish remedial measures and/or soil management practices to ensure construction worker safety, the health of future workers and visitors, and the off-site migration of contaminants from the site. These measures and practices may include, but are not limited to:

- Stockpile management including dust control, sampling, stormwater pollution prevention, and the installation of BMPs
- Mitigation of soil vapors
- Proper disposal procedures of contaminated materials
- Monitoring and reporting
- A health and safety plan for each contractor working at the site that addresses the safety and health hazards of each phase of site construction activities with the requirements and procedures for employee protection
- The health and safety plan will also outline proper soil handling procedures and health and safety requirements to minimize worker and public exposure to hazardous materials during construction.

The City of Novato shall review and approve the project site Soil Management Plan for Impacted Soils prior to start of grading and on-site construction. The project proponent is responsible for all costs associated with the City's review of plans, reports, and/or monitoring associated with this mitigation measure, including costs associated with a City-hired consultant for peer review, if necessary.

HAZ-3 Remediation

If soil present at the project site contains chemicals at concentrations exceeding SFB RWQCB ESLs or hazardous waste screening thresholds for contaminants in soil (California Code of Regulations [CCR] Title 22, Section 66261.24), additional analytical testing shall be required to determine the soil waste categorization. If analytical testing indicates that hazardous waste soils are present at the project site, the impacted soils shall be removed and disposed properly. Remediation of impacted soils may require additional delineation of impacts; additional analytical testing per landfill or recycling facility requirements; soil excavation; and offsite disposal or recycling.

Prior to construction, the City of Novato shall review and approve the project site disposal recommendations prior to transportation of waste soils offsite. The project proponent is responsible for all costs associated with the City's review of plans, reports, and/or monitoring associated with this mitigation measure, including costs associated with a City-hired consultant peer review, if necessary.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

The project is not located within 0.25 mile of the any existing or proposed schools. There would be no impact.

NO IMPACT

d. Would the project be located on a site that is included on a list of hazardous material 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?

The Phase I ESA included an Environmental Data Resources (EDR) report from the Environmental Data Resources, Inc. to summarize the federal, tribal, and local environmental record source databases (Appendix F). The following regulatory agencies and databases were queried during the preparation of the Phase I ESA, for known hazardous materials contamination at the project site:

- **U.S. EPA**
  - Envirofacts and Enforcement & Compliance History Information (ECHO) database (2020).
  - No records available
- **California Regional Water Quality Control Board (RWQCB)**
  - Recovered Government Archive Leaking Underground Storage Tank
  - Records received
- **State Water Resources Control Board (SWRCB)**
  - Geotracker Database
- **California Department of Toxic Substances Control (DTSC)**
  - Cortese Hazardous Waste and Substances Site List
  - HAZNET
  - Hazardous waste Tracking System
- **Marin County Department of Environmental Health**
  - Records received
- **City of Novato Fire Department**
  - Records received but no pertinent files for the project site were provided

As discussed in the Phase I ESA, the project site appeared in the Underground Storage Tank (UST), Leaking Underground Storage Tank (LUST), Recovered Government Archive Leaking Underground Storage Tank (RGA LUST), Cortese, Historical Cortese, HAZNET, and Hazardous Waste Tracking System (HWST) databases. The UST, LUST, Cortese and Historical Cortese findings, as discussed under criterion *(a)* and *(b)*, include that the site was historically developed with a gas station that contained four fuel tanks and one waste oil underground storage, which were removed in the 1970s. The LUST investigation was closed on April 12, 1996 (SWRCB 2021). The HAZNet, and HWTS did not provide any records of historical hazardous waste, regulated waste, or non-hazardous waste on site. Even though the LUST investigation was closed, and no further action was required, there is potential for residual hazardous materials to be present on site from the PG&E staging area as described in criterion (a) and (b). Therefore, the project would be located at a site with potentially

hazardous materials and Mitigation Measure HAZ-1 would be required to reduce impacts to a less than significant level.

Additionally, a natural gas transmission pipeline was identified beneath the project site. When the natural gas pipeline is operational there is potential for the release of natural gas condensate, which could build-up in the soil resulting in contamination with petroleum hydrocarbons. However, no cases of natural gas condensate releases have been documented at the site (Appendix F). Furthermore, the project would involve the construction of roadways, parking, and landscaping above the natural gas pipeline. No residential units would be placed directly above the pipeline and future residents would not be exposed to contaminated soil. Impacts from the natural gas pipeline would be less than significant.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

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?

Gnoss Field, the nearest airport, is located approximately 0.5 miles northeast of the project site, which is within the Gnoss Field area of influence (County of Marin 1991). The project site is located in Aviation Safety Zone 3 – Traffic Zone/ Federal Aviation Regulations (FAR) Part 77 Horizontal Surface as identified in the Marin County Airport Gnoss Field Airport Land Use Plan (County of Marin 1991). As discussed, under the Planning Considerations section in the Airport Land Use Plan, the Traffic Zone is the area under the flight paths of aircraft where aircrafts prepare for landing or perform initial departure. The risk of an off-airport accident is low (approximately four percent) with a majority of accidents occurring at the airport. Additionally, as discussed in Section 13, *Noise*, the project is within a conditionally compatible noise contour, and the project would include noise easements and sound insulation as part of the project design to decrease noise from aircrafts. Thus, construction and operation of the project would not expose people residing or working in the project area to airport-related safety hazards or excessive noise. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Novato is a participant in the Marin County Multi-Jurisdictional Hazard Plan (2018). The project would not interfere with this adopted emergency response plan or the City of Novato Emergency Operations Plan. The project would not result in closure, rerouting or substantial alteration of streets or property access points during or after construction. Redwood Boulevard, which is an evacuation route, would not be closed during project construction or operation. Fire and emergency vehicle access would be provided from a private driveway off of Redwood Boulevard (Novato Fire District 2021). Construction would occur solely on the site. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

As noted in Section 20, *Wildfire*, the project site is adjacent to open space to the north and west, Highway 101 to the east, and limited development to the south. The project site is not located in a State Responsibility Area or Very High Hazard Severity Zone for wildland fires (California Department of Forestry and Fire Protection [CALFIRE] 2021). The site is classified as a Local Responsibility Area, where responsibility for fire protection falls on the Novato Fire Protection District (NFPD), rather than the state or federal government (CALFIRE 2021). The project site is also not located within the Wildland Urban Interface (WUI), an area of high fire hazard, as mapped by the NFPD (Marin County 2021). The project would not expose people or structures to a significant risk involving wildland fires. Furthermore, the project would be required to comply with the applicable fire safety provisions of the California Building Code, thereby reducing the risk of damage from fire to the maximum extent practicable. Impacts would be less than significant. Refer to Section 20, *Wildfire*, for additional details regarding wildfire risks at the project site.

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not be developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units. Construction of a 160-unit housing development would not be significantly different from the project as proposed and would be built within similar parameters and have similar risks related to hazards and hazardous materials. Assuming that hazardous conditions on the site would not be significantly different if such a project were proposed, the same mitigation measures would be required for an alternative project and impacts from hazards and hazardous materials under this alternative would be similar to those of the proposed project.

This page intentionally left blank.

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 off-site;	☐	☐	■	☐
(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?	☐	☐	■	☐

a. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Temporary site preparation, grading, and paving activities associated with construction of the project could result in soil erosion that may degrade water quality. However, on-site construction activities would be required to comply with the requirements of the City of Novato Municipal Code Chapter 7-4 (the City's Urban Runoff Pollution Prevention Ordinance) and National Pollutant Discharge Elimination System (NPDES) permit requirements. In addition, all of Marin County, including Novato, is under the jurisdiction of the Marin County Flood Control and Water Conservation District, which is responsible for managing stormwater and flooding problems in the County. The City adheres to the Marin County Stormwater Pollution Prevention Program (MCSTOPPP) to minimize the negative impacts of storm runoff. Specifically, proposed construction activities would be required to comply with Novato Municipal Code 7-4.10(c), which requires construction plans to include construction, erosion, and sediment control BMPs. Because the project would disturb more than one acre of land, the applicant would be required to obtain coverage under the NPDES Construction General Permit and prepare a Stormwater Pollution Prevention Plan (SWPPP), which includes BMPs for erosion control. The project would also be subject to the City's Urban Runoff Pollution Prevention Ordinance.

The project would increase the amount of impervious surface on the site. The total impervious area would be 220,174 square feet, which is approximately 37 percent of the total project area (13.57 acres). The site is currently undeveloped and has no impervious area.

Although the project would introduce new impervious surfaces, the site would be designed for runoff from impervious areas to be routed to one of four biorientation facilities proposed on the site prior to being discharged into the existing stormwater drain systems adjacent to Redwood Boulevard (Appendix G). Additionally, the project would be required to comply with the City of Novato Municipal Code 7-4.6 and 7-4.10(d), which requires the project site to be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention, and/or rainfall harvest and use. Adherence to these regulations would ensure that pollutants to do not affect water quality. Therefore, impacts to water quality would be less than significant.

LESS THAN SIGNIFICANT IMPACT

b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

The North Marin Water District (NMWD) supplies water to the City of Novato from the Russian River, Stafford Lake and recycled water. The NMWD has no local, developed groundwater supply source (NMWD 2016). The project would not involve or require the use of groundwater and, as discussed in Section 18, *Utilities and Service Systems,* the NMWD has an existing water supply available to serve the project. Additionally, the bioretention basins and swales would allow groundwater recharge. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

c.(i) Would the project 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 result in substantial erosion or siltation on- or off-site?

c.(ii) Would the project 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 substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

c.(iii) Would the project 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 that would 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?

c.(iv) Would the project 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 impede or redirect flood flows?

The project would result in filling and grading of one ephemeral stream and two manmade drainage ditches. However, the project would be graded in a matter that would mimic existing flow patterns (direction and volume) and direct stormwater to the same outlet locations used under the existing conditions. As described in the preliminary drainage report for the project prepare by DVC Group in April 2021, project runoff would be directed to one of the four bioretention areas for treatment and any overflow would be directed to one of the existing storm drains along Redwood Boulevard. All four storm drains have the capacity to handle the increased runoff from the proposed project (Appendix H). Runoff from the site would not cross property lines onto the adjacent Novato Days Inn property (Appendix I). In addition, to comply with the City's urban runoff programs, implementation of these project design features would capture and treat stormwater runoff, reduce the quantity and level of pollutants in runoff leaving the site, and would ensure project runoff does not exceed the capacity of stormwater drainage systems. The project would not increase the rate or amount of surface runoff in a manner that would result in on- or off-site flooding or exceed the capacity of the stormwater drainage system, nor that would impede or redirect flood flows. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

d. In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?

The project site is located approximately 4.3 miles west of San Pablo Bay and 3.9 miles east of Stafford Lake, the nearest large bodies of water. There is low potential for a seiche to form on San Pablo Bay and, due to the distance between the site and the San Pablo Bay, there is likely no risk if one were to form. Although a seiche could form on Stafford Lake during a seismic event, there would be no risk of inundation from a seiche at the project site due to the relatively small size of Stafford Lake and distance from Stafford Lake to the project site. The project site is also not within the Stafford Lake Dam inundation area and would not be flooded if the Novato Creek Dam failed (City of Novato 2020a).

Although an earthquake on the Hayward and Rodgers Creek fault complex, which runs under the San Pablo Bay, could create a tsunami, the potential for a tsunami to impact the City of Novato and

the project site is low (City of Novato 2020a). In addition, and project site is not located within a tsunami inundation zone as shown in Figure 4.8-5 of the General Plan 2035 Final EIR (City of Novato 2020). The project site is also not within a 100-year or 500-year flood plain (see Figure 4.8-2 from the General Plan 2035 Final EIR). A portion of the northwestern section of the site is within a Federal Emergency Management Agency (FEMA) AE flood zone where there is a 1 percent annual chance of flooding (FEMA 2016). This area of the project site would be constructed to be above the required flood elevation. Additionally, the proposed bioretention areas and on-site stormwater treatment would ensure that off-site pollution does not occur if the project site was to be inundated. Therefore, impacts resulting in flood hazard, tsunami, or seiche release of pollutants due to project inundation would be less than significant.

LESS THAN SIGNIFICANT IMPACT

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The project site is located within the Novato Valley Groundwater Basin, which is a low priority basin according to the Department of Water Resources (DWR) Sustainable Groundwater Management Act Basin Prioritization dashboard (DWR 2020). Low priority basins are not required to adopt a groundwater sustainability plan.

The project would be subject to the San Francisco Bay Basin Water Quality Control Plan (Basin Plan) (SWRCB 2018). The San Francisco Bay RWQCB is responsible for adopting and updating the Basin Plan, which establishes water quality control measures and flow requirements needed to provide reasonable protection of beneficial uses in the watershed. As discussed in criterion (a), the project would be required to comply with NPDES requirements and portions of the NMC, such as Chapter 7-4 (Urban Runoff Pollution Prevention) and Chapter 7-5 (Regulatory Fee for Clean Stormwater Activities) relevant to water quality. The project would therefore not conflict with or obstruct implementation of the Basin Plan.

As discussed in Section 19, *Utilities and Service Systems,* the City of Novato is served by the NMWD which provides potable and recycled water service to the City, surrounding unincorporated areas, and portions of West Marin. Approximately 80 percent of the Novato water supply comes from the Russian River through the NMWD wholesale water supplier, the Sonoma County Water Agency. The remaining 20 percent comes from local runoff into Stafford Lake. NMWD has no local, developed groundwater sources (NMWD 2016).

Additionally, as discussed under criterion (a), the project includes features that comply with NMC Sections 7-4.6 and 7-4.10(d), which require the project to be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention, and/or rainfall harvest and use, which would decrease the amount of runoff from the site, allowing for more infiltration. The project would not use groundwater and would not conflict with a sustainable groundwater management plan. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not be developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units. Construction of a 160-unit housing development would not be significantly different from the project as proposed. The alternative project would also be required to comply with the City of Novato Municipal Code 7-4.6 and 7-4.10(d), which requires the project site to be designed to control pollutants, pollutant loads, and runoff. Thus, the alternative housing development would not degrade water quality. It would also source water from NMWD and not deplete groundwater supplies by using wells or well-water. The other conditions of construction and operation that avoid hydrology and water quality impacts as discussed above for the project would be similar for an alternate project, and impacts would be less than significant.

This page intentionally left blank.

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?	☐	☐	■	☐

a. Would the project physically divide an established community?

The project site is in an area of Novato that is largely undeveloped and without substantial residential development. Adjacent uses include a motel, open space and, across Highway 101 to the east, light industrial uses along the freeway. West of the adjacent open space are institutional and office uses on large parcels. The project would not involve constructing bridges, roadways, or other linear features that would divide an established community. Neither would it result in the removal of existing roadways that could prevent access within an established community. Therefore, development of the site would not physically divide an established community and no impact would occur.

NO IMPACT

b. Would the project 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?

The project site has a General Plan designation of Business and Professional office (BPO). The proposed project includes a request for a General Plan Amendment to modify 13± acres of the site's land use designation from BPO to Medium Density Multiple Family Residential (R10). The City of Novato zoning for the project site is Planned District (PD). A portion of the project site would retain the existing BPO land use to allow for the construction of a 2,154-square foot commercial building with offices and a conference room to accommodate the Habitat for Humanity facility.

The project would be consistent with the R10 land use designation, which would allow medium density residential development at 10.1 to 20 units per gross acre. This includes single-family, two-family, and multi-family buildings and related residential uses, such as parking, open space, and recreation amenities. The project site includes areas with 25 percent slope and other areas with sensitive biological resources that would be maintained as open space planted with purple needle grass and streambed plantings to address impacts to sensitive species (see discussion in Section 4, *Biological Resources*). These areas have been subtracted from the gross acreage as they are not considered buildable. The project site is 13.6 acres, some of which is not buildable and would be

retained as open space on the site, and the project would build out the site with a density of 10.1 units per gross acre.

The City's Housing Element (updated last in 2014) demonstrates that affordable housing is needed in Novato (City of Novato 2014). While the Housing Element identifies specific opportunity areas for affordable housing development throughout Novato, HO Policy 9.3 indicates that the City will review additional housing opportunity sites as they arise. Implementing program HO Program 9.A specifies that rezoning and General Plan amendments will be undertaken when developers seek to construct affordable housing within Novato. The City determined that the project site was appropriate for the development of affordable housing and would support the General Plan Housing Element policies to provide adequate supply of housing opportunities for Novato's workforce that matches affordability with household income (HO Policy 6.2). It also supports policies to maintain a resident population of diverse age, social, and economic background (HO Policy 7.1) and to achieve a mix of housing types, densities, affordability levels, and designs (HO Policy 7.2).

The project would also include adoption of a master plan, a precise development plan, a vesting tentative subdivision map, and subject to the City's design review process, including a required plan consistency review. As discussed throughout this Initial Study, the project includes features, is subject to regulatory requirements, and is assigned mitigation measures that avoid or reduce potential impacts to a less than significant level.

Because the project aligns with these policies and programs and addresses the need for additional affordable housing, assuming approval of the requested General Plan Amendment the project would be consistent with applicable City land use plans, policies, and regulations. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the 80-unit residential development not be built, the project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development including up to approximately 160 units. As with the proposed project, maximum buildout would increase density but would not include roads, bridges, or other components that would divide an established community. Neither would the increased density conflict with other plans, policies, or regulations established for the purpose of mitigating environmental impacts. Impacts to this issue area would remain less than significant.

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?	☐	☐	☐	■

a. Would the project 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. Would the project 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?

The project is in an area of Novato where there are no active mining operations or known mineral resources present. The project site does not fall within a Mineral Resource Zone (Stinson et al. 1982). In addition, Novato's General Plan 2035 does not identify mineral resources within the vicinity of the project area (City of Novato 2020a). No mineral resources would be altered or displaced by the project. There would be no impact.

NO IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not be developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units, which would be constructed in the same location as the project; thus, there would be no impacts to mineral resources.

This page intentionally left blank.

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 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?	☐	☐	■	☐

Overview of Noise and Vibration

Noise

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (California Department of Transportation [Caltrans] 2013).

HUMAN PERCEPTION OF SOUND

Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response. Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; dividing the energy in half would result in a 3 dB decrease (Caltrans 2013).

Human perception of noise has no simple correlation with sound energy: the perception of sound is not linear in terms of dBA or in terms of sound energy. Two sources do not "sound twice as loud" as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increase or decrease (i.e., twice the sound energy); that a change of 5 dBA is readily perceptible (8 times the sound energy); and that an increase (or decrease) of 10 dBA sounds twice (half) as loud (10.5 times the sound energy) (Caltrans 2013).

SOUND PROPAGATION AND SHIELDING

Sound changes in both level and frequency spectrum as it travels from the source to the receiver. The most obvious change is the decrease in the noise level as the distance from the source increases. The manner by which noise reduces with distance depends on factors such as the type of sources (e.g., point or line), the path the sound will travel, site conditions, and obstructions.

Sound levels are described as either a "sound power level" or a "sound pressure level," which are two distinct characteristics of sound. Both share the same unit of measurement, the dB. However, sound power (expressed as L_{pw}) is the energy converted into sound by the source. As sound energy travels through the air, it creates a sound wave that exerts pressure on receivers, such as an eardrum or microphone, which is the sound pressure level. Sound measurement instruments only measure sound pressure, and noise level limits are typically expressed as sound pressure levels.

Noise levels from a point source (e.g., construction, industrial machinery, air conditioning units) typically attenuate, or drop off, at a rate of 6 dBA per doubling of distance. Noise from a line source (e.g., roadway, pipeline, railroad) typically attenuates at about 3 dBA per doubling of distance (Caltrans 2013). Noise levels may also be reduced by intervening structures; the amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels. Natural terrain features, such as hills and dense woods, and man-made features, such as buildings and walls, can significantly alter noise levels. Generally, any large structure blocking the line of sight will provide at least a 5-dBA reduction in source noise levels at the receiver (Federal Highway Administration [FHWA] 2011). Structures can substantially reduce exposure to noise as well. The FHWA's guidance indicates that modern building construction generally provides an exterior-to-interior noise level reduction of 10 dBA with open windows and an exterior-to-interior noise level reduction of 20 to 35 dBA with closed windows (FHWA 2011).

DESCRIPTORS

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important factors of project noise impact. Most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. The noise descriptors used for this study are the equivalent noise level (L_{eq}), Day-Night Average Level (DNL; may also be symbolized as L_{dn}), and the community noise equivalent level (CNEL; may also be symbolized as L_{den}). The L_{90} is the sound level exceeded 90 percent of the time. The L_{max} is the maximum noise level reached during a single noise event.

L_{eq} is one of the most frequently used noise metrics; it considers both duration and sound power level. The L_{eq} is defined as the single steady-state A-weighted sound level equal to the average sound energy over a time period. When no time period is specified, a 1-hour period is assumed. The L_{max} is the highest noise level within the sampling period, and the L_{min} is the lowest noise level within the measuring period. Normal conversational levels are in the 60 to 65-dBA L_{eq} range; ambient noise levels greater than 65 dBA L_{eq} can interrupt conversations (Federal Transit Administration [FTA] 2018).

Noise that occurs at night tends to be more disturbing than that occurring during the day. Community noise is usually measured using Day-Night Average Level (L_{DN}), which is the 24-hour average noise level with a +10 dBA penalty for noise occurring during nighttime hours (10:00 p.m. to 7:00 a.m.). Community noise can also be measured using Community Noise Equivalent Level (CNEL or L_{DEN}), which is the 24-hour average noise level with a +5 dBA penalty for noise occurring from 7:00 p.m. to 10:00 p.m. and a +10 dBA penalty for noise occurring from 10:00 p.m. to 7:00 a.m. (Caltrans 2013).[8] The relationship between the peak-hour L_{eq} value and the L_{DN}/CNEL depends on the distribution of noise during the day, evening, and night; however noise levels described by L_{DN} and CNEL usually differ by 1 dBA or less. Quiet suburban areas typically have CNEL noise levels in the range of 40 to 50 CNEL, while areas near arterial streets are in the 50 to 60+ CNEL range (FTA 2018).

Groundborne Vibration

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent buildings or structures and vibration energy may propagate through the buildings or structures. Vibration may be felt, may manifest as an audible low-frequency rumbling noise (referred to as groundborne noise), and may cause windows, items on shelves, and pictures on walls to rattle. Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never annoying to people who are outdoors. The primary concern from vibration is that it can be intrusive and annoying to building occupants at vibration-sensitive land uses and may cause structural damage.

Typically, ground-borne vibration generated by manmade activities attenuates rapidly as distance from the source of the vibration increases. Vibration amplitudes are usually expressed in peak particle velocity (PPV) or root mean squared (RMS) vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used as it corresponds to the stresses that are experienced by buildings (Caltrans 2020).

High levels of groundborne vibration may cause damage to nearby building or structures; at lower levels, groundborne vibration may cause minor cosmetic (i.e., non-structural damage) such as cracks. These vibration levels are nearly exclusively associated with high impact activities such as blasting, pile-driving, vibratory compaction, demolition, drilling, or excavation. The American Association of State Highway and Transportation Officials (AASHTO) has determined vibration levels with potential to damage nearby buildings and structures; these levels are identified in Table 19.

Table 19 AASHTO Maximum Vibration Levels for Preventing Damage

Type of Situation	Limiting Velocity (in/sec)
Historic sites or other critical locations	0.1
Residential buildings, plastered walls	0.2–0.3
Residential buildings in good repair with gypsum board walls	0.4–0.5
Engineered structures, without plaster	1.0–1.5

Source: Caltrans 2020

[8] Because DNL and CNEL are typically used to assess human exposure to noise, the use of A-weighted sound pressure level (dBA) is implicit. Therefore, when expressing noise levels in terms of DNL or CNEL, the dBA unit is not included.

Numerous studies have been conducted to characterize the human response to vibration. The vibration annoyance potential criteria recommended for use by Caltrans, which are based on the general human response to different levels of groundborne vibration velocity levels, are described in Table 20.

Table 20 Vibration Annoyance Potential Criteria

	Vibration Level (in/sec PPV)	
Human Response	Transient Sources	Continuous/ Frequent Intermittent Sources[1]
Severe	2.0	0.4
Strongly perceptible	0.9	0.10
Distinctly perceptible	0.25	0.04
Barely perceptible	0.04	0.01

in/sec = inches per second; PPV = peak particle velocity

Source: Caltrans 2020

[1] Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Project Noise Setting

An environmental noise study was prepared for the project by RGD Acoustics on June 11, 2021, which was peer reviewed by Rincon Consultants. The information and analysis below are informed by the findings of the analysis.

Sensitive Receivers

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. The City of Novato General Plan states that noise-sensitive receivers generally include schools, hospitals, libraries, group care facilities, and convalescent homes (City of Novato 2020a). There are no sensitive receivers within 1,000 feet of the site. For the purpose of this analysis, the receivers at the adjacent hotel, Novato Days Inn, were considered a sensitive receiver. The adjacent hotel is located approximately 73 feet west of the nearest proposed building on the project site, which would be constructed as part of Phase 2, and 120 feet from the nearest building that would be constructed as part of Phase 1.

Noise Measurements

To characterize ambient sound levels at and near the project site noise measurements were conducted by RGD Acoustics. The most prevalent source of noise in the project site vicinity is vehicular traffic on Highway 101 to the east. Seven 15-minute sound level measurements were conducted on Monday, December 3, 2018 between 12:56 p.m. through 2:45 p.m., February 4, 2020 between 4:23 p.m. and 5:58 p.m. Two long-term 72-hour noise measurements were also conducted from 3:00 p.m. Friday November 30, 2018 through 3:00 p.m. Monday December 3, 2018. Table 21 shows the noise measurement locations, and Table 21 summarizes the results of the short term noise measurements. Detailed sound level measurement data and a figure of the noise measurement locations are included in Appendix J.

Table 21 Project Site Vicinity Sound Level Monitoring Results- Short-Term

Measurement Location/Height Above Ground		Sample Times	L_{eq} (dBA)	L_{max} (dBA)
ST-1	24 feet	12:56 – 1:11 p.m.	74	75
	5 feet		71	73
ST-2	24 feet	1:41 – 1:56 p.m.	65	68
	5 feet		62	65
ST-3	24 feet	2:18 – 2:33 p.m.	62	64
	5 feet		62	64
ST-4	5 feet	2:39 – 2:54 p.m.	62	65

ST = short term; L_{eq} = average noise level equivalent; dBA = A-weighted decibel; L_{min} = minimum instantaneous noise level; L_{max} = maximum instantaneous noise level

Detailed sound level measurement data are included in Appendix J

Regulatory Setting

City of Novato 2035 General Plan

The City of Novato General Plan Noise Element contains goals and policies that are designed to include noise control in the planning process in order to maintain compatible land uses with acceptable environmental noise levels and protect Novato residents from excessive noise. The Noise Element establishes the following goals and policies that would apply to the project:

Goal N 1: Maintain a Quiet Community

Objective NS 1: Compatibility of New Development

Protect people in new development from excessive noise by applying the Land use Compatibility Standards in Figure LW-5 in locating and designing new development.

NS 1a: **Acoustical Compatibility Study**. Require an acoustical study for all new residential projects with a future exterior noise exposure of 60 dBA L_{dn} or greater as shown on Figure LW-6 and consider mitigation measures to lower noise exposure.

NS 1b: Indoor Noise Standard. The maximum acceptable interior noise level for all new residential development, including hotels and motels, is 45 dBA L_{dn}.

NS 1c: Residential Near Gnoss Field. An acoustical investigation and noise mitigation should be considered for residential development within the 55 dBA CNEL contour. For any residential development where outdoor noise exceeds 60 dBA L_{dn} require deed disclosure to all residents of the noise levels anticipated.

NS 1d: Exterior Noise Standard. New residential development should be located in areas where outdoor noise levels are no greater than 60 dBA L_{dn} in areas where outdoor use is a major consideration, such as backyards in single family developments and recreation areas in multifamily developments. This standard should not be applied to outdoor areas such as small decks and balconies typically associated with multifamily residential developments, which can have a higher standard of 65 dBA L_{dn}. This standard shall not apply to outdoor

areas for residences in mixed use developments. Additional standards may be applied on a case-by-case basis where supported by acoustical analysis to mitigate the effects of single-event noise sources such as aircraft noise.

Objective NS 2: Noise Impacts of Development

Prevent land uses which increase surrounding noise levels above acceptable standards.

NS 2a: Acoustic Impact Study. Require acoustical studies and mitigation measures for new developments and transportation improvements which affect sensitive receptors such as schools, hospitals, libraries, group care facilities, and convalescent homes

NS 2b: Noise Mitigation. Consider mitigation measures for new projects or land uses that would cause a substantial increase in noise (i.e., cause an increase above 60 dBA L_{dn} or cause an increase in 5 dBA L_{dn} or more in the noise ambient noise levels) in adjacent residential areas or in residential areas affected by traffic generated by the proposed project.

Objective NS 3: Noise Mitigation – Sound Walls

To minimize noise impacts, consider site planning options prior to consideration of sound wall construction, such as increasing the distance from the noise source and receiver, careful building placement and taking advantage of the natural shape and terrain of the landscape. Avoid sound walls where possible, but where necessary, reduce visual impacts with interesting wall design and extensive landscaping.

City of Novato Municipal Code

NMC Section 19.22.070 prohibits exterior noise that exceeds 45 dBA between 10:00 p.m. and 6:00 a.m. and exterior noise that exceeds 60 dBA between 6:00 a.m. and 10:00 p.m. at residential land uses and exterior noise that exceeds 60 dBA between 10:00 p.m. and 6:00 a.m. and exterior noise that exceeds 70 dBA between 6:00 a.m. and 10:00 p.m. at commercial land uses, as shown in Table 22. These maximum noise levels may not be exceeded for an aggregate period of more than three minutes within a one-hour time period or by more than 20 dBA at any time. Section 19.22.070(B) exempts authorized construction activities from these noise level requirements between 7:00 a.m. and 6:00 p.m. on weekdays and between 10:00 a.m. and 5:00 p.m. on Saturdays.

Table 22 City of Novato Municipal Code Table 3-5: Allowable Exterior Noise Levels[1]

Type of Land Use	Time Interval	Maximum Noise Level (dBA)[2]
Commercial[4]	10:00 p.m. to 6:00 a.m.	60
	6:00 a.m. to 10:00 p.m.	70
Industrial or Manufacturing	Any time	70

[1] Each of the noise limits specified shall be reduced by 5 dBA for impulse or simple tone noises. If the ambient noise exceeds the resulting standard, the ambient shall be the standard.

[2] Maximum noise levels shall not be exceeded for an aggregate period of more than three minutes within a one-hour time period or by more than 20 dBA at any time.

[3] Residential standards apply to sensitive receivers such as schools, hospitals, libraries, group care facilities, and convalescent homes. These uses may require special mitigation.

[4] Commercial standards apply to Mixed Use Districts

Source: City of Novato Municipal Code Section 19.22.070, Table 3-5

Construction is not allowed on any time on Sunday or a federal holiday unless authorized in writing by the Community Development Director. Authorized grading is not allowed to occur between 6:00 p.m. to 7:00 a.m. on weekdays and never allowed on weekends.

NMC Section 19.22.090 prohibits groundborne vibration that is perceptible without instruments to the average person along or beyond the property line of a subject parcel, and exempts vibrations from temporary construction, demolition, and vehicles that enter or leave the parcel.

Marin County Gnoss Field Airport Land Use Plan

The project site is within the Referral Area of the Marin County Gnoss Field Airport Land Use Plan (1991), which is the area that is within two miles of the future boundary of the Gnoss Field Airport. The following policies would apply to the project:

- **Policy NC-1.4: Residential Land Use**. New residential development should be prohibited within the 60 dB CNEL noise contour.
- **Policy NC-1.5: Noise Easements**. As a condition of approval, noise easements should be granted to the County or any zoning changes or new residential development within the 55 dB or higher CNEL noise contour.
- **Policy NC-2.6: Acoustical Study**. As a condition of approval, an acoustical study shall be required for any proposed new residential development within the 55 dB CNEL noise contour. Recommendations in the study regarding sound insultation shall be implemented.

Noise Level Increases over Ambient Noise Levels

The operational and construction noise limits used in this analysis are set at reasonable levels at which a substantial noise level increase as compared to ambient noise levels would occur. Operational noise limits are lower than construction noise limits to account for the fact that permanent noise level increases associated with continuous operational noise sources typically result in adverse community reaction at lower magnitudes of increase than temporary noise level increases associated with construction activities that occur during daytime hours and do not affect sleep. Furthermore, these noise limits are tailored to specific land uses; for example, the noise limits for residential land uses are lower than those for commercial land uses. The difference in noise limits for each land use indicates that the noise limits inherently account for typical ambient noise levels associated with each land use. Therefore, an increase in ambient noise levels that exceeds these absolute limits would also be considered a substantial increase above ambient noise levels. As such, a separate evaluation of the magnitude of noise level increases over ambient noise levels would not provide additional analytical information regarding noise impacts and therefore is not included in this analysis.

a. Would the project result in 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?

Construction Noise

Construction activity would generate temporary noise in the project site vicinity, exposing surrounding sensitive receivers to increased noise levels during project construction. Construction noise would be generated by heavy-duty diesel construction equipment used for site preparation, grading, building construction, and paving activities. Each phase of construction has a specific equipment mix and associated noise characteristics, depending on the equipment used during that phase. Construction noise would typically be higher during the more equipment-intensive phases of initial construction (i.e., site preparation, and grading work) and would be lower during the later construction phases (i.e., building construction and paving). Construction noise was estimated using reference noise levels and equipment use factors from the FHWA Roadway Construction Noise Model (RCNM; 2006).

Noise impacts from construction equipment are typically assessed from the center of the equipment activity area over the time period of a construction day (e.g., construction site, site preparation area, grading area, etc.). Maximum hourly noise levels were estimated to be 78 dBA L_{eq} at a distance of 120 feet for Phase 1 construction and maximum hourly noise levels were estimated to be 82 dBA L_{eq} at a distance of 73 feet for Phase 2 construction (see Appendix J).

Per NMC Section 19.22.070, noise generated by construction activities is exempt from compliance with the noise level limits contained in NMC Section 19.22.070 if construction occurs between the hours of 7:00 a.m. to 6:00 p.m., Monday through Friday and 10:00 a.m. to 5:00 p.m. on Saturday. However, for purposes of analyzing impacts from this project, the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018) criteria were used. The FTA provides reasonable criteria for assessing construction noise impacts based on the potential for adverse community reaction. For commercial and residential uses, the daytime noise threshold is 85 dBA L_{eq} and 80 dBA L_{eq}, respectively, for an 8-hour period (FTA 2018).

The closest sensitive receivers to project construction would be hotel users approximately 120 feet from Phase 1 and 73 feet from Phase 2 construction. Over the course of a typical construction day, the construction equipment would be mobile and is estimated to operate at an average distance of 150 feet from the nearest sensitive receivers. Therefore, construction noise levels would be approximately 76 dBA L_{eq} at the nearest sensitive receivers, which not exceed the daytime construction noise threshold for residential land uses of 80 dBA L_{eq}. Construction noise levels at other nearby sensitive receivers would be substantially lower than the noise levels at the Days Inn due to distance attenuation. Therefore, construction noise impacts would be less than significant.

Operational Noise

The project would generate operational noise that would be typical of residential uses, including heating, ventilation, and air conditioning (HVAC) equipment, parking lot activities, and solid waste collection and recycling operations. Noises produced by the project would be similar in character to the existing noise environment associated with surrounding residential uses.

On-site Mechanical Equipment Noise

The project would include an electric strip heating system with a continuous energy recovery ventilator (ERV) as part of the mechanical equipment system. No exterior HVAC systems are proposed. Noise levels from the proposed ERV cannot exceed 60 dBA between the hours of 6:00 a.m. to 10:00 p.m. and 45 dBA between the hours of 10:00 p.m. to 6:00 a.m. in accordance with the NMC. To ensure that that proposed mechanical equipment does not exceed these standards, Mitigation Measure NOI-1 would need to be incorporated. Impacts would be less than significant with mitigation.

Mitigation Measure

NOI-1 Mechanical Equipment Noise Requirements

Prior to issuance of building permits a noise analysis for the project's proposed outdoor mechanical equipment shall be conducted to determine the noise control measures, if any, that would be included in the project design such that the combined noise level generated by all noise-generating outdoor mechanical equipment shall comply with the City's municipal code requirements per Section 19.22.070. Noise control measures may include but are not limited to equipment screening and placement in relation to noise receivers. The noise analysis shall show that mechanical equipment noise would not exceed 60 dBA between the hours of 6:00 a.m. to 10:00 p.m. and 45 dBA between the hours of 10:00 p.m. to 6:00 a.m. with implementation of noise control measures or that noise control measures are not needed to meet City noise standards. The analysis shall be conducted and submitted to the City of Novato prior to building permit issuance. The applicant shall implement all recommendations included in the mechanical equipment analysis to ensure noise levels do not exceed City noise standards.

Off-site Roadway Noise

As discussed in Section 17, *Transportation*, project operation would add approximately 1,130 average daily trips (ADT) to the nearby roadways. Traffic noise impacts are evaluated in accordance with the City's Noise and Land Use Compatibility Guidelines (see Table 17-3) (City of Novato 2014) and community response to changes in ambient noise levels. As discussed under *Overview of Noise and Vibration*, the average healthy ear can barely perceive an increase of up to 3 dBA in noise levels, and a change of 5 dBA is readily perceptible. Based on this information, off-site traffic noise impacts would be significant if project-related traffic would result if one of the following would occur:

- A noise level increase of 5 dBA or greater if noise levels remain within the same land use compatibility classification at the sensitive receiver;
- A noise level increase of 3 dBA or greater if noise levels change the land use compatibility classification of the sensitive receiver;
- Any increase in noise levels if existing noise levels fall within the "normally unacceptable" or "clearly unacceptable" ranges at the sensitive receiver.

The project's contribution to roadway noise was evaluated by comparing existing traffic noise levels to traffic noise levels with operation of the project. Generally, a doubling of traffic (i.e., 100 percent traffic increase) would increase noise levels by approximately 3 dBA, which is the human level of perception for an increase in noise (FTA 2018). Therefore, a 10 percent increase in the number of vehicles on a roadway would result in a noise increase of approximately 0.4 dBA. Project-generated traffic was modeled using the federal Highway Administrations Traffic Noise Model (TNM 2.5) with

project-specific traffic volumes from the Traffic Impact Study (TIS) and highway traffic volumes from Caltrans (Appendix J). The modeled noise levels are shown in Table 23. The highest noise increase, 0.4 dBA, would occur on Redwood Boulevard south of San Marin Drive for existing plus project conditions. All other traffic noise increases from the project are equal to 0.1 dBA or less. Under the cumulative plus project scenario the highest increase in traffic noise would be 0.2 dBA on the same roadway segment. All other project contributions (existing and cumulative) would be 0.1 dBA or less. These increases in traffic noise would be below the significant increase threshold of 3 dBA. Therefore, impacts to roadway noise levels would be less than significant.

Table 23 Increase in Traffic Noise Levels from the Project

Roadway	Existing	Existing Plus Project	Increase due to Project	Cumulative No Project	Cumulative Plus Project	Existing to Future with Project Increase in L_{dn}	Project Contribution to Future L_{dn}
Redwood Boulevard south of San Marin Drive	65.5	65.9	0.4	68.9	69.1	3.6	0.2
Redwood Boulevard north of San Marin Drive	69.4	69.5	0.1	70.1	70.1	0.7	<0.1
San Marin Drive west of Redwood Boulevard	72.6	72.6	0.0	7.3.3	73.4	0.8	<0.1
Atherton Avenue east of Redwood Boulevard	71.7	71.7	<0.1	71.8	71.8	0.1	<0.1

Source: Appendix J

LESS THAN SIGNIFICANT IMPACT

b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction

Project construction would not involve activities typically associated with excessive groundborne vibration such as pile driving or blasting. The equipment utilized during project construction that would generate the highest levels of vibration would include rollers, loaded trucks, and bulldozers. The City of Novato has not adopted standards to assess vibration impacts during construction and operation. However, Caltrans has developed limits for the assessment of vibrations from transportation and construction sources. The Caltrans vibration limits are reflective of standard practice for analyzing vibration impacts on structures from continuous and intermittent sources. The thresholds of significance used in this analysis to evaluate vibration impacts are based on these impact criteria, as summarized in Table 24.

Project construction may require operation of vibratory equipment such as jackhammers, vibratory rollers, loaded trucks, and bulldozers within 120 feet of the neighboring hotel building during Phase 1 and 73 feet from the hotel during Phase 2. As shown in Table 24, vibration levels from individual pieces of construction equipment would not exceed the threshold at which damage can occur to residential structures, 0.20 PPV, or the threshold at which transient vibration sources would be distinctly perceptible to 0.25 PPV. Construction vibration levels at all other buildings in the immediate vicinity, including residences to the east, would be less than the levels shown in Table 24 because vibration levels would attenuate with distance. Furthermore, in accordance with NMC 19.22.070 Section 5-16.02(i), project construction would be required to occur during daytime hours

and would not disturb guests of the adjacent hotel during sensitive hours of sleep. Therefore, construction vibration impacts would be less than significant.

Table 24 Vibration Levels at Sensitive Receivers

Equipment	Estimated PPV at Nearest Building (48 feet)
Vibratory Roller	0.08
Hoe Ram	0.03
Large Bulldozer	0.03
Caisson Drilling	0.03
Loaded Trucks	0.03
Jackhammer	0.01
Small Bulldozer	<0.01
Threshold	**0.25**
Threshold Exceeded?	No

PPV = peak particle velocity

See Appendix J for vibration analysis worksheets.

Operation

As a residential development with residential and office uses, the proposed project would not generate significant stationary sources of vibration, such as manufacturing or heavy equipment operations. No operational vibration impact would occur.

LESS THAN SIGNIFICANT IMPACT

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?

The airport closest to the project site is the Gnoss Field Airport, which is located approximately half a mile northeast of the project site. The project site is located within the 60 dB noise contours shown in Figure 3.2 of the Marin County Gnoss Field Airport Land Use Compatibility Plan (Marin County Planning Department 1991). However, this contour was based on aircraft activities on a crosswind runway that has not been constructed at this time and is no longer being considered as future development for the airport. Therefore, recent publications were reviewed to assess noise levels generated by aircrafts from the airport. Based on Figure 10 from the 2035 Novato General Plan, the project site is located outside the existing airport noise contour of CNEL 60 dBA (City of Novato 2020). In addition, Figure 11 from final EIR for the proposed Runway 13/31 extension at Gnoss Field Airport's indicated that the project site would be located outside the airport noise contour of CNEL 60 dBA (Marin County 2013).

Per the Airport Land Use Compatibility Plan, a residential development located outside the CNEL 60 dBA airport noise contour and within the CNEL 55 dBA airport is considered conditionally compatible. While the CNEL 55 dBA contour is not shown in either recent publication, the project would adhere to Policy NC 1-5 Airport Land Use Compatibility for noise easements and sound

insulation would be part of the project design. Therefore, due to the noise contours and project design, project construction and operation would not expose workers nor future users of the project to excessive noise levels from the airport. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not be developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units. Construction noise and vibration for the alterative project would be similar to the project as proposed because construction would be required to comply with NMC Section 19.22.070 and similar types of construction equipment would be used. Although construction would take longer than the project as proposed louder construction equipment, such as pile drivers, would not be used for an alternative project. The NMC would ensure that construction would only occur between the hours of 7:00 a.m. to 6:00 p.m., Monday through Friday and 10:00 a.m. to 5:00 p.m. on Saturday. Similarly, the alternative project would be required to comply with Mitigation Measure NOI-1 to reduce noise from mechanical equipment. As an alternative project would be built in the same location as the proposed project, it would not conflict with an airport land use plan or contribute to cumulative excessive noise levels within the vicinity of an airport. Noise impacts under this alternative would be the same as the project.

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 (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	■	☐
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

a. Would the project 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)?

The project would directly induce population growth in the area through the proposed construction of 80 dwelling units, which would result in approximately 204 new residents.[9] Novato's current population is approximately 53,702 persons (California Department of Finance 2021. Plan Bay Area anticipates that the population of Novato will grow to 56,295 by 2040 (Association of Bay Area Governments 2020). The Novato General Plan 2035 anticipates that the population of Novato will grow to 55,360 by 2035. The population increase that the project would generate, therefore, falls within the growth projected by Plan Bay Area and General Plan 2035. Therefore, the proposed project would not directly or indirectly induce substantial, unplanned population growth. Impacts would be less than significant.

LESS THAN SIGNIFICANT

b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

The project site does not currently contain housing or habitable structures, and the project would not result in the removal of housing. Therefore, the project would not displace people or housing. There would be no impact.

NO IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the 80-unit residential development not be built, the project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development

[9] 80 units multiplied by 2.55 persons per unit (DOF 2021).

including up to approximately 160 units. These new units could generate approximately 419 new residents, an increase in population that is within the ABAG population forecast for the City. An alternate project would likely include no new full-time employees. Therefore, the impact of maximum buildout would be less than significant.

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, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
	1 Fire protection?	☐	☐	■	☐
	2 Police protection?	☐	☐	■	☐
	3 Schools?	☐	☐	■	☐
	4 Parks?	☐	☐	■	☐
	5 Other public facilities?	☐	☐	■	☐

a.1. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities, or the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

The Novato Fire Protection District (NFPD) provides fire protection services, emergency medical services, and fire and rescue response for vehicle and hazardous materials incidents to Novato. The City of Novato and the NFPD operate a joint Emergency Operations Center in the NFPD Administrative office at 95 Rowland Way (City of Novato 2020a).

Station 63 is the nearest fire station to the project site, approximately 3 miles to the west, at 65 San Ramon Way. Based on the 2009-2013 NFPD Strategic Plan, the district provides emergency services to the area from five stations, comprising 88 personnel (66 firefighters, 9 command staff and 13 administrative staff (NFPD 2009). Station 65 also serves Novato and is 7.1 miles from the project site. Station 65 accommodates a three-person fire district paramedic engine company, and it is part of the 15-person Tam fire crew, in cooperation with the Marin County Fire Department during wildland fire season. This location also has office space used by the Novato Police, Marin County Sheriff, and California Highway Patrol.

According to the City of Novato Emergency Operations Plan, the NFPD's goal is to maintain overall total response time of 8 minutes or less 90 percent of the time for all dispatch emergencies and have five fire stations with adequate equipment to meet local needs (NFPD 2019). No future plans for expansion or renovation of NFPD facilities are in place.

As discussed in Section 13, *Population and Housing*, the project would involve the construction of 80 new multi-family housing units to accommodate 204 persons.[10] The project site is located in the NFPD service area and within three miles of a fire station. Therefore, the NFPD would respond to demands associated with the project and retain an 8-minute response time, which would be adequate to serve demands potentially generated by the project. It is not anticipated that the project would increase response times for the NFPD or impact other NFPD standards. The project would not require the construction of additional fire protection facilities. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

a.2. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities, or the need for new or physically altered police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

The Novato Police Department (NPD) serves the city of Novato, providing professional and proactive street patrol, investigative services, traffic enforcement, narcotics enforcement, a 911 dispatch center, and emergency and preparedness services. The police department is staffed by approximately 80 staff, including 60 sworn personnel and volunteers (City of Novato 2021).

The NPD would service the project site and receive auxiliary support from the Marin County Sheriff's Office and California Highway Patrol (City of Novato 2019). The nearest police station is approximately 2 miles south of the project site at 909 Machin Avenue. Police units are more often mobile and dispatch to emergency calls from where they are in the service area, rather than from the police station. The distance between the facility and the location of the emergency, therefore, does not usually determine response times. Instead, response times correlate more closely with the number of police officers on the street.

When occupied, the project would add approximately 204 new residents to the city, which would slightly increase demand for police protection services. The Novato Police Department currently maintains a ratio of 1.10 sworn officers per 1,000 residents and does not have a standard for staffing levels (City of Novato 2013). With an additional 204 new residents to Novato's existing population of 53,703, the ratio of officers per officers per 1,000 residents would exceed 1.10 per 1,000 residents. The project would not require construction of new or expanded police facilities. Therefore, impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

[10] Based on California DOF calculation of 2.62 persons per unit (DOF 2019)

a.3. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered schools, or the need for new or physically altered schools, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives?

Public schools near the project site include Olive Elementary School, 2.4 miles southeast of the project site at 629 Plum Street, and Lynwood Elementary School, 3.6 miles south of the site, at 1320 Lynwood Drive. Novato High School is 3.5 miles southwest of the project site on 625 Arthur Street.

The additional residents that the project generates would increase the number of students attending schools in the Novato Unified School District. The project would add approximately 33 new students, based on a generation rate of 0.41 students per housing unit (Novato Unified School District 2014). Although 33 new students is considered a nominal increase, the applicant for the project would be required to pay school development fees prior to the issuance of building permits, as dictated by State law. According to Government Code Section 65996 (3)(h), payment of such fees constitutes full mitigation of any school impacts under CEQA. Therefore, impacts from the increase in school enrollment would be offset by the required payment of development fees. This impact would be less than significant.

LESS THAN SIGNIFICANT IMPACT

a.4. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered parks, or the need for new or physically altered parks, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives?

Project-related impacts to parks are discussed in Section 16, *Recreation.* The project would not require the construction of a new park or require the physical altering of an existing park or public facility. The project includes an area that will be improved as a park available for public use. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

a.5. Would the project result in substantial adverse physical impacts associated with the provision of other new or physically altered public facilities, or the need for other new or physically altered public facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

The Marin County Free Library District provides library services for Novato along with Corte Madera, Ross, and Fairfax and unincorporated areas of Marin County. The district includes 11 facilities and one bookmobile. The Novato Main Branch is the closest to the project site, at 2.7 miles southwest, on 1720 Novato Boulevard. The 2007 Marin County Free Library Vision Plan found the South Novato Branch to need additional space to accommodate its service population (City of Novato 2014). An agreement between the Novato Unified School District and the Marin County Free Library would double the size of the South Novato branch, ostensibly offloading the demand on the Novato Branch as well.

The project would add 204 new residents to Novato, increasing demand for library services. Plan Bay Area anticipates that the population of Novato will grow to 56,295 by 2040 (ABAG 2020). The number of residents introduced by the project is not a substantial percentage of the growth anticipated in Plan Bay Area and would not constitute significant or unplanned growth.

Furthermore, the library expansion already planned would accommodate the needs of increased population. Therefore, the impact related to the provision of library services or other public facilities under the proposed project would be less than significant.

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the 80-unit residential development not be built, the project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development including up to approximately 160 units. Although 160 multi-family units could allow for up to twice as many people as the proposed project (approximately 419 people), the increase in population would not be more than that anticipated by the ABAG or General Plan 2035 projections. Therefore, the alternate project would not necessitate the expansion of police, fire, school, or other public facilities that would cause environmental impacts. Neither would maximum buildout result in increased response times or ratio of officers per 1,000 residents. Impacts to all issue areas would be less than significant.

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?	☐	☐	■	☐

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?

Within five miles of the project site there are four local parks and two nature preserves/open space areas: the Miwok Park, Pioneer Park, Slade Park, Scottsdale Pond, Bahia Oak Park, Night Heron Park, and Mount Burdell Preserve and Deer Island Open Space Preserve. The Olompali State Historic Park is also about 1.2 miles north of the project site. The project would include on-site open space amenities that would include a central open space around which pathways and gathering areas would be situated. On-site amenities may include play areas, a dog park, trails, seating areas with benches and tables, and a community garden and meeting area. Site plans are presented in Figure X. The final design of the on-site open space amenities will be determined during the design process. These facilities are expected to supplement the local recreational facilities available to the 204 new residents on the project site.

Additionally, the City of Novato requires new residential developments to pay development fees for the purpose of maintaining existing parks and developing new parks to serve increased demand for recreational land, though it is not anticipated that new recreational facilities or parks would be required to satisfy increased demand from new residents. Therefore, the project would have a less than significant impact on the physical deterioration of existing recreational facilities.

NO IMPACT

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?

Although the project would introduce up to 204 new residents to the area, this is within the population forecast for Novato and the on-site recreational facilities along with the nearby parks, open spaces, and nature preserves would meet the recreational needs of these residents. The project would not require that new or expanded recreation facilities be built that might have an adverse effect on the environment. There would be no impact.

NO IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the 80-unit residential development not be built, the project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development including up to approximately 160 units. Although 160 multi-family units could allow for up to twice as many people as the proposed project (approximately 408 persons), the increase in population would not be more than that anticipated by the ABAG projection. Furthermore, as part of the permitting process, project impact fees would still be required. Therefore, the alternate project would not cause substantial deterioration to existing facilities or necessitate the expansion of recreation facilities. Impacts would be less than significant.

17 Transportation

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	■	☐
b. 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 use (e.g., farm equipment)?	☐	☐	■	☐
d. Result in inadequate emergency access?		☐	■	☐

The transportation analysis provided herein is based on the Transportation Impact Study (TIS) completed by Fehr & Peers in August 2021, which is included as Appendix K. The road network surrounding the proposed mixed-use development analyzed as part of the project includes the following intersections:

1. San Marin Drive/Redwood Boulevard
2. Atherton Avenue/Highway 101 SB Ramps
3. Atherton Avenue/Highway 101 NB Ramps

Additionally, the following streets provide alternative modes of transportation in the form of pedestrian and bicycle facilities:

- Pedestrian sidewalks are present north of San Marin Drive along Redwood Boulevard on the west side of the street until Pinkston Road. North of Pinkston Road, there is a sidewalk on the east side of Redwood Boulevard until Buck Center Drive. There are no sidewalks north of Buck Center Drive on either side of Redwood Boulevard. Pedestrians in that area have the option use the six-foot wide shoulder/bike lane.
- Class II bicycle lanes (on-street right-of-way lane) are located north-south on Redwood Boulevard and east-west on San Marin Drive and Atherton Avenue.

Regional transit service is provided by Marin County Transit (MCT), Golden Gate Transit (GGT), and Sonoma Marin Area Rail Transit (SMART). GGT has stops along Highway 101, Redwood Boulevard, San Marin Drive, and Atherton Avenue. GGT Route 54 connects Novato to San Francisco and has a stop on Atherton Avenue approximately 1.3 miles south of the proposed project. The proposed

project is approximately one mile north of the Novato San Marin SMART rail station, which is accessible via MCT Route 49 and connects to the Sonoma County Airport.

a. Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Pedestrian and Bicycle Facilities

In the project area, Class II bike lanes exist along Redwood Boulevard from the project site south into Downtown Novato. The project would not disrupt or interfere with existing bike lanes and would provide 45 new bike parking spaces.

In accordance with Mobility Policy MO-20a in General Plan 2035, all new development projects are required to include a sidewalk, path or shoulder on all property frontages. There is an existing sidewalk on the west side of Redwood Boulevard, extending north to from Pinkston Road and 0.5 miles south of the proposed project driveway. A raised asphalt sidewalk is located on the east side of Redwood Boulevard from Pinkston Road to Buck Center Drive. There are no sidewalks on Redwood Boulevard north of Buck Center Drive.

The project would provide a sidewalk on the west side of Redwood Boulevard, along its frontage, and an internal path from the project site to the northwest corner of Redwood Boulevard and Buck Center Drive intersection. Construction of the project would not disrupt or interfere with pedestrian facilities.

While the project would not disrupt or interfere with pedestrian facilities, the raised asphalt sidewalk on the east side of Redwood Boulevard is seldom used because its access requires crossing traffic on Redwood Boulevard twice. Instead, pedestrians choose to walk in the bicycle lane on the west side of Redwood Boulevard. Therefore, as a condition of approval, see Table 3, for consistency with General Plan 2035 policies, the project would extend the new curb, gutter, and five-foot-wide sidewalk south of the site along the west side of Redwood Boulevard for approximately 1,300 linear feet and connect it to the existing sidewalk fronting 7711 Redwood Boulevard. The alignment of the curb face shall be parallel to the edge of Caltrans' right-of-way and located to provide a minimum Redwood Boulevard half-width (centerline to face of curb) of 18-feet. Road widening would also be required. These improvements would require a Caltrans encroachment permit as they would be within the Caltrans right-of-way.

Development of the proposed project would not impair bicycle or pedestrian facilities. Therefore, the project would have no significant impact on pedestrian or bicycle facilities.

Transit Facilities

The Novato San Marin SMART rail station, one mile north of the project site, would remain accessible to future project residents via auto, bicycle, or ridesharing services. MCT Route 49 also provides access to the SMART station. GGT Route 54 provides access to San Francisco. Both of these routes are accessible from the Atherton Avenue bus pads, approximately 1.3 miles south of the proposed project. GGT Route 101 provides access to Santa Rosa and San Francisco, which has a stop approximately 1.4 miles south of the project site.

Existing train and bus routes are adequate to support the project, given that future residences would not result in a substantial demand for transit service with the proposed location and supply of parking spaces. The project would have no significant impact on transit facilities.

Development of the proposed project would not impair roadways or conflict with planned pedestrian, bicycle, and transit facilities in the vicinity. This impact would be less than significant.

LESS THAN SIGNIFICANT IMPACT

b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

The City of Novato has not yet adopted a standard of significance for evaluating VMT; therefore, Governor's Office of Planning and Research's (OPR) recommended VMT threshold for residential projects is used for the purposes of this analysis. According to OPR's guidance a project that generates VMT that exceeds a level of 15 percent below existing regional VMT per capita would be considered a significant impact. As such, VMT per resident of the proposed project cannot exceed the threshold of 14.5 miles, based on the citywide baseline rate of 17 miles (see Appendix K for methods and calculations). The VMT analysis applied four project travel metrics to determine the VMT per resident as described below. VMT in relation to office use was not included in the analysis in accordance with OPR's guidance that the dominant land use in mixed use projects be evaluated.

- Generation of 564 weekly residential vehicle trips.
- The average home-based vehicle trip length would be 8.9 miles.
- The population of the residential development would be 359 persons.
- Considering that 50 percent of housing units would be occupied by low-income residents, there would be a VMT reduction of 5.1 percent.

Based on the above VMT calculations, the project would result in an average VMT per resident of 13.3 miles. Thus per capita VMT for the project would be more than 15 percent below (14.5 miles) the citywide per capita VMT of 17 miles. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?

At the three intersections of intersections of interest, there were a total of 27 collisions between 2014 and 2018, 15 of which resulted in property damage and none of which were fatal. None of the collisions involved pedestrians or cyclists. The existing intersection is thus not considered dangerous (Appendix K).

The site would be accessible from Redwood Boulevard north of the Novato Days Inn. A one-way loop road would circulate the site providing access to the residential buildings and on-site amenities. A second private drive aisle would bisect the middle of the site. Neither of these drives would increase hazards. Neither the access to Redwood Boulevard nor internal drives would substantially increase hazards due to design or use. Therefore, impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

d. Would the project result in inadequate emergency access?

The site would be accessible from Redwood Boulevard north of the Novato Days Inn. A one-way loop road would circulate the site providing access to the residential buildings. The roadway would be designed to meet the City's requirements for emergency access. A second private drive aisle would bisect the middle of the site allowing vehicles to avoid driving the entire loop and improving emergency ingress and egress on the site. Therefore, the proposed project would have adequate emergency access. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not be developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units, which would be constructed in the same location as the project. An alternative project with between 81 and 160 units would represent a higher residential density than the proposed project. Increased density is not anticipated to result in increased VMT because areas with higher residential density typically have lower VMT (OPR 2018). OPR's Technical Advisory states that project alternatives that increase density may reduce VMT. Increased density associated with an alternative project, coupled with the condition of approval to construct a pedestrian sidewalk along the project frontage and between the project site, as well as pedestrian access to the existing sidewalk located 0.25-mile south at Pinkston Road, would not result in an increase VMT. The alternative project would also not conflict with a City transportation plan, program, ordinance, or policy; would not increase hazards due to a design feature or incompatible uses; and would not result in inadequate emergency access; thus, there would be less than significant impact to transportation.

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 a Public Resources Code Section 21074 as either a site, feature, place, or 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)?	☐	■	☐	☐
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 Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	■	☐	☐

PRC Section 21074 (a)(1)(A) and (B) defines tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and is:

1. 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
2. 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 these criteria, the lead agency shall consider the significance of the resource to a California Native American tribe.

AB 52 also establishes a formal consultation process for California tribes regarding those resources. The consultation process must be completed before a CEQA document can be certified. Under AB 52, lead agencies are required to "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency.

California Government Code Section 65352.3 (adopted pursuant to the requirements of SB 18) also 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 and prior to making any decisions on zoning changes related to open space. 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*."

a. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074 that is 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)?*

b. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074 that is 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?*

The City of Novato prepared and emailed a notification letter to the NAHC-recommended list of tribes on March 2, 2021 pursuant to AB 52 and SB 18. Consultation letters were submitted to the Federated Indians of Graton Rancheria and the Guidiville Indian Rancheria. Responses were not received from either tribe. As discussed in Section 5, *Cultural Resources*, there are no identified cultural resources on-site. However, because the project involves ground disturbance, there is the possibility of encountering undisturbed subsurface tribal cultural resources during construction of the project. Therefore, the project could result in potentially significant impacts to tribal cultural resources. Mitigation Measure TCR-1 is required to reduce impacts to a less than significant level.

Mitigation Measure

TCR-1 Unanticipated Discovery of Tribal Cultural Resources

If cultural resources of Native American origin are identified during construction of the project all earth-disturbing work in the vicinity of the find must be temporarily suspended or redirected until an archaeologist has evaluated the nature and significance of the find and an appropriate Native American representative, based on the nature of the find, is consulted. If the City determines that the resource is a tribal cultural resource and thus significant under CEQA, a mitigation plan shall be prepared and implemented in accordance with state guidelines and in consultation with Native American groups. The plan would include avoidance of the resource or, if avoidance of the resource is infeasible, the plan would outline the appropriate treatment of the resource in coordination with the archeologist and the appropriate Native American representative.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not be developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units. Construction of a 160-unit housing development would not be significantly different from the project as proposed in terms of disturbed area and would therefore have similar impact potential to tribal cultural resources. Assuming that conditions on the site would not be significantly different if such a project were proposed, the same mitigation measures would be required for an alternative project and impacts to tribal cultural resources under this alternative would be generally the same as for the proposed project.

This page intentionally left blank.

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, 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?	☐	☐	■	☐

a. Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Water

Water for the project would be provided by the NMWD via existing utilities on and adjacent to the project site. Approximately 80 percent of the Novato water supply is sourced from the Russian River, and the remaining 20 percent comes from local runoff into Stafford Lake that is treated at the

NMWD Stafford Water Treatment Plant (City of Novato 2014). Water supply is discussed further under criterion (b) below.

Novato's water supply system includes roughly 6,034 acre feet (AF) of imported water, a storage capacity of 37 million gallons, and two water rights permits for diversion of surface water from Stafford Lake for the annual diversion of 8,454 AF, with a total of 8,461 AF diverted in 2015. Novato's total water supply contracted volume is 14,100 AF per year. NMWD projects that future supplies would be sufficient to meet forecasted demand under normal year and multiple-dry year scenarios (NMWD 2015).

The project's estimated water demand would be approximately 5.59 million gallons per year for the indoor water use and approximately 3.52 million gallons per year for outdoor water use (Appendix A), or approximately 24,959 gallons per day, which is approximately 0.24 percent of Novato's water supply during a normal year, approximately 0.3 percent of Novato's water supply during a dry year and approximately 24 percent of Novato's water supply system surplus capacity by 2040. The estimated outdoor water usage does not account for the usage of recycled water on-site. Thus, this is a conservative water usage assumption and would be slightly lower if recycled water was included in the estimate.

Existing supplies may be insufficient to meet forecasted demand for a single dry year scenario; however, the NMWD contingency plan would allow for the reduction of water supplied by up to 50 percent if needed (NMWD 2016). New development would offset new water demand through NMWD's water connection rate structure, which funds water infrastructure maintenance. In addition, the project would comply with the City's General Plan Policy PF-3a and NMWD Regulation No. 15, which require water-saving landscaping and related water conservation measures. Therefore, impacts would be less than significant.

Wastewater

The Novato Sanitary District (NSD) provides wastewater collection, treatment, and disposal services for the Novato Community. Wastewater is transported to the Novato Treatment Plant (NTP) where most of the water undergoes primary and secondary treatment and is either discharged to San Pablo Bay or used for pasture irrigation. The NTP is designed for an average dry weather flow of 7.0 million gallons per day (MGD) and peak wet weather flow of 30.7 MGD. The NTP has remaining processing capacity of approximately 3.5 MGD for dry weather flow and 17.9 MGD for peak wet weather flow (NSD 2019a).

The project's estimated wastewater generation would be approximately 4.66 million gallons per year (assuming water use equivalent to the indoor water use predicted in the CalEEMod Output [Appendix A] approximately 120 percent of wastewater generation), or approximately 12,767 gallons per day. This would represent approximately 0.36 percent of the NTP wastewater treatment plant remaining capacity for average dry weather flow and 0.07 percent remaining capacity for peak wet weather flow. Therefore, the NTP has capacity to meet the wastewater treatment demands that would be generated from the project. Impacts associated with project's incremental wastewater generation would be less than significant.

Stormwater

The project would be designed and engineered with drainage features appropriate to accommodate the needs of the project and mimic the historical flow patterns. As discussed in Section 10, *Hydrology and Water Quality*, the project would not require an expansion of existing or new

stormwater infrastructure to the site. On-site stormwater generated by the project's impervious surfaces would drain into one of four bioretention areas and undergo treatment prior to discharge into the existing sanitary sewer. Overflow of the bioretention areas would be directed to the existing storm drains. As detailed in Appendix I, the overflow from the bioretention areas would match the existing runoff volumes and not outlet across property lines. In addition, based on hydraulic capacity calculations performed by the DVC Group in the preliminary drainage report, the proposed drainage systems are sufficiently sized to meet 25- and 100-year flood flows (Appendix I). Thus, the volume of stormwater runoff would not exceed the capacity of the storm drain system serving the site. The proposed project would not require the construction of new off-site stormwater drainage facilities or expansion of existing facilities. Impacts would be less than significant.

Electricity, Natural Gas, and Telecommunications

The project would not connect to or utilize natural gas as a source of energy and would use electricity provided by PG&E. A significant impact to electricity and telecommunications facilities may occur if a project's demand for these services exceeds the capacity of local providers. PG&E maintains the electricity distribution lines and substations that serve the project area. Telecommunications are generally available in the project area, and facility upgrades would not be necessary.

As described in Section 6, *Energy*, the project would require approximately 884 megawatts-hours (MW) of electricity per year. PG&E maintains power lines along Redwood Boulevard, which would serve the project site. The substation that powers lines in the vicinity of the project site has a capacity of 16 megawatts (MW) and a peak load of 11 MW, with a remaining capacity of 5 MW (PG&E 2020). The project would require approximately 0.043 MW, less than one percent of the remaining capacity of the PG&E substation that serves the project sites. Accordingly, the project would be accommodated adequately by existing electricity and telecommunication facilities and would not require improvements to existing facilities, or the provision of new facilities, that would cause significant environmental effects. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

b. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

As described above under criterion (a), the City of Novato is serviced by the NMWD, which provides potable and recycled water service to the City, the surrounding unincorporated areas. Approximately 80 percent of the Novato water supply comes from the Russian River through the NMWD wholesale water supplier, the Sonoma County Water Agency. The remaining 20 percent comes from local runoff into Stafford Lake. The District has no local, developed groundwater sources (NMWD 2016).

The NMWD's 2015 Urban Water Management Plan (UWMP) addresses the District's water system and includes descriptions of water supply sources, water use, comparisons of supply and demand during dry years, etc. Per the UWMP, normal year, single dry year, and multiple dry year supply and demand comparisons are shown below in Table 25.

Table 25 NMWD Water Supply and Demand in Acre-Feet for Normal, Single Dry, and Multiple Dry Year

	Year				
	2020	2025	2030	2035	2040 (Opt)
Normal Year					
Supply Totals	12,067	11,828	11,531	11,271	11,046
Demand Totals	10,662	10,708	10,713	10,805	10,930
Difference	1,405	1,120	818	466	116
Single Dry Year					
Supply Totals	12,067	10,459	10,034	9,647	9,339
Demand Totals	10,662	10,708	10,713	10,805	10,930
Difference	1,405	(249)	(679)	(1,158)	(1,591)
Multiple Dry Years	**Year**				
	2020	**2025**	**2030**	**2035**	**2040 (Opt)**
First Year					
Supply Totals	12,067	11,828	11,531	11,271	11,046
Demand Totals	10,662	10,708	10,713	10,805	10,930
Difference	1,405	1,120	818	466	116
Second Year					
Supply Totals	12,067	11,828	11,531	11,271	11,046
Demand Totals	10,662	10,708	10,713	10,805	10,930
Difference	1,405	1,120	818	466	116
Third Year					
Supply Totals	12,067	11,828	11,531	11,271	11,046
Demand Totals	10,662	10,708	10,713	10,805	10,930
Difference	1,405	1,120	818	466	116

Notes: Parentheses denote a negative number

Source: NMWD 2016

Table 25 shows that the District's projected water supplies are sufficient to meet projected demands during normal and multiple dry year conditions. During a single dry year scenario, the District would not have adequate supplies and would need to impose mandatory water use restrictions (NMWD 2016). A single dry year represents the lowest water supply available, while a multiple dry year represents the lowest average water supply available for a three-year period. The NMWD's water supply volume would be sufficient during a multiple dry year scenario since the volume is based on an average, while the single dry year represents the lowest volume available and is the worst-case scenario.

NMWD currently serves the project site through existing utilities and services would continue to do so during project operation. The project would include 80 multi-family units and applicable landscaping on the project site including a community garden and parks. The project's estimated water demand would be approximately 24,932 gallons per day, or 9.1 million gallons per year (Appendix A).

The project's water demand would represent less than 0.24 percent of projected available NMWD supply. Based on the project's incremental contribution to future demand, new sources of water

supply would not be required to meet project water needs. Additionally, the NMWD Board adopted an Amended Emergency Water Conservation Ordinance 41 (Ordinance 41) on April 20, 2021 that prohibits new water connections due to drought conditions in the area. The ordinance restricts overhead irrigation, pool filling, portable water use, car washing, and golf course irrigation. Drip irrigation, hand watering, and recycled water are exempt from the prohibitions with the exception of water waste. The project applicant proposes to maintain landscaping using recycled water; thus Ordinance 41 does not apply and there would be sufficient water supplies for the project. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

c. Would the project 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?

As described in response to criterion (a), above, the project's estimated wastewater generation would be approximately 4.66 million gallons per year (assuming water use is approximately 120 percent of wastewater generation), or approximately 12,767 gallons per day. This would represent approximately 0.1 percent of the NTP wastewater treatment plant remaining capacity for average dry weather flow and 1.3 percent remaining capacity for peak wet weather flow. Therefore, the NTP has capacity to meet the wastewater treatment demands that would be generated from the proposed project. As discussed under criterion (a), NSD has indicated that the existing sewer force main in Rowland Boulevard is not anticipated to have capacity deficiency issues and none of the sewer gravity pipelines in the area have a risk priority above "very low" (NSD 2019b). Therefore, impacts associated with project's incremental wastewater generation would be less than significant.

LESS THAN SIGNIFICANT IMPACT

d. Would the project 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. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Solid waste from the City of Novato is taken to the Redwood Landfill and Recycling Center located north of the Novato city limit. The landfill is permitted to accept 2,300 tons of material per day and has a design capacity of about 26 million cubic yards (CalRecycle 2020a). The estimated closure date of the landfill is 2036 (City of Novato 2020).

The Novato Sanitary District and its franchise service provider Recology provide solid waste and recycling disposal services in the project vicinity for the provision of trash, recycling and organics services to the project. In 2011, NSD amended its franchise agreement to make major progress toward achieving zero waste goals. The contract requires Recology (the recycling, composting, and garbage collection provider) to achieve an 80 percent diversion of waste to recycling by 2025 (NSD 2011).

Assuming 2.55 residents per dwelling unit (DOF 2020), the project would add an estimated 204 residents. Using an estimated solid waste generation rate provided by CalRecycle for residential land uses, the project would result in an increase of approximately 978 pounds of solid waste per day, or 178 tons per year (using a rate of 12.23 pounds per household per day) (CalRecycle 2020a).

This represents approximately 0.02 percent of the permitted daily throughput of the Redwood Landfill and Recycling Center. This does not represent a substantial increase in waste and the project would not be served by a landfill without sufficient capacity. The project would comply with state and local statues and regulations related to solid waste regarding increased recycling efforts per Assembly Bill 341 and the City's General Plan policy ES-27f by providing recycling services to residents. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

Maximum Buildout

Should the proposed General Plan amendment be granted and the Habitat Redwood Boulevard project not be developed, the approximately eight acres of useable project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development up to approximately 160 units. Construction of a 160-unit housing development would result in increased water and electricity consumption and generate more wastewater and solid waste as compared to the project as proposed. However, similar services would be required and the utilities that would be used by the project would have sufficient supply and capacity to serve the alternative Impacts from an alternate project would be less than significant.

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 a wildfire or the uncontrolled spread of a wildfire?	☐	☐	■	☐
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	■	☐
d. Expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	■	☐	☐

a. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

The project site is adjacent to open space to the north and west, Highway 101 to the east, and limited development to the south in Novato. The site is classified as a Local Responsibility Area, where responsibility for fire protection falls on the NFPD, rather than the state or federal government (California Department of Forestry and Fire Protection [CAL FIRE] 2021). The project site is adjacent to a Moderate Fire Hazard Severity Zone to the north and northwest in a State Responsibility Area (SR). The nearest Very High Fire Hazard Severity Zone is approximately five miles south of the site. Thus, the project would not impair an adopted emergency response plan or an evacuation plan within a Very High Fire Hazard Severity Zone. Emergency vehicle access would be provided at the northeastern entrance to the project, off Redwood Boulevard. The project would not interfere with emergency access. Therefore, the project would not expose people or structures

to a significant risk involving wildfire, nor would it exacerbate the risk of wildfire. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

b. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

The project site is not in an SRA or lands classified as Very High Fire Hazard Severity Zone. It is adjacent to SRA lands classified as Moderate Fire Hazard Severity Zone. The project site is adjacent to/in the Wildland Urban Interface (WUI), considered an area subject to high fire hazard, as mapped by the NFPD. Project design features include components to reduce risks of impacts from wildfire, such as the following:

- Before building permit final approval, the property would undergo vegetation clearance in compliance with California Fire Code Section 4906.
- Roof gutters would be designed to prevent accumulation of leaves and debris in the gutter.
- Roof and attic vents would be designed to resist the intrusion of flame and embers through the ventilation openings.
- Eave or cornice vents would not be installed 12 feet above grade unless they are designed to prevent ember/flame intrusion.
- Windows, window walls, glazed doors, and glazed openings in exterior doors would be fire resistant.
- Exterior doors and exterior walls would be made from or finished with non-combustible or ignition-resistant materials.
- Roof openings and open roof eaves would be designed so that flames and embers cannot intrude. Non-combustible or ignition-resistant materials will be used to finish these areas.

The project itself would not exacerbate wildfire risks and expose occupants to pollutant concentrations from a wildfire or uncontrolled spread of wildfire, and project design features would help to protect project buildings from the effects of wildfire. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

c. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

The project site is not in an SRA or lands classified as Very High Fire Hazard Severity Zone. It is adjacent to SRA lands classified as Moderate Fire Hazard Severity Zone. The project would not involve the construction of new utility infrastructure that could exacerbate fire risk. All utility infrastructure would be under-grounded, reducing the risk of wildfire caused by overhead power lines. Furthermore, roads, fuel clearance, maintained landscaping, and fire-resistant building materials would help to prevent the spread of uncontrolled wildfire. Wildfire impacts from associated project infrastructure would be less than significant.

LESS THAN SIGNIFICANT IMPACT

d. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

The project site is relatively flat in the eastern portion of the site, where the project would be constructed. The site increases in slope toward the west, at an average of 9.8 percent over the flatter areas where development would occur. The southwestern, western, and northwestern portions of the project site have slopes up to 25 percent and the site is in an area considered to have a high landslide potential (City of Novato 2020a). The Geotechnical Study for the project indicated there is potential for slope instability due to soil creep, natural weathering, and cuts into the Hillside (Appendix E). To reduce the potential for impacts from landslide in general, Mitigation Measure GEO-1 would ensure the project is designed in such a way to reduce the impacts from landslides due to slope instability. In the event a wildfire occurred on these slopes and was followed by a heavy rainstorm, a landslide could occur. Mitigation Measure WF-1 would be required to reduce impacts.

WF-1 Implement Post-Fire Erosion Control Plan and Application

As part of the permitting process, the project proponent shall develop a plan for immediate erosion control to be deployed in the event of a wildfire that affects slopes of 20 percent or more within the project site. The plan shall include provisions for erosion control as soon as possible after the event and shall include one or more of the following, as applicable:

1. Install mulch to cover the soil and reduce rain drop impact, overland flow, and soil particle movement. This can be certified weed-free straw, slash, and geotextile fabrics and should be installed as quickly as possible after the fire event.
2. Apply hydro-mulch mixture of water, fiber mulch, and tackifier on burned slopes to prevent soil erosion and foster revegetation. Seed, fertilizer, or soil stabilizing polymers can also be applied with the hydro-mulch.
3. Spray seed grasses or legumes with a layer of straw mulch over seeded grasses. Ensure the mix of seed includes native grasses and plants with value for local wildlife.

With implementation of Mitigation Measure WF-1, impacts concerning landslides that result from post-fire runoff, slope instability, or drainage changes would be reduced to less than significant.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

Maximum Buildout

Should the proposed General Plan amendment be granted and the 80-unit residential development not be built, the project site would remain available for uses as allowed under the R10 designation. The maximum use under the R10 designation would be represented by a housing development including up to approximately 160 units. The site conditions would remain the same and the buildable area of the project site would, similarly, remain the same. Therefore, impacts under this issue area would remain less than significant with mitigation, and Mitigation Measure WF-1 would be required.

This page intentionally left blank.

21 Mandatory Findings of Significance

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Does the project:				
a. 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. 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. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	■

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?

As discussed in this Initial Study, the project would have no impact, a less than significant impact, or a less than significant impact after mitigation with respect to all environmental issues. Regarding biological resources, the existing habitat onsite does not currently support special status species. Therefore, there is low potential for special-status species to occur, except for burrowing owls and nesting birds. Implementation of mitigation measures BIO-1 and BIO-2 would reduce potential impacts to burrowing owls and nesting birds to a less-than-significant level by requiring pre-construction surveys to determine the presence of burrowing owls and nesting birds and

implementing necessary avoidance measures if they are found. In addition, Mitigation Measure BIO-3 would reduce impacts to purple needlegrass requiring replanting at a 1:1 ratio and preservation of over an acre of purple needlegrass and Mitigation Measures BIO-4 would require construction of a linear stream channel to convey stormwater flows into an existing culvert. No historical or archeological resources are known to occur at the project site, as stated in Section 5, *Cultural Resources*. Potential impacts to unknown prehistoric archeological sites on the project site would be reduced to a less-than-significant level with implementation of Mitigation Measure CUL-1, CUL-2, and TCR-1, which would require notification and appropriate protective measures in the event of an unanticipated discovery of cultural resources.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

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)?

The proposed project was determined to have no impact in comparison to existing conditions for Agriculture and Forestry Resources and Mineral Resources. Therefore, as there would be no direct or indirect impacts, the proposed project would not contribute to cumulative impacts to these issue areas.

For all other issue areas, the proposed project would have either direct or indirect impacts that have been determined to be less than significant, or less than significant with mitigation incorporated. The project would involve the construction of residential and office development on a site that is currently vacant. The project would not adversely affect biological, cultural, or other physical resources outside of the project site. Other impacts, such as air quality, GHG emissions, noise, transportation, and utilities impacts, would be minor and would not be cumulatively considerable. There are no major nearby proposed developments that the project would potentially overlap with during construction. Therefore, construction equipment exhaust emissions, GHG emissions, noise would not overlap during construction. The effects of the project would not combine with impacts from other projects in the vicinity to result in a significant cumulative impact.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

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

Effects on human beings are generally associated with impacts related to issue areas such as air quality, geology and soils, hazards and hazardous materials, noise, and transportation. As discussed in this Initial Study, the project would have a less than significant impact or a less than significant impact with mitigation in each of these resource areas. Therefore, the project would not cause substantial adverse effects on human beings, either directly or indirectly and impacts associated with the project would be less than significant with mitigation incorporated.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

References

Bibliography

Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California. October 18, 2016. https://califaep.org/docs/AEP-2016_Final_White_Paper.pdf (accessed April 2021).

BAAQMD. 2016. Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines. http://www.baaqmd.gov/~/media/files/planning-and-research/rules-and-regs/workshops/2016/reg-2-5/hra-guidelines_clean_jan_2016-pdf.pdf?la=en (accessed May 2021).

_____. 2017a. Spare the Air, Cool the Climate Final 2017 Clean Air Plan. April. https://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en (accessed May 2021).

_____. 2017b. California Environmental Quality Act Air Quality Guidelines. May. https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en (accessed May 2021).

California Air Resources Board (CARB). 2016. Ambient Air Quality Standards. May. https://ww2.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf (accessed May 20210.

_____. 2017. California's 2017 Climate Change Scoping Plan. December 14, 2017. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf (accessed May 2021).

_____. 2021. Overview: Diesel Exhaust & Health. n.d. https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health (accessed May 2021).

California Department of Finance. 2021. "E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011-2021 with 2010 Census Benchmark." http://dof.ca.gov/Forecasting/Demographics/Estimates/E-5/ (accessed May 2021).

California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation. March 7. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline=true (accessed May 2021).

California Department of Forestry and Fire Protection [CAL FIRE]. 2021. FHSZ Viewer. [online GIS map]. https://egis.fire.ca.gov/FHSZ/ (accessed May 2021).

California Department of Resources Recycling and Recovery (CalRecycle). 2020a. SWIS Facility/Site Activity Details. Redwood Landfill (21-AA-0001). https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/3054?siteID=1727 (accessed April 2021).

California Department of Transportation (Caltrans). 2013a. Technical Noise Supplement to the Traffic Noise Analysis Protocol. (CT-HWANP-RT-13-069.25.2) September. Available at: http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013B.pdf.

_____. 2013b Transportation and Construction Vibration Guidance Manual (CT-HWANP-RT-13-069.25.3). September. Available at: http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf.

California Department of Water Resources (DWR). 2020. SGMA Basin Prioritization Dashboard. https://gis.water.ca.gov/app/bp-dashboard/final/ (accessed June 2021).

California Energy Commission (CEC). 2020. "California Retail Fuel Outlet Annual Reporting (CEC-A15) Results." https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-retail-fuel-outlet-annual-reporting (accessed April 2021).

_____. 2021a. Total System Electric Generation. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2019-total-system-electric-generation (accessed April 2021).

_____. 2021b. "Supply and Demand of Natural Gas in California." https://www.energy.ca.gov/data-reports/energy-almanac/californias-natural-gas-market/supply-and-demand-natural-gas-california (accessed April 2021).

_____. 2021c. "California Energy Consumption Database." https://ecdms.energy.ca.gov/ (accessed April 2021).

_____. 2021d. "California's Petroleum Market." https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market (accessed April 2021).

California Governor's Office of Planning and Research (OPR). 2018. "Technical Advisory on Evaluating Transportation Impacts in CEQA." https://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf (accessed August 2021).

California Native Plant Society. 2021. "CNPS Rare Plant Ranks". N.d. [webpage]. https://www.cnps.org/rare-plants/cnps-rare-plant-ranks (accessed July 2021).

Federal Emergency Management Agency (FEMA). 2016. FEMA Flood Map Service for flood map 06041C0164E. March. https://msc.fema.gov/arcgis/rest/directories/arcgisjobs/nfhl_print/mscprintb_gpserver/jb3676a62fcd841648b06236c191332c1/scratch/FIRMETTE_00ae423b-9b9d-4472-b2ba-5e144d61ffaa.pdf (accessed May 2021).

Federal Highway Administration (FHWA). 2011. *Highway Traffic Noise: Analysis and Abatement Guidance.* December 2011. https://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/revguidance.pdf (accessed June 2021).

Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September 2018. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed June 2021).

Intergovernmental Panel on Climate Change. 2007. Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-spm-1.pdf (accessed April 2021).

_____. 2014. Climate Change 2014 Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland. https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf (accessed April 2021).

Marin, County of. 1991. Airport Land Use Plan: Marin County Airport Gnoss Field. June 10, 1991. https://www.marincounty.org/~/media/files/departments/cd/planning/currentplanning/publications/landuseplan/airport-land-use-plan--marin-county-airport-gnoss-field.pdf (accessed May 2021).

_____. 2013. Gnoss Field Airport Proposed Extension of Runway 13/21 Final Environmental Impact Report. November. http://www.gnossfieldeis-eir.com/reports_documents/volume2.htm (accessed May 2021).

_____. 2021. MarinMap Map Viewer. [online GIS Map]. http://www.marinmap.org/Html5Viewer/Index.html?viewer=mmdataviewer (accessed June 2021).

North Marin Water District (NMWD). 2016. 2015 Urban Water Management Plan. June 2016. https://nmwd.com/wp-content/uploads/2020/05/FINAL-North-Marin-UWMP-Master-2015.pdf (accessed May 2021).

_____. 2021. Emergency Water Conservation Ordinance No. 41. https://nmwd.com/wp-content/uploads/2021/04/Ordinance-41-Water-Cons-Final-4.20.21-rev.pdf (accessed May 2021).

Novato, City of. 1996. City of Novato General Plan. Adopted March 8, 1996. https://www.novato.org/home/showdocument?id=12251 (accessed May 2021).

_____. 2014. Existing Conditions Report. April 1, 2014. https://www.novato.org/government/community-development/general-plan-update/existing-conditions-report (accessed May 2021).

_____. 2020a. General Plan 2035, February 2020. https://www.novato.org/government/community-development/general-plan-update (accessed May 2021).

_____. 2020b. Novato General Plan 2035 Draft Environmental Impact Report. February. https://www.novato.org/home/showdocument?id=30465 (accessed May 2021).

Novato Fire District. 2021. Know Your Way Out Your Citywide Evacuation Routes. N.D. https://www.novatofire.org/home/showpublisheddocument/9400/637327499853470000 (accessed May 2021).

Novato Sanitary District (NSD). 2011. Current Franchise Agreement for Solid Waste. March 2011. https://www.novatosan.com/newsletters-press-documents/documents/#solid-waste (accessed April 2021).

_____. 2019a. Annual Operations and Maintenance Report 2019. https://www.novatosan.com/newsletters-press-documents/documents/#treatment-plant (accessed June 2021).

_____. 2019b. Draft Report Collection System Master Plan. August 2019. https://www.novatosan.com/newsletters-press-documents/documents/#treatment-plant (accessed June 2021).

Pacific Gas & Electric Company (PG&E). 2020. Solar Photovoltaic (PV) and Renewable Auction Mechanism (RAM) Program Map. https://www.pge.com/b2b/energysupply/wholesaleelectricsuppliersolicitation/PVRFO/PVRAMMap/index.shtml (accessed May 2021).

State of California. 2018. California's Fourth Climate Change Assessment Statewide Summary Report. August 27, 2018. http://www.climateassessment.ca.gov/state/ (accessed April 2021).

State Water Resources Control Board (SWRCB). 2018. San Francisco Bay Basin Water Quality Control Plan (Basin Plan). https://www.waterboards.ca.gov/sanfranciscobay/basin_planning.html (accessed June 2021).

_____. State Water Resources Control Board (SWRCB). 2021. GeoTracker database. https://geotracker.waterboards.ca.gov/profile_report?global_id=T0604100288 (accessed July 2021).

Stinson, Melvin C., Manson Michael, W. and Plappert John, J. 1982. Mineral land classification map, special report 146, plate 3.8. California department of conservation. Sacramento, CA. http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps (accessed June 2021).

United States Energy Information Administration. 2021. California State Profile and Energy Estimates. February 18, 2021. https://www.eia.gov/state/?sid=CA (accessed April 2021).

United States Geological Survey. 2019. Quaternary Faults Web Application. Geologic Hazards Science Center – Earthquake Hazards. Available online at: https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf (accessed May 2021).

United States Environmental Protection Agency (U.S. EPA). 2020. "Climate Change Indicators: Atmospheric Concentrations of Greenhouse Gases." Last modified: October 23, 2020. epa.gov/climate-indicators/climate-change-indicators-atmospheric-concentrations-greenhouse-gases (accessed April 2021).

List of Preparers

Rincon Consultants, Inc. prepared this IS-MND under contract to the City of Novato. Persons involved in data gathering analysis, project management, and quality control are listed below.

RINCON CONSULTANTS, INC.

Matthew Maddox, AICP, MESM, Principal
Kari Zajac, MESM, Senior Environmental Planner
April Durham, PhD, Associate Planner
Mimi McNamara, Environmental Planner

Appendix A

Air Quality and Greenhouse Gas Analysis Documentation

HABITAT REDWOOD BOULVEARD AIR QUALITY & GREENHOUSE GAS ASSESSMENT

Novato, California

January 13, 2020

Prepared for:

Doug Fowler
Project Manager
Habitat for Humanity Greater San Francisco
500 Washington Street, Suite 250
San Francisco, CA 94111

Prepared by:

Casey Divine and
James A. Reyff

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality
429 East Cotati Avenue
Cotati, CA 94931
(707) 794-0400

I&R Project#: 20-128

Introduction

The purpose of this report is to address air quality, community health risk, and greenhouse gas (GHG) impacts associated with the Habitat Redwood Boulevard project located at 8161 Redwood Boulevard in Novato, California. The air quality impacts and GHG emissions would be associated with the construction of new building and infrastructure and operation of the project. Air pollutant and GHG emissions associated with the construction and operation of the project were predicted using appropriate computer models. In addition, the potential health risk impact of existing toxic air contaminant (TAC) sources affecting the proposed sensitive receptors were evaluated. This analysis addresses those issues following the guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1]

This air quality analysis was prepared using information reflective of pre-COVID conditions and Shelter-in-Place orders. The only input to this air quality analysis that could be affected by COVID and Shelter-in-Place conditions is traffic. The project's trip generation information provided by the traffic consultant, which was used to assess operational air pollutant and GHG emissions, was calculated from the 2017 ITE Trip Generation 10th Edition. The traffic volumes on U.S. 101, which was used to evaluate the highway's TACs and $PM_{2.5}$ impacts on the project site, was calculated by Caltrans based on 2019 traffic volumes.

Project Description

The 13.6-acre project site is currently vacant. On 8.0 acres of the site, the project proposes to construct a total of 23 residential buildings containing 105,575 square feet (sf) and 80 affordable multi-family dwelling units, a 2,154-sf office building, and 185 total parking spaces. There would be 23 parking spaces provided for the office building and 162 spaces provided along the residential road. The site is laid out in an oval pattern around a central open space with many community amenities. A one-way loop road is being proposed with access provided off Redwood Boulevard.

Project Design Features – Construction Emissions Control

The project design includes features to minimize air quality impacts that may occur during construction. During any construction period ground disturbance, the applicant will ensure that the project contractor implement measures to control dust and exhaust. The contractor will implement the following Best Management Practices that are required of all projects:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site will be covered.

3. All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

[1] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017.

4. All vehicle speeds on unpaved roads will be limited to 15 miles per hour (mph).

5. All roadways, driveways, and sidewalks to be paved will be completed as soon as possible. Building pads will be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The Air District's phone number will also be visible to ensure compliance with applicable regulations.

The practices above are consistent with BAAQMD-recommended basic control measures for reducing fugitive particulate matter that are contained in the BAAQMD CEQA Air Quality Guidelines. These controls on construction equipment emissions are intended to reduce emissions of air pollutants and toxic air contaminants.

Project Design Features – Sensitive Receptor Exposure Control

The project design includes features to minimize air quality impacts that may occur during the operation of the project. Filtration in ventilation systems at the project site would be required to reduce the level of harmful pollutants to below the significant thresholds. The significant exposure for new project receptors is judged by two effects: (1) increased cancer risk, and (2) annual $PM_{2.5}$ concentration. Exposure to cancer risk and annual $PM_{2.5}$ concentrations from U.S. 101 traffic are above their respective thresholds at the project site. Cancer risk is mostly the result of exposure to diesel particulate matter, although, gasoline vehicle exhaust contributes to this effect. Annual $PM_{2.5}$ concentrations are based on the exposure to $PM_{2.5}$ resulting from emissions attributable to truck and auto exhaust, the wearing of brakes and tires and re-entrainment of roadway dust from vehicles traveling over pavement. The modeled $PM_{2.5}$ exposure to future residents drives the project design plan. Reducing particulate matter exposure would reduce both annual $PM_{2.5}$ exposures and cancer risk.

The project shall include the following measures to minimize long-term increased cancer risk and annual $PM_{2.5}$ exposure for new project occupants:

1. Install air filtration in all of the residential buildings on the project site. Air filtration devices shall be rated MERV13 or higher. To ensure adequate health protection to sensitive

receptors (i.e., residents), this ventilation system, whether mechanical or passive, shall filter all fresh air that would be circulated into the dwelling units.

2. The ventilation system shall be designed to keep the building at positive pressure when doors and windows are closed to reduce the intrusion of unfiltered outside air into the building

3. As part of implementing this measure, an ongoing maintenance plan for the buildings' heating, ventilation, and air conditioning (HVAC) air filtration system shall be required.

4. Ensure that the use agreement and other property documents: (1) require cleaning, maintenance, and monitoring of the affected buildings for air flow leaks, (2) include assurance that new owners or tenants are provided information on the ventilation system, and (3) include provisions that fees associated with owning or leasing a unit(s) in the building include funds for cleaning, maintenance, monitoring, and replacements of the filters, as needed.

Effectiveness of Project Design Features

A properly installed and operated ventilation system with MERV13 would achieve an 80-percent reduction. The overall effectiveness calculations take into account the amount of time spent outdoors and away from home. Assuming that the filtration system is 80-percent effective and the individual is being exposed to 21 hours of indoor filtered air and three hours of outdoor unfiltered air, then the overall effectiveness of a MERV13 filtration system would be about 70-percent for DPM and $PM_{2.5}$ exposure.

Air Quality Setting

The project is located in Marin County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

Air Pollutants of Concern

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NO_X). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduce lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5

micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic Air Contaminants

TACs are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter [DPM] near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs. The most recent Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines were published in February of 2015.[2] See *Attachment 1* for a detailed description of the community risk modeling methodology used in this assessment.

Odors

Odor impacts are subjective in nature and are generally regarded as an annoyance rather than a health hazard. The ability to detect and react to odors varies considerably among people. A strong or unfamiliar odor is more easily detected and are more likely to cause complaints. BAAQMD responds to odor complaints from the public and considers a source to have a substantial number of odor complaints if the complaint history includes five or more confirmed complaints per year averaged over a 3-year period. Facilities that are regulated by CalRecycle (e.g. landfill, composting, etc.) are required to have *Odor Impact Minimization Plans* in place.

Regulatory Agencies

Federal Regulations

The United States Environmental Protection Agency (EPA) sets nationwide emission standards for mobile sources, which include on-road (highway) motor vehicles such trucks, buses, and automobiles, and non-road (off-road) vehicles and equipment used in construction, agricultural,

[2] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.

industrial, and mining activities (such as bulldozers and loaders). The EPA also sets nationwide fuel standards. California also has the ability to set motor vehicle emission standards and standards for fuel used in California, as long as they are the same or more stringent than the Federal standards.

In the past decade the EPA has established a number of emission standards for on- and non-road heavy-duty diesel engines used in trucks and other equipment. This was done in part because diesel engines are a significant source of nitrogen oxides, or NO_X, and particulate matter (PM_{10} and $PM_{2.5}$) and because the EPA has identified diesel particulate matter as a probable carcinogen. Implementation of the heavy-duty diesel on-road vehicle standards and the non-road diesel engine standards are estimated to reduce PM and NO_X emissions from diesel engines up to 95 percent in 2030 when the heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards.[3]

In concert with the diesel engine emission standards, the EPA has also substantially reduced the amount of sulfur allowed in diesel fuels. The sulfur contained in diesel fuel is a significant contributor to the formation of particulate matter in diesel-fueled engine exhaust. The new standards reduced the amount of sulfur allowed by 97 percent for highway diesel fuel (from 500 parts per million by weight [ppmw] to 15 ppmw), and by 99 percent for off-highway diesel fuel (from about 3,000 ppmw to 15 ppmw). The low sulfur highway fuel (15 ppmw sulfur), also called ultra-low sulfur diesel (ULSD) is currently required for use by all vehicles in the U.S.

All of the above Federal diesel engine and diesel fuel requirements have been adopted by California, in some cases with modifications making the requirements more stringent or the implementation dates sooner.

State Regulations

To address the issue of diesel emissions in the state, CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles[4]. In addition to requiring more stringent emission standards for new on-road and off-road mobile sources and stationary diesel-fueled engines to reduce particulate matter emissions by 90 percent, a significant component of the plan involves application of emission control strategies to existing diesel vehicles and equipment. Many of the measures of the Diesel Risk Reduction Plan have been approved and adopted, including the Federal on-road and non-road diesel engine emission standards for new engines, as well as adoption of regulations for low sulfur fuel in California.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. CARB

[3] USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.

[4] California Air Resources Board, 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October.

regulations require on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet 2010 or later engine standards that have much lower DPM and $PM_{2.5}$ emissions. This regulation will substantially reduce these emissions between 2013 and 2023. While new trucks and buses will meet strict federal standards, this measure is intended to accelerate the rate at which the fleet either turns over so there are more cleaner vehicles on the road or is retrofitted to meet similar standards. With this regulation, older, more polluting trucks would be removed from the roads sooner.

CARB has also adopted and implemented regulations to reduce DPM and NO_X emissions from in-use (existing) and new off-road heavy-duty diesel vehicles (e.g., loaders, tractors, bulldozers, backhoes, off-highway trucks, etc.). The regulations apply to diesel-powered off-road vehicles with engines 25 horsepower (hp) or greater. The regulations are intended to reduce particulate matter and NO_X exhaust emissions by requiring owners to turn over their fleet (replace older equipment with newer equipment) or retrofit existing equipment in order to achieve specified fleet-averaged emission rates. Implementation of this regulation, in conjunction with stringent Federal off-road equipment engine emission limits for new vehicles, will significantly reduce emissions of DPM and NO_X.

Bay Area Air Quality Management District (BAAQMD)

BAAQMD has jurisdiction over an approximately 5,600-square mile area, commonly referred to as the San Francisco Bay Area (Bay Area). The District's boundary encompasses the nine San Francisco Bay Area counties, including Alameda County, Contra Costa County, Marin County, San Francisco County, San Mateo County, Santa Clara County, Napa County, southwestern Solano County and southern Sonoma County.

BAAQMD is the lead agency in developing plans to address attainment and maintenance of the National Ambient Air Quality Standards and California Ambient Air Quality Standards. The District also has permit authority over most types of stationary equipment utilized for the proposed project. The BAAQMD is responsible for permitting and inspection of stationary sources; enforcement of regulations, including setting fees, levying fines, and enforcement actions; and ensuring that public nuisances are minimized.

The BAAQMD *California Environmental Quality Act (CEQA) Air Quality Guidelines*[5] were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for air toxics, odors, and greenhouse gas emissions. *Attachment 1* includes detailed community risk modeling methodology.

[5] Bay Area Air Quality Management District, 2011. *CEQA Air Quality Guidelines*. May. (Updated May 2017)

City of Novato General Plan 2035

The *Novato General Plan 2035*[6] was adopted by the Novato City Council on October 27, 2020 and includes goals, policies, and programs to improve air quality issues facing the City of Novato. The following goals, policies, and programs are applicable to the proposed project:

Goal ES 2: Maintain clean, healthful air.

ES 17: Clean Air. Work to protect and improve air quality.

ES 17a: Clean Air Plan. Cooperate with the Bay Area Air Quality Management District in implementing the regional Clean Air Plan.

ES 24: Emission Reduction Targets. Establish reduction targets for GHG emissions and actively implement local strategies to reduce the effects of climate change.

ES 24a: Emission Reduction Goals. Implement cost-effective strategies to achieve reductions in greenhouse gas emissions consistent with the City's goal of a 15% reduction below 2005 emission levels by 2020, and a 40% reduction in 2005 emissions by 2035.

ES 24b: Implementation. Implement the Emission Reduction Measures contained in Appendix E to achieve projected reductions in greenhouse gas emissions as feasible.

ES 24c: Monitoring Emissions. Periodically update the greenhouse gas emissions inventory for both community and City emissions and quantify success in meeting reduction measures to monitor achievement of emission reduction targets.

City of Novato Climate Change Action Plan

Adopted in December 2009, the *Novato Climate Change Action Plan* includes a GHG reduction target of 15 percent below 2005 levels by 2020, consistent with the State's AB32 (2007) target, and a 40 percent reduction by 2035.[7] In 2015, the City reaffirmed the GHG targets and supported one of the four new programs presented in the *Climate Change Action Plan White Paper*.[8]

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, the elderly

[6] City of Novato, California (February 2020). "Chapter 3: Environmental Stewardship". *City of Novato General Plan 2035 Draft.* https://www.novato.org/home/showpublisheddocument?id=30461
[7] City of Novato, California (2009). *City of Novato Climate Change Action Plan.* https://www.novato.org/home/showpublisheddocument?id=29116
[8] City of Novato, California (2015). *City of Novato General Plan 2035 Policy White Paper Climate Change Action Plan.* https://www.novato.org/home/showpublisheddocument?id=12601

over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, and elementary schools. For cancer risk assessments, infants and children are the most sensitive receptors, since they are more susceptible to cancer causing TACs. Residential locations are assumed to include infants and small children. The closest sensitive receptors to the project site are in the single-family home over 1,100 feet south of the project site.

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA and these significance thresholds were contained in the District's 2011 *CEQA Air Quality Guidelines*. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. The thresholds were challenged through a series of court challenges and were mostly upheld. BAAQMD updated the *CEQA Air Quality Guidelines* in 2017 to include the latest significance thresholds that were used in this analysis are summarized in Table 1.

Table 1. BAAQMD Air Quality Exceedance Thresholds

Criteria Air Pollutant	**Construction Thresholds**	**Operational Thresholds**	
	Average Daily Emissions (lbs./day)	**Average Daily Emissions (lbs./day)**	**Annual Average Emissions (tons/year)**
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards	**Single Sources Within 1,000-foot Zone of Influence**	**Combined Sources (Cumulative from all sources within 1,000-foot zone of influence)**	
Excess Cancer Risk	>10.0 per one million	>100 per one million	
Hazard Index	>1.0	>10.0	
Incremental annual $PM_{2.5}$	>0.3 µg/m^3	>0.8 µg/m^3	
Greenhouse Gas Emissions			
Land Use Projects – direct and indirect emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually or 4.6 metric tons per capita (for 2020) *		

Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.

*BAAQMD does not have a recommended post-2020 GHG threshold.

AIR QUALITY IMPACTS

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

BAAQMD is the regional agency responsible for overseeing compliance with State and Federal laws, regulations, and programs within the San Francisco Bay Area Air Basin (SFBAAB). BAAQMD, with assistance from the Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC), prepares and implements specific plans to meet the applicable laws, regulations, and programs. The most recent and comprehensive of which is the *Bay Area 2017 Clean Air Plan*.[9] The primary goals of the Clean Air Plan are to attain air quality standards, reduce population exposure and protect public health, and reduce GHG emissions and protect the climate. The BAAQMD has also developed CEQA guidelines to assist lead agencies in evaluating the significance of air quality and GHG impacts. In formulating compliance strategies, BAAQMD relies on planned land uses established by local general plans. Land use planning affects vehicle travel, which, in turn, affects region-wide emissions of air pollutants and GHGs.

The 2017 Clean Air Plan, adopted by BAAQMD in April 2017, includes control measures that are intended to reduce air pollutant emissions in the Bay Area either directly or indirectly. Plans must show consistency with the control measures listed within the Clean Air Plan. At the project-level, there are no consistency measures or thresholds. The proposed project would not conflict with the latest Clean Air planning efforts since the project would have emissions below the BAAQMD thresholds (see below).

Impact AIR-2: 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?

The Bay Area is considered a non-attainment area for ground-level O_3 and $PM_{2.5}$ under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM_{10} under the California Clean Air Act, but not the federal act. The area has attained both State and Federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for O_3, $PM_{2.5}$ and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for O_3 precursor pollutants (ROG and NOx), PM_{10}, and $PM_{2.5}$ and apply to both construction period and operational period impacts.

Construction Period Emissions

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions from on-site construction activity, construction vehicle trips, and evaporative emissions. The project land use types and size, and anticipated construction schedule were input to CalEEMod. The CARB EMission FACtors 2017 (EMFAC2017) model was used to predict emissions from construction traffic, which includes worker travel, vendor trucks, and haul trucks.[10]

[9] Bay Area Air Quality Management District (BAAQMD), 2017. *Final 2017 Clean Air Plan.*
[10] See CARB's EMFAC2017 Web Database at https://www.arb.ca.gov/emfac/2017/

The CalEEMod model output along with construction inputs are included in *Attachment 2* and EMFAC2017 vehicle emissions modeling outputs are included in *Attachment 3*.

CalEEMod Inputs

Land Use Inputs

The project is anticipated to be developed in two construction phases. The housing will be phased, with 42 homes in 11 buildings in Phase 1, and 38 homes in 12 buildings in Phase 2. The proposed project land uses were entered into CalEEMod as described in Table 2.

Table 1. Summary of Project Land Use Inputs

Project Land Uses	Size	Units	Square Feet (sf)	Acreage
Phase I: 2022-2024				
Apartment Low Rise	42	Dwelling Units	55,427	4.2
General Office Building	2.154	1,000-sf	2,154	
Parking Lot	108	Parking Spaces	45,000	
Phase II: 2023-2026				
Apartment Low Rise	38	Dwelling Units	50,148	3.8
Parking Lot	77	Parking Spaces	45,000	

Construction Inputs

CalEEMod computes annual emissions for construction that are based on the project type, size, and acreage. The model provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. The construction build-out scenario, including equipment list and schedule, were based on construction information provided by the project applicant.

The construction equipment worksheet provided by the applicant included the schedule for each phase. Within each phase, the quantity of equipment to be used along with the average hours per day and total number of workdays was provided. Since different equipment would have different estimates of the working days per phase, the hours per day for each phase was computed by dividing the total number of hours that the equipment would be used by the total number of days in that phase. The construction schedule assumed that the earliest possible start date would be March 2022 and the project would be built out over a period of approximately 4 year and 3 months, or 1,080 construction workdays. The first year of operation for the entire project was assumed to be 2026.

Construction Truck Traffic Emissions

The latest version of the CalEEMod model is based on the older version of the CARB EMFAC2014 motor vehicle emission factor model. This model has been superseded by the EMFAC2017 model; however, CalEEMod has not been updated to include EMFAC2017.

Construction would produce traffic in the form of worker trips and truck traffic. The traffic-related emissions are based on worker and vendor trip estimates produced by CalEEMod and haul trips that were computed based on the estimate of soil material imported and/or exported to the site and the estimate of cement and asphalt truck trips. CalEEMod provides daily estimates of worker and vendor trips for each applicable phase. The total trips for those were computed by multiplying the daily trip rate by the number of days in that phase. For both construction phases, the applicant provided the amount of soil export. The number of concrete and asphalt total round haul trips were estimated based on the building and pavement square footages provided by the applicant for each phase and converted to total one-way trips, assuming two trips per round-trip delivery.

The construction traffic information was combined with EMFAC2017 motor vehicle emissions factors. EMFAC2017 provides aggregate emission rates in grams per mile for each vehicle type. The vehicle mix for this study was based on CalEEMod default assumptions, where worker trips are assumed to be comprised of light-duty autos (EMFAC category LDA) and light duty trucks (EMFAC category LDT1and LDT2). Vendor trips are comprised of delivery and large trucks (EMFAC category MHDT and HHDT) and haul trips, including cement trucks, are comprised of large trucks (EMFAC category HHDT). Travel distances are based on CalEEMod default lengths, which are 10.8 miles for worker travel, 7.3 miles for vendor trips and 20 miles for hauling (demolition material export and soil import/export). Since CalEEMod does not address cement or asphalt trucks, these were treated as vendor travel distances. Each trip was assumed to include an idle time of 5 minutes. Emissions associated with vehicle starts were also included. On-road emission rates for years 2022-2026 for Marin County were used. Table 3 provides the traffic inputs that were combined with the EMFAC2017 emission factors to compute vehicle emissions.

Table 3. Construction Traffic Data Used for EMFAC2017 Model Runs

CalEEMod Run/Land Uses and Construction Phase	Trips by Trip Type			Notes
	Total Worker[1]	Total Vendor[1]	Total Haul[2]	
Vehicle mix[1]	67.3% LDA 7.4% LDT1 25.3% LDT2	50.7% MHDT 49.3% HHDT	100% HHDT	
Trip Length (miles)	10.8	7.3	20.0 (Demo/Soil) 7.3 (Cement/Asphalt)	CalEEMod default distance with 5-min truck idle time.
Phase I: 2022-2024				
Phase I - Site Development & Paving	3,000	-	3,247	24,910-cy import. 45,000-sf asphalt and 15,000-sf concrete. CalEEMod default worker trips.
Home Const – Foundations	10,080	-	240	27,000-sf cement. CalEEMod default worker trips.
Office Building Construction	8,400	2,016	20	2,300-sf cement. CalEEMod default worker and vendor trips.
Home Const – Framing, Rough, Enclose	24,000	5,760	-	CalEEMod default worker and vendor trips.
Home Const – Trim & Finish	5,190	-	89	10,000-sf cement CalEEMod default worker trips.
Phase II: 2023-2026				
Phase I - Site Development & Paving	3,960	-	3,247	24,910-cy import. 45,000-sf asphalt and 15,000-sf concrete. CalEEMod default worker trips.
Home Const – Foundations	13,680	-	222	25,000-sf cement. CalEEMod default worker trips.
Home Const – Framing, Rough, Enclose	22,080	5,280	-	CalEEMod default worker and vendor trips.
Home Const – Trim & Finish	4,320	-	89	10,000-sf cement CalEEMod default worker trips.

Notes: [1] Based on 2022-2026 EMFAC2017 light-duty vehicle fleet mix for Marin County.
[2] Includes grading trips estimated by CalEEMod based on amount of material to be removed.

Summary of Computed Construction Period Emissions

Average daily emissions were annualized for each year of construction by dividing the annual construction emissions by the number of active workdays during that year. Table 4 shows average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 4, predicted construction period emissions would not exceed the BAAQMD significance thresholds.

Table 4. Construction Period Emissions

Year	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Emissions Per Year (Tons)				
2022 (Phase I)	0.18	1.62	0.08	0.07
2023 (Phase I & II)	0.56	2.87	0.15	0.13
2024 (Phase I & II)	0.61	2.35	0.12	0.11
2025 (Phase II)	0.41	1.58	0.07	0.06
2026 (Phase II)	0.11	0.26	0.01	0.01
Annualized Daily Construction Emissions (pounds/day)				
2022 (202 construction workdays)	1.78	16.06	0.81	0.71
2023 (260 construction workdays)	4.28	22.06	1.14	1.01
2024 (262 construction workdays)	4.68	17.93	0.93	0.81
2025 (261 construction workdays)	3.10	12.10	0.54	0.49
2026 (95 construction workdays)	2.23	5.45	0.27	0.22
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	No	No	No	No

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less-than-significant if best management practices are implemented to reduce these emissions. As part of the project design, the project would include construction emissions control features that would implement BAAQMD-recommended best management practices.

Operational Period Emissions

Operational air emissions from the project would be generated primarily from autos driven by future residents and employees. Evaporative emissions from architectural coatings and maintenance products (classified as consumer products) are typical emissions from these types of uses. CalEEMod was used to estimate emissions from operation of the proposed project assuming full build-out.

CalEEMod Inputs

Land Uses

Project construction would occur in two phases over multiple, overlapping years. Therefore, a separate CalEEMod run was conducted to calculate the operational emissions of the entire completed project. The proposed operational land uses for the completed project were input into CalEEMod as follows:

- 80 dwelling units and 105,575-sf entered as “Apartments Low Rise” on 7.95 acres,
- 2,154,575-sf entered as “General Office Building” on 0.05 acres, and
- 185 spaces entered as “Parking Lot”.

Model Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest year of operation for the entire project would be 2026 if construction begins in 2022. Emissions associated with build-out later than 2026 would be lower.

Trip Generation Rates

CalEEMod allows the user to enter specific vehicle trip generation rates. Therefore, the project-specific daily trip generation rate provided by the traffic consultant was entered into the model.[11] The weekday trip generation rates were adjusted using the traffic daily rates. The Saturday and Sunday trip rates were adjusted by multiplying the ratio of the CalEEMod default rates for Saturday and Sunday trips to the default weekday rate with the project-specific daily weekday trip rate. The default trip lengths and trip types specified by CalEEMod were used. The project would produce 599 daily trips.

EMFAC2017 Adjustment

The vehicle emission factors and fleet mix used in CalEEMod are based on EMission FACtors from 2014 (EMFAC2014), which is an older CARB emission inventory for on road and off road mobile sources. Since the release of CalEEMod Version 2016.3.2, new emission factors have been produced by CARB. EMFAC2017 became available for use in March 2018 and approved by the EPA in August 2019. It includes the latest data on California's car and truck fleets and travel activity. Additionally, CARB has recently released EMFAC off-model adjustment factors to account for the Safer Affordable Efficient (SAFE) Vehicle Rule Part one.[12,13] The SAFE vehicle Rule Part One revoked California's authority to set its own GHG emission standards and set zero emission vehicle mandates in California. As a result of this ruling, mobile criteria pollutant and GHG emissions would increase. Therefore, the CalEEMod vehicle emission factors and fleet mix were updated with the emission rates and fleet mix from EMFAC2017, which were adjusted with the CARB EMFAC off-model adjustment factors. More details about the updates in emissions calculation methodologies and data are available in the EMFAC2017 Technical Support Document.[14]

[11] Email correspondence with Bob Grandy, Principal, Fehr & Peers, November 27, 2020.
[12] California Air Resource Board, 2019. *EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One*. November. Web: https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf
[13] California Air Resource Board, 2020. *EMFAC Off-Model Adjustment Factors for Carbon Dioxide (CO_20 Emissions to Accounts for the SAFE Vehicles Rule Part One and the Final SAFE Rule*. June. Web: https://ww3.arb.ca.gov/msei/emfac_off_model_co2_adjustment_factors_06262020-final.pdf?utm_medium=email&utm_source=govdelivery
[14] See CARB 2018: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-modeling-tools-emfac

Energy

CalEEMod defaults for energy use were used, which include the 2016 Title 24 Building Standards. Indirect emissions from electricity were computed in CalEEMod. The model has a default rate of 641.3 pounds of CO_2 per megawatt of electricity produced, which is based on PG&E's 2008 emissions rate. However, PG&E published in 2019 emissions rates for 2010 through 2017, which showed the emission rate for delivered electricity had been reduced to 210 pounds CO_2 per megawatt of electricity delivered in the year 2017.[15]

In addition, Marin Clean Energy (MCE) now provides electricity to 86 percent of Marin County, with 60 percent renewable and 100 percent being carbon free electricity by 2022. The 2017 CO_2 intensity rate provided by MCE was 109 pounds of CO_2 per megawatt of electricity delivered.[16] The CO_2 intensity rate input into CalEEMod was adjusted to account for 86 percent participation of MCE's rate and 14 percent of PG&E's rate. The computed rate is 123 pounds of CO_2 per megawatt of electricity delivered. This rate was used in the model.

Other Inputs

Default model assumptions for emissions associated with solid waste generation use were applied to the project. Water/wastewater use were changed to 100% aerobic conditions to represent wastewater treatment plant conditions. All hearths were assumed to be powered by natural gas per BAAQMD Regulation 6, Rule 3, which requires that new building construction not install a wood-burning device (effective as of November 1, 2016).[17]

Existing Uses

The project would be built on a parcel that is vacant. Therefore, existing land use emissions would not exist, nor used to offset proposed project conditions.

Summary of Computed Operational Period Emissions

Annual emissions were predicted using CalEEMod and daily emissions were estimating assuming 365 days of operation. Table 5 shows average daily emissions of ROG, NO_X, total PM_{10}, and total $PM_{2.5}$ during operation of the project. The operational period emissions would not exceed the BAAQMD significance thresholds.

[15] PG&E, 2019. *Corporate Responsibility and Sustainability Report*. Web: http://www.pgecorp.com/corp_responsibility/reports/2019/assets/PGE_CRSR_2019.pdf
[16] Correspondence with Rebecca Boyles, Marin Clean Energy, August 2, 2019.
[17] Bay Area Air Quality Management District, https://www.baaqmd.gov/~/media/dotgov/files/rules/regulation-6-rule-3/documents/20191120_r0603_final-pdf.pdf?la=en

Table 5. Operational Period Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2026 Project Operational Emissions (*tons/year*)	0.85 tons	0.37 tons	0.52 tons	0.15 tons
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Thresholds?	No	No	No	No
2026 Project Operational Emissions (*lbs./day*)[1]	4.66 lbs.	2.02 lbs.	2.83 lbs.	0.81 lbs.
BAAQMD Thresholds (lbs./day)	*54 lbs.*	*54 lbs.*	*82 lbs.*	*54 lbs.*
Exceed Threshold?	No	No	No	No

Notes: [1] Assumes 365-day operation.

Impact AIR-3: Expose sensitive receptors to substantial pollutant concentrations?

BAAQMD has developed community risk thresholds that evaluate increased cancer risk, non-cancer adverse health impacts in terms of a hazard index and annual $PM_{2.5}$ concentrations (see Table 1). Project construction would be a temporary source of TAC and $PM_{2.5}$ emissions. Most on-site construction equipment would be diesel-powered. DPM that would be emitted from this equipment and trucks used during construction, is a TAC that can elevate cancer risk and $PM_{2.5}$ concentrations. Operation of the project is not expected to be a source of TAC emissions that could affect sensitive receptors.

In applying the community risk thresholds, BAAQMD recommends that sensitive receptors within 1,000 feet of a project be considered. Those receptors further away are not expected to experience significant impacts from a project. The closest sensitive receptors to the project are located beyond 1,000 feet at more than 1,100 feet south of the project site. Figure 1 shows the project area and the area within 1,000 feet of the site. A health risk assessment of the project construction activities was not conducted since sensitive receptors are located more than 1,000 feet away from the site. Given the large distance and temporary nature of this impact, community risk caused by construction would not exceed significant thresholds. It should be noted that the project design features for construction emissions control would substantially reduce the emissions of TACs and $PM_{2.5}$ during construction.

The long-term operation of the project is not expected to cause any localized emissions that could expose sensitive receptors to unhealthy air pollutant levels. When operating, the project would generate some automobile traffic and infrequent truck traffic. However, the number of net daily trips generated by the project are small (i.e. 599 daily trips)[18] and emissions from automobile traffic generated by the project would be fairly low and spread out over a broad geographical area and not localized. There would be no other operational sources of TAC or $PM_{2.5}$ since no stationary sources of TACs, such as generators, are proposed as part of the project.

The project in the short-term (i.e., during construction) or long-term (i.e., operation) would not cause cancer risk, non-cancer health effects or annual $PM_{2.5}$ concentrations to exceed the community risk thresholds.

[18] Email correspondence with Bob Grandy, Principal, Fehr & Peers, November 27, 2020.

Non-CEQA: On-site Community Risk Assessment for TAC Sources - New Project Residences

There are several sources of existing TACs and localized air pollutants in the vicinity of the project. A health risk assessment was completed to assess the impact that these existing TAC sources would have on the new proposed sensitive receptors (residents) that the project would introduce.[19] As part of the incorporated project design features, project would include MERV13 air filtration systems throughout all of the proposed residential buildings.

Community Risk Methodology

Community risk impacts were addressed by predicting increased cancer risk, the increase in annual $PM_{2.5}$ concentrations and computing the Hazard Index (HI) for non-cancer health risks. To evaluate the increased cancer risks upon the project, a 30-year exposure period was used, per BAAQMD guidance,[20] with the sensitive receptors being exposed to existing TAC sources during this timeframe. The project maximally exposed individual (MEI) is identified as the on-site sensitive receptor that is most impacted by the existing TAC sources.

The methodology for computing community risks impacts is contained in *Attachment 1*. This involved the calculation of TAC and $PM_{2.5}$ emissions, dispersion modeling of these emissions, and computations of cancer risk and non-cancer health effects.

Impact of Existing TAC Sources on the Project Site Sensitive Receptors

Community health risk assessments typically look at all substantial sources of TACs that can affect sensitive receptors that are located within 1,000 feet of the project site (i.e. influence area). These sources include rail lines, freeways or highways, busy surface streets, and stationary sources identified by BAAQMD. A review of the project area indicates that traffic on U.S. Highway 101 (U.S. 101) has an average daily traffic (ADT) of over 10,000 vehicles. All other roadways within the area are assumed to have an ADT that is less than 10,000 vehicles. The Sonoma-Marin Rail Transit (SMART) rail line, located approximately 600 feet east of the project site, includes the operation of diesel-powered passenger trains. One stationary source was identified within the 1,000-foot influence area using the BAAQMD's stationary source geographic information systems (GIS) map tool.[21] Figure 1 shows the existing TAC sources affecting the project site. Community risk impacts from these sources upon the project site sensitive receptors are reported in Table 6. Details of the modeling and community risk calculations are included in *Attachment 4.*

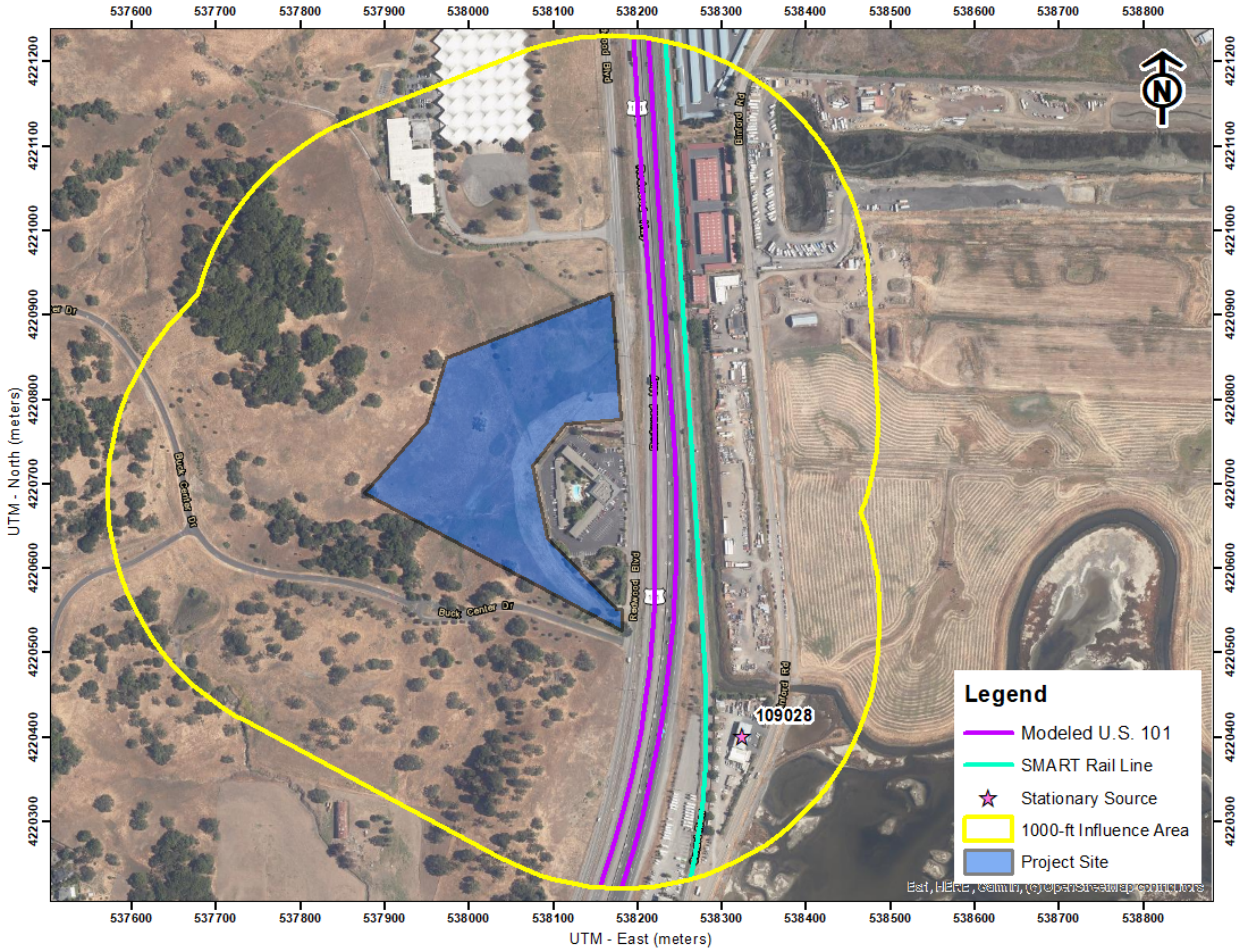
---

[19] We note that to the extent this analysis considers *existing* air quality issues in relation to the impact on *future residents* of the Project, it does so for informational purposes only pursuant to the judicial decisions in *CBIA v. BAAQMD* (2015) 62 Cal.4th 369, 386 and *Ballona Wetlands Land Trust v. City of Los Angeles* (2011) 201 Cal.App.4th 455, 473, which confirm that the impacts of the environment on a project are excluded from CEQA unless the project itself "exacerbates" such impacts.

[20] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines.* December 2016.

[21] BAAQMD, https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65

Figure 1. Project Site and Nearby TAC Sources



Highways – U.S. Highway 101

The project site is located near U.S. 101. A refined analysis of the impacts of TACs and $PM_{2.5}$ to the project site receptors are necessary to evaluate potential cancer risks and $PM_{2.5}$ concentrations from U.S. 101. A review of the traffic information reported by the California Department of Transportation (Caltrans) indicates that in 2019 U.S. 101 traffic had 85,000 vehicles per day (based on an annual average)[22] with about 4.4 percent trucks, of which 2.4 percent are medium duty trucks and 2.0 percent are considered diesel heavy duty trucks. [23]

Traffic Emissions Modeling

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on U.S. 101 using the Caltrans version of the CARB EMFAC2017 emissions model, known as CT-EMFAC2017. CT-EMFAC2017 provides emission factors for mobile source criteria pollutants and TACs, including DPM. Emission processes modeled include running exhaust for DPM, $PM_{2.5}$ and total organic compounds (TOG), running evaporative losses for TOG, and tire

[22] Caltrans. 2020. *2019 Traffic Volumes California State Highways.*
[23] Caltrans. 2020. *2019 Annual Average Daily Truck Traffic on the California State Highway System*

and brake wear and fugitive road dust for $PM_{2.5}$. DPM emissions are projected to decrease in the future and are reflected in the CT-EMFAC2017 emissions data. Inputs to the model include region (i.e., Marin County), type of road (i.e., freeway), traffic mix assigned by CT-EMFAC2017 for the county and adjusted for the local truck mix on U.S. 101, year of analysis (i.e., total project operational year of 2026), and season (i.e., annual).

In order to estimate TAC and $PM_{2.5}$ emissions over the 30-year exposure period used for calculating increased cancer risks to the project site receptors from traffic on U.S. 101, the CT-EMFAC2017 model was used to develop vehicle emission factors for the year 2026 (total project operational year) using the calculated mix of cars and trucks on U.S. 101. Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CT-EMFAC2017. Year 2026 emissions were conservatively assumed as being representative of future conditions over the time period that cancer risks are evaluated (30 years), since, as discussed above, overall vehicle emissions, and in particular diesel truck emissions will decrease in the future. Average daily traffic volumes and truck percentages were based on Caltrans data for U.S. 101. Traffic volumes were assumed to increase 1 percent per year. Hourly traffic distributions specific to this segment of U.S. 101 were obtained from Caltrans Performance Measurement System (PeMS). PeMS data is collected in real-time from nearly 40,000 individual detectors spanning the freeway system across all major metropolitan areas of California.[24] The fraction of traffic volume each hour was calculated and applied to the 2026 average daily traffic volumes estimate to estimate hourly traffic emission rates for U.S. 101.

For all hours of the day, other than during peak a.m. and p.m. periods, an average speed of 65 mph was assumed for all vehicles on U.S. 101. Based on traffic data from the Transportation Authority of Marin's 2017 conformance monitoring program report, traffic speeds during the peak a.m. and p.m. periods were identified.[25] For a 2-hour period during the peak a.m. period, an average travel speed of 45 mph was used for southbound traffic and the free-flow average speed was used for northbound traffic. For the peak p.m. period, an average travel speed of 30 mph was used for northbound traffic and the free-flow average speed was used for southbound traffic.

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for future traffic on U.S. 101 and using these emissions with an air quality dispersion model to calculate TAC and $PM_{2.5}$ concentrations at the project site sensitive receptor location. Maximum increased cancer risks and annual $PM_{2.5}$ concentrations for the receptors were then computed using modeled TAC and $PM_{2.5}$ concentrations and BAAQMD methods and exposure parameters described in *Attachment 1*.

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the U.S. EPA AERMOD dispersion model, which is recommended by the BAAQMD for this type of analysis. Northbound and southbound traffic on U.S. 101 within about 1,000 feet of the project site was evaluated with the model. Emissions from vehicle traffic were modeled in AERMOD using a series of volume

[24] https://dot.ca.gov/programs/traffic-operations/mpr/pems-source
[25] Transportation Authority of Marin. *2017 CMP Update.* Final Report, November 2017.

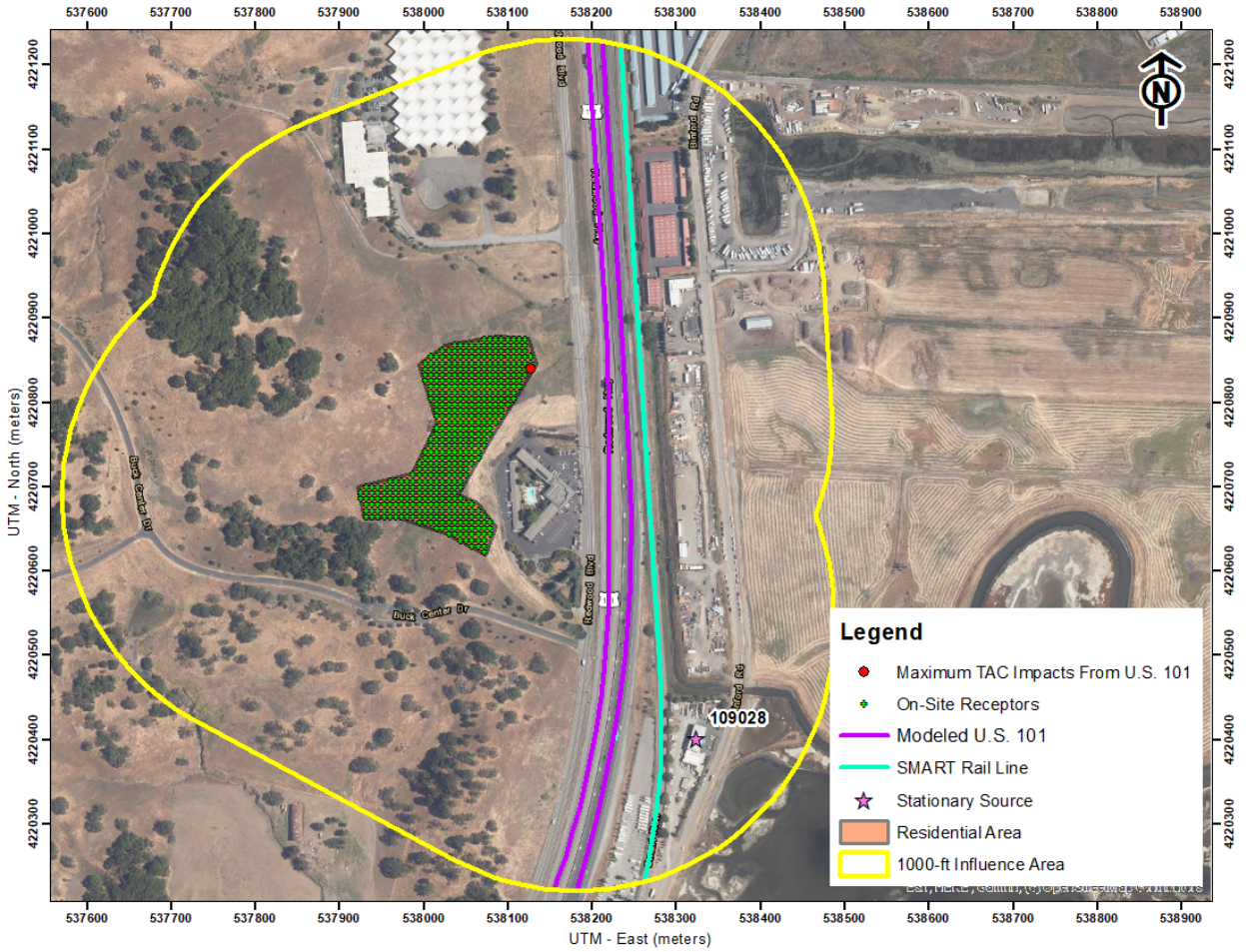
sources along a line (line-volume sources), with line segments used to represent northbound and southbound travel lanes on U.S. 101. The modeling used a five-year data set (2013-2017) of hourly meteorological data from Gnoss Field Airport in Novato prepared by the BAAQMD for use with the AERMOD model. Other inputs to the model included road geometry and elevations, hourly traffic emissions, and receptor location, elevations, and heights. Roadway and receptor elevations were based on USGS National Elevation Data (NED) with a 10-meter resolution.

The project set of receptors placed within the project residential area are spaced every 23 feet (7 meters). Project residential units in the new buildings would be located on all floor levels. Highway impacts were modeled at receptor heights of 5 feet (1.5 meters) and 15 feet (4.5 meters) representing sensitive receptors on the first and second floors. Project sensitive receptors higher than the second floor would have highway impacts less than those on the second floor. The closest project site residential building is about 275 feet west from U.S. 101. Figure 2 shows the roadway links and on-site receptor locations used in the modeling.

Computed Cancer and Non-Cancer Health Impacts

The maximum impacts occurred at a receptor height of 5 feet (first floor level) at the residential units in the northern residential buildings closest to U.S. 101. The location of maximum cancer risks is shown in Figure 2. Increased cancer risks at residences on floor levels above the second floor would be less than the maximum cancer risk on the second-floor level. Cancer risks and $PM_{2.5}$ concentrations associated with U.S. 101 are greatest closest to US. 101 and decrease with distance from the highway. The risk impacts from the highway on the project receptors, assuming MERV13 air filtration systems in the residential buildings, are provided in Table 6. Details of the U.S. 101 traffic emission calculations, dispersion modeling, and cancer risk calculations for the project sensitive receptors are provided in *Attachment 4.*

Figure 2. Project Site and On-Site Residential Receptors, U.S. 101 Segments Evaluated, and Location of Maximum TAC Impacts



SMART Train Line

The SMART railroad lies approximately 250 feet east of proposed project site. The SMART trains use this rail line on a regular basis. Environmental studies were performed for each proposed rail use along the line in Marin and Sonoma counties and used to predict community risk levels from these activities.[26,27] Both studies predicted maximum risk levels for a position of 30 feet from the rail line. Although these predictions are for positions much closer than depicted for this project site, they were used as screening values for this analysis. Both health risk studies for these environmental evaluations were conducted prior to BAAQMD's adoption of age-sensitivity factors, which account for the greater sensitivity of infants and small children to cancer-causing TACs. The levels predicted in each study were increased by a factor of 1.7 to account for the age-sensitivity factors that assume the presence of infants and small children at residences and were then also increased by a factor of 1.3744 to reflect new OEHHA guidance (see *Attachment 1*). The predicted cancer risk, annual $PM_{2.5}$ concentrations and non-cancer hazards at 30 feet from the

[26] Draft Environmental Impact Report (DEIR) for the North Coast Railroad Authority Project (SCH 2007072052)
[27] Supplemental Environmental Impact Report (SEIR) for the Sonoma-Marin Area Rail Transit Project (SCH 2002112033)

tracks would not exceed the BAAQMD thresholds. These levels would be considerably lower at 250 feet from the tracks where project residences would be located.

BAAQMD Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2018* GIS website.[28] This mapping tool identifies the location of nearby stationary sources and their estimated risk and hazard impacts. One source was identified using this tool with the source being a gas dispensing facility. The BAAQMD GIS website provided screening risks and hazards for both sources, so a stationary source information request was not required to be submitted to BAAQMD.

The screening average daily emissions for the source was adjusted for distance using BAAQMD's *Distance Adjustment Multiplier Tool for Gasoline Dispensing Facilities*. Community risk impacts from the stationary sources upon the project sensitive receptors are reported in Table 6.

Cumulative Community Health Risk at Project Site

Community risk impacts from the existing sources upon the project are reported in Table 6. The TAC sources are compared against the BAAQMD single-source threshold and then combined and compared against the BAAQMD cumulative-source threshold. As shown, the cancer risk, $PM_{2.5}$ concentration, and HI from the nearby sources does not exceed their single-source or cumulative-source thresholds assuming the residential buildings have MERV13 filtrations systems.

Table 6. Impacts from Combined Sources to Project Site Receptors with MERV13

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
U.S. Highway 101	4.5 (infant)	0.15	<0.01
SMART Train Line at 250 ft	<3.5	<0.01	<0.01
Cagwin and Dorward (Facility ID #109028, Gas Station) at 900 feet	<0.1	--	--
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Threshold? Unmitigated	*No*	*No*	*No*
Combined Sources *Unmitigated*	<8.1 (infant)	<0.16	<0.02
BAAQMD Cumulative Source Threshold	***>100***	***>0.8***	***>10.0***
Exceed Threshold? Unmitigated	*No*	*No*	*No*

Impact AIR-4: Create objectionable odors affecting a substantial number of people?

The project would generate localized emissions of diesel exhaust during construction equipment operation and truck activity. These emissions may be noticeable from time to time by adjacent receptors. However, they would be localized and are not likely to adversely affect people off-site by resulting in confirmed odor complaints. The project would not include any sources of significant odors that would cause complaints from surrounding uses.

[28] BAAQMD, Web: https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65

Greenhouse Gas Emissions

Setting

Gases that trap heat in the atmosphere, GHGs, regulate the earth's temperature. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate. The most common GHGs are carbon dioxide (CO_2) and water vapor but there are also several others, most importantly methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These are released into the earth's atmosphere through a variety of natural processes and human activities. Sources of GHGs are generally as follows:

- CO_2, CH_4, and N_2O are byproducts of fossil fuel combustion.
- N_2O is associated with agricultural operations such as fertilization of crops.
- CH_4 is commonly created by off-gassing from agricultural practices (e.g., keeping livestock) and landfill operations.
- Chlorofluorocarbons (CFCs) were widely used as refrigerants, propellants, and cleaning solvents but their production has been stopped by international treaty.
- HFCs are now used as a substitute for CFCs in refrigeration and cooling.
- PFCs and sulfur hexafluoride emissions are commonly created by industries such as aluminum production and semi-conductor manufacturing.

Each GHG has its own potency and effect upon the earth's energy balance. This is expressed in terms of a global warming potential (GWP), with CO_2 being assigned a value of 1 and sulfur hexafluoride being several orders of magnitude stronger. In GHG emission inventories, the weight of each gas is multiplied by its GWP and is measured in units of CO_2 equivalents (CO_2e).

An expanding body of scientific research supports the theory that global climate change is currently affecting changes in weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally occurring resources within California are adversely affected by the global warming trend. Increased precipitation and sea level rise will increase coastal flooding, saltwater intrusion, and degradation of wetlands. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes and drought; and increased levels of air pollution.

Recent Regulatory Actions for California GHG Emissions

Executive Order S-3-05 – California GHG Reduction Targets

Executive Order (EO) S-3-05 was signed by Governor Arnold Schwarzenegger in 2005 to set GHG emission reduction targets for California. The three targets established by this EO are as follows: (1) reduce California's GHG emissions to 2000 levels by 2010, (2) reduce California's GHG emissions to 1990 levels by 2020, and (3) reduce California's GHG emissions by 80 percent below 1990 levels by 2050.

Assembly Bill 32 (AB 32), California Global Warming Solutions Act (2006)

AB 32, the Global Warming Solutions Act of 2006, codified the State's GHG emissions target by directing CARB to reduce the State's global warming emissions to 1990 levels by 2020. AB 32 was signed and passed into law by Governor Schwarzenegger on September 27, 2006. Since that time, the CARB, CEC, California Public Utilities Commission (CPUC), and Building Standards Commission have all been developing regulations that will help meet the goals of AB 32 and Executive Order S-3-05.

A Scoping Plan for AB 32 was adopted by CARB in December 2008. It contains the State's main strategies to reduce GHGs from business-as-usual emissions projected in 2020 back down to 1990 levels. Business-as-usual (BAU) is the projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system.

As directed by AB 32, CARB has also approved a statewide GHG emissions limit. On December 6, 2007, CARB staff resolved an amount of 427 million metric tons (MMT) of CO_2e as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector- or facility-specific limit. CARB updated the future 2020 BAU annual emissions forecast, in light of the economic downturn, to 545 MMT of CO_2e. Two GHG emissions reduction measures currently enacted that were not previously included in the 2008 Scoping Plan baseline inventory were included, further reducing the baseline inventory to 507 MMT of CO_2e. Thus, an estimated reduction of 80 MMT of CO_2e is necessary to reduce statewide emissions to meet the AB 32 target by 2020.

Executive Order B-30-15 & Senate Bill 32 GHG Reduction Targets – 2030 GHG Reduction Target

In April 2015, Governor Brown signed Executive Order which extended the goals of AB 32, setting a greenhouse gas emissions target at 40 percent of 1990 levels by 2030. On September 8, 2016, Governor Brown signed SB 32, which legislatively established the GHG reduction target of 40 percent of 1990 levels by 2030. In November 2017, CARB issued *California's 2017 Climate Change Scoping Plan*. While the State is on track to exceed the AB 32 scoping plan 2020 targets, this plan is an update to reflect the enacted SB 32 reduction target.

SB 32 was passed in 2016, which codified a 2030 GHG emissions reduction target of 40 percent below 1990 levels. CARB is currently working on a second update to the Scoping Plan to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32. The proposed Scoping Plan Update was published on January 20, 2017 as directed by SB 32 companion legislation AB 197. The mid-term 2030 target is considered critical by CARB on the path to obtaining an even deeper GHG emissions target of 80 percent below 1990 levels by 2050, as directed in Executive Order S-3-05. The Scoping Plan outlines the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure, providing a blueprint to continue driving down GHG emissions and obtain the statewide goals.

The new Scoping Plan establishes a strategy that will reduce GHG emissions in California to meet the 2030 target (note that the AB 32 Scoping Plan only addressed 2020 targets and a long-term goal). Key features of this plan are:

- Cap and Trade program places a firm limit on 80 percent of the State's emissions;
- Achieving a 50-percent Renewable Portfolio Standard by 2030 (currently at about 29 percent statewide);
- Increase energy efficiency in existing buildings;
- Develop fuels with an 18-percent reduction in carbon intensity;
- Develop more high-density, transit-oriented housing;
- Develop walkable and bikeable communities;
- Increase the number of electric vehicles on the road and reduce oil demand in half;
- Increase zero-emissions transit so that 100 percent of new buses are zero emissions;
- Reduce freight-related emissions by transitioning to zero emissions where feasible and near-zero emissions with renewable fuels everywhere else; and
- Reduce "super pollutants" by reducing methane and HFCs by 40 percent.

In the updated Scoping Plan, CARB recommends statewide targets of no more than 6 metric tons CO_2e per capita (statewide) by 2030 and no more than 2 metric tons CO_2e per capita by 2050. The statewide per capita targets account for all emissions sectors, statewide population forecasts, and the statewide reductions necessary to achieve the 2030 statewide target under SB 32 and the longer-term State emissions reduction goal of 80 percent below 1990 levels by 2050.

Executive Order B-55-18 – Carbon Neutrality

In 2018, a new statewide goal was established to achieve carbon neutrality as soon as possible, but no later than 2045, and to maintain net negative emissions thereafter. CARB and other relevant state agencies are tasked with establishing sequestration targets and create policies/programs that would meet this goal.

Senate Bill 375, California's Regional Transportation and Land Use Planning Efforts (2008)

California enacted legislation (SB 375) to expand the efforts of AB 32 by controlling indirect GHG emissions caused by urban sprawl. SB 375 provides incentives for local governments and applicants to implement new conscientiously planned growth patterns. This includes incentives for creating attractive, walkable, and sustainable communities and revitalizing existing communities. The legislation also allows applicants to bypass certain environmental reviews under CEQA if they build projects consistent with the new sustainable community strategies. Development of more alternative transportation options that would reduce vehicle trips and miles traveled, along with traffic congestion, would be encouraged. SB 375 enhances CARB's ability to reach the AB 32 goals by directing the agency in developing regional GHG emission reduction targets to be achieved from the transportation sector for 2020 and 2035. CARB works with the metropolitan planning organizations (e.g. Association of Bay Area Governments [ABAG] and Metropolitan Transportation Commission [MTC]) to align their regional transportation, housing, and land use plans to reduce vehicle miles traveled and demonstrate the region's ability to attain its GHG

reduction targets. A similar process is used to reduce transportation emissions of ozone precursor pollutants in the Bay Area.

SB 350 Renewable Portfolio Standards

In September 2015, the California Legislature passed SB 350, which increases the states Renewables Portfolio Standard (RPS) for content of electrical generation from the 33 percent target for 2020 to a 50 percent renewables target by 2030.

Senate Bill 100 – Current Renewable Portfolio Standards

In September 2018, SB 100 was signed by Governor Brown to revise California's RPS program goals, furthering California's focus on using renewable energy and carbon-free power sources for its energy needs. The bill would require all California utilities to supply a specific percentage of their retail sales from renewable resources by certain target years. By December 31, 2024, 44 percent of the retails sales would need to be from renewable energy sources, by December 31, 2026 the target would be 40 percent, by December 31, 2017 the target would be 52 percent, and by December 31, 2030 the target would be 60 percent. By December 31, 2045, all California utilities would be required to supply retail electricity that is 100 percent carbon-free and sourced from eligible renewable energy resource to all California end-use customers.

California Building Standards Code – Title 24 Part 11 & Part 6

The California Green Building Standards Code (CALGreen Code) is part of the California Building Standards Code under Title 24, Part 11.[29] The CALGreen Code encourages sustainable construction standards that involve planning/design, energy efficiency, water efficiency resource efficiency, and environmental quality. These green building standard codes are mandatory statewide and are applicable to residential and non-residential developments. The most recent CALGreen Code (2019 California Building Standard Code) was effective as of January 1, 2020.

The California Building Energy Efficiency Standards (California Energy Code) is under Title 24, Part 6 and is overseen by the California Energy Commission (CEC). This code includes design requirements to conserve energy in new residential and non-residential developments, while being cost effective for homeowners. This Energy Code is enforced and verified by cities during the planning and building permit process. The current energy efficiency standards (2019 Energy Code) replaced the 2016 Energy Code as of January 1,2020. Under the 2019 standards, single-family homes are predicted to be 53 percent more efficient than homes built under the 2016 standard due more stringent energy-efficiency standards and mandatory installation of solar photovoltaic systems. For nonresidential developments, it is predicted that these buildings will use 30 percent less energy due to lightening upgrades.[30]

[29] See: https://www.dgs.ca.gov/BSC/Resources/Page-Content/Building-Standards-Commission-Resources-List-Folder/CALGreen#:~:text=CALGreen%20is%20the%20first%2Din,to%201990%20levels%20by%202020.
[30] See: https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf

Federal and Statewide GHG Emissions

The U.S. EPA reported that in 2018, total gross nationwide GHG emissions were 6,676.6 million metric tons (MMT) carbon dioxide equivalent (CO_2e).[31] These emissions were lower than peak levels of 7,416 MMT that were emitted in 2007. CARB updates the statewide GHG emission inventory on an annual basis where the latest inventory includes 2000 through 2017 emissions.[32] In 2017, GHG emissions from statewide emitting activities were 424 MMT. The 2017 emissions have decreased by 14 percent since peak levels in 2004 and are 7 MMT below the 1990 emissions level and the State's 2020 GHG limit. Per capita GHG emissions in California have dropped from a 2001 peak of 14.1 MT per person to 10.7 MT per person in 2017. The most recent Bay Area emission inventory was computed for the year 2011.[33] The Bay Area GHG emission were 87 MMT. As a point of comparison, statewide emissions were about 444 MMT in 2011

City of Novato Climate Change Action Plan

Adopted in December 2009, the *Novato Climate Change Action Plan* includes a GHG reduction target of 15 percent below 2005 levels by 2020, consistent with the State's AB32 (2007) target, and a 40 percent reduction by 2035.[34] In 2015, the City reaffirmed the GHG targets and supported one of the four new programs presented in the *Climate Change Action Plan White Paper*.[35] However, the City's Climate Change Action Plan does not have a specific quantified GHG threshold for project-level construction or operational activities. Therefore, the BAAQMD's CEQA Air Quality Guideline's thresholds are used.

BAAQMD Significance Thresholds

The BAAQMD's CEQA Air Quality Guidelines do not use quantified thresholds for projects that are in a jurisdiction with a qualified GHG reductions plan (i.e., a Climate Action Plan). The plan has to address emissions associated with the period that the project would operate (e.g., beyond year 2020). For quantified emissions, the guidelines recommended a GHG threshold of 1,100 metric tons or 4.6 metric tons (MT) per capita. These thresholds were developed based on meeting the 2020 GHG targets set in the scoping plan that addressed AB 32. Development of the project would occur beyond 2020, so a threshold that addresses a future target is appropriate.

Although BAAQMD has not published a quantified threshold for 2030 yet, this assessment uses a "Substantial Progress" efficiency metric of 2.8 MT CO_2e/year/service population and a bright-line threshold of 660 MT CO_{2e}/year based on the GHG reduction goals of EO B-30-15. The service

[31] United States Environmental Protection Agency, 2020. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2018*. April. Web: https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-main-text.pdf.
[32] CARB. 2019. *2019 Edition, California Greenhouse Gas Emission Inventory: 2000 – 2017*. Web: https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2017/ghg_inventory_trends_00-17.pdf.
[33] BAAQMD. 2015. *Bay Area Emissions Inventory Summary Report: Greenhouse Gases Base Year 2011*. January. Web: http://www.baaqmd.gov/~/media/files/planning-and-research/emission-inventory/by2011_ghgsummary.pdf.
[34] City of Novato, California (2009). *City of Novato Climate Change Action Plan.* https://www.novato.org/home/showpublisheddocument?id=29116
[35] City of Novato, California (2015). *City of Novato General Plan 2035 Policy White Paper Climate Change Action Plan.* https://www.novato.org/home/showpublisheddocument?id=12601

population metric of 2.8 is calculated for 2030 based on the 1990 inventory and the projected 2030 statewide population and employment levels.[36] The 2030 bright-line threshold is a 40 percent reduction of the 2020 1,100 MT CO_{2e}/year threshold. Evidence published by the State indicates the AB 32 goal of reducing statewide GHG emissions to 1990 levels was met prior to 2020. Current State plans are to further reduce emissions to 40% below 1990 levels by 2030. Assuming statewide emissions are at 1990 levels or lower in 2020, it would be logical to reduce the BAAQMD-recommended threshold for meeting the AB 32 threshold by 40% to develop a threshold for 2030.

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

GHG emissions associated with development of the proposed project would occur over the short-term from construction activities, consisting primarily of emissions from equipment exhaust and worker and vendor trips. There would also be long-term operational emissions associated with vehicular traffic within the project vicinity, energy and water usage, and solid waste disposal. Emissions for the proposed project are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.

CalEEMod Modeling

CalEEMod was used to predict GHG emissions from operation of the site assuming full build-out of the project. The project land use types and size and other project-specific information were input to the model, as described above within the operational period emissions. CalEEMod output is included in *Attachment 2*.

Service Population Emissions

The project service population efficiency rate is based on the number of future residents and employees. Based on information provided by the project applicant, there would be a total of 327 future residents and 4 to 5 full-time employees. The estimated total service population was 331 people and this was used to calculate the per capita emissions.

Construction Emissions

GHG emissions associated with construction were computed to be 2,112 MT of CO_2e for the total construction period. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. Neither the City nor BAAQMD have an adopted threshold of significance for construction-related GHG emissions, though BAAQMD recommends quantifying emissions and disclosing that GHG emissions would occur during construction. BAAQMD also encourages the incorporation of best management practices to reduce GHG emissions during construction where feasible and applicable.

[36] Bay Area Air Quality Management District, 2016. *CLE International 12th Annual Super-Conference CEQA Guidelines, Case Law and Policy Update*. December.

Operational Emissions

The CalEEMod model, along with the project vehicle trip generation rates, was used to estimate daily emissions associated with operation of the fully developed site under the proposed project. As shown in Table 7, the annual emissions resulting from operation of the proposed project are predicted to be 575 MT of CO_2e in 2026 and 544 MT of CO_2e in 2030. The service population emission for the year 2026 and 2030 are predicted to be 1.7 and 1.6 MT/CO_{2e}/year/service population, respectively.

To be considered an exceedance, the project must exceed both the GHG significance threshold in metric tons per year and the service population significance threshold in the future year of 2030. The project would not exceed either the annual emissions bright-line threshold of 660 MT CO_2e/year in 2030 or the per service population threshold of 2.8 MT of CO_2e/year/service population in 2030. Therefore, the project would not be in exceedance for GHG emissions.

Table 7. Annual Project GHG Emissions (CO_2e) in Metric Tons and Per Capita

Source Category	Proposed Project in 2026	Proposed Project in 2030
Area	4	4
Energy Consumption	112	112
Mobile	433	402
Solid Waste Generation	20	20
Water Usage	6	6
Total (MT CO_{2e}/year)	575	544
Significance Threshold		***660 MT CO_2e/year***
Service Population Emissions (MT CO_{2e}/year/service population)	1.7	1.6
Significance Threshold		***2.8 in 2030***
Exceeds both thresholds?		*No*

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

The proposed project would not conflict or otherwise interfere with the statewide GHG reduction measures identified in CARB's Scoping Plan nor would the project conflict with SB 100 goals. For example, proposed buildings would be constructed in conformance with CALGreen and the Title 24 Building Code, which requires high-efficiency water fixtures, water-efficient irrigation systems, and compliance with current energy efficacy standards.

Supporting Documentation

Attachment 1 is the methodology used to compute community risk impacts, including the methods to compute lifetime cancer risk from exposure to project emissions.

Attachment 2 includes the CalEEMod output for project construction and operational criteria air pollutant and GHG emissions. The operational outputs for 2030 uses are also included in this attachment. Also included are any modeling assumptions.

Attachment 3 includes the EMFAC2017 emissions modeling. The input files for these calculations are voluminous and are available upon request in digital format.

Attachment 4 includes the cumulative community risk calculations, modeling results, and health risk calculations from sources affecting the on-site sensitive receptors.

Attachment 1: Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[37] These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.[38] This HRA used the 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[39] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

Potential increased cancer risk from inhalation of TACs is calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency and duration of exposure. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day) or liters per kilogram of body weight per 8-hour period for the case of worker or school child exposures. As recommended by the BAAQMD for residential exposures, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. For children at schools and daycare facilities, BAAQMD recommends using the 95th percentile 8-hour breathing rates. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of

[37] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.
[38] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[39] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

30 years for sources with long-term emissions (e.g., roadways). For workers, assumed to be adults, a 25-year exposure period is recommended by the BAAQMD. For school children a 9-year exposure period is recommended by the BAAQMD.

Under previous OEHHA and BAAQMD HRA guidance, residential receptors are assumed to be at their home 24 hours a day, or 100 percent of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100 percent of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to less than 16 years, and 0.73 for ages 16 to 70 years. Use of the FAH factors is allowed by the BAAQMD if there are no schools in the project vicinity have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

Functionally, cancer risk is calculated using the following parameters and formulas:

Cancer Risk (per million) = $CPF \times Inhalation\ Dose \times ASF \times ED/AT \times FAH \times 10^6$

Where:

CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = $C_{air} \times DBR^* \times A \times (EF/365) \times 10^{-6}$

Where:

C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
8HrBR = 8-hour breathing rate (L/kg body weight-8 hours)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

* An 8-hour breathing rate (8HrBR) is used for worker and school child exposures.

The health risk parameters used in this evaluation are summarized as follows:

Parameter	*Exposure Type* →	Infant		Child	Adult
	Age Range →	3rd Trimester	0<2	2 < 16	16 - 30
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day) 80th Percentile Rate		273	758	572	261
Daily Breathing Rate (L/kg-day) 95th Percentile Rate		361	1,090	745	335
8-hour Breathing Rate (L/kg-8 hours) 95th Percentile Rate		-	1,200	520	240
Inhalation Absorption Factor		1	1	1	1
Averaging Time (years)		70	70	70	70
Exposure Duration (years)		0.25	2	14	14*
Exposure Frequency (days/year)		350	350	350	350*
Age Sensitivity Factor		10	10	3	1
Fraction of Time at Home (FAH)		0.85-1.0	0.85-1.0	0.72-1.0	0.73*

Non-Cancer Hazards

Non-cancer health risk is usually determined by comparing the predicted level of exposure to a chemical to the level of exposure that is not expected to cause any adverse effects (reference exposure level), even to the most susceptible people. Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur.

Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is diesel particulate matter (DPM). For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu g/m^3$).

Annual $PM_{2.5}$ Concentrations

While not a TAC, fine particulate matter ($PM_{2.5}$) has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under the California Environmental Quality Act (CEQA). The thresholds of significance for $PM_{2.5}$ (project level and cumulative) are in terms of an increase in the annual average concentration. When considering $PM_{2.5}$ impacts, the contribution from all sources of $PM_{2.5}$ emissions should be included. For projects with potential impacts from nearby local roadways, the $PM_{2.5}$ impacts should include those from vehicle exhaust emissions, $PM_{2.5}$ generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

Attachment 2: CalEEMod Modeling Inputs and Outputs

Air Quality/Noise Construction Information Data Request

Project Name: 8161 Redwood Boulevard - Phase I

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size	42	Dwelling Units	4.2	total project acres disturbed
	55427	s.f. residential		
		s.f. retail		
	2154	s.f. office/commercial		
		s.f. other, specify:		
		s.f. parking garage		spaces
	45000	s.f. parking lot	108	spaces
Construction Hours	7	am to	4	pm

Pile Driving? Y/N? None planned

Project include OPERATIONAL GENERATOR OR FIRE PUMP on-site? Y/N? __N_

IF YES (if BOTH separate values) -->

Kilowatts/Horsepower: _____

Fuel Type: _____

Location in project (Plans Desired if Available):

DO NOT MULTIPLY EQUIPMENT HOURS/DAY BY THE QUANTITY OF EQUIPMENT

Quantity	Description	HP	Load Factor	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments
	Phase I-Site Development	**Start Date:**		**3/24/2022**	**Total phase:**	**120**			**Overall Import/Export Volumes**
		End Date:		**9/7/2022**					
1	Concrete/Industrial Saws	81	0.73	0.73	8	8	0.5	64	**Soil Hauling Volume**
2	Excavators	158	0.38	0.38	8	50	3.3	800	Export volume =
2	Rubber-Tired Dozers	247	0.4	0.4	8	33	2.2	528	Import volume = **24,910** cubic yards (estimate)
2	Graders	187	0.41	0.41	8	66	4.4	1056	No demo to speak of (no existing buildings / structure)
	Cement and Mortar Mixers	9	0.56	0.56	0	0	0	0	Clear and grub of site will be prep work
1	Pavers	132	0.42	0.42	8	8	0.5	64	Assume temp power available at project start
1	Paving Equipment	130	0.36	0.36	8	8	0.5	64	**Cement Trucks? Yes.**
1	Rollers	80	0.38	0.38	8	8	0.5	64	**Asphalt: 25,000 sq ft roadway (extimate) + 20,000 sq ft parking spaces (estimate)**
									Concrete Curb & Sidealk: 15,000 sq ft (estimate)
	Office Building Construction	**Start Date:**		**8/1/2022**	**Total phase:**	**168**			
		End Date:		**3/22/2023**					
1	Graders	187	0.41	0.41	8	5	0.2	40	Single Building: Aprox 2300 square feet; built over 8 months
1	Excavators	158	0.38	0.38	8	11	0.5	88	To be constructed on separate schedule from all other buildings
1	Rollers	80	0.38	0.38	8	11	0.5	88	To start this building first so office is completed early in project
	Cement and Mortar Mixers	9	0.56	0.56	0	0	0	0	Clear and grub of site will be prep work
1	Aerial Lifts	63	0.31	0.31	8	11	0.5	88	
3	Air Compressors	78	0.48	0.48	8	53	2.5	1272	**Cement Trucks? Yes. 2300 sq ft building foundation**
1	Cranes	231	0.29	0.29	8	2	0.1	16	
1	Skid Steer Loaders	65	0.37	0.37	8	21	1.0	168	
1	Tractors/Loaders/Backhoes	97	0.37	0.37	8	21	1.0	168	
	Home Const - Foundations	**Start Date:**		**7/14/2022**	**Total phase:**	**360**			
		End Date:		**11/29/2023**					
	Excavators	158	0.38	0.38	0	0	0	0	11 buildings / foundations -- built in sequence over 11 months
2	Plate Compactors	8	0.43	0.43	8	131	2.9	2096	
	Aerial Lifts	63	0.31	0.31	8	0	0	0	**Cement Trucks? Yes. 27,000 sq ft lot coverage of foundations**
	Cement and Mortar Mixers	9	0.56	0.56	0	0	0	0	
1	Concrete/Industrial Saws	81	0.73	0.73	8	8	0.5	64	
3	Air Compressors	78	0.48	0.48	8	65	1.4	1560	
1	Cranes	231	0.29	0.29	8	1	0.02	8	
2	Skid Steer Loaders	65	0.37	0.37	8	98	2.2	1568	
2	Tractors/Loaders/Backhoes	97	0.37	0.37	8	245	5.4	3920	
	Home Const - Framing, Rough, Enclo	**Start Date:**		**9/8/2022**	**Total phase:**	**480**			
		End Date:		**7/10/2024**					
	Excavators	158	0.38	0.38	0	0	0	0	11 building -- built in sequence over 14 total months
4	Aerial Lifts	63	0.31	0.31	8	274	4.6	8768	
6	Air Compressors	78	0.48	0.48	8	274	4.6	13152	
1	Cranes	231	0.29	0.29	8	17	0.3	136	Used to set trusses
2	Skid Steer Loaders	65	0.37	0.37	8	34	0.6	544	Rough Grade & Misc
2	Tractors/Loaders/Backhoes	97	0.37	0.37	8	66	1.1	1056	Utlity Trenching
	Home Const - Trim & Finish	**Start Date:**		**12/29/2022**	**Total phase:**	**519**			11 building -- Trim/Finish in sequence over 14 total months
		End Date:		**12/24/2024**					
2	Excavators	158	0.38	0.38	8	19	0.3	304	**Cement Trucks? Yes. Aprox 10,000 sq ft final flatwork.**
	Aerial Lifts	63	0.31	0.31	0	0	0	0	
3	Air Compressors	78	0.48	0.48	8	297	4.6	7128	
	Cement and Mortar Mixers	9	0.56	0.56	0	0	0	0	
	Cranes	231	0.29	0.29	0	0	0	0	
2	Skid Steer Loaders	65	0.37	0.37	8	37	0.6	592	Final Grading & landscapin
2	Tractors/Loaders/Backhoes	97	0.37	0.37	8	37	0.6	592	Final utility work; final flatwork, etc
1	Pressure Washers	13	0.3	0.3	8	28	0.4	224	
	Walk throughs & home sales	**Start Date:**		**10/5/2023**	**Total phase:**	**400**			11 buildings (42 total units) -- punch, walk through and sold
		End Date:		**2/19/2025**					
	Nominal equipment onsite						0	0	
							0	0	
							0	0	
							0	0	
							0	0	

Equipment types listed in "Equipment Types" worksheet tab.

Equipment listed in this sheet is to provide an example of inputs

It is assumed that water trucks would be used during grading

Add or subtract phases and equipment, as appropriate

Modify horsepower or load factor, as appropriate

Complete one sheet for each project component

Air Quality/Noise Construction Information Data Request

Project Name: 8161 Redwood Boulevard - Phase II

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size	38	**Dwelling Units**	3.8	total project acres disturbed
	50148	**s.f. residential**		
		s.f. retail		
		s.f. office/commercial		
		s.f. other, specify:		
		s.f. parking garage		spaces
	45000	**s.f. parking lot**	77	spaces
Construction Hours	7	am to	4	pm

Pile Driving? Y/N? None planned

Project include OPERATIONAL GENERATOR OR FIRE PUMP on-site? Y/N? __N_

IF YES (if BOTH separate values) -->

Kilowatts/Horsepower: _____

Fuel Type: _____

Location in project (Plans Desired if Available):

DO NOT MULTIPLY EQUIPMENT HOURS/DAY BY THE QUANTITY OF EQUIPMENT

Quantity	Description	HP	Load Factor	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments
	Phase II-Site Development	**Start Date:**		**4/20/2023**	**Total phase:**	**120**			**Overall Import/Export Volumes**
		End Date:		**10/4/2023**					
1	Concrete/Industrial Saws	81	0.73	0.73	8	8	0.5	64	**Soil Hauling Volume**
2	Excavators	158	0.38	0.38	8	50	3.3	800	Export volume =
2	Rubber-Tired Dozers	247	0.4	0.4	8	33	2.2	528	Import volume = **24,910** cubic yards (estimate)
2	Graders	187	0.41	0.41	8	66	4.4	1056	No demo to speak of (no existing buildings / structure)
	Cement and Mortar Mixers	9	0.56	0.56	0	0	0.0	0	Clear and grub of site will be prep work
2	Pavers	132	0.42	0.42	8	8	0.5	128	Assume temp power available at project start
2	Paving Equipment	130	0.36	0.36	8	8	0.5	128	**Cement Trucks? Yes.**
2	Rollers	80	0.38	0.38	8	8	0.5	128	**Asphalt: 25,000 sq ft roadway (extimate) + 20,000 sq ft parking spaces (estimate)**
									Concrete Curb & Sidealk: 15,000 sq ft (estimate)
	Home Const - Foundations	**Start Date:**		**1/25/2024**	**Total phase:**	**360**			
		End Date:		**6/11/2025**					
4	Excavators	158	0.38	0.38	8	8	0.2	256	12 buildings / foundations -- built in sequence over 11 months
2	Plate Compactors	8	0.43	0.43	8	16	0.4	256	
	Aerial Lifts	63	0.31	0.31	0	0	0.0	0	**Cement Trucks? Yes. 25,000 sq ft lot coverage of foundations**
	Cement and Mortar Mixers	9	0.56	0.56	0	0	0.0	0	
1	Concrete/Industrial Saws	81	0.73	0.73	8	16	0.4	128	
3	Air Compressors	78	0.48	0.48	8	65	1.4	1560	
1	Cranes	231	0.29	0.29	8	2	0.04	16	
2	Skid Steer Loaders	65	0.37	0.37	8	33	0.7	528	
2	Tractors/Loaders/Backhoes	97	0.37	0.37	8	33	0.7	528	
	Home Const - Framing, Rough, Enclo	**Start Date:**		**3/21/2024**	**Total phase:**	**480**			
		End Date:		**1/21/2026**					
0	Excavators	158	0.38	0.38	0	0	0	0	12 building -- built in sequence over 14 total months
4	Aerial Lifts	63	0.31	0.31	8	274	4.6	8768	
6	Air Compressors	78	0.48	0.48	8	274	4.6	13152	
1	Cranes	231	0.29	0.29	8	17	0.3	136	Used to set trusses
2	Skid Steer Loaders	65	0.37	0.37	8	34	0.6	544	Rough Grade & Misc
2	Tractors/Loaders/Backhoes	97	0.37	0.37	8	69	1.2	1104	Utility Trenching
	Home Const - Trim & Finish	**Start Date:**		**7/11/2024**	**Total phase:**	**480**			12 building -- Trim/Finish in sequence over 14 total months
		End Date:		**5/13/2026**					
2	Excavators	158	0.38	0.38	8	17	0.3	272	**Cement Trucks? Yes. Aprox 10,000 sq ft final flatwork.**
2	Aerial Lifts	63	0.31	0.31	8	274	4.6	4384	
3	Air Compressors	78	0.48	0.48	8	274	4.6	6576	
	Cranes	231	0.29	0.29	0	0	0.0	0	
2	Skid Steer Loaders	65	0.37	0.37	8	34	0.6	544	Final Grading & landscapin
2	Tractors/Loaders/Backhoes	97	0.37	0.37	8	34	0.6	544	Final utility work; final flatwork, etc
1	Pressure Washers	13	0.3	0.3	8	26	0.4	208	
	Walk throughs & home sales	**Start Date:**		**4/17/2025**	**Total phase:**	**400**			12 buildings (38 total units) -- punch, walk through and sold
		End Date:		**7/8/2026**					
	Nominal equipment onsite						0	0	
							0	0	
							0	0	
							0	0	
							0	0	

Equipment types listed in "Equipment Types" worksheet tab.

Equipment listed in this sheet is to provide an example of inputs

It is assumed that water trucks would be used during grading

Add or subtract phases and equipment, as appropriate

Modify horsepower or load factor, as appropriate

Complete one sheet for each project component

PHASE I & Phase II

Construction Criteria Air Pollutants						
Unmitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	CO2e	
Year	Tons				MT	
Construction Equipment						
2022	0.16	1.50	0.07	0.07	228.28	
2023	0.52	2.67	0.13	0.12	497.12	
2024	0.58	2.13	0.10	0.10	465.42	
2025	0.39	1.49	0.06	0.06	347.60	
2026	0.10	0.23	0.01	0.01	53.40	
EMFAC						
2022	0.02	0.12	0.01	0.01	81.98	
2023	0.03	0.19	0.02	0.01	155.69	
2024	0.03	0.22	0.03	0.01	173.19	
2025	0.01	0.09	0.01	0.00	80.37	
2026	0.00	0.03	0.00	0.00	28.65	
Total Construction Emissions by Year						
2022	0.18	1.62	0.08	0.07	310.26	
2023	0.56	2.87	0.15	0.13	652.81	
2024	0.61	2.35	0.12	0.11	638.61	
2025	0.41	1.58	0.07	0.06	427.97	
2026	0.11	0.26	0.01	0.01	82.05	
	Total Construction Emissions					
Tons	1.86	8.68	0.43	0.38	2111.69	
Pounds/Workdays	*Average Daily Emissions*				Workdays	
2022	1.78	16.06	0.81	0.71		202
2023	4.28	22.06	1.14	1.01		260
2024	4.68	17.93	0.93	0.81		262
2025	3.10	12.10	0.54	0.49		261
2026	2.23	5.45	0.27	0.22		95
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		
	Total Construction Emissions					
Pounds	16.09	73.60	3.69	3.23	0.00	
Average	3.45	16.07	0.80	0.71	0.00	1080.00
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		

Operational Criteria Air Pollutants						
Unmitigated	ROG	NOX	Total PM10	Total PM2.5		
Year	Tons					
Total	0.85	0.37	0.52	0.15		
	Existing Use Emissions					
Total						
	Net Annual Operational Emissions					
Tons/year	0.85	0.37	0.52	0.15		
Threshold - Tons/year	**10.0**	**10.0**	**15.0**	**10.0**		
	Average Daily Emissions					
Pounds Per Day	4.66	2.02	2.83	0.81		
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		

Category	CO2e			
	Project	Existing	Project 2030	Existing
Area	4.21		4.21	
Energy	112.15		112.15	
Mobile	433.03		402.22	
Waste	19.51		19.51	
Water	5.86		5.86	
TOTAL	574.76	0.00	543.95	0.00
Net GHG Emissions		574.76		543.95
Service Population	331.00			
Per Capita Emissions		1.74		1.64

PHASE I

Construction Criteria Air Pollutants						
Unmitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	CO2e	
Year	Tons				MT	
Construction Equipment						
2022	0.16	1.50	0.07	0.07	228.28	
2023	0.46	2.01	0.10	0.10	401.25	
2024	0.33	0.93	0.04	0.04	202.11	
2025						
2026						
EMFAC						
2022	0.02	0.12	0.01	0.01	81.98	
2023	0.02	0.13	0.01	0.01	102.23	
2024	0.02	0.12	0.01	0.01	98.41	
2025						
2026						
Total Construction Emissions by Year						
2022	0.18	1.62	0.08	0.07	310.26	
2023	0.48	2.14	0.11	0.10	503.48	
2024	0.35	1.06	0.06	0.05	300.52	
2025	0.00	0.00	0.00	0.00	0.00	
2026	0.00	0.00	0.00	0.00	0.00	
	Total Construction Emissions					
Tons	1.01	4.82	0.25	0.22	1114.26	
Pounds/Workdays	*Average Daily Emissions*				Workdays	
2022	1.78	16.06	0.81	0.71		202
2023	3.72	16.43	0.87	0.79		260
2024	2.72	8.24	0.45	0.38		257
2025	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
2026	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		
	Total Construction Emissions					
Pounds	8.22	40.73	2.13	1.88	0.00	
Average	1.87	8.92	0.47	0.41	0.00	719.00
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		

PHASE II

Construction Criteria Air Pollutants						
Unmitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	CO2e	
Year	Tons				MT	
Construction Equipment						
2022						
2023	0.06	0.67	0.03	0.02	95.87	
2024	0.25	1.20	0.05	0.05	263.31	
2025	0.39	1.49	0.06	0.06	347.60	
2026	0.10	0.23	0.01	0.01	53.40	
EMFAC						
2022						
2023	0.01	0.07	0.01	0.00	53.46	
2024	0.02	0.09	0.01	0.00	74.78	
2025	0.01	0.09	0.01	0.00	80.37	
2026	0.00	0.03	0.00	0.00	28.65	
Total Construction Emissions by Year						
2022	0.00	0.00	0.00	0.00	0.00	
2023	0.07	0.73	0.03	0.03	149.33	
2024	0.26	1.29	0.06	0.06	338.08	
2025	0.41	1.58	0.07	0.06	427.97	
2026	0.11	0.26	0.01	0.01	82.05	
	Total Construction Emissions					
Tons	0.85	3.86	0.18	0.16	997.43	
Pounds/Workdays	*Average Daily Emissions*				Workdays	
2022	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
2023	0.81	8.05	0.38	0.31		182
2024	2.02	9.85	0.49	0.44		262
2025	3.10	12.10	0.54	0.49		261
2026	2.23	5.45	0.27	0.22		95
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		
	Total Construction Emissions					
Pounds	8.16	35.44	1.69	1.45	0.00	
Average	1.57	7.15	0.34	0.29	0.00	800.00
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		

Traffic Consultant Trip Gen						CalEEMod Default		
Land Use	Units	Size	Daily Trips	New Trips	Weekday Trip Gen	Weekday	Sat	Sun
Apartmetns low Rise	du	80	564	564	***7.05***	6.59	7.16	6.07
						Rev	***7.66***	***6.49***
Office	1ksf	2.154	35	35	***16.25***	11.03	2.46	1.05
						Rev	***3.62***	***1.55***
	Total		*599*					

Table 1: Project Trip Generation

		Daily	AM Peak Hour			PM Peak Hour		
Land Use	Units	Trips	Total Trips	In	Out	Total Trips	In	Out
Residential	80	564	39	9	30	49	31	18
Office	2,154 sf	35	4	3	1	5	2	3
Totals		599	43	12	31	54	33	21

Source: ITE Trip Generation 10th Edition, 2017.

Habitat Redwood Blvd, Novato - Construction Phase I

Marin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	108.00	Space	0.00	45,000.00	0
Apartments Low Rise	42.00	Dwelling Unit	4.15	55,427.00	120
General Office Building	2.15	1000sqft	0.05	2,154.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	69
Climate Zone	5			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	123	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - MCE 2017 Rate = 109, PG&E 2017 rate = 210, (109*0.86)+(210*0.14) = 123

Land Use - Provided Phase I construction project plans, PD, and worksheet land uses

Construction Phase - Provided construction Schedule

Off-road Equipment -

Grading - site dev & paving = 24,910cy import

Off-road Equipment - Provided construction worksheet equip & hours

Off-road Equipment - Provided construction worksheet equip & hours

Off-road Equipment - Provided construction worksheet equip & hours

Off-road Equipment - Provided construction worksheet equip & hours

Off-road Equipment - Provided construction worksheet equip & hours

Trips and VMT - 0 trips for EMFAC2017 post-calcs, site dev & paving = 45,000-sf asphalt and 15,000-sf concrete, office bldg const = 2,300-sf cement, home const foundation = 27,000-sf cement, home const - trim & finish = 10,000-sf cement

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	168.00
tblConstructionPhase	NumDays	5.00	120.00
tblConstructionPhase	NumDays	8.00	360.00
tblConstructionPhase	NumDays	230.00	480.00
tblConstructionPhase	NumDays	18.00	519.00
tblConstructionPhase	PhaseEndDate	3/30/2022	9/7/2022
tblConstructionPhase	PhaseEndDate	4/11/2022	11/29/2023
tblConstructionPhase	PhaseEndDate	2/27/2023	7/10/2024
tblConstructionPhase	PhaseEndDate	4/18/2023	12/24/2024
tblConstructionPhase	PhaseStartDate	3/31/2022	7/14/2022
tblConstructionPhase	PhaseStartDate	4/12/2022	9/8/2022
tblConstructionPhase	PhaseStartDate	3/24/2023	12/29/2022
tblGrading	MaterialImported	0.00	24,910.00
tblLandUse	LandUseSquareFeet	43,200.00	45,000.00
tblLandUse	LandUseSquareFeet	42,000.00	55,427.00
tblLandUse	LandUseSquareFeet	2,150.00	2,154.00
tblLandUse	LotAcreage	0.97	0.00
tblLandUse	LotAcreage	2.63	4.15
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.41	0.41

tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators

tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Pressure Washers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	4.60
tblOffRoadEquipment	UsageHours	7.00	0.30
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	2.20
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.10
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	1.10
tblOffRoadEquipment	UsageHours	8.00	5.40
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	123
tblTripsAndVMT	HaulingTripNumber	3,114.00	0.00
tblTripsAndVMT	VendorTripNumber	12.00	0.00
tblTripsAndVMT	VendorTripNumber	12.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	25.00	0.00
tblTripsAndVMT	WorkerTripNumber	50.00	0.00
tblTripsAndVMT	WorkerTripNumber	28.00	0.00
tblTripsAndVMT	WorkerTripNumber	50.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1612	1.5015	1.4279	2.6100e-003	0.2351	0.0695	0.3046	0.1132	0.066	0.1792	0.0000	226.9775	226.9775	0.0521	0.0000	228.2793
2023	0.4625	2.0071	2.9085	4.6300e-003	0.0000	0.0986	0.0986	0.0000	0.0967	0.0967	0.0000	399.7753	399.7753	0.0591	0.0000	401.2537
2024	0.3299	0.9343	1.4459	2.3400e-003	0.0000	0.0432	0.0432	0.0000	0.0428	0.0428	0.0000	201.5317	201.5317	0.0233	0.0000	202.1148
Maximum	**0.4625**	**2.0071**	**2.9085**	**4.6300e-003**	**0.2351**	**0.0986**	**0.3046**	**0.1132**	**0.0967**	**0.1792**	**0.0000**	**399.7753**	**399.7753**	**0.0591**	**0.0000**	**401.2537**

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	0.1612	1.5015	1.4279	2.6100e-003	0.2351	0.0695	0.3046	0.1132	0.0660	0.1792	0.0000	226.9773	226.9773	0.0521	0.0000	228.2790
2023	0.4625	2.0071	2.9085	4.6300e-003	0.0000	0.0986	0.0986	0.0000	0.0967	0.0967	0.0000	399.7748	399.7748	0.0591	0.0000	401.2532
2024	0.3299	0.9343	1.4459	2.3400e-003	0.0000	0.0432	0.0432	0.0000	0.0428	0.0428	0.0000	201.5315	201.5315	0.0233	0.0000	202.1146
Maximum	**0.4625**	**2.0071**	**2.9085**	**4.6300e-003**	**0.2351**	**0.0986**	**0.3046**	**0.1132**	**0.0967**	**0.1792**	**0.0000**	**399.7748**	**399.7748**	**0.0591**	**0.0000**	**401.2532**

	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**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**3-24-2022**	**6-23-2022**	0.4512	0.4512
2	**6-24-2022**	**9-23-2022**	0.6016	0.6016
3	**9-24-2022**	**12-23-2022**	0.5553	0.5553
4	**12-24-2022**	**3-23-2023**	0.6809	0.6809
5	**3-24-2023**	**6-23-2023**	0.6168	0.6168
6	**6-24-2023**	**9-23-2023**	0.6168	0.6168
7	**9-24-2023**	**12-23-2023**	0.5734	0.5734
8	**12-24-2023**	**3-23-2024**	0.4488	0.4488
9	**3-24-2024**	**6-23-2024**	0.4516	0.4516
10	**6-24-2024**	**9-23-2024**	0.2256	0.2256
11	**9-24-2024**	**9-30-2024**	0.0133	0.0133
		Highest	0.6809	0.6809

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Phase I - Site Development & Paving	Site Preparation	3/24/2022	9/7/2022	5	120	
2	Home Const - Foundations	Grading	7/14/2022	11/29/2023	5	360	
3	Office Building Construction	Building Construction	8/1/2022	3/22/2023	5	168	
4	Home Const - Framing, Rough, Enclose	Building Construction	9/8/2022	7/10/2024	5	480	
5	Home Const - Trim & Finish	Architectural Coating	12/29/2022	12/24/2024	5	519	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 112,240; Residential Outdoor: 37,413; Non-Residential Indoor: 3,231; Non-Residential Outdoor: 1,077; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Home Const - Trim & Finish	Air Compressors	3	4.60	78	0.48
Home Const - Framing, Rough, Enclose	Cranes	1	0.30	231	0.29
Home Const - Foundations	Excavators	0	0.00	158	0.38
Phase I - Site Development & Paving	Rubber Tired Dozers	2	2.20	247	0.40
Phase I - Site Development & Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Home Const - Framing, Rough, Enclose	Forklifts	0	0.00	89	0.20
Home Const - Framing, Rough, Enclose	Generator Sets	0	0.00	84	0.74
Office Building Construction	Cranes	1	0.10	231	0.29
Office Building Construction	Forklifts	0	0.00	89	0.20
Office Building Construction	Generator Sets	0	0.00	84	0.74
Office Building Construction	Tractors/Loaders/Backhoes	1	1.00	97	0.37
Office Building Construction	Welders	0	0.00	46	0.45

Phase I - Site Development & Paving	Concrete/Industrial Saws	1	0.50	81	0.73
Phase I - Site Development & Paving	Excavators	2	3.30	158	0.38
Phase I - Site Development & Paving	Graders	2	4.40	187	0.41
Phase I - Site Development & Paving	Pavers	1	0.50	130	0.42
Phase I - Site Development & Paving	Paving Equipment	1	0.50	132	0.36
Phase I - Site Development & Paving	Rollers	1	0.50	80	0.38
Home Const - Foundations	Plate Compactors	2	2.90	8	0.43
Home Const - Foundations	Concrete/Industrial Saws	1	0.50	81	0.73
Home Const - Foundations	Graders	0	0.00	187	0.41
Home Const - Foundations	Rubber Tired Dozers	0	0.00	247	0.40
Home Const - Framing, Rough, Enclose	Tractors/Loaders/Backhoes	2	1.10	97	0.37
Home Const - Foundations	Tractors/Loaders/Backhoes	2	5.40	97	0.37
Home Const - Framing, Rough, Enclose	Welders	0	0.00	46	0.45
Home Const - Foundations	Air Compressors	3	1.40	78	0.48
Home Const - Foundations	Cranes	1	0.10	231	0.29
Home Const - Foundations	Skid Steer Loaders	2	2.20	65	0.37
Office Building Construction	Graders	1	0.20	187	0.41
Office Building Construction	Excavators	1	0.50	158	0.38
Office Building Construction	Rollers	1	0.50	80	0.38
Office Building Construction	Aerial Lifts	1	0.50	63	0.31
Office Building Construction	Air Compressors	3	2.50	78	0.48
Office Building Construction	Skid Steer Loaders	1	1.00	65	0.37
Home Const - Framing, Rough, Enclose	Aerial Lifts	4	4.60	63	0.31
Home Const - Framing, Rough, Enclose	Air Compressors	6	4.60	78	0.48
Home Const - Framing, Rough, Enclose	Skid Steer Loaders	2	0.60	65	0.37
Home Const - Trim & Finish	Excavators	2	0.30	158	0.38
Home Const - Trim & Finish	Skid Steer Loaders	2	0.60	65	0.37
Home Const - Trim & Finish	Tractors/Loaders/Backhoes	2	0.60	97	0.37
Home Const - Trim & Finish	Pressure Washers	1	0.40	13	0.30

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
Home Const - Trim & Finish	10	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase I - Site Development & Paving	10	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Home Const - Framing, Rough	15	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Home Const - Foundations	11	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Office Building Construction	10	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Phase I - Site Development & Paving - 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					0.2351	0.0000	0.2351	0.1132	0.0000	0.1132	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0684	0.7556	0.4342	1.0400e-003		0.0307	0.0307		0.0283	0.0283	0.0000	91.3244	91.3244	0.0290	0.0000	92.0492
Total	**0.0684**	**0.7556**	**0.4342**	**1.0400e-003**	**0.2351**	**0.0307**	**0.2658**	**0.1132**	**0.0283**	**0.1415**	**0.0000**	**91.3244**	**91.3244**	**0.0290**	**0.0000**	**92.0492**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					0.2351	0.0000	0.2351	0.1132	0.0000	0.1132	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0684	0.7556	0.4342	1.0400e-003		0.0307	0.0307		0.0283	0.0283	0.0000	91.3243	91.3243	0.0290	0.0000	92.0491
Total	**0.0684**	**0.7556**	**0.4342**	**1.0400e-003**	**0.2351**	**0.0307**	**0.2658**	**0.1132**	**0.0283**	**0.1415**	**0.0000**	**91.3243**	**91.3243**	**0.0290**	**0.0000**	**92.0491**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Home Const - Foundations - 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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0281	0.2543	0.3330	5.0000e-004		0.0132	0.0132		0.0125	0.0125	0.0000	43.3258	43.3258	0.0103	0.0000	43.5843
Total	**0.0281**	**0.2543**	**0.3330**	**5.0000e-004**	**0.0000**	**0.0132**	**0.0132**	**0.0000**	**0.0125**	**0.0125**	**0.0000**	**43.3258**	**43.3258**	**0.0103**	**0.0000**	**43.5843**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0281	0.2543	0.3330	5.0000e-004		0.0132	0.0132		0.0125	0.0125	0.0000	43.3257	43.3257	0.0103	0.0000	43.5842
Total	**0.0281**	**0.2543**	**0.3330**	**5.0000e-004**	**0.0000**	**0.0132**	**0.0132**	**0.0000**	**0.0125**	**0.0125**	**0.0000**	**43.3257**	**43.3257**	**0.0103**	**0.0000**	**43.5842**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Home Const - Foundations - 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					

Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0510	0.4584	0.6481	9.8000e-004		0.0220	0.0220		0.0209	0.0209	0.0000	84.5756	84.5756	0.0201	0.0000	85.0770
Total	**0.0510**	**0.4584**	**0.6481**	**9.8000e-004**	**0.0000**	**0.0220**	**0.0220**	**0.0000**	**0.0209**	**0.0209**	**0.0000**	**84.5756**	**84.5756**	**0.0201**	**0.0000**	**85.0770**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0510	0.4584	0.6481	9.8000e-004		0.0220	0.0220		0.0209	0.0209	0.0000	84.5755	84.5755	0.0201	0.0000	85.0769
Total	**0.0510**	**0.4584**	**0.6481**	**9.8000e-004**	**0.0000**	**0.0220**	**0.0220**	**0.0000**	**0.0209**	**0.0209**	**0.0000**	**84.5755**	**84.5755**	**0.0201**	**0.0000**	**85.0769**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Office 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	0.0179	0.1387	0.1745	2.9000e-004		7.4900e-003	7.4900e-003		7.3400e-003	7.3400e-003	0.0000	24.6767	24.6767	3.4500e-003	0.0000	24.7629
Total	**0.0179**	**0.1387**	**0.1745**	**2.9000e-004**		**7.4900e-003**	**7.4900e-003**		**7.3400e-003**	**7.3400e-003**	**0.0000**	**24.6767**	**24.6767**	**3.4500e-003**	**0.0000**	**24.7629**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0179	0.1387	0.1745	2.9000e-004		7.4900e-003	7.4900e-003		7.3400e-003	7.3400e-003	0.0000	24.6767	24.6767	3.4500e-003	0.0000	24.7629
Total	**0.0179**	**0.1387**	**0.1745**	**2.9000e-004**		**7.4900e-003**	**7.4900e-003**		**7.3400e-003**	**7.3400e-003**	**0.0000**	**24.6767**	**24.6767**	**3.4500e-003**	**0.0000**	**24.7629**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Office 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	8.8200e-003	0.0673	0.0919	1.5000e-004		3.4300e-003	3.4300e-003		3.3600e-003	3.3600e-003	0.0000	13.0127	13.0127	1.7700e-003	0.0000	13.0569
Total	**8.8200e-003**	**0.0673**	**0.0919**	**1.5000e-004**		**3.4300e-003**	**3.4300e-003**		**3.3600e-003**	**3.3600e-003**	**0.0000**	**13.0127**	**13.0127**	**1.7700e-003**	**0.0000**	**13.0569**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.8200e-003	0.0673	0.0919	1.5000e-004		3.4300e-003	3.4300e-003		3.3600e-003	3.3600e-003	0.0000	13.0127	13.0127	1.7700e-003	0.0000	13.0569
Total	**8.8200e-003**	**0.0673**	**0.0919**	**1.5000e-004**		**3.4300e-003**	**3.4300e-003**		**3.3600e-003**	**3.3600e-003**	**0.0000**	**13.0127**	**13.0127**	**1.7700e-003**	**0.0000**	**13.0569**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Home Const - Framing, Rough, Enclose - 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	0.0448	0.3492	0.4813	7.7000e-004		0.0179	0.0179		0.0177	0.0177	0.0000	66.9595	66.9595	9.2200e-003	0.0000	67.1899
Total	**0.0448**	**0.3492**	**0.4813**	**7.7000e-004**		**0.0179**	**0.0179**		**0.0177**	**0.0177**	**0.0000**	**66.9595**	**66.9595**	**9.2200e-003**	**0.0000**	**67.1899**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0448	0.3492	0.4813	7.7000e-004		0.0179	0.0179		0.0177	0.0177	0.0000	66.9594	66.9594	9.2200e-003	0.0000	67.1898

Total	**0.0448**	**0.3492**	**0.4813**	**7.7000e-004**		**0.0179**	**0.0179**		**0.0177**	**0.0177**	**0.0000**	**66.9594**	**66.9594**	**9.2200e-003**	**0.0000**	**67.1898**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Home Const - Framing, Rough, Enclose - 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	0.1333	1.0280	1.5233	2.4600e-003		0.0491	0.0491		0.0486	0.0486	0.0000	212.3231	212.3231	0.0284	0.0000	213.0337
Total	**0.1333**	**1.0280**	**1.5233**	**2.4600e-003**		**0.0491**	**0.0491**		**0.0486**	**0.0486**	**0.0000**	**212.3231**	**212.3231**	**0.0284**	**0.0000**	**213.0337**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.1333	1.0280	1.5233	2.4600e-003		0.0491	0.0491		0.0486	0.0486	0.0000	212.3229	212.3229	0.0284	0.0000	213.0334
Total	**0.1333**	**1.0280**	**1.5233**	**2.4600e-003**		**0.0491**	**0.0491**		**0.0486**	**0.0486**	**0.0000**	**212.3229**	**212.3229**	**0.0284**	**0.0000**	**213.0334**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Home Const - Framing, Rough, Enclose - 2024

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	0.0671	0.5150	0.8082	1.3000e-003		0.0227	0.0227		0.0224	0.0224	0.0000	112.6986	112.6986	0.0148	0.0000	113.0686
Total	**0.0671**	**0.5150**	**0.8082**	**1.3000e-003**		**0.0227**	**0.0227**		**0.0224**	**0.0224**	**0.0000**	**112.6986**	**112.6986**	**0.0148**	**0.0000**	**113.0686**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0671	0.5150	0.8082	1.3000e-003		0.0227	0.0227		0.0224	0.0224	0.0000	112.6985	112.6985	0.0148	0.0000	113.0685
Total	**0.0671**	**0.5150**	**0.8082**	**1.3000e-003**		**0.0227**	**0.0227**		**0.0224**	**0.0224**	**0.0000**	**112.6985**	**112.6985**	**0.0148**	**0.0000**	**113.0685**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Home Const - Trim & Finish - 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					
Archit. Coating	1.5800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2000e-004	3.7800e-003	4.9700e-003	1.0000e-005		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004	0.0000	0.6912	0.6912	7.0000e-005	0.0000	0.6930
Total	**2.1000e-003**	**3.7800e-003**	**4.9700e-003**	**1.0000e-005**		**2.1000e-004**	**2.1000e-004**		**2.1000e-004**	**2.1000e-004**	**0.0000**	**0.6912**	**0.6912**	**7.0000e-005**	**0.0000**	**0.6930**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	1.5800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2000e-004	3.7800e-003	4.9700e-003	1.0000e-005		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004	0.0000	0.6912	0.6912	7.0000e-005	0.0000	0.6930
Total	**2.1000e-003**	**3.7800e-003**	**4.9700e-003**	**1.0000e-005**		**2.1000e-004**	**2.1000e-004**		**2.1000e-004**	**2.1000e-004**	**0.0000**	**0.6912**	**0.6912**	**7.0000e-005**	**0.0000**	**0.6930**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Home Const - Trim & Finish - 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	0.2058					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0636	0.4533	0.6453	1.0400e-003		0.0240	0.0240		0.0238	0.0238	0.0000	89.8639	89.8639	8.8900e-003	0.0000	90.0861

Total	**0.2694**	**0.4533**	**0.6453**	**1.0400e-003**		**0.0240**	**0.0240**		**0.0238**	**0.0238**	**0.0000**	**89.8639**	**89.8639**	**8.8900e-003**	**0.0000**	**90.0861**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.2058					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0636	0.4533	0.6453	1.0400e-003		0.0240	0.0240		0.0238	0.0238	0.0000	89.8638	89.8638	8.8900e-003	0.0000	90.0860
Total	**0.2694**	**0.4533**	**0.6453**	**1.0400e-003**		**0.0240**	**0.0240**		**0.0238**	**0.0238**	**0.0000**	**89.8638**	**89.8638**	**8.8900e-003**	**0.0000**	**90.0860**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Home Const - Trim & Finish - 2024

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	0.2034					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0594	0.4194	0.6377	1.0300e-003		0.0205	0.0205		0.0203	0.0203	0.0000	88.8331	88.8331	8.5200e-003	0.0000	89.0462
Total	**0.2628**	**0.4194**	**0.6377**	**1.0300e-003**		**0.0205**	**0.0205**		**0.0203**	**0.0203**	**0.0000**	**88.8331**	**88.8331**	**8.5200e-003**	**0.0000**	**89.0462**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.2034					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0594	0.4194	0.6377	1.0300e-003		0.0205	0.0205		0.0203	0.0203	0.0000	88.8330	88.8330	8.5200e-003	0.0000	89.0461
Total	**0.2628**	**0.4194**	**0.6377**	**1.0300e-003**		**0.0205**	**0.0205**		**0.0203**	**0.0203**	**0.0000**	**88.8330**	**88.8330**	**8.5200e-003**	**0.0000**	**89.0461**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Habitat Redwood Blvd, Novato - Construction Phase II

Marin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	77.00	Space	0.00	45,000.00	0
Apartments Low Rise	38.00	Dwelling Unit	3.80	50,148.00	109

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	69
Climate Zone	5			**Operational Year**	2026
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	123	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - MCE 2017 Rate = 109, PG&E 2017 rate = 210, (109*0.86)+(210*0.14) = 123

Land Use - Provided Phase II construction project plans, PD, and worksheet land uses

Construction Phase - Provided construction Schedule

Off-road Equipment -

Off-road Equipment - Provided construction worksheet equip & hours

Off-road Equipment - Provided construction worksheet equip & hours

Off-road Equipment - Provided construction worksheet equip & hours

Off-road Equipment - Provided construction worksheet equip & hours

Trips and VMT - 0 trips for EMFAC2017 post-calcs, site dev & paving = 45,000-sf asphalt and 15,000-sf concrete, home const foundation = 25,000-sf cement, home const - trim & finish = 10,000-sf cement
Grading - site dev & paving = 24,910cy import

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	18.00	480.00
tblConstructionPhase	NumDays	230.00	480.00
tblConstructionPhase	NumDays	8.00	360.00
tblConstructionPhase	NumDays	5.00	120.00
tblGrading	MaterialImported	0.00	24,910.00
tblLandUse	LandUseSquareFeet	30,800.00	45,000.00
tblLandUse	LandUseSquareFeet	38,000.00	50,148.00
tblLandUse	LotAcreage	0.69	0.00
tblLandUse	LotAcreage	2.38	3.80
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	4.60
tblOffRoadEquipment	UsageHours	7.00	0.30
tblOffRoadEquipment	UsageHours	8.00	0.20
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	2.20
tblOffRoadEquipment	UsageHours	7.00	1.20
tblOffRoadEquipment	UsageHours	8.00	0.70
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	123
tblTripsAndVMT	HaulingTripNumber	3,114.00	0.00
tblTripsAndVMT	VendorTripNumber	11.00	0.00
tblTripsAndVMT	WorkerTripNumber	33.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	46.00	0.00
tblTripsAndVMT	WorkerTripNumber	9.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0624	0.6669	0.4439	1.0800e-003	0.2351	0.0267	0.2618	0.1132	0.0246	0.1378	0.0000	95.1125	95.1125	0.0302	0.0000	95.8678
2024	0.2493	1.1985	1.8869	3.0400e-003	0.0000	0.0533	0.0533	0.0000	0.0525	0.0525	0.0000	262.4000	262.4000	0.0363	0.0000	263.3075
2025	0.3909	1.4901	2.4892	4.0100e-003	0.0000	0.0595	0.0595	0.0000	0.0586	0.0586	0.0000	346.4288	346.4288	0.0469	0.0000	347.6016
2026	0.1012	0.2271	0.3834	6.2000e-004	0.0000	9.03E-03	9.0300e-003	0.0000	8.90E-03	8.9000e-003	0.0000	53.2196	53.2196	7.3200e-003	0.0000	53.4028
Maximum	**0.3909**	**1.4901**	**2.4892**	**4.0100e-003**	**0.2351**	**0.0595**	**0.2618**	**0.1132**	**0.0586**	**0.1378**	**0.0000**	**346.4288**	**346.4288**	**0.0469**	**0.0000**	**347.6016**

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					
2023	0.0624	0.6669	0.4439	1.0800e-003	0.2351	0.0267	0.2618	0.1132	0.0246	0.1378	0.0000	95.1124	95.1124	0.0302	0.0000	95.8676
2024	0.2493	1.1985	1.8869	3.0400e-003	0.0000	0.0533	0.0533	0.0000	0.0525	0.0525	0.0000	262.3997	262.3997	0.0363	0.0000	263.3072
2025	0.3909	1.4901	2.4892	4.0100e-003	0.0000	0.0595	0.0595	0.0000	0.0586	0.0586	0.0000	346.4284	346.4284	0.0469	0.0000	347.6012
2026	0.1012	0.2271	0.3834	6.2000e-004	0.0000	9.0300e-003	9.0300e-003	0.0000	8.9000e-003	8.9000e-003	0.0000	53.2196	53.2196	7.3200e-003	0.0000	53.4027
Maximum	**0.3909**	**1.4901**	**2.4892**	**4.0100e-003**	**0.2351**	**0.0595**	**0.2618**	**0.1132**	**0.0586**	**0.1378**	**0.0000**	**346.4284**	**346.4284**	**0.0469**	**0.0000**	**347.6012**

	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**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**4-20-2023**	**7-19-2023**	0.3950	0.3950
2	**7-20-2023**	**10-19-2023**	0.3342	0.3342
4	**1-20-2024**	**4-19-2024**	0.1457	0.1457
5	**4-20-2024**	**7-19-2024**	0.3526	0.3526
6	**7-20-2024**	**10-19-2024**	0.5307	0.5307
7	**10-20-2024**	**1-19-2025**	0.5252	0.5252
8	**1-20-2025**	**4-19-2025**	0.4931	0.4931
9	**4-20-2025**	**7-19-2025**	0.4759	0.4759
10	**7-20-2025**	**10-19-2025**	0.4492	0.4492
11	**10-20-2025**	**1-19-2026**	0.4492	0.4492
12	**1-20-2026**	**4-19-2026**	0.1871	0.1871

13	**4-20-2026**	**7-19-2026**	0.0484	0.0484
		Highest	0.5307	0.5307

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Phase II Site Development & Paving	Site Preparation	4/20/2023	10/4/2023	5	120	
2	Home Const - Foundations	Grading	1/25/2024	6/11/2025	5	360	
3	Home Const - Framing, Rough, Enclosed	Building Construction	3/21/2024	1/21/2026	5	480	
4	Home Const - Trim & Finish	Architectural Coating	7/11/2024	5/13/2026	5	480	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 101,550; Residential Outdoor: 33,850; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Phase II Site Development & Paving	Concrete/Industrial Saws	1	0.50	81	0.73
Phase II Site Development & Paving	Excavators	2	3.30	158	0.38
Phase II Site Development & Paving	Graders	2	4.40	187	0.41
Phase II Site Development & Paving	Pavers	2	0.50	130	0.42
Phase II Site Development & Paving	Paving Equipment	2	0.50	132	0.36
Phase II Site Development & Paving	Rollers	2	0.50	80	0.38
Phase II Site Development & Paving	Rubber Tired Dozers	2	2.20	247	0.40
Phase II Site Development & Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Home Const - Foundations	Air Compressors	3	1.40	78	0.48
Home Const - Foundations	Concrete/Industrial Saws	1	0.40	81	0.73
Home Const - Foundations	Cranes	1	0.10	231	0.29

Home Const - Foundations	Excavators	4	0.20	158	0.38
Home Const - Foundations	Graders	0	0.00	187	0.41
Home Const - Foundations	Plate Compactors	2	0.40	8	0.43
Home Const - Foundations	Rubber Tired Dozers	0	0.00	247	0.40
Home Const - Foundations	Skid Steer Loaders	2	0.70	65	0.37
Home Const - Foundations	Tractors/Loaders/Backhoes	2	0.70	97	0.37
Home Const - Framing, Rough, Enclosed	Aerial Lifts	4	4.60	63	0.31
Home Const - Framing, Rough, Enclosed	Air Compressors	6	4.60	78	0.48
Home Const - Framing, Rough, Enclosed	Cranes	1	0.30	231	0.29
Home Const - Framing, Rough, Enclosed	Forklifts	0	0.00	89	0.20
Home Const - Framing, Rough, Enclosed	Generator Sets	0	0.00	84	0.74
Home Const - Framing, Rough, Enclosed	Skid Steer Loaders	2	0.60	65	0.37
Home Const - Framing, Rough, Enclosed	Tractors/Loaders/Backhoes	2	1.20	97	0.37
Home Const - Framing, Rough, Enclosed	Welders	0	0.00	46	0.45
Home Const - Trim & Finish	Aerial Lifts	2	4.60	63	0.31
Home Const - Trim & Finish	Air Compressors	3	4.60	78	0.48
Home Const - Trim & Finish	Excavators	2	0.30	158	0.38
Home Const - Trim & Finish	Pressure Washers	1	0.40	13	0.30
Home Const - Trim & Finish	Skid Steer Loaders	2	0.60	65	0.37
Home Const - Trim & Finish	Tractors/Loaders/Backhoes	2	0.60	97	0.37

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
Phase II Site Development & Paving	13	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Home Const - Foundations	15	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Home Const - Framing, Rough	15	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Home Const - Trim & Finish	12	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Phase II Site Development & 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					
Fugitive Dust					0.2351	0.0000	0.2351	0.1132	0.0000	0.1132	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0624	0.6669	0.4439	1.0800e-003		0.0267	0.0267		0.0246	0.0246	0.0000	95.1125	95.1125	0.0302	0.0000	95.8678
Total	**0.0624**	**0.6669**	**0.4439**	**1.0800e-003**	**0.2351**	**0.0267**	**0.2618**	**0.1132**	**0.0246**	**0.1378**	**0.0000**	**95.1125**	**95.1125**	**0.0302**	**0.0000**	**95.8678**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					0.2351	0.0000	0.2351	0.1132	0.0000	0.1132	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0624	0.6669	0.4439	1.0800e-003		0.0267	0.0267		0.0246	0.0246	0.0000	95.1124	95.1124	0.0302	0.0000	95.8676
Total	**0.0624**	**0.6669**	**0.4439**	**1.0800e-003**	**0.2351**	**0.0267**	**0.2618**	**0.1132**	**0.0246**	**0.1378**	**0.0000**	**95.1124**	**95.1124**	**0.0302**	**0.0000**	**95.8676**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Home Const - Foundations - 2024

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0249	0.1929	0.2993	4.8000e-004		9.0500e-003	9.0500e-003		8.8000e-003	8.8000e-003	0.0000	41.5054	41.5054	6.6100e-003	0.0000	41.6706
Total	**0.0249**	**0.1929**	**0.2993**	**4.8000e-004**	**0.0000**	**9.0500e-003**	**9.0500e-003**	**0.0000**	**8.8000e-003**	**8.8000e-003**	**0.0000**	**41.5054**	**41.5054**	**6.6100e-003**	**0.0000**	**41.6706**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0249	0.1929	0.2993	4.8000e-004		9.0500e-003	9.0500e-003		8.8000e-003	8.8000e-003	0.0000	41.5053	41.5053	6.6100e-003	0.0000	41.6706
Total	**0.0249**	**0.1929**	**0.2993**	**4.8000e-004**	**0.0000**	**9.0500e-003**	**9.0500e-003**	**0.0000**	**8.8000e-003**	**8.8000e-003**	**0.0000**	**41.5053**	**41.5053**	**6.6100e-003**	**0.0000**	**41.6706**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Home Const - Foundations - 2025

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0112	0.0855	0.1420	2.3000e-004		3.6500e-003	3.6500e-003		3.5600e-003	3.5600e-003	0.0000	19.7343	19.7343	3.1200e-003	0.0000	19.8123
Total	**0.0112**	**0.0855**	**0.1420**	**2.3000e-004**	**0.0000**	**3.6500e-003**	**3.6500e-003**	**0.0000**	**3.5600e-003**	**3.5600e-003**	**0.0000**	**19.7343**	**19.7343**	**3.1200e-003**	**0.0000**	**19.8123**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0112	0.0855	0.1420	2.3000e-004		3.6500e-003	3.6500e-003		3.5600e-003	3.5600e-003	0.0000	19.7342	19.7342	3.1200e-003	0.0000	19.8122
Total	**0.0112**	**0.0855**	**0.1420**	**2.3000e-004**	**0.0000**	**3.6500e-003**	**3.6500e-003**	**0.0000**	**3.5600e-003**	**3.5600e-003**	**0.0000**	**19.7342**	**19.7342**	**3.1200e-003**	**0.0000**	**19.8122**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Home Const - Framing, Rough, Enclosed - 2024

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	0.0996	0.7657	1.2021	1.9400e-003		0.0337	0.0337		0.0333	0.0333	0.0000	167.5082	167.5082	0.0222	0.0000	168.0626
Total	**0.0996**	**0.7657**	**1.2021**	**1.9400e-003**		**0.0337**	**0.0337**		**0.0333**	**0.0333**	**0.0000**	**167.5082**	**167.5082**	**0.0222**	**0.0000**	**168.0626**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0996	0.7657	1.2021	1.9400e-003		0.0337	0.0337		0.0333	0.0333	0.0000	167.5080	167.5080	0.0222	0.0000	168.0624
Total	**0.0996**	**0.7657**	**1.2021**	**1.9400e-003**		**0.0337**	**0.0337**		**0.0333**	**0.0333**	**0.0000**	**167.5080**	**167.5080**	**0.0222**	**0.0000**	**168.0624**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Home Const - Framing, Rough, Enclosed - 2025

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	0.1207	0.9271	1.5363	2.4800e-003		0.0368	0.0368		0.0364	0.0364	0.0000	214.3207	214.3207	0.0281	0.0000	215.0234
Total	**0.1207**	**0.9271**	**1.5363**	**2.4800e-003**		**0.0368**	**0.0368**		**0.0364**	**0.0364**	**0.0000**	**214.3207**	**214.3207**	**0.0281**	**0.0000**	**215.0234**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.1207	0.9271	1.5363	2.4800e-003		0.0368	0.0368		0.0364	0.0364	0.0000	214.3205	214.3205	0.0281	0.0000	215.0231

Total	**0.1207**	**0.9271**	**1.5363**	**2.4800e-003**		**0.0368**	**0.0368**		**0.0364**	**0.0364**	**0.0000**	**214.3205**	**214.3205**	**0.0281**	**0.0000**	**215.0231**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Home Const - Framing, Rough, Enclosed - 2026

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	6.9300e-003	0.0533	0.0883	1.4000e-004		2.1200e-003	2.1200e-003		2.0900e-003	2.0900e-003	0.0000	12.3173	12.3173	1.6200e-003	0.0000	12.3577
Total	**6.9300e-003**	**0.0533**	**0.0883**	**1.4000e-004**		**2.1200e-003**	**2.1200e-003**		**2.0900e-003**	**2.0900e-003**	**0.0000**	**12.3173**	**12.3173**	**1.6200e-003**	**0.0000**	**12.3577**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	6.9300e-003	0.0533	0.0883	1.4000e-004		2.1200e-003	2.1200e-003		2.0900e-003	2.0900e-003	0.0000	12.3173	12.3173	1.6200e-003	0.0000	12.3577
Total	**6.9300e-003**	**0.0533**	**0.0883**	**1.4000e-004**		**2.1200e-003**	**2.1200e-003**		**2.0900e-003**	**2.0900e-003**	**0.0000**	**12.3173**	**12.3173**	**1.6200e-003**	**0.0000**	**12.3577**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Home Const - Trim & Finish - 2024

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	0.0936					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0311	0.2399	0.3856	6.2000e-004		0.0106	0.0106		0.0104	0.0104	0.0000	53.3864	53.3864	7.5200e-003	0.0000	53.5743
Total	**0.1248**	**0.2399**	**0.3856**	**6.2000e-004**		**0.0106**	**0.0106**		**0.0104**	**0.0104**	**0.0000**	**53.3864**	**53.3864**	**7.5200e-003**	**0.0000**	**53.5743**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0936					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0311	0.2399	0.3856	6.2000e-004		0.0106	0.0106		0.0104	0.0104	0.0000	53.3863	53.3863	7.5200e-003	0.0000	53.5742
Total	**0.1248**	**0.2399**	**0.3856**	**6.2000e-004**		**0.0106**	**0.0106**		**0.0104**	**0.0104**	**0.0000**	**53.3863**	**53.3863**	**7.5200e-003**	**0.0000**	**53.5742**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Home Const - Trim & Finish - 2025

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	0.1971					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0621	0.4774	0.8109	1.3000e-003		0.0190	0.0190		0.0187	0.0187	0.0000	112.3739	112.3739	0.0157	0.0000	112.7660
Total	**0.2591**	**0.4774**	**0.8109**	**1.3000e-003**		**0.0190**	**0.0190**		**0.0187**	**0.0187**	**0.0000**	**112.3739**	**112.3739**	**0.0157**	**0.0000**	**112.7660**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.1971					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0621	0.4774	0.8109	1.3000e-003		0.0190	0.0190		0.0187	0.0187	0.0000	112.3737	112.3737	0.0157	0.0000	112.7659
Total	**0.2591**	**0.4774**	**0.8109**	**1.3000e-003**		**0.0190**	**0.0190**		**0.0187**	**0.0187**	**0.0000**	**112.3737**	**112.3737**	**0.0157**	**0.0000**	**112.7659**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Home Const - Trim & Finish - 2026

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	0.0717					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0226	0.1738	0.2951	4.7000e-004		6.9100e-003	6.9100e-003		6.8100e-003	6.8100e-003	0.0000	40.9024	40.9024	5.7100e-003	0.0000	41.0451

Total	**0.0943**	**0.1738**	**0.2951**	**4.7000e-004**		**6.9100e-003**	**6.9100e-003**		**6.8100e-003**	**6.8100e-003**	**0.0000**	**40.9024**	**40.9024**	**5.7100e-003**	**0.0000**	**41.0451**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0717					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0226	0.1738	0.2951	4.7000e-004		6.9100e-003	6.9100e-003		6.8100e-003	6.8100e-003	0.0000	40.9023	40.9023	5.7100e-003	0.0000	41.0451
Total	**0.0943**	**0.1738**	**0.2951**	**4.7000e-004**		**6.9100e-003**	**6.9100e-003**		**6.8100e-003**	**6.8100e-003**	**0.0000**	**40.9023**	**40.9023**	**5.7100e-003**	**0.0000**	**41.0451**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Habitat Redwood Blvd, Novato - Operation

Marin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	80.00	Dwelling Unit	7.95	105,575.00	229
General Office Building	2.15	1000sqft	0.05	2,154.00	0
Parking Lot	185.00	Space	0.00	90,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	69
Climate Zone	5			**Operational Year**	2026
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	123	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - MCE 2017 Rate = 109, PG&E 2017 rate = 210, (109*0.86)+(210*0.14) = 123

Land Use - Provided project plans, PD land uses

Construction Phase - Operational run only

Off-road Equipment - Operational run only

Trips and VMT - Operational run only

Vehicle Trips - Provided trip gen, apts = 7.05, 7.66, 6.49, office = 16.25, 3.62, 1.55

Vehicle Emission Factors - EMFAC2017 Emission Factors for 2026 Marin County

Woodstoves - All gas no wood

Water And Wastewater - WWTP 100% aerobic

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	PhaseEndDate	5/4/2022	4/21/2022
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	12.00	25.60
tblFireplaces	NumberWood	13.60	0.00
tblFleetMix	HHD	0.01	0.01
tblFleetMix	HHD	0.01	0.01
tblFleetMix	HHD	0.01	0.01
tblFleetMix	LDA	0.60	0.54
tblFleetMix	LDA	0.60	0.54
tblFleetMix	LDA	0.60	0.54
tblFleetMix	LDT1	0.04	0.06
tblFleetMix	LDT1	0.04	0.06
tblFleetMix	LDT1	0.04	0.06
tblFleetMix	LDT2	0.20	0.19
tblFleetMix	LDT2	0.20	0.19
tblFleetMix	LDT2	0.20	0.19
tblFleetMix	LHD1	0.01	0.03
tblFleetMix	LHD1	0.01	0.03
tblFleetMix	LHD1	0.01	0.03
tblFleetMix	LHD2	5.2170e-003	6.1869e-003
tblFleetMix	LHD2	5.2170e-003	6.1869e-003
tblFleetMix	LHD2	5.2170e-003	6.1869e-003
tblFleetMix	MCY	5.6250e-003	0.03
tblFleetMix	MCY	5.6250e-003	0.03
tblFleetMix	MCY	5.6250e-003	0.03
tblFleetMix	MDV	0.11	0.12

tblFleetMix	MDV	0.11	0.12
tblFleetMix	MDV	0.11	0.12
tblFleetMix	MH	6.9500e-004	8.2421e-004
tblFleetMix	MH	6.9500e-004	8.2421e-004
tblFleetMix	MH	6.9500e-004	8.2421e-004
tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.01
tblFleetMix	OBUS	2.0450e-003	1.1434e-003
tblFleetMix	OBUS	2.0450e-003	1.1434e-003
tblFleetMix	OBUS	2.0450e-003	1.1434e-003
tblFleetMix	SBUS	7.2500e-004	7.8487e-004
tblFleetMix	SBUS	7.2500e-004	7.8487e-004
tblFleetMix	SBUS	7.2500e-004	7.8487e-004
tblFleetMix	UBUS	2.6470e-003	7.5219e-004
tblFleetMix	UBUS	2.6470e-003	7.5219e-004
tblFleetMix	UBUS	2.6470e-003	7.5219e-004
tblLandUse	LandUseSquareFeet	80,000.00	105,575.00
tblLandUse	LandUseSquareFeet	74,000.00	90,000.00
tblLandUse	LotAcreage	5.00	7.95
tblLandUse	LotAcreage	1.66	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	123
tblVehicleEF	HHD	0.22	0.03
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	0.07	1.0000e-006
tblVehicleEF	HHD	1.41	5.98

tblVehicleEF	HHD	1.30	0.64
tblVehicleEF	HHD	5.53	0.02
tblVehicleEF	HHD	3,528.90	981.04
tblVehicleEF	HHD	1,567.67	1,421.59
tblVehicleEF	HHD	16.90	0.25
tblVehicleEF	HHD	12.96	5.44
tblVehicleEF	HHD	1.97	2.85
tblVehicleEF	HHD	18.66	2.43
tblVehicleEF	HHD	0.01	3.4840e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	6.6280e-003	0.02
tblVehicleEF	HHD	1.7600e-004	2.0000e-006
tblVehicleEF	HHD	0.01	3.3330e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.7440e-003	8.8480e-003
tblVehicleEF	HHD	6.3400e-003	0.02
tblVehicleEF	HHD	1.6200e-004	1.0000e-006
tblVehicleEF	HHD	1.3200e-004	6.0000e-006
tblVehicleEF	HHD	7.4020e-003	2.8000e-004
tblVehicleEF	HHD	0.36	0.40
tblVehicleEF	HHD	8.9000e-005	4.0000e-006
tblVehicleEF	HHD	0.09	0.03
tblVehicleEF	HHD	9.4400e-004	1.4650e-003
tblVehicleEF	HHD	0.12	5.0000e-006
tblVehicleEF	HHD	0.03	8.9940e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.5900e-004	2.0000e-006
tblVehicleEF	HHD	1.3200e-004	6.0000e-006
tblVehicleEF	HHD	7.4020e-003	2.8000e-004

tblVehicleEF	HHD	0.42	0.47
tblVehicleEF	HHD	8.9000e-005	4.0000e-006
tblVehicleEF	HHD	0.19	0.13
tblVehicleEF	HHD	9.4400e-004	1.4650e-003
tblVehicleEF	HHD	0.13	5.0000e-006
tblVehicleEF	LDA	2.7480e-003	1.5350e-003
tblVehicleEF	LDA	3.7490e-003	0.04
tblVehicleEF	LDA	0.40	0.46
tblVehicleEF	LDA	0.92	2.00
tblVehicleEF	LDA	213.77	232.42
tblVehicleEF	LDA	48.95	48.77
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.05	0.15
tblVehicleEF	LDA	1.6340e-003	1.2920e-003
tblVehicleEF	LDA	2.2440e-003	1.6150e-003
tblVehicleEF	LDA	1.5050e-003	1.1910e-003
tblVehicleEF	LDA	2.0630e-003	1.4850e-003
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	6.9380e-003	5.8850e-003
tblVehicleEF	LDA	0.04	0.20
tblVehicleEF	LDA	0.05	0.18
tblVehicleEF	LDA	2.1390e-003	1.3200e-004
tblVehicleEF	LDA	5.0500e-004	0.00
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.01	8.5310e-003
tblVehicleEF	LDA	0.04	0.20

tblVehicleEF	LDA	0.06	0.19
tblVehicleEF	LDT1	5.2040e-003	2.6890e-003
tblVehicleEF	LDT1	8.7030e-003	0.05
tblVehicleEF	LDT1	0.67	0.66
tblVehicleEF	LDT1	1.90	2.21
tblVehicleEF	LDT1	270.16	284.21
tblVehicleEF	LDT1	62.90	60.59
tblVehicleEF	LDT1	0.07	0.05
tblVehicleEF	LDT1	0.10	0.21
tblVehicleEF	LDT1	1.9490e-003	1.4800e-003
tblVehicleEF	LDT1	2.7280e-003	1.9770e-003
tblVehicleEF	LDT1	1.7940e-003	1.3610e-003
tblVehicleEF	LDT1	2.5080e-003	1.8180e-003
tblVehicleEF	LDT1	0.06	0.07
tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.01	0.01
tblVehicleEF	LDT1	0.14	0.57
tblVehicleEF	LDT1	0.12	0.26
tblVehicleEF	LDT1	2.7080e-003	2.8800e-003
tblVehicleEF	LDT1	6.6200e-004	0.00
tblVehicleEF	LDT1	0.06	0.07
tblVehicleEF	LDT1	0.18	0.15
tblVehicleEF	LDT1	0.06	0.06
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.14	0.57
tblVehicleEF	LDT1	0.13	0.28
tblVehicleEF	LDT2	3.8260e-003	2.2840e-003
tblVehicleEF	LDT2	4.9810e-003	0.06
tblVehicleEF	LDT2	0.52	0.59

tblVehicleEF	LDT2	1.20	2.61
tblVehicleEF	LDT2	304.02	300.90
tblVehicleEF	LDT2	69.85	64.08
tblVehicleEF	LDT2	0.05	0.05
tblVehicleEF	LDT2	0.08	0.22
tblVehicleEF	LDT2	1.6950e-003	1.3200e-003
tblVehicleEF	LDT2	2.3540e-003	1.6380e-003
tblVehicleEF	LDT2	1.5580e-003	1.2150e-003
tblVehicleEF	LDT2	2.1640e-003	1.5060e-003
tblVehicleEF	LDT2	0.03	0.05
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.03	0.06
tblVehicleEF	LDT2	9.4990e-003	8.9480e-003
tblVehicleEF	LDT2	0.07	0.42
tblVehicleEF	LDT2	0.07	0.26
tblVehicleEF	LDT2	3.0430e-003	0.01
tblVehicleEF	LDT2	7.1800e-004	1.2700e-004
tblVehicleEF	LDT2	0.03	0.05
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.03	0.06
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.07	0.42
tblVehicleEF	LDT2	0.07	0.28
tblVehicleEF	LHD1	4.4960e-003	4.5320e-003
tblVehicleEF	LHD1	0.01	7.9230e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	0.94	0.75
tblVehicleEF	LHD1	2.24	0.99
tblVehicleEF	LHD1	9.11	8.84

tblVehicleEF	LHD1	664.61	750.17
tblVehicleEF	LHD1	28.34	10.67
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	1.09	0.69
tblVehicleEF	LHD1	0.84	0.27
tblVehicleEF	LHD1	9.3000e-004	9.2800e-004
tblVehicleEF	LHD1	0.01	9.9030e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.5400e-004	2.4300e-004
tblVehicleEF	LHD1	8.9000e-004	8.8800e-004
tblVehicleEF	LHD1	2.5790e-003	2.4760e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	7.8500e-004	2.2300e-004
tblVehicleEF	LHD1	2.0970e-003	1.6290e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.01	0.02
tblVehicleEF	LHD1	1.2150e-003	9.4200e-004
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.35	0.54
tblVehicleEF	LHD1	0.21	0.06
tblVehicleEF	LHD1	9.1000e-005	8.6000e-005
tblVehicleEF	LHD1	6.5050e-003	7.3140e-003
tblVehicleEF	LHD1	3.2500e-004	1.0600e-004
tblVehicleEF	LHD1	2.0970e-003	1.6290e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.2150e-003	9.4200e-004
tblVehicleEF	LHD1	0.15	0.11
tblVehicleEF	LHD1	0.35	0.54
tblVehicleEF	LHD1	0.24	0.07

tblVehicleEF	LHD2	2.9230e-003	2.9510e-003
tblVehicleEF	LHD2	6.1430e-003	6.1350e-003
tblVehicleEF	LHD2	4.8010e-003	7.0530e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.49	0.56
tblVehicleEF	LHD2	0.99	0.58
tblVehicleEF	LHD2	13.84	13.59
tblVehicleEF	LHD2	690.15	734.45
tblVehicleEF	LHD2	22.83	7.42
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.42	0.60
tblVehicleEF	LHD2	0.36	0.17
tblVehicleEF	LHD2	1.1570e-003	1.4290e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.7600e-004	1.1800e-004
tblVehicleEF	LHD2	1.1070e-003	1.3670e-003
tblVehicleEF	LHD2	2.7010e-003	2.6940e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.4600e-004	1.0800e-004
tblVehicleEF	LHD2	5.4000e-004	7.6100e-004
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	3.4700e-004	4.6800e-004
tblVehicleEF	LHD2	0.10	0.10
tblVehicleEF	LHD2	0.05	0.21
tblVehicleEF	LHD2	0.06	0.03
tblVehicleEF	LHD2	1.3500e-004	1.3000e-004
tblVehicleEF	LHD2	6.7070e-003	7.0910e-003
tblVehicleEF	LHD2	2.4600e-004	7.3000e-005

tblVehicleEF	LHD2	5.4000e-004	7.6100e-004
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.4700e-004	4.6800e-004
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	0.05	0.21
tblVehicleEF	LHD2	0.07	0.04
tblVehicleEF	MCY	0.47	0.34
tblVehicleEF	MCY	0.16	0.26
tblVehicleEF	MCY	19.85	20.08
tblVehicleEF	MCY	10.34	9.19
tblVehicleEF	MCY	177.69	217.68
tblVehicleEF	MCY	44.87	61.31
tblVehicleEF	MCY	1.18	1.18
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	2.2060e-003	2.1670e-003
tblVehicleEF	MCY	3.7690e-003	3.1720e-003
tblVehicleEF	MCY	2.0610e-003	2.0250e-003
tblVehicleEF	MCY	3.5450e-003	2.9830e-003
tblVehicleEF	MCY	0.76	1.56
tblVehicleEF	MCY	0.70	0.72
tblVehicleEF	MCY	0.46	0.94
tblVehicleEF	MCY	2.29	2.30
tblVehicleEF	MCY	0.64	2.09
tblVehicleEF	MCY	2.23	1.99
tblVehicleEF	MCY	2.1690e-003	2.1540e-003
tblVehicleEF	MCY	6.8400e-004	6.0700e-004
tblVehicleEF	MCY	0.76	1.56
tblVehicleEF	MCY	0.70	0.72
tblVehicleEF	MCY	0.46	0.94

tblVehicleEF	MCY	2.85	2.86
tblVehicleEF	MCY	0.64	2.09
tblVehicleEF	MCY	2.43	2.16
tblVehicleEF	MDV	5.9550e-003	2.5170e-003
tblVehicleEF	MDV	0.01	0.06
tblVehicleEF	MDV	0.69	0.60
tblVehicleEF	MDV	2.02	2.71
tblVehicleEF	MDV	407.92	362.61
tblVehicleEF	MDV	92.81	75.09
tblVehicleEF	MDV	0.08	0.05
tblVehicleEF	MDV	0.16	0.24
tblVehicleEF	MDV	1.7290e-003	1.3910e-003
tblVehicleEF	MDV	2.3460e-003	1.6440e-003
tblVehicleEF	MDV	1.5930e-003	1.2850e-003
tblVehicleEF	MDV	2.1570e-003	1.5110e-003
tblVehicleEF	MDV	0.05	0.06
tblVehicleEF	MDV	0.14	0.12
tblVehicleEF	MDV	0.05	0.06
tblVehicleEF	MDV	0.01	0.01
tblVehicleEF	MDV	0.10	0.41
tblVehicleEF	MDV	0.14	0.28
tblVehicleEF	MDV	4.0780e-003	3.4460e-003
tblVehicleEF	MDV	9.6300e-004	7.1500e-004
tblVehicleEF	MDV	0.05	0.06
tblVehicleEF	MDV	0.14	0.12
tblVehicleEF	MDV	0.05	0.06
tblVehicleEF	MDV	0.02	0.01
tblVehicleEF	MDV	0.10	0.41
tblVehicleEF	MDV	0.15	0.31
tblVehicleEF	MH	0.02	7.4860e-003

tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.20	0.64
tblVehicleEF	MH	4.53	1.80
tblVehicleEF	MH	1,193.48	1,428.07
tblVehicleEF	MH	55.92	16.26
tblVehicleEF	MH	1.13	1.31
tblVehicleEF	MH	0.69	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	9.6600e-004	2.2700e-004
tblVehicleEF	MH	3.2390e-003	3.3130e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	8.8800e-004	2.0900e-004
tblVehicleEF	MH	0.50	0.42
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.20	0.17
tblVehicleEF	MH	0.07	0.05
tblVehicleEF	MH	0.02	0.93
tblVehicleEF	MH	0.26	0.08
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.3800e-004	1.6100e-004
tblVehicleEF	MH	0.50	0.42
tblVehicleEF	MH	0.05	0.04
tblVehicleEF	MH	0.20	0.17
tblVehicleEF	MH	0.09	0.07
tblVehicleEF	MH	0.02	0.93
tblVehicleEF	MH	0.28	0.09
tblVehicleEF	MHD	0.02	5.1400e-003
tblVehicleEF	MHD	4.1960e-003	2.1500e-003
tblVehicleEF	MHD	0.04	0.01

tblVehicleEF	MHD	0.40	0.54
tblVehicleEF	MHD	0.33	0.27
tblVehicleEF	MHD	5.47	1.47
tblVehicleEF	MHD	118.69	95.69
tblVehicleEF	MHD	1,183.33	1,110.34
tblVehicleEF	MHD	67.35	12.87
tblVehicleEF	MHD	0.34	0.59
tblVehicleEF	MHD	1.08	1.42
tblVehicleEF	MHD	8.94	1.52
tblVehicleEF	MHD	1.2300e-004	4.2800e-004
tblVehicleEF	MHD	3.2210e-003	6.8560e-003
tblVehicleEF	MHD	8.9600e-004	1.5100e-004
tblVehicleEF	MHD	1.1800e-004	4.0900e-004
tblVehicleEF	MHD	3.0730e-003	6.5490e-003
tblVehicleEF	MHD	8.2400e-004	1.3800e-004
tblVehicleEF	MHD	7.6300e-004	4.4600e-004
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	4.8300e-004	2.7900e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.15
tblVehicleEF	MHD	0.33	0.07
tblVehicleEF	MHD	1.1460e-003	9.0800e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.6900e-004	1.2700e-004
tblVehicleEF	MHD	7.6300e-004	4.4600e-004
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	4.8300e-004	2.7900e-004
tblVehicleEF	MHD	0.05	0.02

tblVehicleEF	MHD	0.03	0.15
tblVehicleEF	MHD	0.36	0.07
tblVehicleEF	OBUS	0.01	9.0930e-003
tblVehicleEF	OBUS	6.8260e-003	5.6490e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.24	0.53
tblVehicleEF	OBUS	0.46	0.60
tblVehicleEF	OBUS	5.29	2.55
tblVehicleEF	OBUS	78.23	67.62
tblVehicleEF	OBUS	1,278.50	1,447.70
tblVehicleEF	OBUS	68.46	20.82
tblVehicleEF	OBUS	0.16	0.25
tblVehicleEF	OBUS	0.83	0.98
tblVehicleEF	OBUS	2.26	0.67
tblVehicleEF	OBUS	1.4000e-005	8.5000e-005
tblVehicleEF	OBUS	2.6020e-003	6.0210e-003
tblVehicleEF	OBUS	8.7500e-004	2.0100e-004
tblVehicleEF	OBUS	1.4000e-005	8.2000e-005
tblVehicleEF	OBUS	2.4660e-003	5.7360e-003
tblVehicleEF	OBUS	8.0400e-004	1.8400e-004
tblVehicleEF	OBUS	1.2420e-003	1.3430e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	6.0400e-004	6.7200e-004
tblVehicleEF	OBUS	0.04	0.03
tblVehicleEF	OBUS	0.06	0.29
tblVehicleEF	OBUS	0.33	0.12
tblVehicleEF	OBUS	7.5800e-004	6.4600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7700e-004	2.0600e-004

tblVehicleEF	OBUS	1.2420e-003	1.3430e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	6.0400e-004	6.7200e-004
tblVehicleEF	OBUS	0.05	0.04
tblVehicleEF	OBUS	0.06	0.29
tblVehicleEF	OBUS	0.36	0.13
tblVehicleEF	SBUS	0.83	0.06
tblVehicleEF	SBUS	9.7220e-003	6.7500e-003
tblVehicleEF	SBUS	0.06	5.0410e-003
tblVehicleEF	SBUS	6.72	2.28
tblVehicleEF	SBUS	0.61	0.56
tblVehicleEF	SBUS	6.33	0.74
tblVehicleEF	SBUS	1,167.08	340.04
tblVehicleEF	SBUS	1,088.89	1,016.37
tblVehicleEF	SBUS	44.99	4.07
tblVehicleEF	SBUS	7.93	3.77
tblVehicleEF	SBUS	3.10	5.30
tblVehicleEF	SBUS	13.56	0.78
tblVehicleEF	SBUS	6.1060e-003	3.9270e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	8.6600e-004	6.2000e-005
tblVehicleEF	SBUS	5.8420e-003	3.7570e-003
tblVehicleEF	SBUS	2.7030e-003	2.7050e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	7.9600e-004	5.7000e-005
tblVehicleEF	SBUS	1.8800e-003	3.7400e-004
tblVehicleEF	SBUS	0.02	4.3840e-003
tblVehicleEF	SBUS	0.80	0.26

tblVehicleEF	SBUS	9.1300e-004	1.8600e-004
tblVehicleEF	SBUS	0.09	0.09
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.31	0.03
tblVehicleEF	SBUS	0.01	3.2370e-003
tblVehicleEF	SBUS	0.01	9.7090e-003
tblVehicleEF	SBUS	5.5900e-004	4.0000e-005
tblVehicleEF	SBUS	1.8800e-003	3.7400e-004
tblVehicleEF	SBUS	0.02	4.3840e-003
tblVehicleEF	SBUS	1.15	0.37
tblVehicleEF	SBUS	9.1300e-004	1.8600e-004
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.34	0.03
tblVehicleEF	UBUS	0.27	0.78
tblVehicleEF	UBUS	0.03	0.03
tblVehicleEF	UBUS	4.42	6.02
tblVehicleEF	UBUS	5.43	2.43
tblVehicleEF	UBUS	2,119.89	1,724.19
tblVehicleEF	UBUS	81.78	23.96
tblVehicleEF	UBUS	10.32	0.45
tblVehicleEF	UBUS	15.97	0.23
tblVehicleEF	UBUS	0.65	0.11
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	0.21	3.5980e-003
tblVehicleEF	UBUS	7.5000e-004	2.7800e-004
tblVehicleEF	UBUS	0.28	0.05
tblVehicleEF	UBUS	3.0000e-003	5.0890e-003
tblVehicleEF	UBUS	0.20	3.3970e-003
tblVehicleEF	UBUS	6.9000e-004	2.5600e-004

tblVehicleEF	UBUS	1.6140e-003	5.7200e-004
tblVehicleEF	UBUS	0.03	7.1240e-003
tblVehicleEF	UBUS	1.0390e-003	3.3300e-004
tblVehicleEF	UBUS	0.54	0.02
tblVehicleEF	UBUS	7.0390e-003	0.04
tblVehicleEF	UBUS	0.46	0.13
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	9.1700e-004	2.3700e-004
tblVehicleEF	UBUS	1.6140e-003	5.7200e-004
tblVehicleEF	UBUS	0.03	7.1240e-003
tblVehicleEF	UBUS	1.0390e-003	3.3300e-004
tblVehicleEF	UBUS	0.85	0.81
tblVehicleEF	UBUS	7.0390e-003	0.04
tblVehicleEF	UBUS	0.50	0.14
tblVehicleTrips	ST_TR	7.16	7.66
tblVehicleTrips	ST_TR	2.46	3.62
tblVehicleTrips	SU_TR	6.07	6.49
tblVehicleTrips	SU_TR	1.05	1.55
tblVehicleTrips	WD_TR	6.59	7.05
tblVehicleTrips	WD_TR	11.03	16.25
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5222	9.6100e-003	0.5963	5.0000e-005		3.5200e-003	3.5200e-003		3.5200e-003	3.5200e-003	0.0000	4.1695	4.1695	1.0000e-003	6.0000e-005	4.212
Energy	9.0000e-003	0.0771	0.0336	4.9000e-004		6.2200e-003	6.2200e-003		6.2200e-003	6.2200e-003	0.0000	111.1716	111.1716	6.9100e-003	2.7100e-003	112.152
Mobile	0.3196	0.2819	2.2047	5.0300e-003	0.5026	3.4400e-003	0.5060	0.1343	3.2100e-003	0.1375	0.0000	432.3015	432.3015	0.0290	0.0000	433.0274
Waste						0.0000	0.0000		0.0000	0.0000	7.8761	0.0000	7.8761	0.4655	0.0000	19.5126
Water						0.0000	0.0000		0.0000	0.0000	1.9793	2.3763	4.3556	7.3700e-003	4.4200e-003	5.8572
Total	**0.8508**	**0.3685**	**2.8347**	**5.5700e-003**	**0.5026**	**0.0132**	**0.5158**	**0.1343**	**0.0130**	**0.1472**	**9.8554**	**550.0189**	**559.8743**	**0.5098**	**7.1900e-003**	**574.7612**

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	0.5222	9.6100e-003	0.5963	5.0000e-005		3.5200e-003	3.5200e-003		3.5200e-003	3.5200e-003	0.0000	4.1695	4.1695	1.0000e-003	6.0000e-005	4.2120
Energy	9.0000e-003	0.0771	0.0336	4.9000e-004		6.2200e-003	6.2200e-003		6.2200e-003	6.2200e-003	0.0000	111.1716	111.1716	6.9100e-003	2.7100e-003	112.1520
Mobile	0.3196	0.2819	2.2047	5.0300e-003	0.5026	3.4400e-003	0.5060	0.1343	3.2100e-003	0.1375	0.0000	432.3015	432.3015	0.0290	0.0000	433.0274

Waste						0.0000	0.0000		0.0000	0.0000	7.8761	0.0000	7.8761	0.4655	0.0000	19.5126
Water						0.0000	0.0000		0.0000	0.0000	1.9793	2.3763	4.3556	7.3700e-003	4.4200e-003	5.8572
Total	**0.8508**	**0.3685**	**2.8347**	**5.5700e-003**	**0.5026**	**0.0132**	**0.5158**	**0.1343**	**0.0130**	**0.1472**	**9.8554**	**550.0189**	**559.8743**	**0.5098**	**7.1900e-003**	**574.7612**

	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**

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	0.3196	0.2819	2.2047	5.0300e-003	0.5026	3.4400e-003	0.5060	0.1343	3.2100e-003	0.1375	0.0000	432.3015	432.3015	0.0290	0.0000	433.0274
Unmitigated	0.3196	0.2819	2.2047	5.0300e-003	0.5026	3.4400e-003	0.5060	0.1343	3.2100e-003	0.1375	0.0000	432.3015	432.3015	0.0290	0.0000	433.0274

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	564.00	612.80	519.20	1,303,938	1,303,938
General Office Building	35.00	7.80	3.34	63,550	63,550
Parking Lot	0.00	0.00	0.00		
Total	599.00	620.60	522.54	1,367,488	1,367,488

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
Apartments Low Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.544586	0.059189	0.194842	0.116655	0.025323	0.006187	0.010605	0.010839	0.001143	0.000752	0.028270	0.000785	0.000824
General Office Building	0.544586	0.059189	0.194842	0.116655	0.025323	0.006187	0.010605	0.010839	0.001143	0.000752	0.028270	0.000785	0.000824
Parking Lot	0.544586	0.059189	0.194842	0.116655	0.025323	0.006187	0.010605	0.010839	0.001143	0.000752	0.028270	0.000785	0.000824

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	22.0755	22.0755	5.2000e-003	1.0800e-003	22.5265
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	22.0755	22.0755	5.2000e-003	1.0800e-003	22.5265
NaturalGas Mitigated	9.0000e-003	0.0771	0.0336	4.9000e-004		6.2200e-003	6.2200e-003		6.2200e-003	6.2200e-003	0.0000	89.0960	89.0960	1.7100e-003	1.6300e-003	89.6255
NaturalGas Unmitigated	9.0000e-003	0.0771	0.0336	4.9000e-004		6.2200e-003	6.2200e-003		6.2200e-003	6.2200e-003	0.0000	89.0960	89.0960	1.7100e-003	1.6300e-003	89.6255

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					
Apartments Low Rise	1.62796e+006	8.7800e-003	0.0750	0.0319	4.8000e-004		6.0600e-003	6.0600e-003		6.0600e-003	6.0600e-003	0.0000	86.8742	86.8742	1.6700e-003	1.5900e-003	87.3904
General Office Building	41636.8	2.2000e-004	2.0400e-003	1.7100e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.2219	2.2219	4.0000e-005	4.0000e-005	2.2351
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		**9.0000e-003**	**0.0771**	**0.0336**	**4.9000e-004**		**6.2200e-003**	**6.2200e-003**		**6.2200e-003**	**6.2200e-003**	**0.0000**	**89.0961**	**89.0961**	**1.7100e-003**	**1.6300e-003**	**89.6255**

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					
Apartments Low Rise	1.62796e+006	8.7800e-003	0.0750	0.0319	4.8000e-004		6.0600e-003	6.0600e-003		6.0600e-003	6.0600e-003	0.0000	86.8742	86.8742	1.6700e-003	1.5900e-003	87.3904
General Office Building	41636.8	2.2000e-004	2.0400e-003	1.7100e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.2219	2.2219	4.0000e-005	4.0000e-005	2.2351
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		**9.0000e-003**	**0.0771**	**0.0336**	**4.9000e-004**		**6.2200e-003**	**6.2200e-003**		**6.2200e-003**	**6.2200e-003**	**0.0000**	**89.0961**	**89.0961**	**1.7100e-003**	**1.6300e-003**	**89.6255**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	337294	18.8183	4.4400e-003	9.2000e-004	19.2028
General Office Building	26881.9	1.4998	3.5000e-004	7.0000e-005	1.5304
Parking Lot	31500	1.7574	4.1000e-004	9.0000e-005	1.7934
Total		**22.0755**	**5.2000e-003**	**1.0800e-003**	**22.5265**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	337294	18.8183	4.4400e-003	9.2000e-004	19.2028
General Office Building	26881.9	1.4998	3.5000e-004	7.0000e-005	1.5304
Parking Lot	31500	1.7574	4.1000e-004	9.0000e-005	1.7934
Total		**22.0755**	**5.2000e-003**	**1.0800e-003**	**22.5265**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	0.5222	9.6100e-003	0.5963	5.0000e-005		3.5200e-003	3.5200e-003		3.5200e-003	3.5200e-003	0.0000	4.1695	4.1695	1.0000e-003	6.0000e-005	4.2120
Unmitigated	0.5222	9.6100e-003	0.5963	5.0000e-005		3.5200e-003	3.5200e-003		3.5200e-003	3.5200e-003	0.0000	4.1695	4.1695	1.0000e-003	6.0000e-005	4.2120

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	0.0773					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	3.2000e-004	2.7600e-003	1.1700e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	3.1959	3.1959	6.0000e-005	6.0000e-005	3.2149
Landscaping	0.0180	6.8500e-003	0.5952	3.0000e-005		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003	0.0000	0.9737	0.9737	9.4000e-004	0.0000	0.9971
Total	**0.5222**	**9.6100e-003**	**0.5963**	**5.0000e-005**		**3.5200e-003**	**3.5200e-003**		**3.5200e-003**	**3.5200e-003**	**0.0000**	**4.1695**	**4.1695**	**1.0000e-003**	**6.0000e-005**	**4.2120**

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	0.0773					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	3.2000e-004	2.7600e-003	1.1700e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	3.1959	3.1959	6.0000e-005	6.0000e-005	3.2149	
Landscaping	0.0180	6.8500e-003	0.5952	3.0000e-005		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003	0.0000	0.9737	0.9737	9.4000e-004	0.0000	0.9971	
Total	**0.5222**	**9.6100e-003**	**0.5963**	**5.0000e-005**		**3.5200e-003**	**3.5200e-003**		**3.5200e-003**	**3.5200e-003**	**0.0000**	**4.1695**	**4.1695**	**1.0000e-003**	**6.0000e-005**	**4.2120**	

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	4.3556	7.3700e-003	4.4200e-003	5.8572
Unmitigated	4.3556	7.3700e-003	4.4200e-003	5.8572

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	5.21232 / 3.28603	4.0593	6.8700e-003	4.1200e-003	5.4584

General Office Building	0.382128 / 0.234207	0.2963	5.0000e-004	3.0000e-004	0.3988
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**4.3556**	**7.3700e-003**	**4.4200e-003**	**5.8572**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	5.21232 / 3.28603	4.0593	6.8700e-003	4.1200e-003	5.4584
General Office Building	0.382128 / 0.234207	0.2963	5.0000e-004	3.0000e-004	0.3988
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**4.3556**	**7.3700e-003**	**4.4200e-003**	**5.8572**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	7.8761	0.4655	0.0000	19.5126

Unmitigated	7.8761	0.4655	0.0000	19.5126

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	36.8	7.4701	0.4415	0.0000	18.5068
General Office Building	2	0.4060	0.0240	0.0000	1.0058
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**7.8761**	**0.4655**	**0.0000**	**19.5126**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	36.8	7.4701	0.4415	0.0000	18.5068
General Office Building	2	0.4060	0.0240	0.0000	1.0058
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**7.8761**	**0.4655**	**0.0000**	**19.5126**

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

Habitat Redwood Blvd, Novato - Operation - Marin County, Annual

Habitat Redwood Blvd, Novato - Operation 2030

Marin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	80.00	Dwelling Unit	7.95	105,575.00	229
General Office Building	2.15	1000sqft	0.05	2,154.00	0
Parking Lot	185.00	Space	0.00	90,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	69
Climate Zone	5			**Operational Year**	2030
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	123	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - MCE 2017 Rate = 109, PG&E 2017 rate = 210, (109*0.86)+(210*0.14) = 123

Land Use - Provided project plans, PD land uses

Construction Phase - Operational run only

Off-road Equipment - Operational run only

Trips and VMT - Operational run only

Vehicle Trips - Provided trip gen, apts = 7.05, 7.66, 6.49, office = 16.25, 3.62, 1.55

Vehicle Emission Factors - EMFAC2017 Emission Factors for 2030 Marin County

Woodstoves - All gas no wood

Water And Wastewater - WWTP 100% aerobic

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	PhaseEndDate	5/4/2022	4/21/2022
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	12.00	25.60
tblFireplaces	NumberWood	13.60	0.00
tblFleetMix	HHD	0.01	0.01
tblFleetMix	HHD	0.01	0.01
tblFleetMix	HHD	0.01	0.01
tblFleetMix	LDA	0.61	0.55
tblFleetMix	LDA	0.61	0.55
tblFleetMix	LDA	0.61	0.55
tblFleetMix	LDT1	0.04	0.06
tblFleetMix	LDT1	0.04	0.06
tblFleetMix	LDT1	0.04	0.06
tblFleetMix	LDT2	0.20	0.19
tblFleetMix	LDT2	0.20	0.19
tblFleetMix	LDT2	0.20	0.19
tblFleetMix	LHD1	0.01	0.02
tblFleetMix	LHD1	0.01	0.02
tblFleetMix	LHD1	0.01	0.02
tblFleetMix	LHD2	5.2640e-003	6.3811e-003
tblFleetMix	LHD2	5.2640e-003	6.3811e-003
tblFleetMix	LHD2	5.2640e-003	6.3811e-003
tblFleetMix	MCY	5.5130e-003	0.03
tblFleetMix	MCY	5.5130e-003	0.03
tblFleetMix	MCY	5.5130e-003	0.03
tblFleetMix	MDV	0.11	0.12

tblFleetMix	MDV	0.11	0.12
tblFleetMix	MDV	0.11	0.12
tblFleetMix	MH	6.7300e-004	8.2165e-004
tblFleetMix	MH	6.7300e-004	8.2165e-004
tblFleetMix	MH	6.7300e-004	8.2165e-004
tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.01
tblFleetMix	OBUS	2.0580e-003	1.1227e-003
tblFleetMix	OBUS	2.0580e-003	1.1227e-003
tblFleetMix	OBUS	2.0580e-003	1.1227e-003
tblFleetMix	SBUS	7.5500e-004	8.1380e-004
tblFleetMix	SBUS	7.5500e-004	8.1380e-004
tblFleetMix	SBUS	7.5500e-004	8.1380e-004
tblFleetMix	UBUS	2.2880e-003	7.4412e-004
tblFleetMix	UBUS	2.2880e-003	7.4412e-004
tblFleetMix	UBUS	2.2880e-003	7.4412e-004
tblLandUse	LandUseSquareFeet	80,000.00	105,575.00
tblLandUse	LandUseSquareFeet	74,000.00	90,000.00
tblLandUse	LotAcreage	5.00	7.95
tblLandUse	LotAcreage	1.66	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	123
tblVehicleEF	HHD	0.19	0.03
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	HHD	1.28	5.99

tblVehicleEF	HHD	1.32	0.60
tblVehicleEF	HHD	5.60	0.02
tblVehicleEF	HHD	3,390.24	902.77
tblVehicleEF	HHD	1,532.40	1,280.13
tblVehicleEF	HHD	16.95	0.20
tblVehicleEF	HHD	11.48	5.20
tblVehicleEF	HHD	1.69	2.61
tblVehicleEF	HHD	18.57	2.50
tblVehicleEF	HHD	5.7650e-003	2.5680e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.8880e-003	0.02
tblVehicleEF	HHD	1.8800e-004	2.0000e-006
tblVehicleEF	HHD	5.5150e-003	2.4570e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.7510e-003	8.8560e-003
tblVehicleEF	HHD	5.6330e-003	0.02
tblVehicleEF	HHD	1.7300e-004	1.0000e-006
tblVehicleEF	HHD	1.2300e-004	6.0000e-006
tblVehicleEF	HHD	6.5160e-003	2.7700e-004
tblVehicleEF	HHD	0.32	0.40
tblVehicleEF	HHD	8.6000e-005	4.0000e-006
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	8.4000e-004	1.4630e-003
tblVehicleEF	HHD	0.10	5.0000e-006
tblVehicleEF	HHD	0.03	8.2840e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.6000e-004	2.0000e-006
tblVehicleEF	HHD	1.2300e-004	6.0000e-006
tblVehicleEF	HHD	6.5160e-003	2.7700e-004

tblVehicleEF	HHD	0.38	0.46
tblVehicleEF	HHD	8.6000e-005	4.0000e-006
tblVehicleEF	HHD	0.18	0.12
tblVehicleEF	HHD	8.4000e-004	1.4630e-003
tblVehicleEF	HHD	0.11	5.0000e-006
tblVehicleEF	LDA	2.0150e-003	1.0620e-003
tblVehicleEF	LDA	2.4220e-003	0.03
tblVehicleEF	LDA	0.32	0.40
tblVehicleEF	LDA	0.69	1.76
tblVehicleEF	LDA	188.24	216.84
tblVehicleEF	LDA	42.70	45.31
tblVehicleEF	LDA	0.03	0.02
tblVehicleEF	LDA	0.03	0.13
tblVehicleEF	LDA	1.2060e-003	9.7000e-004
tblVehicleEF	LDA	1.8610e-003	1.2920e-003
tblVehicleEF	LDA	1.1100e-003	8.9300e-004
tblVehicleEF	LDA	1.7110e-003	1.1880e-003
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.06	0.07
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	5.0570e-003	3.8200e-003
tblVehicleEF	LDA	0.03	0.18
tblVehicleEF	LDA	0.03	0.13
tblVehicleEF	LDA	1.8830e-003	1.1500e-004
tblVehicleEF	LDA	4.3800e-004	0.00
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.06	0.07
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	7.3530e-003	5.5430e-003
tblVehicleEF	LDA	0.03	0.18

tblVehicleEF	LDA	0.04	0.14
tblVehicleEF	LDT1	3.4500e-003	1.6350e-003
tblVehicleEF	LDT1	5.3100e-003	0.04
tblVehicleEF	LDT1	0.48	0.50
tblVehicleEF	LDT1	1.27	1.94
tblVehicleEF	LDT1	239.93	265.78
tblVehicleEF	LDT1	55.58	56.39
tblVehicleEF	LDT1	0.05	0.03
tblVehicleEF	LDT1	0.06	0.17
tblVehicleEF	LDT1	1.4450e-003	1.1100e-003
tblVehicleEF	LDT1	2.2370e-003	1.5310e-003
tblVehicleEF	LDT1	1.3290e-003	1.0210e-003
tblVehicleEF	LDT1	2.0570e-003	1.4080e-003
tblVehicleEF	LDT1	0.04	0.05
tblVehicleEF	LDT1	0.13	0.11
tblVehicleEF	LDT1	0.04	0.05
tblVehicleEF	LDT1	8.5490e-003	6.3800e-003
tblVehicleEF	LDT1	0.10	0.43
tblVehicleEF	LDT1	0.07	0.18
tblVehicleEF	LDT1	2.4030e-003	2.7630e-003
tblVehicleEF	LDT1	5.7700e-004	0.00
tblVehicleEF	LDT1	0.04	0.05
tblVehicleEF	LDT1	0.13	0.11
tblVehicleEF	LDT1	0.04	0.05
tblVehicleEF	LDT1	0.01	9.3080e-003
tblVehicleEF	LDT1	0.10	0.43
tblVehicleEF	LDT1	0.08	0.19
tblVehicleEF	LDT2	2.9140e-003	1.6330e-003
tblVehicleEF	LDT2	3.4120e-003	0.04
tblVehicleEF	LDT2	0.44	0.50

tblVehicleEF	LDT2	0.94	2.37
tblVehicleEF	LDT2	271.33	274.95
tblVehicleEF	LDT2	61.80	58.54
tblVehicleEF	LDT2	0.04	0.03
tblVehicleEF	LDT2	0.05	0.18
tblVehicleEF	LDT2	1.3310e-003	1.0750e-003
tblVehicleEF	LDT2	2.0380e-003	1.3750e-003
tblVehicleEF	LDT2	1.2240e-003	9.9100e-004
tblVehicleEF	LDT2	1.8740e-003	1.2650e-003
tblVehicleEF	LDT2	0.03	0.05
tblVehicleEF	LDT2	0.07	0.10
tblVehicleEF	LDT2	0.03	0.05
tblVehicleEF	LDT2	7.2400e-003	6.1350e-003
tblVehicleEF	LDT2	0.06	0.37
tblVehicleEF	LDT2	0.05	0.19
tblVehicleEF	LDT2	2.7150e-003	0.01
tblVehicleEF	LDT2	6.3300e-004	1.1700e-004
tblVehicleEF	LDT2	0.03	0.05
tblVehicleEF	LDT2	0.07	0.10
tblVehicleEF	LDT2	0.03	0.05
tblVehicleEF	LDT2	0.01	8.9040e-003
tblVehicleEF	LDT2	0.06	0.37
tblVehicleEF	LDT2	0.05	0.21
tblVehicleEF	LHD1	3.9010e-003	4.1040e-003
tblVehicleEF	LHD1	9.8130e-003	5.7980e-003
tblVehicleEF	LHD1	0.01	9.4380e-003
tblVehicleEF	LHD1	0.13	0.17
tblVehicleEF	LHD1	0.70	0.54
tblVehicleEF	LHD1	1.75	0.90
tblVehicleEF	LHD1	9.04	8.42

tblVehicleEF	LHD1	642.36	702.31
tblVehicleEF	LHD1	26.02	9.91
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.72	0.42
tblVehicleEF	LHD1	0.68	0.23
tblVehicleEF	LHD1	8.5500e-004	9.5000e-004
tblVehicleEF	LHD1	0.01	9.9460e-003
tblVehicleEF	LHD1	0.01	8.3880e-003
tblVehicleEF	LHD1	6.9900e-004	2.1700e-004
tblVehicleEF	LHD1	8.1800e-004	9.0900e-004
tblVehicleEF	LHD1	2.6120e-003	2.4860e-003
tblVehicleEF	LHD1	0.01	7.9800e-003
tblVehicleEF	LHD1	6.4300e-004	1.9900e-004
tblVehicleEF	LHD1	1.7130e-003	1.3380e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.01	0.02
tblVehicleEF	LHD1	1.0320e-003	8.1000e-004
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.31	0.53
tblVehicleEF	LHD1	0.16	0.05
tblVehicleEF	LHD1	9.0000e-005	8.2000e-005
tblVehicleEF	LHD1	6.2740e-003	6.8450e-003
tblVehicleEF	LHD1	2.9200e-004	9.8000e-005
tblVehicleEF	LHD1	1.7130e-003	1.3380e-003
tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.0320e-003	8.1000e-004
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.31	0.53
tblVehicleEF	LHD1	0.17	0.05

tblVehicleEF	LHD2	2.5500e-003	2.6050e-003
tblVehicleEF	LHD2	5.3040e-003	5.3800e-003
tblVehicleEF	LHD2	3.2900e-003	5.2060e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.46	0.50
tblVehicleEF	LHD2	0.89	0.50
tblVehicleEF	LHD2	13.64	13.04
tblVehicleEF	LHD2	676.45	686.56
tblVehicleEF	LHD2	21.82	6.64
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.22	0.39
tblVehicleEF	LHD2	0.27	0.14
tblVehicleEF	LHD2	1.0530e-003	1.4770e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	9.4570e-003	0.01
tblVehicleEF	LHD2	3.7000e-004	1.0600e-004
tblVehicleEF	LHD2	1.0070e-003	1.4130e-003
tblVehicleEF	LHD2	2.7080e-003	2.7070e-003
tblVehicleEF	LHD2	9.0240e-003	0.01
tblVehicleEF	LHD2	3.4000e-004	9.8000e-005
tblVehicleEF	LHD2	4.4100e-004	5.8900e-004
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	2.9700e-004	3.8800e-004
tblVehicleEF	LHD2	0.09	0.10
tblVehicleEF	LHD2	0.04	0.15
tblVehicleEF	LHD2	0.04	0.02
tblVehicleEF	LHD2	1.3300e-004	1.2500e-004
tblVehicleEF	LHD2	6.5720e-003	6.6240e-003
tblVehicleEF	LHD2	2.3300e-004	6.6000e-005

tblVehicleEF	LHD2	4.4100e-004	5.8900e-004
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	2.9700e-004	3.8800e-004
tblVehicleEF	LHD2	0.11	0.11
tblVehicleEF	LHD2	0.04	0.15
tblVehicleEF	LHD2	0.05	0.03
tblVehicleEF	MCY	0.48	0.33
tblVehicleEF	MCY	0.16	0.25
tblVehicleEF	MCY	19.06	19.24
tblVehicleEF	MCY	10.45	9.31
tblVehicleEF	MCY	178.62	217.21
tblVehicleEF	MCY	43.41	60.17
tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	2.2460e-003	2.2210e-003
tblVehicleEF	MCY	3.3740e-003	2.9170e-003
tblVehicleEF	MCY	2.0960e-003	2.0720e-003
tblVehicleEF	MCY	3.1600e-003	2.7320e-003
tblVehicleEF	MCY	0.74	1.53
tblVehicleEF	MCY	0.63	0.66
tblVehicleEF	MCY	0.43	0.91
tblVehicleEF	MCY	2.24	2.25
tblVehicleEF	MCY	0.50	1.63
tblVehicleEF	MCY	2.17	1.94
tblVehicleEF	MCY	2.1640e-003	2.1490e-003
tblVehicleEF	MCY	6.6900e-004	5.9500e-004
tblVehicleEF	MCY	0.74	1.53
tblVehicleEF	MCY	0.63	0.66
tblVehicleEF	MCY	0.43	0.91

tblVehicleEF	MCY	2.80	2.81
tblVehicleEF	MCY	0.50	1.63
tblVehicleEF	MCY	2.36	2.11
tblVehicleEF	MDV	4.3350e-003	1.7060e-003
tblVehicleEF	MDV	7.1620e-003	0.04
tblVehicleEF	MDV	0.56	0.50
tblVehicleEF	MDV	1.52	2.37
tblVehicleEF	MDV	364.83	331.60
tblVehicleEF	MDV	82.85	68.43
tblVehicleEF	MDV	0.06	0.03
tblVehicleEF	MDV	0.11	0.18
tblVehicleEF	MDV	1.3730e-003	1.0950e-003
tblVehicleEF	MDV	2.0630e-003	1.3530e-003
tblVehicleEF	MDV	1.2650e-003	1.0100e-003
tblVehicleEF	MDV	1.8970e-003	1.2440e-003
tblVehicleEF	MDV	0.05	0.05
tblVehicleEF	MDV	0.13	0.10
tblVehicleEF	MDV	0.05	0.06
tblVehicleEF	MDV	0.01	6.6540e-003
tblVehicleEF	MDV	0.09	0.36
tblVehicleEF	MDV	0.10	0.20
tblVehicleEF	MDV	3.6470e-003	3.0610e-003
tblVehicleEF	MDV	8.5400e-004	6.3300e-004
tblVehicleEF	MDV	0.05	0.05
tblVehicleEF	MDV	0.13	0.10
tblVehicleEF	MDV	0.05	0.06
tblVehicleEF	MDV	0.02	9.6130e-003
tblVehicleEF	MDV	0.09	0.36
tblVehicleEF	MDV	0.11	0.22
tblVehicleEF	MH	7.7730e-003	5.1140e-003

tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.42	0.32
tblVehicleEF	MH	3.61	1.59
tblVehicleEF	MH	1,181.48	1,340.95
tblVehicleEF	MH	55.62	14.88
tblVehicleEF	MH	0.88	1.14
tblVehicleEF	MH	0.61	0.22
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	8.5300e-004	2.0500e-004
tblVehicleEF	MH	3.2320e-003	3.3160e-003
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	7.8400e-004	1.8800e-004
tblVehicleEF	MH	0.36	0.29
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	0.16	0.12
tblVehicleEF	MH	0.04	0.04
tblVehicleEF	MH	9.1240e-003	0.52
tblVehicleEF	MH	0.21	0.07
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.1900e-004	1.4700e-004
tblVehicleEF	MH	0.36	0.29
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	0.16	0.12
tblVehicleEF	MH	0.05	0.05
tblVehicleEF	MH	9.1240e-003	0.52
tblVehicleEF	MH	0.23	0.08
tblVehicleEF	MHD	0.02	5.1880e-003
tblVehicleEF	MHD	3.0630e-003	1.4320e-003
tblVehicleEF	MHD	0.03	0.01

tblVehicleEF	MHD	0.40	0.55
tblVehicleEF	MHD	0.26	0.18
tblVehicleEF	MHD	4.29	1.24
tblVehicleEF	MHD	119.84	91.23
tblVehicleEF	MHD	1,171.46	1,045.93
tblVehicleEF	MHD	65.42	11.83
tblVehicleEF	MHD	0.32	0.52
tblVehicleEF	MHD	1.01	1.37
tblVehicleEF	MHD	8.99	1.54
tblVehicleEF	MHD	7.5000e-005	2.6600e-004
tblVehicleEF	MHD	3.0430e-003	6.6940e-003
tblVehicleEF	MHD	8.6600e-004	1.4600e-004
tblVehicleEF	MHD	7.2000e-005	2.5500e-004
tblVehicleEF	MHD	2.9020e-003	6.3940e-003
tblVehicleEF	MHD	7.9600e-004	1.3400e-004
tblVehicleEF	MHD	6.5200e-004	3.7100e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	4.4100e-004	2.4700e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.27	0.06
tblVehicleEF	MHD	1.1570e-003	8.6600e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.2900e-004	1.1700e-004
tblVehicleEF	MHD	6.5200e-004	3.7100e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	4.4100e-004	2.4700e-004
tblVehicleEF	MHD	0.05	0.02

tblVehicleEF	MHD	0.02	0.11
tblVehicleEF	MHD	0.29	0.06
tblVehicleEF	OBUS	0.01	8.8240e-003
tblVehicleEF	OBUS	4.9730e-003	3.7480e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.24	0.56
tblVehicleEF	OBUS	0.34	0.40
tblVehicleEF	OBUS	4.67	2.28
tblVehicleEF	OBUS	86.30	72.05
tblVehicleEF	OBUS	1,266.16	1,322.84
tblVehicleEF	OBUS	67.15	18.99
tblVehicleEF	OBUS	0.18	0.29
tblVehicleEF	OBUS	0.76	1.02
tblVehicleEF	OBUS	2.31	0.73
tblVehicleEF	OBUS	1.6000e-005	9.9000e-005
tblVehicleEF	OBUS	2.6160e-003	6.4490e-003
tblVehicleEF	OBUS	9.4400e-004	2.0600e-004
tblVehicleEF	OBUS	1.6000e-005	9.4000e-005
tblVehicleEF	OBUS	2.4770e-003	6.1460e-003
tblVehicleEF	OBUS	8.6800e-004	1.8900e-004
tblVehicleEF	OBUS	1.2330e-003	1.3950e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	6.0900e-004	7.0700e-004
tblVehicleEF	OBUS	0.04	0.02
tblVehicleEF	OBUS	0.06	0.30
tblVehicleEF	OBUS	0.29	0.11
tblVehicleEF	OBUS	8.3500e-004	6.8700e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.5300e-004	1.8800e-004

tblVehicleEF	OBUS	1.2330e-003	1.3950e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	6.0900e-004	7.0700e-004
tblVehicleEF	OBUS	0.05	0.03
tblVehicleEF	OBUS	0.06	0.30
tblVehicleEF	OBUS	0.32	0.12
tblVehicleEF	SBUS	0.82	0.07
tblVehicleEF	SBUS	5.6820e-003	5.4620e-003
tblVehicleEF	SBUS	0.05	6.1350e-003
tblVehicleEF	SBUS	7.29	2.84
tblVehicleEF	SBUS	0.38	0.47
tblVehicleEF	SBUS	5.73	0.88
tblVehicleEF	SBUS	1,106.25	329.06
tblVehicleEF	SBUS	1,059.21	945.39
tblVehicleEF	SBUS	49.57	4.89
tblVehicleEF	SBUS	5.18	3.05
tblVehicleEF	SBUS	1.91	3.70
tblVehicleEF	SBUS	12.65	1.09
tblVehicleEF	SBUS	2.6220e-003	2.6460e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	9.5620e-003	0.02
tblVehicleEF	SBUS	9.7900e-004	7.8000e-005
tblVehicleEF	SBUS	2.5090e-003	2.5320e-003
tblVehicleEF	SBUS	2.6720e-003	2.6600e-003
tblVehicleEF	SBUS	9.1310e-003	0.02
tblVehicleEF	SBUS	9.0000e-004	7.2000e-005
tblVehicleEF	SBUS	2.1580e-003	5.9400e-004
tblVehicleEF	SBUS	0.02	6.7130e-003
tblVehicleEF	SBUS	0.87	0.31

tblVehicleEF	SBUS	1.0980e-003	3.0300e-004
tblVehicleEF	SBUS	0.07	0.07
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.29	0.03
tblVehicleEF	SBUS	0.01	3.1380e-003
tblVehicleEF	SBUS	0.01	9.0510e-003
tblVehicleEF	SBUS	5.9400e-004	4.8000e-005
tblVehicleEF	SBUS	2.1580e-003	5.9400e-004
tblVehicleEF	SBUS	0.02	6.7130e-003
tblVehicleEF	SBUS	1.25	0.45
tblVehicleEF	SBUS	1.0980e-003	3.0300e-004
tblVehicleEF	SBUS	0.08	0.08
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.32	0.04
tblVehicleEF	UBUS	0.25	0.83
tblVehicleEF	UBUS	0.04	0.03
tblVehicleEF	UBUS	3.97	6.40
tblVehicleEF	UBUS	6.04	2.39
tblVehicleEF	UBUS	2,058.31	1,671.51
tblVehicleEF	UBUS	96.26	22.73
tblVehicleEF	UBUS	8.43	0.46
tblVehicleEF	UBUS	15.02	0.23
tblVehicleEF	UBUS	0.61	0.11
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	0.17	3.5750e-003
tblVehicleEF	UBUS	9.7700e-004	2.8000e-004
tblVehicleEF	UBUS	0.26	0.05
tblVehicleEF	UBUS	3.0000e-003	5.0890e-003
tblVehicleEF	UBUS	0.17	3.3750e-003
tblVehicleEF	UBUS	8.9800e-004	2.5800e-004

tblVehicleEF	UBUS	1.9760e-003	6.4600e-004
tblVehicleEF	UBUS	0.03	8.4650e-003
tblVehicleEF	UBUS	1.2990e-003	3.9000e-004
tblVehicleEF	UBUS	0.43	0.02
tblVehicleEF	UBUS	9.2280e-003	0.04
tblVehicleEF	UBUS	0.53	0.13
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	1.0730e-003	2.2500e-004
tblVehicleEF	UBUS	1.9760e-003	6.4600e-004
tblVehicleEF	UBUS	0.03	8.4650e-003
tblVehicleEF	UBUS	1.2990e-003	3.9000e-004
tblVehicleEF	UBUS	0.72	0.86
tblVehicleEF	UBUS	9.2280e-003	0.04
tblVehicleEF	UBUS	0.58	0.14
tblVehicleTrips	ST_TR	7.16	7.66
tblVehicleTrips	ST_TR	2.46	3.62
tblVehicleTrips	SU_TR	6.07	6.49
tblVehicleTrips	SU_TR	1.05	1.55
tblVehicleTrips	WD_TR	6.59	7.05
tblVehicleTrips	WD_TR	11.03	16.25
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5221	9.6000e-003	0.5953	5.0000e-005		3.5200e-003	3.5200e-003		3.5200e-003	3.5200e-003	0.0000	4.1695	4.1695	9.9000e-004	6.0000e-005	4.2119
Energy	9.0000e-003	0.0771	0.0336	4.9000e-004		6.2200e-003	6.2200e-003		6.2200e-003	6.2200e-003	0.0000	111.1716	111.1716	6.9100e-003	2.7100e-003	112.152
Mobile	0.2789	0.2438	1.9787	4.6400e-003	0.5027	2.8400e-003	0.5055	0.1344	2.6500e-003	0.1370	0.0000	401.5758	401.5758	0.0256	0.0000	402.2159
Waste						0.0000	0.0000		0.0000	0.0000	7.8761	0.0000	7.8761	0.4655	0.0000	19.5126
Water						0.0000	0.0000		0.0000	0.0000	1.9793	2.3763	4.3556	7.3700e-003	4.4200e-003	5.8572
Total	**0.8100**	**0.3304**	**2.6077**	**5.1800e-003**	**0.5027**	**0.0126**	**0.5153**	**0.1344**	**0.0124**	**0.1467**	**9.8554**	**519.2932**	**529.1486**	**0.5063**	**7.1900e-003**	**543.9495**

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	0.5221	9.6000e-003	0.5953	5.0000e-005		3.5200e-003	3.5200e-003		3.5200e-003	3.5200e-003	0.0000	4.1695	4.1695	9.9000e-004	6.0000e-005	4.2119
Energy	9.0000e-003	0.0771	0.0336	4.9000e-004		6.2200e-003	6.2200e-003		6.2200e-003	6.2200e-003	0.0000	111.1716	111.1716	6.9100e-003	2.7100e-003	112.1520
Mobile	0.2789	0.2438	1.9787	4.6400e-003	0.5027	2.8400e-003	0.5055	0.1344	2.6500e-003	0.1370	0.0000	401.5758	401.5758	0.0256	0.0000	402.2159

Waste						0.0000	0.0000		0.0000	0.0000	7.8761	0.0000	7.8761	0.4655	0.0000	19.5126
Water						0.0000	0.0000		0.0000	0.0000	1.9793	2.3763	4.3556	7.3700e-003	4.4200e-003	5.8572
Total	**0.8100**	**0.3304**	**2.6077**	**5.1800e-003**	**0.5027**	**0.0126**	**0.5153**	**0.1344**	**0.0124**	**0.1467**	**9.8554**	**519.2932**	**529.1486**	**0.5063**	**7.1900e-003**	**543.9495**

	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**

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	0.2789	0.2438	1.9787	4.6400e-003	0.5027	2.8400e-003	0.5055	0.1344	2.6500e-003	0.1370	0.0000	401.5758	401.5758	0.0256	0.0000	402.2159
Unmitigated	0.2789	0.2438	1.9787	4.6400e-003	0.5027	2.8400e-003	0.5055	0.1344	2.6500e-003	0.1370	0.0000	401.5758	401.5758	0.0256	0.0000	402.2159

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	564.00	612.80	519.20	1,303,938	1,303,938
General Office Building	35.00	7.80	3.34	63,550	63,550
Parking Lot	0.00	0.00	0.00		
Total	599.00	620.60	522.54	1,367,488	1,367,488

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
Apartments Low Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.548735	0.059639	0.189953	0.116598	0.024933	0.006381	0.010873	0.011469	0.001123	0.000744	0.027916	0.000814	0.000822
General Office Building	0.548735	0.059639	0.189953	0.116598	0.024933	0.006381	0.010873	0.011469	0.001123	0.000744	0.027916	0.000814	0.000822
Parking Lot	0.548735	0.059639	0.189953	0.116598	0.024933	0.006381	0.010873	0.011469	0.001123	0.000744	0.027916	0.000814	0.000822

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	22.0755	22.0755	5.2000e-003	1.0800e-003	22.5265
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	22.0755	22.0755	5.2000e-003	1.0800e-003	22.5265
NaturalGas Mitigated	9.0000e-003	0.0771	0.0336	4.9000e-004		6.2200e-003	6.2200e-003		6.2200e-003	6.2200e-003	0.0000	89.0960	89.0960	1.7100e-003	1.6300e-003	89.6255
NaturalGas Unmitigated	9.0000e-003	0.0771	0.0336	4.9000e-004		6.2200e-003	6.2200e-003		6.2200e-003	6.2200e-003	0.0000	89.0960	89.0960	1.7100e-003	1.6300e-003	89.6255

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					
Apartments Low Rise	1.62796e+006	8.7800e-003	0.0750	0.0319	4.8000e-004		6.0600e-003	6.0600e-003		6.0600e-003	6.0600e-003	0.0000	86.8742	86.8742	1.6700e-003	1.5900e-003	87.3904
General Office Building	41636.8	2.2000e-004	2.0400e-003	1.7100e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.2219	2.2219	4.0000e-005	4.0000e-005	2.2351
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		**9.0000e-003**	**0.0771**	**0.0336**	**4.9000e-004**		**6.2200e-003**	**6.2200e-003**		**6.2200e-003**	**6.2200e-003**	**0.0000**	**89.0961**	**89.0961**	**1.7100e-003**	**1.6300e-003**	**89.6255**

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					
Apartments Low Rise	1.62796e+006	8.7800e-003	0.0750	0.0319	4.8000e-004		6.0600e-003	6.0600e-003		6.0600e-003	6.0600e-003	0.0000	86.8742	86.8742	1.6700e-003	1.5900e-003	87.3904
General Office Building	41636.8	2.2000e-004	2.0400e-003	1.7100e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.2219	2.2219	4.0000e-005	4.0000e-005	2.2351
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		**9.0000e-003**	**0.0771**	**0.0336**	**4.9000e-004**		**6.2200e-003**	**6.2200e-003**		**6.2200e-003**	**6.2200e-003**	**0.0000**	**89.0961**	**89.0961**	**1.7100e-003**	**1.6300e-003**	**89.6255**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	337294	18.8183	4.4400e-003	9.2000e-004	19.2028
General Office Building	26881.9	1.4998	3.5000e-004	7.0000e-005	1.5304
Parking Lot	31500	1.7574	4.1000e-004	9.0000e-005	1.7934
Total		**22.0755**	**5.2000e-003**	**1.0800e-003**	**22.5265**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	337294	18.8183	4.4400e-003	9.2000e-004	19.2028
General Office Building	26881.9	1.4998	3.5000e-004	7.0000e-005	1.5304
Parking Lot	31500	1.7574	4.1000e-004	9.0000e-005	1.7934
Total		**22.0755**	**5.2000e-003**	**1.0800e-003**	**22.5265**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	0.5221	9.6000e-003	0.5953	5.0000e-005		3.5200e-003	3.5200e-003		3.5200e-003	3.5200e-003	0.0000	4.1695	4.1695	9.9000e-004	6.0000e-005	4.2119
Unmitigated	0.5221	9.6000e-003	0.5953	5.0000e-005		3.5200e-003	3.5200e-003		3.5200e-003	3.5200e-003	0.0000	4.1695	4.1695	9.9000e-004	6.0000e-005	4.2119

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	0.0773					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	3.2000e-004	2.7600e-003	1.1700e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	3.1959	3.1959	6.0000e-005	6.0000e-005	3.2149
Landscaping	0.0179	6.8500e-003	0.5942	3.0000e-005		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003	0.0000	0.9737	0.9737	9.3000e-004	0.0000	0.9970
Total	**0.5221**	**9.6100e-003**	**0.5953**	**5.0000e-005**		**3.5200e-003**	**3.5200e-003**		**3.5200e-003**	**3.5200e-003**	**0.0000**	**4.1695**	**4.1695**	**9.9000e-004**	**6.0000e-005**	**4.2119**

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	0.0773					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	3.2000e-004	2.7600e-003	1.1700e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	3.1959	3.1959	6.0000e-005	6.0000e-005	3.2149	
Landscaping	0.0179	6.8500e-003	0.5942	3.0000e-005		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003	0.0000	0.9737	0.9737	9.3000e-004	0.0000	0.9970	
Total	**0.5221**	**9.6100e-003**	**0.5953**	**5.0000e-005**		**3.5200e-003**	**3.5200e-003**		**3.5200e-003**	**3.5200e-003**	**0.0000**	**4.1695**	**4.1695**	**9.9000e-004**	**6.0000e-005**	**4.2119**	

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	4.3556	7.3700e-003	4.4200e-003	5.8572
Unmitigated	4.3556	7.3700e-003	4.4200e-003	5.8572

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	5.21232 / 3.28603	4.0593	6.8700e-003	4.1200e-003	5.4584

General Office Building	0.382128 / 0.234207	0.2963	5.0000e-004	3.0000e-004	0.3988
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**4.3556**	**7.3700e-003**	**4.4200e-003**	**5.8572**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	5.21232 / 3.28603	4.0593	6.8700e-003	4.1200e-003	5.4584
General Office Building	0.382128 / 0.234207	0.2963	5.0000e-004	3.0000e-004	0.3988
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**4.3556**	**7.3700e-003**	**4.4200e-003**	**5.8572**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	7.8761	0.4655	0.0000	19.5126

Unmitigated	7.8761	0.4655	0.0000	19.5126

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	36.8	7.4701	0.4415	0.0000	18.5068
General Office Building	2	0.4060	0.0240	0.0000	1.0058
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**7.8761**	**0.4655**	**0.0000**	**19.5126**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	36.8	7.4701	0.4415	0.0000	18.5068
General Office Building	2	0.4060	0.0240	0.0000	1.0058
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**7.8761**	**0.4655**	**0.0000**	**19.5126**

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

Attachment 3: EMFAC2017 Calculations

CalEEMod Construction Inputs

Phase	CalEEMod WORKER TRIPS	CalEEMod VENDOR TRIPS	Total Worker Trips	Total Vendor Trips	CalEEMod HAULING TRIPS	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class	*Worker VMT*	*Vendor VMT*	*Hauling VMT*
Phase I - Site Development & Paving	25	0	3000	0	3247	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	32400	0	23703.1
Home Const - Foundations	28	0	10080	0	240	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	108864	0	4800
Office Building Construction	50	12	8400	2016	20	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	90720	14716.8	146
Home Const - Framing, Rough, Enclose	50	12	24000	5760	0	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	259200	42048	0
Home Const - Trim & Finish	10	0	5190	0	89	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	56052	0	1780

Number of Days Per Year					
2022	3/24/22	12/31/22	283	**202**	
2023	1/1/23	12/31/23	365	**260**	
2024	1/1/24	12/24/2024	359	**257**	
			1007	**719**	***Total Workdays***

Phase	Start Date	End Date	Days/Week	Workdays
Phase I - Site Development & Paving	3/24/2022	9/7/2022	5	120
Home Const - Foundations	7/14/2022	11/29/2023	5	360
Office Building Construction	8/1/2022	3/22/2023	5	168
Home Const - Framing, Rough, Enclose	9/8/2022	7/10/2024	5	480
Home Const - Trim & Finish	12/29/2022	12/24/2024	5	519

CalEEMod Construction Inputs

Phase	CalEEMod WORKER TRIPS	CalEEMod VENDOR TRIPS	Total Worker Trips	Total Vendor Trips	CalEEMod HAULING TRIPS	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class	*Worker VMT*	*Vendor VMT*	*Hauling VMT*
Phase I - Site Development & Paving	33	0	3960	0	3247	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	42768	0	23703.1
Home Const - Foundations	38	0	13680	0	222	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	147744	0	4440
Home Const - Framing, Rough, Enclose	46	11	22080	5280	0	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	238464	38544	0
Home Const - Trim & Finish	9	0	4320	0	89	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	46656	0	649.7

Number of Days Per Year					
2023	4/20/23	12/31/23	256	**182**	
2024	1/1/24	12/31/24	366	**262**	
2025	1/1/25	12/31/2025	365	**261**	
2026	1/1/26	5/13/2026	133	**95**	
			1120	**800**	***Total Workdays***

Phase	Start Date	End Date	Days/Week	Workdays
Phase I - Site Development & Paving	4/20/2023	10/4/2023	5	120
Home Const - Foundations	1/25/2024	6/11/2025	5	360
Home Const - Framing, Rough, Enclose	3/21/2024	1/21/2026	5	480
Home Const - Trim & Finish	7/11/2024	5/13/2026	5	480

Phase I Summary of Construction Traffic Emissions (EMFAC2017)

Pollutants YEAR	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2
					Tons						*Metric Tons*
Criteria Pollutants											
2022	0.0188	0.1210	0.1888	0.0009	0.0588	0.0118	0.0706	0.0088	0.0053	0.0142	81.9777
2023	0.0208	0.1287	0.2255	0.0012	0.0758	0.0147	0.0905	0.0114	0.0063	0.0177	102.2278
2024	0.0191	0.1242	0.2097	0.0011	0.0745	0.0144	0.0890	0.0112	0.0062	0.0174	98.4086

Phase II Summary of Construction Traffic Emissions (EMFAC2017)

Pollutants YEAR	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2
					Tons						*Metric Tons*
Criteria Pollutants											
2023	0.0112	0.0653	0.1216	0.0006	0.0409	0.0078	0.0487	0.0062	0.0033	0.0095	53.4573
2024	0.0151	0.0914	0.1644	0.0008	0.0585	0.0111	0.0696	0.0088	0.0048	0.0136	74.7765
2025	0.0141	0.0892	0.1558	0.0008	0.0583	0.0110	0.0694	0.0088	0.0047	0.0135	80.3706
2026	0.0049	0.0318	0.0543	0.0003	0.0213	0.0040	0.0253	0.0032	0.0017	0.0049	28.6481

CalEEMod EMFAC2017 Emission Factors Input — Year 2026

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.004532	0.002951	0.00514	0.027908456	0.009093	0	0	0.055295	0
A	CH4_RUNEX	0.001535	0.002689	0.002284	0.002517	0.007923	0.006135	0.00215	0.094930751	0.005649	0.780607	0.339381	0.00675	0.007486
A	CH4_STREX	0.039815	0.053742	0.055876	0.059194	0.012221	0.007053	0.012935	9.08536E-07	0.023652	0.02992	0.258455	0.005041	0.020291
A	CO_IDLEX	0	0	0	0	0.176302	0.136914	0.536878	5.97805362	0.526914	0	0	2.275509	0
A	CO_RUNEX	0.460793	0.662033	0.587188	0.604992	0.747739	0.555273	0.271621	0.637485545	0.599088	6.016444	20.08316	0.559459	0.635511
A	CO_STREX	2.001883	2.213639	2.607954	2.709172	0.993711	0.576004	1.465505	0.020406299	2.54531	2.433415	9.192938	0.7366	1.795971
A	CO2_NBIO_IDLEX	0	0	0	0	8.844073	13.59073	95.69005	981.0412588	67.61539	0	0	340.0414	0
A	CO2_NBIO_RUNEX	232.4221	284.2145	300.8969	362.6128	750.1698	734.4506	1110.335	1421.585727	1447.699	1724.192	217.6794	1016.374	1428.07
A	CO2_NBIO_STREX	48.77066	60.58864	64.08253	75.08596	10.66853	7.419925	12.87393	0.246138606	20.82463	23.96222	61.30627	4.066411	16.26223
A	NOX_IDLEX	0	0	0	0	0.061566	0.086717	0.592953	5.43566337	0.251819	0	0	3.770232	0
A	NOX_RUNEX	0.027835	0.053312	0.045606	0.051418	0.688237	0.599166	1.415517	2.850285843	0.981294	0.44633	1.180767	5.299492	1.310898
A	NOX_STREX	0.153987	0.208312	0.223283	0.23848	0.269785	0.166667	1.524132	2.430743808	0.665816	0.228641	0.27489	0.778295	0.225416
A	PM10_IDLEX	0	0	0	0	0.000928	0.001429	0.000428	0.003484058	8.53E-05	0	0	0.003927	0
A	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.08918	0.13034	0.060778734	0.13034	0.105346	0.01176	0.7448	0.13034
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009903	0.010776	0.012	0.035392977	0.012	0.020357	0.004	0.010818	0.013251
A	PM10_RUNEX	0.001292	0.00148	0.00132	0.001391	0.010568	0.014373	0.006856	0.024122609	0.006021	0.003598	0.002167	0.032121	0.023904
A	PM10_STREX	0.001615	0.001977	0.001638	0.001644	0.000243	0.000118	0.000151	1.53884E-06	0.000201	0.000278	0.003172	6.17E-05	0.000227
A	PM25_IDLEX	0	0	0	0	0.000888	0.001367	0.000409	0.003333339	8.16E-05	0	0	0.003757	0
A	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.03822	0.05586	0.026048029	0.05586	0.045148	0.00504	0.3192	0.05586
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002476	0.002694	0.003	0.008848244	0.003	0.005089	0.001	0.002705	0.003313
A	PM25_RUNEX	0.001191	0.001361	0.001215	0.001285	0.010064	0.013727	0.006549	0.023078986	0.005736	0.003397	0.002025	0.030715	0.022831
A	PM25_STREX	0.001485	0.001818	0.001506	0.001511	0.000223	0.000108	0.000138	1.4149E-06	0.000184	0.000256	0.002983	5.67E-05	0.000209
A	ROG_DIURN	0.031828	0.067321	0.052667	0.05663	0.001629	0.000761	0.000446	5.86948E-06	0.001343	0.000572	1.558971	0.000374	0.418092
A	ROG_HTSK	0.084473	0.150387	0.113331	0.117036	0.070359	0.03429	0.025554	0.000280312	0.024256	0.007124	0.721626	0.004384	0.040804
A	ROG_IDLEX	0	0	0	0	0.01919	0.01504	0.025323	0.403157938	0.048926	0	0	0.255544	0
A	ROG_RESTL	0.031184	0.062704	0.056473	0.061483	0.000942	0.000468	0.000279	3.96271E-06	0.000672	0.000333	0.939947	0.000186	0.168068
A	ROG_RUNEX	0.005885	0.011233	0.008948	0.010293	0.094203	0.103369	0.017662	0.028681953	0.030638	0.022374	2.299672	0.092352	0.054706
A	ROG_RUNLS	0.196251	0.572546	0.421876	0.407505	0.543612	0.205661	0.146865	0.001464552	0.285916	0.040287	2.092083	0.027653	0.931738
A	ROG_STREX	0.176162	0.259491	0.255912	0.281734	0.061819	0.034641	0.06737	4.7447E-06	0.120933	0.125653	1.985297	0.028766	0.081128
A	SO2_IDLEX	0	0	0	0	8.56E-05	0.00013	0.000908	0.008994229	0.000646	0	0	0.003237	0
A	SO2_RUNEX	0.000132	0.00288	0.010639	0.003446	0.007314	0.007091	0.010639	0.01262042	0.014104	0.014448	0.002154	0.009709	0.013997
A	SO2_STREX	0	0	0.000127	0.000715	0.000106	7.34E-05	0.000127	2.43574E-06	0.000206	0.000237	0.000607	4.02E-05	0.000161
A	TOG_DIURN	0.031828	0.067321	0.052667	0.05663	0.001629	0.000761	0.000446	5.86948E-06	0.001343	0.000572	1.558971	0.000374	0.418092
A	TOG_HTSK	0.084473	0.150387	0.113331	0.117036	0.070359	0.03429	0.025554	0.000280312	0.024256	0.007124	0.721626	0.004384	0.040804
A	TOG_IDLEX	0	0	0	0	0.026823	0.020148	0.034609	0.468198181	0.0655	0	0	0.366338	0
A	TOG_RESTL	0.031184	0.062704	0.056473	0.061483	0.000942	0.000468	0.000279	3.96271E-06	0.000672	0.000333	0.939947	0.000186	0.168068
A	TOG_RUNEX	0.008531	0.016382	0.013003	0.014892	0.114342	0.119959	0.022663	0.126941516	0.042867	0.809586	2.856662	0.110142	0.069905
A	TOG_RUNLS	0.196251	0.572546	0.421876	0.407505	0.543612	0.205661	0.146865	0.001464552	0.285916	0.040287	2.092083	0.027653	0.931738
A	TOG_STREX	0.192875	0.28411	0.280192	0.308464	0.067685	0.037928	0.073761	5.19485E-06	0.132407	0.137575	2.16079	0.031495	0.088825

CalEEMod EMFAC2017 Fleet Mix Input

Year 2026

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.544586	0.059189	0.194842	0.116655	0.025323	0.006187	0.010605	0.010839	0.001143	0.000752	0.02827	0.000785	0.000824
General Office Building	0.544586	0.059189	0.194842	0.116655	0.025323	0.006187	0.010605	0.010839	0.001143	0.000752	0.02827	0.000785	0.000824
Parking Lot	0.544586	0.059189	0.194842	0.116655	0.025323	0.006187	0.010605	0.010839	0.001143	0.000752	0.02827	0.000785	0.000824

CalEEMod EMFAC2017 Emission Factors Input — Year 2030

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.004104	0.002605	0.005188	0.027066798	0.008824	0	0	0.068888	0
A	CH4_RUNEX	0.001062	0.001635	0.001633	0.001706	0.005798	0.00538	0.001432	0.08619495	0.003748	0.833053	0.334663	0.005462	0.005114
A	CH4_STREX	0.030408	0.03896	0.043872	0.044767	0.009438	0.005206	0.011822	8.65914E-07	0.02166	0.030956	0.253258	0.006135	0.018849
A	CO_IDLEX	0	0	0	0	0.174078	0.133198	0.551828	5.988651525	0.562089	0	0	2.835223	0
A	CO_RUNEX	0.39515	0.497514	0.500356	0.499778	0.53874	0.498358	0.184257	0.596470955	0.398348	6.398355	19.24408	0.47211	0.322398
A	CO_STREX	1.763963	1.944061	2.365016	2.372091	0.898464	0.500582	1.241063	0.019869127	2.281572	2.389953	9.305814	0.875111	1.586482
A	CO2_NBIO_IDLEX	0	0	0	0	8.424391	13.04016	91.23108	902.7737504	72.0507	0	0	329.0611	0
A	CO2_NBIO_RUNEX	216.8353	265.7772	274.9471	331.5967	702.3104	686.5646	1045.93	1280.132048	1322.84	1671.513	217.2106	945.3913	1340.952
A	CO2_NBIO_STREX	45.30983	56.39083	58.54373	68.43076	9.913165	6.642895	11.83489	0.20467843	18.98754	22.73019	60.17452	4.885329	14.87616
A	NOX_IDLEX	0	0	0	0	0.052978	0.075222	0.521106	5.202994293	0.291951	0	0	3.047311	0
A	NOX_RUNEX	0.0213	0.033603	0.032077	0.034081	0.420357	0.388379	1.365983	2.614779728	1.019709	0.460341	1.173097	3.701429	1.140174
A	NOX_STREX	0.130474	0.16619	0.17722	0.181839	0.227903	0.135734	1.544668	2.498654452	0.73348	0.229166	0.274089	1.090758	0.223472
A	PM10_IDLEX	0	0	0	0	0.00095	0.001477	0.000266	0.002568356	9.88E-05	0	0	0.002646	0
A	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.08918	0.13034	0.060818132	0.13034	0.105346	0.01176	0.7448	0.13034
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009946	0.010828	0.012	0.035425367	0.012	0.020357	0.004	0.010639	0.013263
A	PM10_RUNEX	0.00097	0.00111	0.001075	0.001095	0.008388	0.013826	0.006694	0.022671905	0.006449	0.003575	0.002221	0.023998	0.018842
A	PM10_STREX	0.001292	0.001531	0.001375	0.001353	0.000217	0.000106	0.000146	1.53176E-06	0.000206	0.00028	0.002917	7.8E-05	0.000205
A	PM25_IDLEX	0	0	0	0	0.000909	0.001413	0.000255	0.00245725	9.45E-05	0	0	0.002532	0
A	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.03822	0.05586	0.026064914	0.05586	0.045148	0.00504	0.3192	0.05586
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002486	0.002707	0.003	0.008856342	0.003	0.005089	0.001	0.00266	0.003316
A	PM25_RUNEX	0.000893	0.001021	0.000991	0.00101	0.00798	0.013204	0.006394	0.021691043	0.006146	0.003375	0.002072	0.02294	0.017991
A	PM25_STREX	0.001188	0.001408	0.001265	0.001244	0.000199	9.75E-05	0.000134	1.4084E-06	0.000189	0.000258	0.002732	7.17E-05	0.000188
A	ROG_DIURN	0.025117	0.048781	0.046761	0.05207	0.001338	0.000589	0.000371	5.57228E-06	0.001395	0.000646	1.531205	0.000594	0.286242
A	ROG_HTSK	0.067832	0.111389	0.096616	0.101084	0.061609	0.025888	0.021245	0.000276577	0.024738	0.008465	0.662478	0.006713	0.026763
A	ROG_IDLEX	0	0	0	0	0.017399	0.013775	0.025181	0.399973409	0.050372	0	0	0.314347	0
A	ROG_RESTL	0.025037	0.047718	0.051154	0.057244	0.00081	0.000388	0.000247	3.93944E-06	0.000707	0.00039	0.905554	0.000303	0.124927
A	ROG_RUNEX	0.00382	0.00638	0.006135	0.006654	0.079502	0.098148	0.013432	0.026059734	0.021875	0.023072	2.251166	0.070371	0.041311
A	ROG_RUNLS	0.176082	0.428445	0.369476	0.357642	0.533626	0.149225	0.114186	0.001462886	0.299311	0.043279	1.634824	0.043249	0.516682
A	ROG_STREX	0.12933	0.177541	0.194919	0.204532	0.046302	0.024672	0.058993	4.51784E-06	0.110389	0.129873	1.936167	0.034784	0.071811
A	SO2_IDLEX	0	0	0	0	8.15E-05	0.000125	0.000866	0.008283551	0.000687	0	0	0.003138	0
A	SO2_RUNEX	0.000115	0.002763	0.010024	0.003061	0.006845	0.006624	0.010024	0.01137157	0.012858	0.013716	0.002149	0.009051	0.013141
A	SO2_STREX	0	0	0.000117	0.000633	9.81E-05	6.57E-05	0.000117	2.02546E-06	0.000188	0.000225	0.000595	4.83E-05	0.000147
A	TOG_DIURN	0.025117	0.048781	0.046761	0.05207	0.001338	0.000589	0.000371	5.57228E-06	0.001395	0.000646	1.531205	0.000594	0.286242
A	TOG_HTSK	0.067832	0.111389	0.096616	0.101084	0.061609	0.025888	0.021245	0.000276577	0.024738	0.008465	0.662478	0.006713	0.026763
A	TOG_IDLEX	0	0	0	0	0.02417	0.018242	0.03443	0.463873706	0.066713	0	0	0.452317	0
A	TOG_RESTL	0.025037	0.047718	0.051154	0.057244	0.00081	0.000388	0.000247	3.93944E-06	0.000707	0.00039	0.905554	0.000303	0.124927
A	TOG_RUNEX	0.005543	0.009308	0.008904	0.009613	0.094224	0.112968	0.016678	0.115228626	0.029871	0.86306	2.813111	0.084522	0.051069
A	TOG_RUNLS	0.176082	0.428445	0.369476	0.357642	0.533626	0.149225	0.114186	0.001462886	0.299311	0.043279	1.634824	0.043249	0.516682
A	TOG_STREX	0.1416	0.194385	0.213412	0.223937	0.050695	0.027013	0.06459	4.94647E-06	0.120862	0.142195	2.108152	0.038084	0.078623

CalEEMod EMFAC2017 Fleet Mix Input — Year 2030

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.548735	0.059639	0.189953	0.116598	0.024933	0.006381	0.010873	0.011469	0.001123	0.000744	0.027916	0.000814	0.000822
General Office Building	0.548735	0.059639	0.189953	0.116598	0.024933	0.006381	0.010873	0.011469	0.001123	0.000744	0.027916	0.000814	0.000822
Parking Lot	0.548735	0.059639	0.189953	0.116598	0.024933	0.006381	0.010873	0.011469	0.001123	0.000744	0.027916	0.000814	0.000822

Adjustment Factors for EMFAC2017 Gasoline Light Duty Vehicles						
Year	NOx Exhaust	TOG Evaporative	TOG Exhaust	PM Exhaust	CO Exhaust	CO2 Exhaust
NA	1	1	1	1	1	1
2021	1.0002	1.0001	1.0002	1.0009	1.0005	1.0023
2022	1.0004	1.0003	1.0004	1.0018	1.0014	1.0065
2023	1.0007	1.0006	1.0007	1.0032	1.0027	1.0126
2024	1.0012	1.0010	1.0011	1.0051	1.0044	1.0207
2025	1.0018	1.0016	1.0016	1.0074	1.0065	1.0309
2026	1.0023	1.0022	1.0020	1.0091	1.0083	1.0394
2027	1.0028	1.0028	1.0024	1.0105	1.0102	1.0475
2028	1.0034	1.0035	1.0028	1.0117	1.0120	1.0554
2029	1.0040	1.0042	1.0032	1.0129	1.0138	1.0629
2030	1.0047	1.0051	1.0037	1.0142	1.0156	1.0702
2031	1.0054	1.0061	1.0042	1.0155	1.0173	1.0770
2032	1.0061	1.0072	1.0047	1.0169	1.0189	1.0834
2033	1.0068	1.0083	1.0052	1.0182	1.0204	1.0893
2034	1.0075	1.0095	1.0058	1.0196	1.0218	1.0947
2035	1.0081	1.0108	1.0063	1.0210	1.0232	1.0997
2036	1.0088	1.0121	1.0069	1.0223	1.0244	1.1041
2037	1.0094	1.0134	1.0074	1.0236	1.0255	1.1080
2038	1.0099	1.0148	1.0079	1.0248	1.0265	1.1114
2039	1.0104	1.0161	1.0085	1.0259	1.0274	1.1143
2040	1.0109	1.0174	1.0090	1.0270	1.0281	1.1168
2041	1.0113	1.0186	1.0095	1.0279	1.0288	1.1189
2042	1.0116	1.0198	1.0099	1.0286	1.0294	1.1207
2043	1.0119	1.0207	1.0103	1.0293	1.0299	1.1221
2044	1.0122	1.0216	1.0106	1.0299	1.0303	1.1233
2045	1.0124	1.0225	1.0109	1.0303	1.0306	1.1243
2046	1.0125	1.0233	1.0111	1.0308	1.0309	1.1251
2047	1.0127	1.0240	1.0113	1.0311	1.0311	1.1258
2048	1.0128	1.0246	1.0115	1.0314	1.0313	1.1263
2049	1.0128	1.0252	1.0116	1.0316	1.0315	1.1268
2050	1.0129	1.0257	1.0117	1.0318	1.0316	1.1272
Enter Year: 2022	**1.0004**	**1.0003**	**1.0004**	**1.0018**	**1.0014**	**1.0065**

*PM Exhaust off model factor is only applied to the PM Exhaust emissions not start/idle

The off-model adjustment factors need to be applied only to emissions from gasoline light duty vehicles (LDA, LDT1, LDT2 and MDV). Please note that the adjustment factors are by calendar year and includes all model years.

Enter NA in the date field if adjustments do not apply

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: County
Region: Marin
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	VMT	Trips	NOx_RUNE	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PM	PM2.5_PM	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PM	PM10_PM	CO2_RUNE	CO2_IDLEX	CO2_STREX	CH4_RUNE	CH4_IDLEX	CH4_STREX	N2O_RUNE	N2O_IDLEX	N2O_STREX	ROG_RUNI	ROG_IDLEX	ROG_STRE	ROG_HOTS	ROG_RUNI	ROG_REST	ROG_DIUR	TOG_RUNE	TOG_IDLEX	TOG_STRE	TOG_HOTS	TOG_RUNI	TOG_REST	TOG_DIUR	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Marin	2022	HHDT	Aggregate	Aggregate	Gasoline	2.322679	314.838	46.47216	3.718242	0	0.004003	0.000647	0	0.000249	0.005	0.02646	0.000704	0	0.000271	0.02	0.06174	2183.57	0	46.80932	0.081583	0	0.000175	0.145168	0	0.000195	0.37511	0	0.000916	0.040965	0.207154	0.011396	0.019226	0.54736	0	0.001003	0.040965	0.207154	0.011396	0.019226	32.58226	0	4.160093	0.021608	0	0.000463
Marin	2022	HHDT	Aggregate	Aggregate	Diesel	847.3732	82872.96	7541.85	3.867562	55.40396	2.17317	0.03323	0.041401	0	0.008847	0.026009	0.034732	0.043273	0	0.035387	0.060689	1537.488	9632.918	0	0.003845	0.174373	0	0.241672	1.514161	0	0.082778	3.754212	0	0	0	0	0	0.094236	4.273885	0	0	0	0	0	0.361629	50.23551	0	0.014525	0.091007	0
Marin	2022	HHDT	Aggregate	Aggregate	Natural Ga	60.1787	2454.834	234.6969	1.445264	20.47389	0	0.005097	0.028628	0	0.009	0.02646	0.005327	0.029923	0	0.036	0.06174	3130.749	3960.823	0	3.446276	1.242032	0	0.638224	0.80744	0	0.138227	0.040154	0	0	0	0	0	3.618567	1.293116	0	0	0	0	0	10.82954	21.85143	0	0	0	0
Marin	2022	LDA	Aggregate	Aggregate	Gasoline	129563.8	4355174	608209.8	0.044156	0	0.208071	0.001383	0	0.00183	0.002	0.01575	0.001504	0	0.00199	0.008	0.03675	264.1501	0	55.77464	0.002651	0	0.057532	0.004718	0	0.027024	0.010618	0	0.267457	0.113012	0.238311	0.196588	0.206753	0.015485	0	0.29283	0.113012	0.238311	0.196588	0.206753	0.630963	0	2.418165	0.002614	0	0.000552
Marin	2022	LDA	Aggregate	Aggregate	Diesel	2272.772	73283.39	10501.26	0.116195	0	0	0.00988	0	0	0.002	0.01575	0.010326	0	0	0.008	0.03675	221.232	0	0	0.000876	0	0	0.034775	0	0	0.018852	0	0	0	0	0	0	0.021461	0	0	0	0	0	0.260094	0	0	0.002091	0	0
Marin	2022	LDA	Aggregate	Aggregate	Electricity	3850.387	149672.8	18881.41	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0
Marin	2022	LDT1	Aggregate	Aggregate	Gasoline	15428.61	496265.8	70497.86	0.094578	0	0.28182	0.001736	0	0.002347	0.002	0.01575	0.001888	0	0.002552	0.008	0.03675	310.2879	0	66.01985	0.004892	0	0.077988	0.00741	0	0.030304	0.021449	0	0.397738	0.205105	0.757214	0.3774	0.428284	0.031281	0	0.43547	0.205105	0.757214	0.3774	0.428284	1.00663	0	2.598278	0.003071	0	0.000653
Marin	2022	LDT1	Aggregate	Aggregate	Diesel	10.37569	124.1997	33.04358	1.213652	0	0	0.172221	0	0	0.002	0.01575	0.180008	0	0	0.008	0.03675	417.5434	0	0	0.010819	0	0	0.065632	0	0	0.232932	0	0	0	0	0	0	0.265178	0	0	0	0	0	1.484678	0	0	0.003947	0	0
Marin	2022	LDT1	Aggregate	Aggregate	Electricity	109.0022	4442.41	541.764	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0
Marin	2022	LDT2	Aggregate	Aggregate	Gasoline	50593.24	1685774	235337.4	0.073326	0	0.305114	0.00133	0	0.001702	0.002	0.01575	0.001446	0	0.001852	0.008	0.03675	335.6699	0	71.9273	0.003468	0	0.074109	0.006245	0	0.03378	0.01401	0	0.350403	0.131688	0.465107	0.280768	0.272615	0.020438	0	0.383646	0.131688	0.465107	0.280768	0.272615	0.764729	0	2.983184	0.003322	0	0.000712
Marin	2022	LDT2	Aggregate	Aggregate	Diesel	556.476	20219.11	2678.125	0.039922	0	0	0.004639	0	0	0.002	0.01575	0.004848	0	0	0.008	0.03675	305.0175	0	0	0.000669	0	0	0.047945	0	0	0.014412	0	0	0	0	0	0	0.016408	0	0	0	0	0	0.140502	0	0	0.002884	0	0
Marin	2022	LDT2	Aggregate	Aggregate	Electricity	481.0798	15470.03	2412.355	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0
Marin	2022	LHDT1	Aggregate	Aggregate	Gasoline	3455.817	121161.5	51486.53	0.271723	0.038749	0.536509	0.002314	0	0.000426	0.002	0.03276	0.002516	0	0.000464	0.008	0.07644	1010.412	121.4506	19.13297	0.012929	0.121453	0.026699	0.015961	0.003114	0.041482	0.064121	0.443579	0.136297	0.138453	1.030335	0.026619	0.047963	0.093565	0.64727	0.149229	0.138453	1.030335	0.026619	0.047963	1.191132	3.743966	1.856644	0.009999	0.001202	0.000189
Marin	2022	LHDT1	Aggregate	Aggregate	Diesel	2719.92	102034.5	34213.17	2.026741	2.160834	0	0.025142	0.02701	0	0.003	0.03276	0.026279	0.028231	0	0.012	0.07644	553.7404	135.1688	0	0.007884	0.005098	0	0.08704	0.021247	0	0.169727	0.10976	0	0	0	0	0	0.193223	0.124954	0	0	0	0	0	0.74564	0.909745	0	0.005235	0.001278	0
Marin	2022	LHDT2	Aggregate	Aggregate	Gasoline	465.6701	16573.73	6937.79	0.255682	0.038311	0.535794	0.002036	0	0.000336	0.002	0.03822	0.002215	0	0.000365	0.008	0.08918	1152.319	139.5271	21.68075	0.009421	0.12179	0.025241	0.015902	0.003065	0.041238	0.043396	0.439018	0.126888	0.11632	0.751873	0.022241	0.039108	0.063324	0.640614	0.138927	0.11632	0.751873	0.022241	0.039108	0.80206	3.754459	1.812577	0.011403	0.001381	0.000215
Marin	2022	LHDT2	Aggregate	Aggregate	Diesel	862.0879	33937.49	10843.98	1.294438	2.057558	0	0.021217	0.026825	0	0.003	0.03822	0.022176	0.028038	0	0.012	0.08918	613.9646	213.9782	0	0.006912	0.005098	0	0.096507	0.033634	0	0.148812	0.10976	0	0	0	0	0	0.169412	0.124954	0	0	0	0	0	0.634359	0.909745	0	0.005804	0.002023	0
Marin	2022	MCY	Aggregate	Aggregate	Gasoline	7015.065	51666.26	14030.13	1.193857	0	0.2756	0.00196	0	0.00347	0.001	0.00504	0.002092	0	0.003673	0.004	0.01176	218.4694	0	62.60806	0.347416	0	0.264387	0.067993	0	0.015407	2.384728	0	2.038653	0.789408	2.561423	0.979119	1.588688	2.930841	0	2.217831	0.789408	2.561423	0.979119	1.588688	21.5316	0	9.070736	0.002162	0	0.00062
Marin	2022	MDV	Aggregate	Aggregate	Gasoline	29660.65	955422.8	137072.8	0.092148	0	0.358863	0.001401	0	0.001881	0.002	0.01575	0.001524	0	0.002045	0.008	0.03675	404.8492	0	87.11354	0.004308	0	0.086373	0.007429	0	0.035906	0.018043	0	0.429964	0.144194	0.478125	0.318693	0.303631	0.026283	0	0.47075	0.144194	0.478125	0.318693	0.303631	0.864981	0	3.406087	0.004006	0	0.000862
Marin	2022	MDV	Aggregate	Aggregate	Diesel	1137.649	39734.21	5438.47	0.048401	0	0	0.004773	0	0	0.002	0.01575	0.004989	0	0	0.008	0.03675	398.3749	0	0	0.00056	0	0	0.062619	0	0	0.012064	0	0	0	0	0	0	0.013734	0	0	0	0	0	0.218353	0	0	0.003766	0	0
Marin	2022	MDV	Aggregate	Aggregate	Electricity	200.4776	6795.888	1022.094	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0
Marin	2022	MH	Aggregate	Aggregate	Gasoline	504.9258	4888.784	50.51278	0.424131	0	0.333712	0.001612	0	0.000356	0.003	0.05586	0.001753	0	0.000387	0.012	0.13034	1750.985	0	26.04277	0.014745	0	0.032859	0.025997	0	0.034458	0.063653	0	0.140007	0.085554	2.110139	0.033533	0.089436	0.092882	0	0.15329	0.085554	2.110139	0.033533	0.089436	1.5825	0	3.098997	0.017327	0	0.000258
Marin	2022	MH	Aggregate	Aggregate	Diesel	221.6198	2169.947	22.16198	4.137214	0	0	0.09107	0	0	0.004	0.05586	0.095188	0	0	0.016	0.13034	1024.433	0	0	0.005079	0	0	0.161027	0	0	0.109353	0	0	0	0	0	0	0.124491	0	0	0	0	0	0.387033	0	0	0.009685	0	0
Marin	2022	MHDT	Aggregate	Aggregate	Gasoline	338.6158	17672.47	6775.025	0.568993	0.088411	0.383156	0.001263	0	0.000457	0.003	0.05586	0.001374	0	0.000497	0.012	0.13034	1743.831	538.8171	39.82282	0.018166	0.259948	0.041529	0.027028	0.007264	0.028994	0.090914	1.011571	0.227679	0.094464	0.570819	0.020632	0.03597	0.132662	1.476083	0.24928	0.094464	0.570819	0.020632	0.03597	2.081247	15.10332	5.142999	0.017257	0.005332	0.000394
Marin	2022	MHDT	Aggregate	Aggregate	Diesel	1347.742	70318.68	12193.99	2.374549	11.00489	1.704483	0.041846	0.018096	0	0.003	0.05586	0.043738	0.018914	0	0.012	0.13034	1056.091	1265.645	0	0.004516	0.005759	0	0.166003	0.198942	0	0.097223	0.123987	0	0	0	0	0	0.110681	0.14115	0	0	0	0	0	0.330729	3.359638	0	0.009977	0.011957	0
Marin	2022	OBUS	Aggregate	Aggregate	Gasoline	127.856	6584.562	2558.144	0.466447	0.065188	0.324034	0.000941	0	0.000206	0.003	0.05586	0.001024	0	0.000224	0.012	0.13034	1781.863	379.5718	26.61701	0.013689	0.202274	0.030744	0.023853	0.005697	0.026431	0.06427	0.748207	0.157666	0.026708	0.303349	0.014258	0.029041	0.093782	1.091782	0.172625	0.026708	0.303349	0.014258	0.029041	1.441171	5.786194	3.343722	0.017633	0.003756	0.000263
Marin	2022	OBUS	Aggregate	Aggregate	Diesel	43.84264	3639.916	440.6047	2.446288	18.60711	1.9937	0.03143	0.031053	0	0.003	0.05586	0.032851	0.032458	0	0.012	0.13034	1249.636	3318.7	0	0.003467	0.057066	0	0.196425	0.521653	0	0.074638	1.228605	0	0	0	0	0	0.084969	1.398674	0	0	0	0	0	0.291246	16.27224	0	0.011806	0.031353	0
Marin	2022	SBUS	Aggregate	Aggregate	Gasoline	34.30664	1705.151	137.2265	0.867962	0.91824	0.555039	0.001868	0	0.000697	0.002	0.3192	0.002031	0	0.000759	0.008	0.7448	852.9793	2537.521	51.573	0.025155	2.407311	0.066136	0.039777	0.08499	0.049522	0.126564	10.52036	0.388455	0.107491	0.736091	0.013161	0.035317	0.184683	15.35129	0.425309	0.107491	0.736091	0.013161	0.035317	3.022088	81.50519	10.72465	0.008441	0.025111	0.00051
Marin	2022	SBUS	Aggregate	Aggregate	Diesel	148.3604	4641.985	1712.059	8.674391	53.04736	0.541068	0.048722	0.060646	0	0.003	0.3192	0.050925	0.063388	0	0.012	0.7448	1153.864	3744.252	0	0.005564	0.012385	0	0.181371	0.588544	0	0.119794	0.266644	0	0	0	0	0	0.136376	0.303554	0	0	0	0	0	0.311894	4.776441	0	0.010901	0.035374	0
Marin	2022	UBUS	Aggregate	Aggregate	Gasoline	35.78096	3315.187	143.1238	0.32774	0	0.797042	0.001267	0	0.000463	0.002959	0.055135	0.001378	0	0.000503	0.011836	0.128648	2244.953	0	80.82837	0.00672	0	0.104086	0.027038	0	0.067692	0.022127	0	0.440698	0.053175	0.330527	0.009193	0.013913	0.032287	0	0.482509	0.053175	0.330527	0.009193	0.013913	0.390684	0	7.027006	0.022216	0	0.0008
Marin	2022	UBUS	Aggregate	Aggregate	Diesel	58.27691	2764.351	233.1076	0.864875	0	0	0.005377	0	0	0.007201	0.035273	0.00562	0	0	0.028806	0.082303	1365.814	0	0	0.074581	0	0	0.214687	0	0	0.001066	0	0	0	0	0	0	0.076116	0	0	0	0	0	0.123767	0	0	0.012912	0	0
Marin	2022	UBUS	Aggregate	Aggregate	Natural Ga	11.18311	395.4604	44.73242	0.479123	0	0	0.003122	0	0	0.008183	0.030464	0.003263	0	0	0.032732	0.071082	1980.585	0	0	6.241614	0	0	0.403755	0	0	0.08918	0	0	0	0	0	0	6.370025	0	0	0	0	0	48.33079	0	0	0	0	0

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: County
Region: Marin
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	VMT	Trips	NOx_RUNE	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PMB	PM2.5_PMT	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PMB	PM10_PMT	CO2_RUNE	CO2_IDLEX	CO2_STREX	CH4_RUNE	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNI	ROG_IDLEX	ROG_STREX	ROG_HOTS	ROG_RUNI	ROG_REST	ROG_DIUR	TOG_RUNE	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNI	TOG_REST	TOG_DIUR	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Marin	2023	HHDT	Aggregate	Aggregate	Gasoline	2.370916	306.003	47.43728	3.456262	0	0.003398	0.000671	0	0.000248	0.005	0.02646	0.00073	0	0.00027	0.02	0.06174	2155.471	0	46.86619	0.078437	0	0.000173	0.139705	0	0.000194	0.357242	0	0.000906	0.043515	0.222811	0.012156	0.019683	0.521286	0	0.000992	0.043515	0.222811	0.012156	0.019683	32.14645	0	4.382798	0.02133	0	0.000464
Marin	2023	HHDT	Aggregate	Aggregate	Diesel	864.5484	84838.08	7667.602	3.033171	50.73442	2.463706	0.023905	0.034885	0	0.008849	0.026017	0.024986	0.036463	0	0.035398	0.060707	1461.041	9244.968	0	0.001213	0.173485	0	0.229655	1.45318	0	0.02611	3.73508	0	0	0	0	0.029724	4.252105	0	0	0	0	0	0	0.236884	53.41158	0	0.013803	0.087342	0
Marin	2023	HHDT	Aggregate	Aggregate	Natural Ga	61.72523	2517.857	240.7284	1.317036	20.17729	0	0.004815	0.026087	0	0.009	0.02646	0.005033	0.027266	0	0.036	0.06174	3110.087	3931.266	0	3.400209	1.232516	0	0.634012	0.801414	0	0.127515	0.037497	0	0	0	0	3.560098	1.280532	0	0	0	0	0	0	10.87339	21.86893	0	0	0	0
Marin	2023	LDA	Aggregate	Aggregate	Gasoline	131553.3	4374907	618062.6	0.038909	0	0.194769	0.001322	0	0.001753	0.002	0.01575	0.001437	0	0.001907	0.008	0.03675	256.7407	0	54.21129	0.002321	0	0.053166	0.004354	0	0.025966	0.00912	0	0.243495	0.105807	0.228268	0.184273	0.191849	0.013303	0	0.266595	0.105807	0.228268	0.184273	0.191849	0.583348	0	2.34627	0.002541	0	0.000536
Marin	2023	LDA	Aggregate	Aggregate	Diesel	2268.885	71569.93	10453.37	0.100838	0	0	0.008938	0	0	0.002	0.01575	0.009342	0	0	0.008	0.03675	216.4917	0	0	0.000806	0	0	0.034029	0	0	0.017342	0	0	0	0	0	0.019743	0	0	0	0	0	0	0.249228	0	0	0.002047	0	0
Marin	2023	LDA	Aggregate	Aggregate	Electricity	4237.673	167357	20726.78	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0
Marin	2023	LDT1	Aggregate	Aggregate	Gasoline	15619.75	497563.5	71471.62	0.081316	0	0.261194	0.001621	0	0.002197	0.002	0.01575	0.001763	0	0.002389	0.008	0.03675	302.3719	0	64.30006	0.004202	0	0.071251	0.006639	0	0.029069	0.018187	0	0.358014	0.189996	0.705199	0.353468	0.395019	0.026532	0	0.391979	0.189996	0.705199	0.353468	0.395019	0.896483	0	2.503475	0.002992	0	0.000636
Marin	2023	LDT1	Aggregate	Aggregate	Diesel	9.501206	114.0156	30.10747	1.118576	0	0	0.1592	0	0	0.002	0.01575	0.166398	0	0	0.008	0.03675	410.7999	0	0	0.010015	0	0	0.064572	0	0	0.215622	0	0	0	0	0	0.245471	0	0	0	0	0	0	1.373847	0	0	0.003884	0	0
Marin	2023	LDT1	Aggregate	Aggregate	Electricity	138.9456	5825.749	691.7468	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0
Marin	2023	LDT2	Aggregate	Aggregate	Gasoline	50999.73	1672558	236983	0.064615	0	0.282611	0.001291	0	0.001659	0.002	0.01575	0.001404	0	0.001804	0.008	0.03675	325.1651	0	69.80876	0.003125	0	0.069568	0.005711	0	0.032193	0.012466	0	0.3258	0.127773	0.458119	0.278733	0.267241	0.018188	0	0.35671	0.127773	0.458119	0.278733	0.267241	0.711315	0	2.901456	0.003218	0	0.000691
Marin	2023	LDT2	Aggregate	Aggregate	Diesel	573.8956	20192.3	2744.173	0.038289	0	0	0.00461	0	0	0.002	0.01575	0.004818	0	0	0.008	0.03675	299.0993	0	0	0.000668	0	0	0.047014	0	0	0.014374	0	0	0	0	0	0.016364	0	0	0	0	0	0	0.142908	0	0	0.002828	0	0
Marin	2023	LDT2	Aggregate	Aggregate	Electricity	592.1076	18637.24	2961.846	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0
Marin	2023	LHDT1	Aggregate	Aggregate	Gasoline	3424.787	119094.4	5104.23	0.244369	0.03778	0.519728	0.002271	0	0.000412	0.002	0.03276	0.00247	0	0.000448	0.008	0.07644	999.0343	120.4868	18.97551	0.011535	0.119288	0.025174	0.014495	0.003085	0.040588	0.056765	0.432589	0.128229	0.133645	0.997941	0.025878	0.046097	0.082832	0.631233	0.140395	0.133645	0.997941	0.025878	0.046097	1.06354	3.747449	1.81269	0.009886	0.001192	0.000188
Marin	2023	LHDT1	Aggregate	Aggregate	Diesel	2770.651	102611.7	34851.31	1.800178	2.064031	0	0.023324	0.026851	0	0.003	0.03276	0.024379	0.028065	0	0.012	0.07644	545.7943	133.6287	0	0.007641	0.005098	0	0.085791	0.021005	0	0.164516	0.10976	0	0	0	0	0.18729	0.124954	0	0	0	0	0	0	0.723937	0.909745	0	0.00516	0.001263	0
Marin	2023	LHDT2	Aggregate	Aggregate	Gasoline	468.7318	16520.56	6983.406	0.227324	0.037247	0.518202	0.002007	0	0.000325	0.002	0.03822	0.002183	0	0.000354	0.008	0.08918	1138.777	138.3242	21.46766	0.008251	0.119265	0.023711	0.014353	0.003031	0.040302	0.037529	0.426931	0.118586	0.111319	0.702443	0.021612	0.037259	0.054762	0.622977	0.129837	0.111319	0.702443	0.021612	0.037259	0.696512	3.758167	1.75372	0.011269	0.001369	0.000212
Marin	2023	LHDT2	Aggregate	Aggregate	Diesel	901.7193	34842.8	11342.49	1.142924	1.951762	0	0.020433	0.026778	0	0.003	0.03822	0.021357	0.027989	0	0.012	0.08918	605.0059	211.4435	0	0.006768	0.005098	0	0.095099	0.033236	0	0.145704	0.10976	0	0	0	0	0.165874	0.124954	0	0	0	0	0	0	0.62429	0.909745	0	0.005719	0.001999	0
Marin	2023	MCY	Aggregate	Aggregate	Gasoline	7093.436	51472.53	14186.87	1.189892	0	0.275576	0.001971	0	0.003258	0.001	0.00504	0.002105	0	0.003454	0.004	0.01176	218.2252	0	62.23681	0.344974	0	0.26269	0.067817	0	0.015415	2.358588	0	2.023258	0.770323	2.436421	0.968804	1.580476	2.908181	0	2.201367	0.770323	2.436421	0.968804	1.580476	21.09046	0	9.102345	0.00216	0	0.000616
Marin	2023	MDV	Aggregate	Aggregate	Gasoline	30011.06	954428.5	138706.8	0.079329	0	0.32782	0.00134	0	0.001794	0.002	0.01575	0.001458	0	0.001951	0.008	0.03675	391.9667	0	84.4216	0.003784	0	0.0797	0.006657	0	0.033944	0.015609	0	0.391891	0.138549	0.465352	0.3133	0.295012	0.022751	0	0.429068	0.138549	0.465352	0.3133	0.295012	0.786791	0	3.247018	0.003879	0	0.000835
Marin	2023	MDV	Aggregate	Aggregate	Diesel	1169.944	39704.38	5562.217	0.044081	0	0	0.004541	0	0	0.002	0.01575	0.004746	0	0	0.008	0.03675	389.5439	0	0	0.000539	0	0	0.061231	0	0	0.011598	0	0	0	0	0	0.013203	0	0	0	0	0	0	0.216306	0	0	0.003683	0	0
Marin	2023	MDV	Aggregate	Aggregate	Electricity	283.0616	9377.471	1439.318	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0
Marin	2023	MH	Aggregate	Aggregate	Gasoline	501.0557	4898.187	50.12561	0.372426	0	0.334382	0.001543	0	0.000342	0.003	0.05586	0.001678	0	0.000372	0.012	0.13034	1726.734	0	25.61832	0.012841	0	0.032123	0.023777	0	0.035216	0.054291	0	0.134499	0.078979	1.928948	0.031221	0.081913	0.079221	0	0.147259	0.078979	1.928948	0.031221	0.081913	1.315313	0	2.97659	0.017087	0	0.000254
Marin	2023	MH	Aggregate	Aggregate	Diesel	227.0799	2186.161	22.70799	3.989886	0	0	0.085154	0	0	0.004	0.05586	0.089004	0	0	0.016	0.13034	1013.916	0	0	0.004948	0	0	0.159373	0	0	0.106534	0	0	0	0	0	0.121282	0	0	0	0	0	0	0.373482	0	0	0.009585	0	0
Marin	2023	MHDT	Aggregate	Aggregate	Gasoline	340.9177	17931.13	6821.081	0.466074	0.088627	0.375533	0.001239	0	0.000429	0.003	0.05586	0.001348	0	0.000467	0.012	0.13034	1718.209	533.0051	38.96432	0.014577	0.264084	0.040141	0.023094	0.007511	0.029321	0.071875	1.014805	0.217019	0.087093	0.520722	0.018706	0.031905	0.10488	1.480801	0.237608	0.087093	0.520722	0.018706	0.031905	1.640264	15.14077	4.848739	0.017003	0.005275	0.000286
Marin	2023	MHDT	Aggregate	Aggregate	Diesel	1330.762	70922.65	11890	1.705089	9.39061	2.128121	0.007887	0.008284	0	0.003	0.05586	0.008244	0.008659	0	0.012	0.13034	1019.622	1253.781	0	0.000588	0.004831	0	0.16027	0.197077	0	0.012659	0.104015	0	0	0	0	0.014411	0.118413	0	0	0	0	0	0	0.115744	3.517008	0	0.009633	0.011845	0
Marin	2023	OBUS	Aggregate	Aggregate	Gasoline	126.035	6288.279	2521.708	0.431224	0.065195	0.322117	0.000971	0	0.000211	0.003	0.05586	0.001056	0	0.000229	0.012	0.13034	1762.799	377.0365	26.38299	0.01259	0.2022	0.030272	0.022317	0.005717	0.026364	0.059056	0.748317	0.155233	0.02755	0.315146	0.01488	0.030105	0.086174	1.091942	0.169961	0.02755	0.315146	0.01488	0.030105	1.301844	5.78686	3.291843	0.017444	0.003731	0.000261
Marin	2023	OBUS	Aggregate	Aggregate	Diesel	45.13689	3814.103	449.4934	1.849239	14.00397	2.215211	0.012201	0.004599	0	0.003	0.05586	0.012753	0.004807	0	0.012	0.13034	1219.379	3078.901	0	0.000623	0.048357	0	0.191669	0.48396	0	0.013413	1.041104	0	0	0	0	0.015269	1.185218	0	0	0	0	0	0	0.144784	16.40134	0	0.01152	0.029088	0
Marin	2023	SBUS	Aggregate	Aggregate	Gasoline	35.55027	1741.837	142.2011	0.63715	0.922766	0.545264	0.001614	0	0.000664	0.002	0.3192	0.001755	0	0.000722	0.008	0.7448	841.336	2510.632	49.23413	0.017884	2.437783	0.061814	0.031495	0.087893	0.050864	0.088977	10.58651	0.357768	0.073684	0.488575	0.009922	0.024194	0.129835	15.4478	0.391711	0.073684	0.488575	0.009922	0.024194	2.073511	81.90683	9.561102	0.008326	0.024845	0.000487
Marin	2023	SBUS	Aggregate	Aggregate	Diesel	149.6531	4687.64	1726.976	8.369237	51.77231	0.601765	0.04743	0.057376	0	0.003	0.3192	0.049575	0.05997	0	0.012	0.7448	1142.942	3720.666	0	0.005465	0.012259	0	0.179655	0.584837	0	0.117652	0.263932	0	0	0	0	0.133938	0.300467	0	0	0	0	0	0	0.30955	5.013283	0	0.010798	0.035151	0
Marin	2023	UBUS	Aggregate	Aggregate	Gasoline	35.79722	3316.694	143.1889	0.305064	0	0.766739	0.001556	0	0.000556	0.002959	0.055135	0.001692	0	0.000605	0.011836	0.128648	2168.787	0	78.56328	0.006738	0	0.099352	0.02551	0	0.066511	0.022125	0	0.419806	0.050216	0.303553	0.008866	0.013427	0.032285	0	0.459635	0.050216	0.303553	0.008866	0.013427	0.373046	0	7.02563	0.021462	0	0.000777
Marin	2023	UBUS	Aggregate	Aggregate	Diesel	56.94108	2735.932	227.7643	0.736038	0	0	0.005241	0	0	0.007247	0.035051	0.005478	0	0	0.028987	0.081786	1355.588	0	0	0.068936	0	0	0.21308	0	0	0.000985	0	0	0	0	0	0.070354	0	0	0	0	0	0	0.115664	0	0	0.012815	0	0
Marin	2023	UBUS	Aggregate	Aggregate	Natural Ga	12.55051	425.3158	50.20204	0.46653	0	0	0.003047	0	0	0.007823	0.032226	0.003185	0	0	0.031293	0.075193	1936.564	0	0	0.029626	0	0	0.394781	0	0	0.086151	0	0	0	0	0	6.153676	0	0	0	0	0	0	46.51504	0	0	0	0	0

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: County
Region: Marin
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	VMT	Trips	NOx_RUNE	NOx_IDLE	NOx_STRE	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PMB	PM2.5_PMT	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PMB	PM10_PMT	CO2_RUNE	CO2_IDLEX	CO2_STRE	CH4_RUNE	CH4_IDLEX	CH4_STRE	N2O_RUNE	N2O_IDLE	N2O_STRE	ROG_RUNI	ROG_IDLE	ROG_STRE	ROG_HOTS	ROG_RUNI	ROG_REST	ROG_DIUR	TOG_RUNE	TOG_IDLE	TOG_STRE	TOG_HOTS	TOG_RUNI	TOG_REST	TOG_DIUR	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Marin	2024	HHDT	Aggregate	Aggregate	Gasoline	2.393533	295.9956	47.88981	3.419373	0	0.003427	0.000697	0	0.000247	0.005	0.02646	0.000758	0	0.000269	0.02	0.06174	2120.174	0	45.9617	0.078442	0	0.000159	0.139964	0	0.000168	0.355808	0	0.000832	0.045785	0.236158	0.012858	0.020029	0.519194	0	0.000911	0.045785	0.236158	0.012858	0.020029	31.77875	0	4.050312	0.020981	0	0.000455
Marin	2024	HHDT	Aggregate	Aggregate	Diesel	891.3086	86917.04	7923.202	3.00541	50.06378	2.481614	0.024042	0.033058	0	0.008852	0.026024	0.025129	0.034552	0	0.035407	0.060723	1434.59	9114.809	0	0.00121	0.173439	0	0.225498	1.432721	0	0.026051	3.734099	0	0	0	0	0.029657	4.250988	0	0	0	0	0	0.240452	53.5553	0	0.013553	0.086112	0
Marin	2024	HHDT	Aggregate	Aggregate	Natural Ga	63.12546	2574.966	246.1893	1.205673	19.91682	0	0.004572	0.023849	0	0.009	0.02646	0.004779	0.024927	0	0.036	0.06174	3084.699	3896.469	0	3.360325	1.224142	0	0.628836	0.794321	0	0.118247	0.035174	0	0	0	0	3.509482	1.269474	0	0	0	0	0	10.91133	21.88807	0	0	0	0
Marin	2024	LDA	Aggregate	Aggregate	Gasoline	133488.9	4388991	627482.2	0.034651	0	0.182811	0.001268	0	0.001685	0.002	0.01575	0.001379	0	0.001833	0.008	0.03675	249.3805	0	52.64554	0.002044	0	0.049164	0.004055	0	0.024927	0.007873	0	0.222074	0.099515	0.219566	0.173023	0.17852	0.543447	0	2.267239	0.002468	0	0.000521
Marin	2024	LDA	Aggregate	Aggregate	Diesel	2251.126	69765.21	10359.08	0.086272	0	0	0.007743	0	0	0.002	0.01575	0.008093	0	0	0.008	0.03675	211.3346	0	0	0.000718	0	0	0.033219	0	0	0.015467	0	0	0	0	0	0.017608	0	0	0	0	0	0.237686	0	0	0.001998	0	0
Marin	2024	LDA	Aggregate	Aggregate	Electricity	4672.563	187778.5	22811.84	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0
Marin	2024	LDT1	Aggregate	Aggregate	Gasoline	15815.19	498632.8	72444.31	0.070384	0	0.242566	0.001522	0	0.002065	0.002	0.01575	0.001655	0	0.002246	0.008	0.03675	294.4384	0	62.59035	0.003627	0	0.065147	0.005996	0	0.027871	0.015498	0	0.32265	0.176148	0.658573	0.330937	0.364564	0.807197	0	2.415439	0.002914	0	0.000619
Marin	2024	LDT1	Aggregate	Aggregate	Diesel	8.736885	105.9258	27.60266	1.022322	0	0	0.145798	0	0	0.002	0.01575	0.15239	0	0	0.008	0.03675	403.1815	0	0	0.009195	0	0	0.063375	0	0	0.197962	0	0	0	0	0	0.225366	0	0	0	0	0	1.262534	0	0	0.003812	0	0
Marin	2024	LDT1	Aggregate	Aggregate	Electricity	172.3048	7390.27	857.9863	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0
Marin	2024	LDT2	Aggregate	Aggregate	Gasoline	51368.49	1658844	238446.9	0.057335	0	0.262679	0.001256	0	0.001621	0.002	0.01575	0.001366	0	0.001763	0.008	0.03675	314.726	0	67.70123	0.002825	0	0.065289	0.005259	0	0.030688	0.011131	0	0.303093	0.123961	0.451035	0.276015	0.261703	0.616242	0	0.331849	0.123961	0.451035	0.276015	0.261703	0.666926	0	2.822711	0.003114	0	0.00067
Marin	2024	LDT2	Aggregate	Aggregate	Diesel	587.7502	20062.53	2793.428	0.036847	0	0	0.004583	0	0	0.002	0.01575	0.00479	0	0	0.008	0.03675	292.7454	0	0	0.000666	0	0	0.046016	0	0	0.014337	0	0	0	0	0	0.016322	0	0	0	0	0	0.144903	0	0	0.002767	0	0
Marin	2024	LDT2	Aggregate	Aggregate	Electricity	714.0577	22003.07	3562.756	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0
Marin	2024	LHDT1	Aggregate	Aggregate	Gasoline	3402.516	117242.7	50692.42	0.22198	0.036803	0.520249	0.002247	0	0.000402	0.002	0.03276	0.002444	0	0.000438	0.008	0.07644	986.6473	119.4123	18.80704	0.010569	0.116958	0.023713	0.013264	0.00305	0.039621	0.051841	0.421458	0.120529	0.129572	0.974382	0.025382	0.044782	0.075646	0.614991	0.131964	0.129572	0.974382	0.025382	0.044782	0.978645	3.749967	1.775872	0.009764	0.001182	0.000186
Marin	2024	LHDT1	Aggregate	Aggregate	Diesel	2818.765	103049.9	35456.51	1.595968	1.97143	0	0.021659	0.026712	0	0.003	0.03276	0.022638	0.02792	0	0.012	0.07644	537.5175	131.9903	0	0.00742	0.005098	0	0.08449	0.020747	0	0.159755	0.10976	0	0	0	0	0.18187	0.124954	0	0	0	0	0	0.704808	0.909745	0	0.005081	0.001248	0
Marin	2024	LHDT2	Aggregate	Aggregate	Gasoline	471.2057	16449.74	7020.263	0.201801	0.036217	0.500472	0.001984	0	0.000316	0.002	0.03822	0.002158	0	0.000344	0.008	0.08918	1124.039	136.9864	21.24151	0.007171	0.116806	0.022302	0.012976	0.002998	0.039359	0.032032	0.415232	0.110967	0.106236	0.65798	0.02088	0.035332	0.046741	0.605905	0.121495	0.106236	0.65798	0.02088	0.035332	0.598971	3.761634	1.701988	0.011123	0.001356	0.00021
Marin	2024	LHDT2	Aggregate	Aggregate	Diesel	939.5525	35625.43	11818.39	1.010163	1.854479	0	0.019809	0.026757	0	0.003	0.03822	0.020704	0.027967	0	0.012	0.08918	595.8244	208.7904	0	0.006643	0.005098	0	0.093655	0.032819	0	0.143013	0.10976	0	0	0	0	0.16281	0.124954	0	0	0	0	0	0.61635	0.909745	0	0.005633	0.001974	0
Marin	2024	MCY	Aggregate	Aggregate	Gasoline	7171.208	51250.73	14342.42	1.1865	0	0.275575	0.001982	0	0.003079	0.001	0.00504	0.00212	0	0.003268	0.004	0.01176	218.0145	0	61.89949	0.342849	0	0.261141	0.067663	0	0.015422	2.336083	0	2.009476	0.754271	2.327595	0.959384	1.573691	2.888591	0	2.186629	0.754271	2.327595	0.959384	1.573691	20.7085	0	9.131437	0.002157	0	0.000613
Marin	2024	MDV	Aggregate	Aggregate	Gasoline	30339.73	952720.9	140224.7	0.068571	0	0.299514	0.001287	0	0.001718	0.002	0.01575	0.001399	0	0.001869	0.008	0.03675	379.1747	0	81.74213	0.003332	0	0.073483	0.005999	0	0.032056	0.013529	0	0.356988	0.133271	0.45397	0.308274	0.287519	0.719731	0	0.390856	0.133271	0.45397	0.308274	0.287519	0.720284	0	3.097962	0.003752	0	0.000809
Marin	2024	MDV	Aggregate	Aggregate	Diesel	1198.125	39566	5666.444	0.04028	0	0	0.004319	0	0	0.002	0.01575	0.004515	0	0	0.008	0.03675	380.2993	0	0	0.000518	0	0	0.059778	0	0	0.011153	0	0	0	0	0	0.012697	0	0	0	0	0	0.21398	0	0	0.003595	0	0
Marin	2024	MDV	Aggregate	Aggregate	Electricity	375.235	12131.02	1901.584	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0
Marin	2024	MH	Aggregate	Aggregate	Gasoline	497.0312	4893.698	49.723	0.32986	0	0.334889	0.001489	0	0.00033	0.003	0.05586	0.00162	0	0.000359	0.012	0.13034	1693.522	0	25.14699	0.011299	0	0.031448	0.021949	0	0.035856	0.046765	0	0.129563	0.072837	1.757278	0.02907	0.075017	0.068239	0	0.141855	0.072837	1.757278	0.02907	0.075017	1.104267	0	2.8681	0.016759	0	0.000249
Marin	2024	MH	Aggregate	Aggregate	Diesel	232.368	2200.647	23.2368	3.856542	0	0	0.079806	0	0	0.004	0.05586	0.083415	0	0	0.016	0.13034	1000.165	0	0	0.004827	0	0	0.157212	0	0	0.103927	0	0	0	0	0	0.118314	0	0	0	0	0	0.360952	0	0	0.009455	0	0
Marin	2024	MHDT	Aggregate	Aggregate	Gasoline	344.764	18186.05	6898.038	0.38537	0.088796	0.367975	0.001228	0	0.000411	0.003	0.05586	0.001336	0	0.000447	0.012	0.13034	1685.478	525.6716	38.06248	0.01189	0.26735	0.038807	0.020002	0.007713	0.029536	0.057731	1.017334	0.207012	0.081278	0.480283	0.017483	0.02914	0.084241	1.484492	0.226652	0.081278	0.480283	0.017483	0.02914	1.309933	15.1701	4.583258	0.016679	0.005202	0.000377
Marin	2024	MHDT	Aggregate	Aggregate	Diesel	1380.74	71691.19	12309.45	1.711144	8.904333	2.140975	0.007926	0.007213	0	0.003	0.05586	0.008284	0.007539	0	0.012	0.13034	1006.245	1229.853	0	0.000581	0.004752	0	0.158168	0.193316	0	0.012514	0.10231	0	0	0	0	0.014247	0.116472	0	0	0	0	0	0.117013	3.575097	0	0.009507	0.011619	0
Marin	2024	OBUS	Aggregate	Aggregate	Gasoline	124.1141	6015.378	2483.276	0.392333	0.065201	0.320896	0.001001	0	0.000216	0.003	0.05586	0.001089	0	0.000234	0.012	0.13034	1737.435	373.7136	26.0798	0.01143	0.202139	0.029758	0.020723	0.005734	0.026336	0.053395	0.748403	0.152355	0.028322	0.327171	0.015446	0.031048	0.077914	1.092068	0.166809	0.028322	0.327171	0.015446	0.031048	1.170848	5.787382	3.225391	0.017193	0.003698	0.000258
Marin	2024	OBUS	Aggregate	Aggregate	Diesel	47.70089	3983.542	473.1706	1.879319	13.7256	2.216204	0.012418	0.004501	0	0.003	0.05586	0.01298	0.004705	0	0.012	0.13034	1200.325	2997.314	0	0.000627	0.047206	0	0.188674	0.471136	0	0.013499	1.01634	0	0	0	0	0.015367	1.157025	0	0	0	0	0	0.146105	16.04396	0	0.01134	0.028317	0
Marin	2024	SBUS	Aggregate	Aggregate	Gasoline	36.95198	1785.678	147.8079	0.463366	0.92653	0.543438	0.001403	0	0.000637	0.002	0.3192	0.001526	0	0.000693	0.008	0.7448	826.8896	2474.592	47.18208	0.012332	2.461742	0.058099	0.025007	0.09045	0.052089	0.060586	10.64152	0.331909	0.044054	0.273209	0.007192	0.014686	0.088406	15.52808	0.363399	0.044054	0.273209	0.007192	0.014686	1.366438	82.24088	8.6482	0.008183	0.024488	0.000467
Marin	2024	SBUS	Aggregate	Aggregate	Diesel	150.6045	4725.185	1737.955	8.046338	50.43582	0.664658	0.04605	0.054122	0	0.003	0.3192	0.048132	0.05657	0	0.012	0.7448	1130.263	3691.914	0	0.00535	0.012154	0	0.177662	0.580317	0	0.11519	0.261665	0	0	0	0	0.131135	0.297886	0	0	0	0	0	0.306506	5.260683	0	0.010678	0.034879	0
Marin	2024	UBUS	Aggregate	Aggregate	Gasoline	35.81348	3318.201	143.2539	0.187362	0	0.639467	0.00218	0	0.000724	0.002959	0.055135	0.002371	0	0.000788	0.011836	0.128648	1890.425	0	71.60479	0.006818	0	0.079959	0.018107	0	0.061285	0.022124	0	0.335051	0.023271	0.108158	0.004834	0.007846	0.032283	0	0.366838	0.023271	0.108158	0.004834	0.007846	0.281351	0	7.02335	0.018707	0	0.000709
Marin	2024	UBUS	Aggregate	Aggregate	Diesel	56.96356	2736.954	227.8543	0.73604	0	0	0.005241	0	0	0.007247	0.035051	0.005478	0	0	0.028987	0.081786	1355.613	0	0	0.068936	0	0	0.213083	0	0	0.000985	0	0	0	0	0	0.070354	0	0	0	0	0	0.115664	0	0	0.012815	0	0
Marin	2024	UBUS	Aggregate	Aggregate	Natural Ga	12.55959	425.7291	50.23838	0.466513	0	0	0.003047	0	0	0.007823	0.032228	0.003185	0	0	0.031291	0.075199	1936.505	0	0	6.029341	0	0	0.394769	0	0	0.086147	0	0	0	0	0	6.153384	0	0	0	0	0	46.51259	0	0	0	0	0

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: County
Region: Marin
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	VMT	Trips	NOx_RUNE	NOx_IDLE	NOx_STRE	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PMB	PM2.5_PMT	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PMB	PM10_PMT	PM10_PMT	CO2_RUNE	CO2_IDLEX	CO2_STRE	CH4_RUNE	CH4_IDLEX	CH4_STRE	N2O_RUNE	N2O_IDLEX	N2O_STRE	ROG_RUNI	ROG_IDLE	ROG_STRE	ROG_HOTS	ROG_RUNI	ROG_REST	ROG_DIUR	TOG_RUNE	TOG_IDLEX	TOG_STRE	TOG_HOTS	TOG_RUNI	TOG_REST	TOG_DIUR	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Marin	2025	HHDT	Aggregate	Aggregate	Gasoline	2.38479	283.6928	47.71489	3.426886	0	0.003996	0.000728	0	0.00025	0.005	0.02646	0.000792	0	0.000272	0.02	0.06174	2081.427	0	45.21414	0.079014	0	0.000161	0.141384	0	0.000194	0.357773	0	0.000843	0.048131	0.249886	0.013578	0.020523	0.522061	0	0.000923	0.048131	0.249886	0.013578	0.020523	31.40858	0	3.850537	0.020597	0	0.000447
Marin	2025	HHDT	Aggregate	Aggregate	Diesel	910.2895	88744.5	8110.951	2.955629	49.4765	2.500744	0.023916	0.03109	0	0.008854	0.02603	0.024997	0.032496	0	0.035414	0.060736	1403.887	8967.413	0	0.001199	0.173335	0	0.220671	1.409552	0	0.025808	3.731847	0	0	0	0	0	0.02938	4.248424	0	0	0	0	0	0	0.242027	53.68587	0	0.013263	0.08472	0
Marin	2025	HHDT	Aggregate	Aggregate	Natural Ga	64.16458	2617.371	250.2418	1.107285	19.6815	0	0.004361	0.021882	0	0.009	0.02646	0.004558	0.022872	0	0.036	0.06174	3057.152	3859.076	0	3.325216	1.216798	0	0.62322	0.786698	0	0.110062	0.033123	0	0	0	0	0	3.464897	1.259762	0	0	0	0	0	0	10.94493	21.91194	0	0	0	0
Marin	2025	LDA	Aggregate	Aggregate	Gasoline	135372.9	4400754	636446.8	0.031303	0	0.171826	0.001222	0	0.001628	0.002	0.01575	0.001329	0	0.001771	0.008	0.03675	242.0513	0	51.08252	0.001815	0	0.045427	0.003815	0	0.023878	0.006877	0	0.202788	0.09395	0.212944	0.163367	0.167371	0.010035	0	0.222027	0.09395	0.212944	0.163367	0.167371	0.510567	0	2.180456	0.002395	0	0.000506
Marin	2025	LDA	Aggregate	Aggregate	Diesel	2223.777	67993.07	10233.91	0.073006	0	0	0.006761	0	0	0.002	0.01575	0.007067	0	0	0.008	0.03675	205.7768	0	0	0.000649	0	0	0.032345	0	0	0.013981	0	0	0	0	0	0	0.015916	0	0	0	0	0	0	0.226815	0	0	0.001945	0	0
Marin	2025	LDA	Aggregate	Aggregate	Electricity	5149.998	210993.3	25111.71	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0	0
Marin	2025	LDT1	Aggregate	Aggregate	Gasoline	16011.48	499665.4	73393.52	0.061456	0	0.225795	0.001437	0	0.001953	0.002	0.01575	0.001563	0	0.002124	0.008	0.03675	286.4615	0	60.87409	0.003146	0	0.059583	0.005466	0	0.026699	0.01327	0	0.291115	0.163782	0.617611	0.310817	0.337801	0.732607	0	2.322403	0.002835	0	0.000602
Marin	2025	LDT1	Aggregate	Aggregate	Diesel	8.089602	99.67697	25.51859	0.928433	0	0	0.132713	0	0	0.002	0.01575	0.138714	0	0	0.008	0.03675	394.7658	0	0	0.008395	0	0	0.062052	0	0	0.18074	0	0	0	0	0	0	0.205761	0	0	0	0	0	0	1.153676	0	0	0.003732	0	0
Marin	2025	LDT1	Aggregate	Aggregate	Electricity	209.1247	9144.703	1040.422	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0	0
Marin	2025	LDT2	Aggregate	Aggregate	Gasoline	51712.5	1646055	239775.9	0.051388	0	0.245222	0.001225	0	0.001591	0.002	0.01575	0.001332	0	0.001731	0.008	0.03675	304.3367	0	65.60334	0.002567	0	0.061315	0.004886	0	0.029293	0.009998	0	0.282414	0.120295	0.443156	0.273091	0.256533	0.01459	0	0.309208	0.120295	0.443156	0.273091	0.256533	0.629466	0	2.7432	0.003012	0	0.000649
Marin	2025	LDT2	Aggregate	Aggregate	Diesel	597.7521	19863.29	2826.376	0.035153	0	0	0.004493	0	0	0.002	0.01575	0.004696	0	0	0.008	0.03675	285.88	0	0	0.000661	0	0	0.044936	0	0	0.014224	0	0	0	0	0	0	0.016193	0	0	0	0	0	0	0.146173	0	0	0.002703	0	0
Marin	2025	LDT2	Aggregate	Aggregate	Electricity	847.8881	25592.49	4219.012	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0	0
Marin	2025	LHDT1	Aggregate	Aggregate	Gasoline	3383.684	115695.2	50411.85	0.200551	0.035829	0.484329	0.002223	0	0.000393	0.002	0.03276	0.002417	0	0.000427	0.008	0.07644	973.2039	118.2199	18.62799	0.009541	0.114649	0.022373	0.012109	0.003015	0.038675	0.046438	0.410376	0.113457	0.125311	0.953309	0.024758	0.043207	0.667762	0.598819	0.124221	0.125311	0.953309	0.024758	0.043207	0.887249	3.752616	1.74413	0.009631	0.00117	0.000184
Marin	2025	LHDT1	Aggregate	Aggregate	Diesel	2865.164	103470	36040.16	1.412488	1.882724	0	0.020128	0.026585	0	0.003	0.03276	0.021038	0.027787	0	0.012	0.07644	528.9352	130.2598	0	0.00722	0.005098	0	0.083141	0.020475	0	0.155451	0.10976	0	0	0	0	0	0.176971	0.124954	0	0	0	0	0	0	0.687923	0.909745	0	0.005	0.001231	0
Marin	2025	LHDT2	Aggregate	Aggregate	Gasoline	473.6445	16384.66	7056.598	0.179798	0.035221	0.482769	0.001972	0	0.00031	0.002	0.03822	0.002145	0	0.000338	0.008	0.08918	1108.273	135.5252	20.99938	0.006358	0.114376	0.020958	0.011784	0.002963	0.038421	0.028005	0.403905	0.103655	0.101191	0.615421	0.020263	0.033674	0.040865	0.589377	0.113489	0.101191	0.615421	0.020263	0.033674	0.526413	3.76452	1.65477	0.010967	0.001341	0.000208
Marin	2025	LHDT2	Aggregate	Aggregate	Diesel	976.3545	36347.09	12281.31	0.895268	1.765056	0	0.019329	0.026763	0	0.003	0.03822	0.020203	0.027974	0	0.012	0.08918	586.4609	206.0367	0	0.006536	0.005098	0	0.092183	0.032386	0	0.140727	0.10976	0	0	0	0	0	0.160208	0.124954	0	0	0	0	0	0	0.610356	0.909745	0	0.005544	0.001948	0
Marin	2025	MCY	Aggregate	Aggregate	Gasoline	7251.819	51070.17	14503.64	1.183501	0	0.275318	0.002008	0	0.003049	0.001	0.00504	0.002147	0	0.003239	0.004	0.01176	217.8381	0	61.60291	0.341016	0	0.259819	0.067526	0	0.015418	2.316874	0	1.99802	0.74066	2.229887	0.951133	1.568364	2.871799	0	2.174394	0.74066	2.229887	0.951133	1.568364	20.37895	0	9.161047	0.002156	0	0.00061
Marin	2025	MDV	Aggregate	Aggregate	Gasoline	30670.31	951548.9	141721.9	0.059889	0	0.274228	0.001241	0	0.001659	0.002	0.01575	0.00135	0	0.001804	0.008	0.03675	366.5041	0	79.09969	0.002955	0	0.067814	0.005458	0	0.030297	0.011829	0	0.325676	0.12838	0.442596	0.304312	0.281687	0.017259	0	0.356574	0.12838	0.442596	0.304312	0.281687	0.667736	0	2.963752	0.003627	0	0.000783
Marin	2025	MDV	Aggregate	Aggregate	Diesel	1221.483	39342.5	5748.722	0.036894	0	0	0.004096	0	0	0.002	0.01575	0.004281	0	0	0.008	0.03675	370.5969	0	0	0.000497	0	0	0.058253	0	0	0.010706	0	0	0	0	0	0	0.012189	0	0	0	0	0	0	0.211214	0	0	0.003503	0	0
Marin	2025	MDV	Aggregate	Aggregate	Electricity	476.3902	15034.22	2405.337	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0	0
Marin	2025	MH	Aggregate	Aggregate	Gasoline	493.7302	4888.328	49.39277	0.29305	0	0.335395	0.001444	0	0.000321	0.003	0.05586	0.001571	0	0.000349	0.012	0.13034	1662.655	0	24.68889	0.010001	0	0.030813	0.020362	0	0.036455	0.040478	0	0.124997	0.066901	1.578662	0.027051	0.068576	0.059065	0	0.136856	0.066901	1.578662	0.027051	0.068576	0.932013	0	2.768542	0.016453	0	0.000244
Marin	2025	MH	Aggregate	Aggregate	Diesel	237.0836	2212.291	23.70836	3.735024	0	0	0.074858	0	0	0.004	0.05586	0.078242	0	0	0.016	0.13034	986.4937	0	0	0.004713	0	0	0.155063	0	0	0.101476	0	0	0	0	0	0	0.115524	0	0	0	0	0	0	0.349193	0	0	0.009326	0	0
Marin	2025	MHDT	Aggregate	Aggregate	Gasoline	349.8192	18464.26	6999.183	0.322505	0.088939	0.360995	0.001225	0	0.000398	0.003	0.05586	0.001332	0	0.000433	0.012	0.13034	1654.76	518.3817	37.22235	0.009806	0.270037	0.037658	0.017582	0.00788	0.029701	0.046769	1.019458	0.1984	0.076325	0.445338	0.016424	0.026789	1.053345	15.19473	4.35174	0.016375	0.00513	0.000368
Marin	2025	MHDT	Aggregate	Aggregate	Diesel	1427.728	72254.4	12700.29	1.713801	8.480055	2.152419	0.007943	0.006354	0	0.003	0.05586	0.008303	0.006641	0	0.012	0.13034	991.8636	1208.096	0	0.000574	0.004697	0	0.155907	0.189896	0	0.012368	0.101118	0	0	0	0	0	0.01408	0.115115	0	0	0	0	0	0	0.117976	3.629574	0	0.009371	0.011413	0
Marin	2025	OBUS	Aggregate	Aggregate	Gasoline	122.4487	5781.186	2449.954	0.361096	0.065205	0.318544	0.001032	0	0.000221	0.003	0.05586	0.001122	0	0.00024	0.012	0.13034	1710.728	370.1758	25.79824	0.010493	0.201995	0.029324	0.019405	0.005747	0.026247	0.048861	0.748461	0.150074	0.029032	0.338485	0.015968	0.031957	0.071298	1.092152	0.164312	0.029032	0.338485	0.015968	0.031957	1.056027	5.787731	3.178983	0.016929	0.003663	0.000255
Marin	2025	OBUS	Aggregate	Aggregate	Diesel	51.41884	4134.598	509.2154	1.85044	13.60935	2.217953	0.012087	0.004461	0	0.003	0.05586	0.012634	0.004662	0	0.012	0.13034	1168.019	2918.105	0	0.000619	0.046726	0	0.183596	0.458685	0	0.013326	1.005998	0	0	0	0	0	0.01517	1.145252	0	0	0	0	0	0	0.144624	15.89472	0	0.011035	0.027569	0
Marin	2025	SBUS	Aggregate	Aggregate	Gasoline	39.66615	1892.883	158.6646	0.44065	0.92653	0.539792	0.001408	0	0.00064	0.002	0.3192	0.001532	0	0.000696	0.008	0.7448	817.9035	2449.998	46.5566	0.011515	2.460748	0.057364	0.024045	0.091036	0.051893	0.056496	10.64152	0.327492	0.046803	0.293044	0.007807	0.015796	0.082439	15.52808	0.358563	0.046803	0.293044	0.007807	0.015796	1.270129	82.24088	8.481409	0.008094	0.024245	0.000461
Marin	2025	SBUS	Aggregate	Aggregate	Diesel	151.2833	4754.002	1745.788	7.709537	49.02177	0.730127	0.044601	0.050882	0	0.003	0.3192	0.046617	0.053183	0	0.012	0.7448	1116.957	3660.32	0	0.005219	0.012069	0	0.17557	0.575351	0	0.112365	0.259852	0	0	0	0	0	0.127919	0.295822	0	0	0	0	0	0	0.302606	5.520465	0	0.010552	0.034581	0
Marin	2025	UBUS	Aggregate	Aggregate	Gasoline	35.82975	3319.708	143.319	0.214749	0	0.675379	0.00218	0	0.000724	0.002959	0.055135	0.002371	0	0.000788	0.011836	0.128648	1890.401	0	71.67596	0.006795	0	0.085347	0.020016	0	0.062651	0.022121	0	0.358641	0.02875	0.138093	0.005844	0.009171	0.032278	0	0.392667	0.02875	0.138093	0.005844	0.009171	0.302808	0	7.019814	0.018707	0	0.000709
Marin	2025	UBUS	Aggregate	Aggregate	Diesel	54.97159	2424.219	219.8864	0.722949	0	0	0.005162	0	0	0.00702	0.036163	0.005395	0	0	0.028079	0.08438	1428.35	0	0	0.067301	0	0	0.224517	0	0	0.000962	0	0	0	0	0	0	0.068685	0	0	0	0	0	0	0.112627	0	0	0.013503	0	0
Marin	2025	UBUS	Aggregate	Aggregate	Natural Ga	14.58313	739.9012	58.33254	0.483983	0	0	0.003151	0	0	0.008322	0.029783	0.003294	0	0	0.033287	0.069495	1997.574	0	0	6.323431	0	0	0.407219	0	0	0.090349	0	0	0	0	0	0	6.455525	0	0	0	0	0	0	49.03158	0	0	0	0	0

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: County
Region: Marin
Calendar Year: 2026
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	VMT	Trips	NOx_RUNE	NOx_IDLE	NOx_STRE	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PMB	PM2.5_PMT	PM10_RUP	PM10_IDLE	PM10_STR	PM10_PMB	PM10_PMT	CO2_RUNE	CO2_IDLEX	CO2_STRE	CH4_RUNE	CH4_IDLEX	CH4_STRE	N2O_RUNE	N2O_IDLEX	N2O_STRE	ROG_RUNI	ROG_IDLEX	ROG_STRE	ROG_HOTS	ROG_RUNI	ROG_RESTL	ROG_DIUR	TOG_RUNE	TOG_IDLEX	TOG_STRE	TOG_HOTS	TOG_RUNI	TOG_RESTL	TOG_DIUR	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Marin	2026	HHDT	Aggregate	Aggregate	Gasoline	2.369563	271.7504	47.41022	3.414633	0	0.004401	0.000763	0	0.000256	0.005	0.02646	0.00083	0	0.000278	0.02	0.06174	2040.462	0	44.48608	0.078695	0	0.000164	0.141553	0	0.000195	0.355529	0	0.000858	0.050663	0.264697	0.01433	0.021225	0.518787	0	0.000939	0.050663	0.264697	0.01433	0.021225	31.10907	0	3.688151	0.020192	0	0.00044
Marin	2026	HHDT	Aggregate	Aggregate	Diesel	926.5049	90543.13	8267.453	2.902296	48.90358	2.5193	0.0237	0.029414	0	0.008855	0.026035	0.024772	0.030744	0	0.035421	0.060748	1372.613	8804.719	0	0.001186	0.173081	0	0.215756	1.383979	0	0.025531	3.726385	0	0	0	0	0	0.029065	4.242206	0	0	0	0	0	0	0.242895	53.74665	0	0.012968	0.083183	0
Marin	2026	HHDT	Aggregate	Aggregate	Natural Ga	65.09346	2655.012	253.8645	1.018818	19.46911	0	0.004169	0.02013	0	0.009	0.02646	0.004357	0.02104	0	0.036	0.06174	3028.351	3820.056	0	3.293549	1.210254	0	0.617349	0.778743	0	0.10268	0.031286	0	0	0	0	0	3.424682	1.251097	0	0	0	0	0	0	10.97522	21.93429	0	0	0	0
Marin	2026	LDA	Aggregate	Aggregate	Gasoline	137264.4	4404067	645321.1	0.028695	0	0.162546	0.001171	0	0.001571	0.002	0.01575	0.001274	0	0.001708	0.008	0.03675	235.4439	0	49.64375	0.001629	0	0.042124	0.003626	0	0.02297	0.006075	0	0.186009	0.088969	0.20718	0.154633	0.157447	0.488865	0	0.203656	0.088969	0.20718	0.154633	0.157447	0.484087	0	2.100572	0.00233	0	0.000491
Marin	2026	LDA	Aggregate	Aggregate	Diesel	2190.831	66194.96	10092.53	0.061137	0	0	0.005789	0	0	0	0.01575	0.006051	0	0	0.008	0.03675	200.3707	0	0	0.000581	0	0	0.031495	0	0	0.012518	0	0	0	0	0	0	0.014251	0	0	0	0	0	0	0.21622	0	0	0.001894	0	0
Marin	2026	LDA	Aggregate	Aggregate	Electricity	5615.594	226155.3	27340.79	0	0	0	0	0	0	0	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0
Marin	2026	LDT1	Aggregate	Aggregate	Gasoline	16207.16	499806.8	74328.81	0.054172	0	0.211311	0.001357	0	0.001848	0.002	0.01575	0.001475	0	0.00201	0.008	0.03675	279.184	0	59.26707	0.002745	0	0.054641	0.005033	0	0.025674	0.01142	0	0.263306	0.152487	0.580846	0.29169	0.313031	0.016663	0	0.288287	0.152487	0.580846	0.29169	0.313031	0.670353	0	2.232143	0.002763	0	0.000586
Marin	2026	LDT1	Aggregate	Aggregate	Diesel	7.126501	91.94383	22.71114	0.807849	0	0	0.115359	0	0	0.002	0.01575	0.120575	0	0	0.008	0.03675	384.5969	0	0	0.007369	0	0	0.060453	0	0	0.15866	0	0	0	0	0	0	0.180624	0	0	0	0	0	0	1.032732	0	0	0.003636	0	0
Marin	2026	LDT1	Aggregate	Aggregate	Electricity	245.8693	10534.81	1220.691	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0
Marin	2026	LDT2	Aggregate	Aggregate	Gasoline	52049.34	1631740	241078.3	0.046449	0	0.229892	0.001187	0	0.001554	0.002	0.01575	0.001291	0	0.00169	0.008	0.03675	294.7538	0	63.62435	0.002344	0	0.057663	0.004575	0	0.028041	0.009026	0	0.263566	0.116599	0.434407	0.269274	0.250948	0.01317	0	0.288572	0.116599	0.434407	0.269274	0.250948	0.597913	0	2.669172	0.002917	0	0.00063
Marin	2026	LDT2	Aggregate	Aggregate	Diesel	604.8215	19576.1	2846.232	0.033795	0	0	0.004423	0	0	0.002	0.01575	0.004623	0	0	0.008	0.03675	279.1737	0	0	0.000657	0	0	0.043882	0	0	0.014135	0	0	0	0	0	0	0.016092	0	0	0	0	0	0	0.147213	0	0	0.002639	0	0
Marin	2026	LDT2	Aggregate	Aggregate	Electricity	979.9887	28966.74	4860.641	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0
Marin	2026	LHDT1	Aggregate	Aggregate	Gasoline	3372.919	114485	50251.46	0.182271	0.03487	0.466241	0.002208	0	0.000386	0.002	0.03276	0.002402	0	0.000419	0.008	0.07644	958.9806	116.9331	18.43725	0.008728	0.112302	0.021121	0.011118	0.002977	0.037705	0.042209	0.39944	0.106836	0.121594	0.939466	0.024247	0.041932	0.061591	0.582863	0.116972	0.121594	0.939466	0.024247	0.041932	0.815749	3.754679	1.717321	0.00949	0.001157	0.000182
Marin	2026	LHDT1	Aggregate	Aggregate	Diesel	2909.086	103899.9	36592.64	1.24575	1.797474	0	0.01872	0.026509	0	0.003	0.03276	0.019567	0.027708	0	0.012	0.07644	520.0858	128.4423	0	0.007037	0.005098	0	0.08175	0.020189	0	0.151494	0.10976	0	0	0	0	0	0.172466	0.124954	0	0	0	0	0	0	0.6728	0.909745	0	0.004917	0.001214	0
Marin	2026	LHDT2	Aggregate	Aggregate	Gasoline	475.6633	16332.87	7086.674	0.158198	0.034259	0.465925	0.001956	0	0.000303	0.002	0.03822	0.002127	0	0.00033	0.008	0.08918	1091.543	133.9407	20.74272	0.005437	0.112071	0.019717	0.01065	0.002929	0.037561	0.02323	0.392965	0.096841	0.095858	0.574934	0.019476	0.031715	0.033897	0.573414	0.106029	0.095858	0.574934	0.019476	0.031715	0.441382	3.767672	1.610245	0.010802	0.001325	0.000205
Marin	2026	LHDT2	Aggregate	Aggregate	Diesel	1011.582	37022.14	12724.43	0.793706	1.682181	0	0.018921	0.026779	0	0.003	0.03822	0.019776	0.027989	0	0.012	0.08918	576.914	203.1835	0	0.006443	0.005098	0	0.090683	0.031938	0	0.138723	0.10976	0	0	0	0	0	0.157927	0.124954	0	0	0	0	0	0	0.605517	0.909745	0	0.005454	0.001921	0
Marin	2026	MCY	Aggregate	Aggregate	Gasoline	7315.392	50937.17	14630.78	1.180767	0	0.27489	0.002025	0	0.002983	0.001	0.00504	0.002167	0	0.003172	0.004	0.01176	217.6794	0	61.30627	0.339381	0	0.258455	0.067404	0	0.015412	2.299672	0	1.985297	0.721626	2.092083	0.939947	1.558971	2.856662	0	2.16079	0.721626	2.092083	0.939947	1.558971	20.08316	0	9.192938	0.002154	0	0.000607
Marin	2026	MDV	Aggregate	Aggregate	Gasoline	31006.61	949200	143227.8	0.053002	0	0.252418	0.001194	0	0.001603	0.002	0.01575	0.001299	0	0.001744	0.008	0.03675	354.9009	0	76.63752	0.002648	0	0.062798	0.00502	0	0.028756	0.01047	0	0.298289	0.123789	0.431364	0.300571	0.276666	0.015276	0	0.326589	0.123789	0.431364	0.300571	0.276666	0.627385	0	2.850441	0.003512	0	0.000758
Marin	2026	MDV	Aggregate	Aggregate	Diesel	1239.975	39005.81	5812.896	0.033292	0	0	0.003792	0	0	0.002	0.01575	0.003964	0	0	0.008	0.03675	361.2782	0	0	0.000472	0	0	0.056788	0	0	0.010168	0	0	0	0	0	0	0.011575	0	0	0	0	0	0	0.207763	0	0	0.003415	0	0
Marin	2026	MDV	Aggregate	Aggregate	Electricity	578.0956	17803.73	2906.499	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0
Marin	2026	MH	Aggregate	Aggregate	Gasoline	490.8885	4884.557	49.10848	0.26016	0	0.336176	0.001403	0	0.000311	0.003	0.05586	0.001526	0	0.000339	0.012	0.13034	1634.842	0	24.25285	0.008803	0	0.030262	0.018953	0	0.037029	0.034594	0	0.120991	0.060853	1.389558	0.025075	0.062377	0.050479	0	0.13247	0.060853	1.389558	0.025075	0.062377	0.771367	0	2.67844	0.016178	0	0.00024
Marin	2026	MH	Aggregate	Aggregate	Diesel	241.2996	2223.271	24.12996	3.619385	0	0	0.069906	0	0	0.004	0.05586	0.073067	0	0	0.016	0.13034	973.7898	0	0	0.004593	0	0	0.153066	0	0	0.098894	0	0	0	0	0	0	0.112584	0	0	0	0	0	0	0.337035	0	0	0.009206	0	0
Marin	2026	MHDT	Aggregate	Aggregate	Gasoline	355.8992	18748.27	7120.831	0.273876	0.089044	0.354565	0.001229	0	0.000392	0.003	0.05586	0.001337	0	0.000426	0.012	0.13034	1627.265	511.5007	36.45876	0.008292	0.272049	0.036632	0.015708	0.008011	0.029807	0.038877	1.021023	0.19079	0.072369	0.415921	0.015785	0.025265	0.056729	1.489874	0.208891	0.072369	0.415921	0.015785	0.025265	0.865542	15.21292	4.150286	0.016103	0.005062	0.000361
Marin	2026	MHDT	Aggregate	Aggregate	Diesel	1468.941	72709.51	13045.24	1.709891	8.118667	2.162548	0.007921	0.005618	0	0.003	0.05586	0.008279	0.005872	0	0.012	0.13034	977.0442	1189.735	0	0.000566	0.004657	0	0.153578	0.18701	0	0.012192	0.100269	0	0	0	0	0	0.01388	0.114149	0	0	0	0	0	0	0.118477	3.684595	0	0.009231	0.01124	0
Marin	2026	OBUS	Aggregate	Aggregate	Gasoline	120.8112	5571.225	2417.191	0.327656	0.065207	0.317425	0.001061	0	0.000226	0.003	0.05586	0.001153	0	0.000246	0.012	0.13034	1684.873	366.6976	25.49491	0.009528	0.201832	0.028957	0.01808	0.005755	0.026231	0.044076	0.748486	0.148054	0.029696	0.350037	0.016472	0.032886	0.064316	1.092188	0.162101	0.029696	0.350037	0.016472	0.032886	0.949863	5.787884	3.116139	0.016673	0.003629	0.000252
Marin	2026	OBUS	Aggregate	Aggregate	Diesel	54.8724	4289.533	542.096	1.830235	13.43713	2.21928	0.011808	0.0044	0	0.003	0.05586	0.012342	0.004599	0	0.012	0.13034	1139.659	2839.172	0	0.000612	0.046014	0	0.179138	0.446278	0	0.013185	0.990678	0	0	0	0	0	0.01501	1.127811	0	0	0	0	0	0	0.143504	15.67363	0	0.010767	0.026823	0
Marin	2026	SBUS	Aggregate	Aggregate	Gasoline	42.37995	1999.826	169.5198	0.424781	0.92653	0.548029	0.001413	0	0.000642	0.002	0.3192	0.001537	0	0.000698	0.008	0.7448	809.961	2428.266	46.01114	0.010782	2.459701	0.057044	0.023405	0.091189	0.052484	0.052826	10.64152	0.325486	0.049609	0.312894	0.008434	0.016925	0.077083	15.52808	0.356366	0.049609	0.312894	0.008434	0.016925	1.184546	82.24088	8.334575	0.008015	0.02403	0.000455
Marin	2026	SBUS	Aggregate	Aggregate	Diesel	151.5256	4768.747	1748.584	7.343755	47.46677	0.800619	0.043003	0.047556	0	0.003	0.3192	0.044947	0.049706	0	0.012	0.7448	1102.936	3625.295	0	0.005059	0.012008	0	0.173366	0.569846	0	0.108928	0.258524	0	0	0	0	0	0.124006	0.29431	0	0	0	0	0	0	0.297323	5.80297	0	0.010142	0.03425	0
Marin	2026	UBUS	Aggregate	Aggregate	Gasoline	35.84601	3321.215	143.384	0.239583	0	0.672493	0.002196	0	0.000752	0.002959	0.055135	0.002388	0	0.000818	0.011836	0.128648	1882.693	0	70.47903	0.006746	0	0.088002	0.021651	0	0.061963	0.022011	0	0.369579	0.020955	0.118495	0.003915	0.006733	0.032118	0	0.404642	0.020955	0.118495	0.003915	0.006733	0.323661	0	7.157297	0.018631	0	0.000697
Marin	2026	UBUS	Aggregate	Aggregate	Diesel	52.9566	2362.693	211.8264	0.729097	0	0	0.005199	0	0	0.007126	0.035641	0.005434	0	0	0.028506	0.083161	1425.757	0	0	0.068069	0	0	0.224109	0	0	0.000973	0	0	0	0	0	0	0.069469	0	0	0	0	0	0	0.114053	0	0	0.013479	0	0
Marin	2026	UBUS	Aggregate	Aggregate	Natural Ga	16.6297	802.8628	66.51879	0.469447	0	0	0.003064	0	0	0.007907	0.031818	0.003203	0	0	0.031627	0.074241	1946.761	0	0	6.07873	0	0	0.39686	0	0	0.086853	0	0	0	0	0	0	6.20379	0	0	0	0	0	0	46.93563	0	0	0	0	0

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: County
Region: Marin
Calendar Year: 2030
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	VMT	Trips	NOx_RUNE	NOx_IDLE	NOx_STRE	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PMB	PM2.5_PMT	PM10_RUP	PM10_IDLE	PM10_STR	PM10_PMB	PM10_PMT	CO2_RUNE	CO2_IDLEX	CO2_STRE	CH4_RUNE	CH4_IDLEX	CH4_STRE	N2O_RUNE	N2O_IDLEX	N2O_STRE	ROG_RUNI	ROG_IDLEX	ROG_STRE	ROG_HOTS	ROG_RUNI	ROG_REST	ROG_DIUR	TOG_RUNE	TOG_IDLEX	TOG_STRE	TOG_HOTS	TOG_RUNI	TOG_RESTI	TOG_DIUR	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Marin	2030	HHDT	Aggregate	Aggregate	Gasoline	2.188396	232.2581	43.78544	3.15732	0	0.004206	0.000906	0	0.000294	0.005	0.02646	0.000986	0	0.000319	0.02	0.06174	1849.858	0	42.66901	0.073706	0	0.000181	0.135198	0	0.000205	0.328494	0	0.000942	0.057658	0.304966	0.016432	0.023242	0.479338	0	0.001031	0.057658	0.304966	0.016432	0.023242	30.28884	0	4.142088	0.018306	0	0.000422
Marin	2030	HHDT	Aggregate	Aggregate	Diesel	992.1764	97276.08	8830.389	2.663596	46.62899	2.582814	0.022233	0.021602	0	0.008862	0.026053	0.023238	0.022579	0	0.035447	0.060791	1234.74	8066.419	0	0.001105	0.170833	0	0.194084	1.267929	0	0.023801	3.677979	0	0	0	0	0.027095	4.187099	0	0	0	0	0	0	0.240197	53.65216	0	0.011665	0.076208	0
Marin	2030	HHDT	Aggregate	Aggregate	Natural Ga	65.05417	2653.498	253.7113	0.7777	18.87893	0	0.003637	0.01532	0	0	0.009	0.02646	0.003802	0.016012	0	0.036	0.06174	2894.331	3644.734	0	3.206631	1.192338	0	0.590028	0.743003	0	0.082406	0.026249	0	0	0	0	3.314292	1.227366	0	0	0	0	0	0	11.05836	22.00204	0	0	0	0
Marin	2030	LDA	Aggregate	Aggregate	Gasoline	144353.5	4455419	677803	0.022422	0	0.138397	0.000912	0	0.001266	0.002	0.01575	0.000992	0	0.001377	0.008	0.03675	215.4485	0	45.12003	0.001137	0	0.032406	0.003185	0	0.020615	0.003988	0	0.137321	0.071671	0.186702	0.124484	0.124412	0.416093	0	1.85101	0.002132	0	0.000446
Marin	2030	LDA	Aggregate	Aggregate	Diesel	2046.802	60847.29	9518.155	0.027878	0	0	0.002595	0	0	0.002	0.01575	0.002712	0	0	0.008	0.03675	181.4714	0	0	0.000359	0	0	0.028525	0	0	0.007724	0	0	0	0	0	0.008793	0	0	0	0	0	0	0.175472	0	0	0.001716	0	0
Marin	2030	LDA	Aggregate	Aggregate	Electricity	7248.325	275925.8	35024.95	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0	0	0	0	0	0	0	0
Marin	2030	LDT1	Aggregate	Aggregate	Gasoline	16964.77	505434.2	77868.37	0.034441	0	0.169458	0.001034	0	0.001442	0.002	0.01575	0.001125	0	0.001569	0.008	0.03675	255.8676	0	53.9808	0.001684	0	0.039913	0.003897	0	0.022807	0.006544	0	0.181214	0.113416	0.436698	0.223169	0.227929	0.00955	0	0.198406	0.113416	0.436698	0.223169	0.227929	0.504751	0	1.961025	0.002532	0	0.000534
Marin	2030	LDT1	Aggregate	Aggregate	Diesel	2.624735	64.32571	10.84799	0.184627	0	0	0.02285	0	0	0.002	0.01575	0.023884	0	0	0.008	0.03675	331.9732	0	0	0.002018	0	0	0.052182	0	0	0.043449	0	0	0	0	0	0.049463	0	0	0	0	0	0	0.35984	0	0	0.003138	0	0
Marin	2030	LDT1	Aggregate	Aggregate	Electricity	386.6936	15334.93	1893.963	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0	0	0	0	0	0	0	0
Marin	2030	LDT2	Aggregate	Aggregate	Gasoline	53235.98	1600239	245703.3	0.032758	0	0.18361	0.000966	0	0.001316	0.002	0.01575	0.001051	0	0.001432	0.008	0.03675	263.4211	0	56.94227	0.001685	0	0.045668	0.003723	0	0.024228	0.00618	0	0.202148	0.099916	0.382645	0.244419	0.223158	0.009017	0	0.221327	0.099916	0.382645	0.244419	0.223158	0.509041	0	2.42399	0.002607	0	0.000563
Marin	2030	LDT2	Aggregate	Aggregate	Diesel	606.7802	18342.98	2820.445	0.029564	0	0	0.004055	0	0	0.002	0.01575	0.004238	0	0	0.008	0.03675	253.6579	0	0	0.000636	0	0	0.039871	0	0	0.013693	0	0	0	0	0	0.015588	0	0	0	0	0	0	0.147163	0	0	0.002398	0	0
Marin	2030	LDT2	Aggregate	Aggregate	Electricity	1481.148	40311.82	7234.903	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0	0	0	0	0	0	0	0
Marin	2030	LHDT1	Aggregate	Aggregate	Gasoline	3367.256	111828.8	50167.1	0.116739	0.031315	0.403843	0.002143	0	0.000353	0.002	0.03276	0.00233	0	0.000384	0.008	0.07644	904.7971	111.4932	17.56606	0.005146	0.10368	0.016724	0.007768	0.002829	0.034504	0.022557	0.358983	0.082047	0.10917	0.945582	0.021375	0.035323	0.032915	0.523827	0.089831	0.10917	0.945582	0.021375	0.035323	0.452465	3.76382	1.592073	0.008954	0.001103	0.000174
Marin	2030	LHDT1	Aggregate	Aggregate	Diesel	3078.897	105913.4	38728.65	0.740931	1.495352	0	0.014144	0.02624	0	0.003	0.03276	0.014783	0.027427	0	0.012	0.07644	488.5145	121.2988	0	0.006485	0.005098	0	0.076788	0.019066	0	0.139628	0.10976	0	0	0	0	0.158957	0.124954	0	0	0	0	0	0	0.629833	0.909745	0	0.004618	0.001147	0
Marin	2030	LHDT2	Aggregate	Aggregate	Gasoline	488.7851	16334.66	7282.17	0.09958	0.030821	0.403779	0.001947	0	0.00029	0.002	0.03822	0.002117	0	0.000316	0.008	0.08918	1030.699	127.5441	19.76115	0.003411	0.103512	0.015488	0.007501	0.002789	0.034445	0.01312	0.353769	0.073393	0.07701	0.443912	0.017214	0.026117	0.019145	0.516219	0.080356	0.07701	0.443912	0.017214	0.026117	0.260364	3.77544	1.489121	0.0102	0.001262	0.000196
Marin	2030	LHDT2	Aggregate	Aggregate	Diesel	1143.253	39392.31	14380.69	0.508134	1.412164	0	0.017873	0.026776	0	0.003	0.03822	0.018681	0.027986	0	0.012	0.08918	543.8639	192.5606	0	0.006196	0.005098	0	0.085488	0.030268	0	0.133406	0.10976	0	0	0	0	0.151874	0.124954	0	0	0	0	0	0	0.597046	0.909745	0	0.005141	0.00182	0
Marin	2030	MCY	Aggregate	Aggregate	Gasoline	7565.494	50707.28	15130.99	1.173097	0	0.274089	0.002072	0	0.002732	0.001	0.00504	0.002221	0	0.002917	0.004	0.01176	217.2106	0	60.17452	0.334663	0	0.253258	0.067051	0	0.015413	2.251166	0	1.936167	0.662478	1.634824	0.905554	1.531205	19.24408	0	9.305814	0.002149	0	0.000595
Marin	2030	MDV	Aggregate	Aggregate	Gasoline	32365.63	953331	149235.6	0.035379	0	0.193985	0.000962	0	0.001333	0.002	0.01575	0.001046	0	0.00145	0.008	0.03675	317.9376	0	68.53386	0.001807	0	0.047982	0.003911	0	0.024583	0.006762	0	0.218412	0.107637	0.38138	0.281367	0.255649	0.009867	0	0.239133	0.107637	0.38138	0.281367	0.255649	0.518076	0	2.503384	0.003146	0	0.000678
Marin	2030	MDV	Aggregate	Aggregate	Diesel	1281.143	37800.1	5939.904	0.021529	0	0	0.002579	0	0	0.002	0.01575	0.002696	0	0	0.008	0.03675	328.2328	0	0	0.000374	0	0	0.051594	0	0	0.008049	0	0	0	0	0	0.009163	0	0	0	0	0	0	0.190343	0	0	0.003103	0	0
Marin	2030	MDV	Aggregate	Aggregate	Electricity	968.205	27140.57	4777.078	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0	0	0	0	0	0	0	0
Marin	2030	MH	Aggregate	Aggregate	Gasoline	491.3825	4909.494	49.15791	0.169641	0	0.340385	0.001301	0	0.000287	0.003	0.05586	0.001415	0	0.000312	0.012	0.13034	1532.796	0	22.65887	0.005526	0	0.02871	0.015121	0	0.038872	0.018404	0	0.109379	0.040765	0.786992	0.019036	0.043617	0.026855	0	0.119757	0.040765	0.786992	0.019036	0.043617	0.333444	0	2.416476	0.015168	0	0.000224
Marin	2030	MH	Aggregate	Aggregate	Diesel	257.1775	2266.102	25.71775	3.242828	0	0	0.054149	0	0	0.004	0.05586	0.056597	0	0	0.016	0.13034	925.3229	0	0	0.004224	0	0	0.145448	0	0	0.090938	0	0	0	0	0	0.103527	0	0	0	0	0	0	0.298469	0	0	0.008748	0	0
Marin	2030	MHDT	Aggregate	Aggregate	Gasoline	382.3255	19801.41	7649.569	0.158832	0.089337	0.339222	0.001254	0	0.000382	0.003	0.05586	0.001364	0	0.000415	0.012	0.13034	1526.696	484.2502	33.76061	0.004836	0.276984	0.033723	0.011305	0.008327	0.030325	0.02073	1.025366	0.168285	0.060605	0.325732	0.014125	0.021148	0.03025	1.496212	0.184251	0.060605	0.325732	0.014125	0.021148	0.430115	15.26345	3.540298	0.015108	0.004792	0.000334
Marin	2030	MHDT	Aggregate	Aggregate	Diesel	1608.021	75158.44	14171.86	1.684022	7.050353	2.195334	0.007748	0.003455	0	0.003	0.05586	0.008098	0.003612	0	0.012	0.13034	919.2664	1122.903	0	0.000535	0.004548	0	0.144496	0.176505	0	0.011509	0.097925	0	0	0	0	0.013102	0.11148	0	0	0	0	0	0	0.119483	3.859444	0	0.008685	0.010609	0
Marin	2030	OBUS	Aggregate	Aggregate	Gasoline	116.0852	4986.418	2322.633	0.232601	0.06522	0.31474	0.001157	0	0.000242	0.003	0.05586	0.001258	0	0.000264	0.012	0.13034	1579.034	351.864	24.3268	0.006786	0.201004	0.027751	0.014251	0.005758	0.02621	0.030455	0.74868	0.14143	0.031695	0.383477	0.018133	0.035766	0.044439	1.092472	0.154848	0.031695	0.383477	0.018133	0.035766	0.645223	5.789064	2.923146	0.015626	0.003482	0.000241
Marin	2030	OBUS	Aggregate	Aggregate	Diesel	66.58459	4818.696	653.1198	1.834213	12.93398	2.222609	0.011309	0.004223	0	0.003	0.05586	0.011821	0.004414	0	0.012	0.13034	1057.728	2606.592	0	0.000604	0.043935	0	0.16626	0.40972	0	0.012997	0.945917	0	0	0	0	0.014796	1.076854	0	0	0	0	0	0	0.14288	15.02768	0	0.009993	0.024626	0
Marin	2030	SBUS	Aggregate	Aggregate	Gasoline	53.11862	2417.489	212.4745	0.334932	0.92653	0.558713	0.001426	0	0.000648	0.002	0.3192	0.001551	0	0.000705	0.008	0.7448	779.964	2346.049	44.13699	0.008326	2.456124	0.055426	0.02013	0.092276	0.053356	0.04041	10.64152	0.314259	0.060651	0.390736	0.010961	0.021472	0.058967	15.52808	0.344074	0.060651	0.390736	0.010961	0.021472	0.891563	82.24088	7.906274	0.007718	0.023216	0.000437
Marin	2030	SBUS	Aggregate	Aggregate	Diesel	147.9348	4689.516	1707.147	5.436889	39.20963	1.156977	0.03403	0.032854	0	0.003	0.3192	0.035569	0.03434	0	0.012	0.7448	1030.671	3427.55	0	0.003986	0.011983	0	0.162007	0.538763	0	0.085817	0.257985	0	0	0	0	0.097696	0.293696	0	0	0	0	0	0	0.255878	7.260174	0	0.009737	0.032382	0
Marin	2030	UBUS	Aggregate	Aggregate	Gasoline	35.91106	3327.242	143.6443	0.273244	0	0.674036	0.002207	0	0.000758	0.002959	0.055135	0.002401	0	0.000825	0.011836	0.128648	1785.665	0	66.85533	0.006699	0	0.091049	0.023694	0	0.061278	0.02191	0	0.381991	0.024899	0.127294	0.004583	0.007598	0.031971	0	0.418232	0.024899	0.127294	0.004583	0.007598	0.350053	0	7.029465	0.017671	0	0.000662
Marin	2030	UBUS	Aggregate	Aggregate	Diesel	49.65075	2258.666	198.603	0.740514	0	0	0.005269	0	0	0.007324	0.034671	0.005507	0	0	0.029297	0.080899	1420.941	0	0	0.069495	0	0	0.223352	0	0	0.000993	0	0	0	0	0	0.070925	0	0	0	0	0	0	0.116702	0	0	0.013433	0	0
Marin	2030	UBUS	Aggregate	Aggregate	Natural Ga	20.06183	912.6345	80.24734	0.449054	0	0	0.002943	0	0	0.007324	0.034671	0.003076	0	0	0.029297	0.080899	1875.478	0	0	5.735455	0	0	0.382328	0	0	0.081948	0	0	0	0	0	5.853453	0	0	0	0	0	0	43.99535	0	0	0	0	0

Attachment 4: Community Risk Modeling Information and Calculations

CT-EMFAC2017 Emissions Factors for U.S. 101

File Name: Habitat Redwood Blvd - Marin (SF) - 2026 - Annual.EF
CT-EMFAC2017 Version: 1.0.2.27401
Run Date: 12/21/2020 14:46
Area: Marin (SF)
Analysis Year: 2026
Season: Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category	Gas VMT Fraction Within Category
Truck 1	0.024	0.519	0.481
Truck 2	0.02	0.876	0.103
Non-Truck	0.956	0.017	0.947

Road Type:	Freeway	
Silt Loading Factor:	CARB	0.015 g/m2
Precipitation Correction	CARB	P = 66 days N = 365 days

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph
PM2.5	0.008537	0.005585	0.003816	0.002744	0.00209	0.001689	0.001448	0.001317	0.001267	0.001284	0.001364	0.001508	0.001726	0.001825
TOG	0.187907	0.123513	0.082293	0.057599	0.043351	0.034481	0.028815	0.025293	0.023326	0.022609	0.023041	0.02473	0.027928	0.030252
Diesel PM	0.001156	0.000936	0.000727	0.000578	0.00049	0.000442	0.000424	0.000429	0.000457	0.000505	0.000572	0.000655	0.000749	0.000749

Fleet Average Running Loss Emission Factors (grams/veh-hour)

Pollutant Name	Emission Factor
TOG	1.386896

Fleet Average Tire Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.002092

Fleet Average Brake Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.016977

Fleet Average Road Dust Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.007525

END

U.S. 101 Traffic Emissions and Health Risk Calculations – Project Receptors

Analysis Year = ***2026***

Vehicle Type	2019 Caltrans Vehicles (veh/day)	2026 Vehicles (veh/day)
Truck 1 (MDT)	2,016	2,157
Truck 2 (HDT)	1,724	1,844
Non-Truck	81,260	86,948
Total	**85,000**	**90,950**
Increase From 2019		1.07
Vehicles/Direction		**45,475**
Avg Vehicles/Hour/Direction		1,895

Traffic Data Year = ***2019***

Caltrans AADT (2019) & Truck %s (2019)	AADT Total	Total Truck	Trucks by Axle			
			2	3	4	5
US 101, A Anotherton Avenue	85,000	3,740	2,016	372	209	1,143
US 101, A Novato, Jct Rte 37 East			53.91%	9.94%	5.58%	30.57%
Percent of Total Vehicles		4.40%	2.37%	0.44%	0.25%	1.35%

Traffic Increase per Year (%) = *1.00%*

Habitat Redwood Blvd, Novato, CA - On- and Off-site Residential Receptors
Cumulative Operation - U.S. Highway 101
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2026

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
DPM_NB_101	U.S. 101 Northbound	NB	3	1014.8	0.63	17.0	55.7	3.4	Variable	45,475
DPM_SB_101	U.S. 101 Southbound	SB	3	1016.4	0.63	17.0	55.7	3.4	Variable	45,475
									Total	90,950

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	65	30	45	
Emissions per Vehicle (g/VMT)	0.000749	0.000442	0.000457	

Emisson Factors from CT-EMFAC2017

2026 Hourly Traffic Volumes and DPM Emissions - DPM_NB_101

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.10%	501	6.58E-05	9	5.36%	2438	3.20E-04	17	6.83%	3107	2.41E-04
2	0.62%	282	3.70E-05	10	5.51%	2505	3.29E-04	18	6.74%	3066	2.37E-04
3	0.46%	210	2.76E-05	11	5.74%	2609	3.42E-04	19	6.06%	2757	3.62E-04
4	0.47%	216	2.83E-05	12	5.92%	2691	3.53E-04	20	5.14%	2338	3.07E-04
5	0.89%	405	5.32E-05	13	6.10%	2776	3.64E-04	21	4.32%	1964	2.58E-04
6	2.02%	921	1.21E-04	14	6.24%	2838	3.72E-04	22	3.74%	1701	2.23E-04
7	3.49%	1588	2.08E-04	15	6.69%	3041	3.99E-04	23	2.91%	1324	1.74E-04
8	4.91%	2233	2.93E-04	16	6.78%	3085	4.05E-04	24	1.93%	879	1.15E-04
								Total		45,475	

2026 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_SB_101

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	502	6.60E-05	9	5.36%	2438	1.95E-04	17	6.83%	3106	4.08E-04
2	0.62%	282	3.71E-05	10	5.51%	2505	3.29E-04	18	6.74%	3066	4.03E-04
3	0.46%	210	2.76E-05	11	5.74%	2609	3.43E-04	19	6.06%	2757	3.62E-04
4	0.47%	216	2.83E-05	12	5.92%	2692	3.54E-04	20	5.14%	2338	3.07E-04
5	0.89%	405	5.33E-05	13	6.10%	2776	3.65E-04	21	4.32%	1965	2.58E-04
6	2.02%	921	1.21E-04	14	6.24%	2838	3.73E-04	22	3.74%	1701	2.23E-04
7	3.49%	1588	2.09E-04	15	6.69%	3041	4.00E-04	23	2.91%	1324	1.74E-04
8	4.91%	2233	1.79E-04	16	6.78%	3084	4.05E-04	24	1.93%	879	1.16E-04
								Total		45,475	

Habitat Redwood Blvd, Novato, CA - On- and Off-site Residential Receptors
Cumulative Operation - U.S. Highway 101
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2026

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
PM2.5_NB_101	U.S. 101 Northbound	NB	3	1014.8	0.63	17.0	56	1.3	Variable	45,475
PM2.5_SB_101	U.S. 101 Southbound	SB	3	1016.4	0.63	17.0	56	1.3	Variable	45,475
									Total	90,950

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	65	30	45	
Emissions per Vehicle (g/VMT)	0.001726	0.00169	0.001267	

Emisson Factors from CT-EMFAC2017

2026 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_NB_101

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.10%	501	1.52E-04	9	5.36%	2438	7.37E-04	17	6.83%	3107	9.19E-04
2	0.62%	282	8.53E-05	10	5.51%	2505	7.57E-04	18	6.74%	3066	9.07E-04
3	0.46%	210	6.36E-05	11	5.74%	2609	7.89E-04	19	6.06%	2757	8.34E-04
4	0.47%	216	6.52E-05	12	5.92%	2691	8.14E-04	20	5.14%	2338	7.07E-04
5	0.89%	405	1.23E-04	13	6.10%	2776	8.39E-04	21	4.32%	1964	5.94E-04
6	2.02%	921	2.78E-04	14	6.24%	2838	8.58E-04	22	3.74%	1701	5.14E-04
7	3.49%	1588	4.80E-04	15	6.69%	3041	9.19E-04	23	2.91%	1324	4.00E-04
8	4.91%	2233	6.75E-04	16	6.78%	3085	9.33E-04	24	1.93%	879	2.66E-04
								Total		45,475	

2026 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM2.5_SB_101

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	502	1.52E-04	9	5.36%	2438	5.42E-04	17	6.83%	3106	9.41E-04
2	0.62%	282	8.54E-05	10	5.51%	2505	7.59E-04	18	6.74%	3066	9.28E-04
3	0.46%	210	6.37E-05	11	5.74%	2609	7.90E-04	19	6.06%	2757	8.35E-04
4	0.47%	216	6.53E-05	12	5.92%	2692	8.15E-04	20	5.14%	2338	7.08E-04
5	0.89%	405	1.23E-04	13	6.10%	2776	8.41E-04	21	4.32%	1965	5.95E-04
6	2.02%	921	2.79E-04	14	6.24%	2838	8.59E-04	22	3.74%	1701	5.15E-04
7	3.49%	1588	4.81E-04	15	6.69%	3041	9.21E-04	23	2.91%	1324	4.01E-04
8	4.91%	2233	4.96E-04	16	6.78%	3084	9.34E-04	24	1.93%	879	2.66E-04
								Total		45,475	

Habitat Redwood Blvd, Novato, CA - On- and Off-site Residential Receptors
Cumulative Operation - U.S. Highway 101
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2026

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEXH_NB_101	U.S. 101 Northbound	NB	3	1014.8	0.63	17.0	56	1.3	Variable	45,475
TEXH_SB_101	U.S. 101 Southbound	SB	3	1016.4	0.63	17.0	56	1.3	Variable	45,475
									Total	90,950

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	65	30	45	
Emissions per Vehicle (g/VMT)	0.027928	0.034481	0.023326	

Emisson Factors from CT-EMFAC2017

2026 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_NB_101

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.10%	501	2.45E-03	9	5.36%	2438	1.19E-02	17	6.83%	3107	1.88E-02
2	0.62%	282	1.38E-03	10	5.51%	2505	1.23E-02	18	6.74%	3066	1.85E-02
3	0.46%	210	1.03E-03	11	5.74%	2609	1.28E-02	19	6.06%	2757	1.35E-02
4	0.47%	216	1.05E-03	12	5.92%	2691	1.32E-02	20	5.14%	2338	1.14E-02
5	0.89%	405	1.98E-03	13	6.10%	2776	1.36E-02	21	4.32%	1964	9.61E-03
6	2.02%	921	4.50E-03	14	6.24%	2838	1.39E-02	22	3.74%	1701	8.32E-03
7	3.49%	1588	7.77E-03	15	6.69%	3041	1.49E-02	23	2.91%	1324	6.48E-03
8	4.91%	2233	1.09E-02	16	6.78%	3085	1.51E-02	24	1.93%	879	4.30E-03
								Total		45,475	

2026 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_SB_101

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	502	2.46E-03	9	5.36%	2438	9.98E-03	17	6.83%	3106	1.52E-02
2	0.62%	282	1.38E-03	10	5.51%	2505	1.23E-02	18	6.74%	3066	1.50E-02
3	0.46%	210	1.03E-03	11	5.74%	2609	1.28E-02	19	6.06%	2757	1.35E-02
4	0.47%	216	1.06E-03	12	5.92%	2692	1.32E-02	20	5.14%	2338	1.15E-02
5	0.89%	405	1.99E-03	13	6.10%	2776	1.36E-02	21	4.32%	1965	9.63E-03
6	2.02%	921	4.51E-03	14	6.24%	2838	1.39E-02	22	3.74%	1701	8.33E-03
7	3.49%	1588	7.78E-03	15	6.69%	3041	1.49E-02	23	2.91%	1324	6.49E-03
8	4.91%	2233	9.14E-03	16	6.78%	3084	1.51E-02	24	1.93%	879	4.31E-03
								Total		45,475	

Habitat Redwood Blvd, Novato, CA - On- and Off-site Residential Receptors
Cumulative Operation - U.S. Highway 101
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2026

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEVAP_NB_101	U.S. 101 Northbound	NB	3	1014.8	0.63	17.0	56	1.3	Variable	45,475
TEVAP_SB_101	U.S. 101 Southbound	SB	3	1016.4	0.63	17.0	56	1.3	Variable	45,475
									Total	90,950

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	65	30	45	
Emissions per Vehicle per Hour (g/hour)	1.386896	1.386896	1.386896	
Emissions per Vehicle per Mile (g/VMT)	0.021337	0.046230	0.030820	

Emisson Factors from CT-EMFAC2017

2026 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_NB_101

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.10%	501	1.87E-03	9	5.36%	2438	9.11E-03	17	6.83%	3107	2.52E-02
2	0.62%	282	1.05E-03	10	5.51%	2505	9.36E-03	18	6.74%	3066	2.48E-02
3	0.46%	210	7.86E-04	11	5.74%	2609	9.75E-03	19	6.06%	2757	1.03E-02
4	0.47%	216	8.06E-04	12	5.92%	2691	1.01E-02	20	5.14%	2338	8.74E-03
5	0.89%	405	1.51E-03	13	6.10%	2776	1.04E-02	21	4.32%	1964	7.34E-03
6	2.02%	921	3.44E-03	14	6.24%	2838	1.06E-02	22	3.74%	1701	6.36E-03
7	3.49%	1588	5.93E-03	15	6.69%	3041	1.14E-02	23	2.91%	1324	4.95E-03
8	4.91%	2233	8.35E-03	16	6.78%	3085	1.15E-02	24	1.93%	879	3.29E-03
								Total		45,475	

2026 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_SB_101

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	502	1.88E-03	9	5.36%	2438	1.32E-02	17	6.83%	3106	1.16E-02
2	0.62%	282	1.06E-03	10	5.51%	2505	9.38E-03	18	6.74%	3066	1.15E-02
3	0.46%	210	7.87E-04	11	5.74%	2609	9.76E-03	19	6.06%	2757	1.03E-02
4	0.47%	216	8.07E-04	12	5.92%	2692	1.01E-02	20	5.14%	2338	8.75E-03
5	0.89%	405	1.52E-03	13	6.10%	2776	1.04E-02	21	4.32%	1965	7.35E-03
6	2.02%	921	3.45E-03	14	6.24%	2838	1.06E-02	22	3.74%	1701	6.37E-03
7	3.49%	1588	5.94E-03	15	6.69%	3041	1.14E-02	23	2.91%	1324	4.96E-03
8	4.91%	2233	1.21E-02	16	6.78%	3084	1.15E-02	24	1.93%	879	3.29E-03
								Total		45,475	

Habitat Redwood Blvd, Novato, CA - On- and Off-site Residential Receptors
Cumulative Operation - U.S. Highway 101
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = 2026

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
FUG_NB_101	U.S. 101 Northbound	NB	3	1014.8	0.63	17.0	56	1.3	Variable	45,475
FUG_SB_101	U.S. 101 Southbound	SB	3	1016.4	0.63	17.0	56	1.3	Variable	45,475
									Total	90,950

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	65	30	45	
Tire Wear - Emissions per Vehicle (g/VMT)	0.002092	0.002092	0.002092	
Brake Wear - Emissions per Vehicle (g/VMT)	0.016977	0.016977	0.016977	
Road Dust - Emissions per Vehicle (g/VMT)	0.007525	0.007525	0.007525	
Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.026594	0.026594	0.026594	

Emisson Factors from CT-EMFAC2017

2026 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_NB_101

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.10%	501	2.33E-03	9	5.36%	2438	1.14E-02	17	6.83%	3107	1.45E-02
2	0.62%	282	1.31E-03	10	5.51%	2505	1.17E-02	18	6.74%	3066	1.43E-02
3	0.46%	210	9.79E-04	11	5.74%	2609	1.22E-02	19	6.06%	2757	1.28E-02
4	0.47%	216	1.00E-03	12	5.92%	2691	1.25E-02	20	5.14%	2338	1.09E-02
5	0.89%	405	1.89E-03	13	6.10%	2776	1.29E-02	21	4.32%	1964	9.15E-03
6	2.02%	921	4.29E-03	14	6.24%	2838	1.32E-02	22	3.74%	1701	7.92E-03
7	3.49%	1588	7.40E-03	15	6.69%	3041	1.42E-02	23	2.91%	1324	6.17E-03
8	4.91%	2233	1.04E-02	16	6.78%	3085	1.44E-02	24	1.93%	879	4.10E-03
								Total		45,475	

2026 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_SB_101

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	502	2.34E-03	9	5.36%	2438	1.14E-02	17	6.83%	3106	1.45E-02
2	0.62%	282	1.32E-03	10	5.51%	2505	1.17E-02	18	6.74%	3066	1.43E-02
3	0.46%	210	9.81E-04	11	5.74%	2609	1.22E-02	19	6.06%	2757	1.29E-02
4	0.47%	216	1.01E-03	12	5.92%	2692	1.26E-02	20	5.14%	2338	1.09E-02
5	0.89%	405	1.89E-03	13	6.10%	2776	1.30E-02	21	4.32%	1965	9.17E-03
6	2.02%	921	4.30E-03	14	6.24%	2838	1.32E-02	22	3.74%	1701	7.93E-03
7	3.49%	1588	7.41E-03	15	6.69%	3041	1.42E-02	23	2.91%	1324	6.18E-03
8	4.91%	2233	1.04E-02	16	6.78%	3084	1.44E-02	24	1.93%	879	4.10E-03
								Total		45,475	

Habitat Redwood Boulevard, Novato, CA - S. U.S Highway 101 Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations - With MERV13 Filtration
On-Site 1st Floor Residential Receptors (1.5 meter receptor height)

Emission Year	2026
Receptor Information	Maximum On-Site Receptor
Number of Receptors	474
Receptor Height	1.5 meters
Receptor Distances	7 meter grid spacing in residential areas

Meteorological Conditions	
BAAQMD Gnoss Air Field Met Data	2013-2017
Land Use Classification	Rural
Wind Speed	Variable
Winf Direction	Variable

1st Floor Project Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)*		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.003168	0.47679	0.39071

1st Floor Project PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)*		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.145134	0.136431	0.008703

Habitat Redwood Boulevard, Novato, CA - U.S. Highway 101 Traffic Cancer Risk
Impacts at On-Site 1st Floor Residential Receptors - 1.5 meter receptor height
30 Year Residential Exposure - With MERV13 Filtration

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age –>	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2026	10	0.0032	0.4768	0.3907	0.043	0.037	0.0018	0.08
1	1	0 - 1	2026	10	0.0032	0.4768	0.3907	0.520	0.447	0.0216	0.99
2	1	1 - 2	2027	10	0.0032	0.4768	0.3907	0.520	0.447	0.0216	0.99
3	1	2 - 3	2028	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
4	1	3 - 4	2029	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
5	1	4 - 5	2030	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
6	1	5 - 6	2031	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
7	1	6 - 7	2032	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
8	1	7 - 8	2033	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
9	1	8 - 9	2034	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
10	1	9 - 10	2035	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
11	1	10 - 11	2036	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
12	1	11 - 12	2037	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
13	1	12 - 13	2038	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
14	1	13 - 14	2039	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
15	1	14 - 15	2040	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
16	1	15 - 16	2041	3	0.0032	0.4768	0.3907	0.082	0.070	0.0034	0.16
17	1	16-17	2042	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
18	1	17-18	2043	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
19	1	18-19	2044	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
20	1	19-20	2045	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
21	1	20-21	2046	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
22	1	21-22	2047	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
23	1	22-23	2048	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
24	1	23-24	2049	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
25	1	24-25	2050	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
26	1	25-26	2051	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
27	1	26-27	2052	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
28	1	27-28	2053	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
29	1	28-29	2054	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
30	1	29-30	2055	1	0.0032	0.4768	0.3907	0.009	0.008	0.0004	0.02
Total Increased Cancer Risk								2.36	2.026	0.098	**4.5**

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.001	0.14	0.15

* Third trimester of pregnancy

Habitat Redwood Boulevard, Novato, CA - S. U.S Highway 101 Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations - Without MERV13 Filtration
On-Site 1st Floor Residential Receptors (1.5 meter receptor height)

Emission Year	2026
Receptor Information	Maximum On-Site Receptor
Number of Receptors	474
Receptor Height	1.5 meters
Receptor Distances	7 meter grid spacing in residential areas

Meteorological Conditions	
BAAQMD Gnoss Air Field Met Data	2013-2017
Land Use Classification	Rural
Wind Speed	Variable
Winf Direction	Variable

1st Floor Project Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)*		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.01056	0.47679	0.39071

1st Floor Project PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)*		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.48378	0.45477	0.02901

Habitat Redwood Boulevard, Novato, CA - U.S. Highway 101 Traffic Cancer Risk
Impacts at On-Site 1st Floor Residential Receptors - 1.5 meter receptor height
30 Year Residential Exposure - Without MERV13 Filtration

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age –>	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2026	10	0.0106	0.4768	0.3907	0.144	0.037	0.0018	0.18
1	1	0 - 1	2026	10	0.0106	0.4768	0.3907	1.734	0.447	0.0216	2.20
2	1	1 - 2	2027	10	0.0106	0.4768	0.3907	1.734	0.447	0.0216	2.20
3	1	2 - 3	2028	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
4	1	3 - 4	2029	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
5	1	4 - 5	2030	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
6	1	5 - 6	2031	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
7	1	6 - 7	2032	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
8	1	7 - 8	2033	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
9	1	8 - 9	2034	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
10	1	9 - 10	2035	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
11	1	10 - 11	2036	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
12	1	11 - 12	2037	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
13	1	12 - 13	2038	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
14	1	13 - 14	2039	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
15	1	14 - 15	2040	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
16	1	15 - 16	2041	3	0.0106	0.4768	0.3907	0.273	0.070	0.0034	0.35
17	1	16-17	2042	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
18	1	17-18	2043	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
19	1	18-19	2044	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
20	1	19-20	2045	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
21	1	20-21	2046	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
22	1	21-22	2047	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
23	1	22-23	2048	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
24	1	23-24	2049	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
25	1	24-25	2050	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
26	1	25-26	2051	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
27	1	26-27	2052	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
28	1	27-28	2053	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
29	1	28-29	2054	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
30	1	29-30	2055	1	0.0106	0.4768	0.3907	0.030	0.008	0.0004	0.04
Total Increased Cancer Risk								7.86	2.026	0.098	**10.0**

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.0021	0.45	0.48

* Third trimester of pregnancy

Habitat Redwood Boulevard, Novato, CA - S. U.S Highway 101 Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations - Without MERV13 Filtration
On-Site 2nd Floor Residential Receptors (4.5 meter receptor height)

Emission Year	2026
Receptor Information	Maximum On-Site Receptor
Number of Receptors	474
Receptor Height	4.5 meters
Receptor Distances	7 meter grid spacing in residential areas

Meteorological Conditions	
BAAQMD Gnoss Air Field Met Data	2013-2017
Land Use Classification	Rural
Wind Speed	Variable
Winf Direction	Variable

2nd Floor Project Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)*		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.00839	0.36525	0.29983

2nd Floor Project PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)*		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.37035	0.34814	0.02221

Habitat Redwood Boulevard, Novato, CA - U.S. Highway 101 Traffic Cancer Risk
Impacts at On-Site 2nd Floor Residential Receptors - 4.5 meter receptor height
30 Year Residential Exposure - Without MERV13 Filtration

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2026	10	0.0084	0.3653	0.2998	0.114	0.028	0.0014	0.14
1	1	0 - 1	2026	10	0.0084	0.3653	0.2998	1.378	0.342	0.0166	1.74
2	1	1 - 2	2027	10	0.0084	0.3653	0.2998	1.378	0.342	0.0166	1.74
3	1	2 - 3	2028	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
4	1	3 - 4	2029	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
5	1	4 - 5	2030	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
6	1	5 - 6	2031	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
7	1	6 - 7	2032	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
8	1	7 - 8	2033	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
9	1	8 - 9	2034	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
10	1	9 - 10	2035	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
11	1	10 - 11	2036	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
12	1	11 - 12	2037	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
13	1	12 - 13	2038	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
14	1	13 - 14	2039	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
15	1	14 - 15	2040	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
16	1	15 - 16	2041	3	0.0084	0.3653	0.2998	0.217	0.054	0.0026	0.27
17	1	16-17	2042	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
18	1	17-18	2043	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
19	1	18-19	2044	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
20	1	19-20	2045	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
21	1	20-21	2046	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
22	1	21-22	2047	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
23	1	22-23	2048	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
24	1	23-24	2049	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
25	1	24-25	2050	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
26	1	25-26	2051	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
27	1	26-27	2052	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
28	1	27-28	2053	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
29	1	28-29	2054	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
30	1	29-30	2055	1	0.0084	0.3653	0.2998	0.024	0.006	0.0003	0.03
Total Increased Cancer Risk								6.24	1.552	0.075	**7.9**

Maximum Hazard Index	Fugitive PM2.5	Total PM2.5
0.0017	0.35	0.37

* Third trimester of pregnancy

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

429 East Cotati Avenue
Cotati, California 94931

Tel: 707-794-0400 *Fax: 707-794-0405*
www.illingworthrodkin.com *illro@illingworthrodkin.com*

M E M O

Date: June 15, 2021

To: Doug Fowler
Habitat for Humanity Greater San Francisco
500 Washington Street, Suite 250
San Francisco, CA 94111
DFowler@habitatgsf.org

From: Casey Divine & James Reyff
Illingworth & Rodkin, Inc.
429 East Cotati Avenue
Cotati, CA 94931

RE: Habitat Redwood Boulevard Project, Novato, CA
I&R Job #20-128

SUBJECT: Maximum Buildout Scenario Assessment for Project Site Based on Habitat Redwood Boulevard Air Quality and Greenhouse Gas Assessment

In January 2021, *Illingworth & Rodkin, Inc. (I&R)* completed an air quality and greenhouse gas (GHG) assessment for the Habitat Redwood Boulevard project located at 8161 Redwood Boulevard in Novato, California.[1] Since the project is seeking a General Plan Amendment (GPA), the City of Novato has requested additional analysis to address a possible "maximum buildout potential" scenario. This memo addresses the City's request and discusses the potential impact generated by the maximum buildout potential of the project site.

Proposed Project and Maximum Buildout Scenario

The proposed project intends to construct a total of 23 residential buildings containing 105,575 square feet (sf) and 80 affordable multi-family dwelling units, a 2,154-sf office building, and 185 total parking spaces. Project specific data regarding the construction and operation of the proposed project was provided by the applicant and assessed in the air quality report for the proposed project.

[1] Illingworth & Rodkin, Inc., "Habitat Redwood Boulevard Air Quality and Greenhouse Gas Assessment," January 13, 2021.

The maximum buildout scenario would include up to 160 dwelling units with the assumption that the project design and layout would be similar to the proposed project but with a higher unit density. Due to the hypothetical nature of the maximum buildout scenario, construction or operational data were not available.

Construction Criteria Air Pollutants

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate potential maximum building emissions from on-site construction activity, construction vehicle trips, and evaporative emissions. The maximum buildout scenario land use types and size, and anticipated construction schedule were input to CalEEMod. The CARB EMission FACtors 2017 (EMFAC2017) model was used to predict emissions from construction traffic, which includes worker travel, vendor trucks, and haul trucks.[2] The CalEEMod model output along with construction inputs are included in *Attachment 1* and EMFAC2017 vehicle emissions modeling outputs are included in *Attachment 2*.

CalEEMod Inputs

Land Use Inputs

The maximum buildout scenario uses were entered into CalEEMod as described in Table 1.

Table 1. Summary of Sanitary Sewer Land Use Inputs

Project Land Uses	Size	Units	Square Feet (sf)	Acreage
Apartment Mid Rise	160	Dwelling Units	160,000	4.21
General Office Building	2.154	1,000-sf	2,154	0.05
Parking Lot	185	Parking Spaces	74,000	1.66
Note: The same office and parking uses from the proposed project were included in analysis of the maximum buildout scenario, as the only changes indicated by the City was the addition of 160 dwelling units instead of 80 units. Default acreages were used as no maximum buildout information was available.				

Construction Inputs

CalEEMod computes annual emissions for construction that are based on the project type, size, and acreage. The model provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. The construction buildout scenario, including equipment list and schedule, were based on CalEEMod defaults for a project of this type and size since no information for the maximum buildout scenario was known at the time of this analysis.

The maximum buildout construction equipment data included the CalEEMod default schedule for each phase. Within each phase, the quantity of equipment to be used along with the average hours per day and total number of workdays was also based on CalEEMod defaults. The default

[2] See CARB's EMFAC2017 Web Database at https://www.arb.ca.gov/emfac/2017/

construction schedule assumed that the earliest possible start date would be January 2022 and the maximum buildout scenario would be built out over a period of approximately 15 months, or approximately 320 construction workdays. It was assumed that the same hauling information for the proposed project would be required for any development of this site, and was therefore, incorporated into the CalEEMod construction modeling for the maximum buildout scenario.

Construction Truck Traffic Emissions

The construction traffic information was combined with EMFAC2017 motor vehicle emissions factors. Construction would produce traffic in the form of worker trips and truck traffic. The traffic-related emissions are based on worker and vendor trip estimates produced by CalEEMod and haul trips that were computed based on the same hauling estimates from the proposed project analysis. CalEEMod provides daily estimates of worker and vendor trips for each applicable phase. The total trips for those were computed by multiplying the daily trip rate by the number of days in that phase. On-road emission rates from the years 2022 for Marin County were used. Table 2 provides the traffic inputs that were combined with the EMFAC2017 emission database to compute vehicle emissions.

Table 2. Construction Traffic Data Used for EMFAC2017 Model Runs

CalEEMod Run/Land Uses and Construction Phase	Trips by Trip Type			Notes
	Total Worker[1]	Total Vendor[1]	Total Haul[2]	
Vehicle mix[1]	67.3% LDA 7.4% LDT1 25.3% LDT2	50.7% MHDT 49.3% HHDT	100% HHDT	
Trip Length (miles)	10.8	7.3	20.0 (Demo/Soil) 7.3 (Cement/Asphalt)	CalEEMod default distance with 5-min truck idle time.
Demolition	300	-	-	CalEEMod default worker trips.
Site Preparation	180	-	-	CalEEMod default worker trips.
Grading	300	-	3,114	24,910-cy of import volume. CalEEMod default worker trips.
Building Construction	20	-	-	CalEEMod default worker trips.
Paving	130	-	-	CalEEMod default worker trips.
Architectural Coating				

Notes: [1] Based on 2022 EMFAC2017 light-duty vehicle fleet mix for Marin County.
[2] Includes grading trips estimated by CalEEMod based on amount of material to be imported.

Summary of Computed Construction Period Emissions

Average daily emissions were computed by dividing the total construction emissions by the number of construction days (320 days). Table 3 shows average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 3, predicted construction period emissions would not exceed the BAAQMD significance thresholds.

Table 3. Maximum Buildout Construction Period Emissions

Scenario	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Total Construction Emissions (tons)	1.48 tons	3.05 tons	0.16 tons	0.14 tons
Average Daily Emissions (pounds/day)[1]	9.23 lbs./day	19.06 lbs./day	1.03 lbs./day	0.86 lbs./day
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	No	No	No	No
Note: Assumes 320 construction workdays				

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less-than-significant if best management practices are implemented to reduce these emissions. The application of Project Design Features – Construction Emissions Control from the proposed project report would implement BAAQMD-recommended best management practices.

Comparison of Construction Period Emissions

When comparing to the proposed project, some of the maximum buildout scenario's average daily construction emissions were lower than the smaller proposed project's emissions. This is because the proposed project's construction emissions were based on detailed construction information, including phased construction, truck trips, and equipment quantities and hours per day use, while the maximum buildout scenario was based on CalEEMod construction default since construction data is unknown. However, both the maximum buildout scenario and the proposed project have predicted average daily construction emissions below BAAMQD's significance thresholds.

Operational Period Emissions

Operational air emissions from the maximum buildout scenario would be generated primarily from autos driven by future residents and employees. Evaporative emissions from architectural coatings and maintenance products (classified as consumer products) are typical emissions from these types of uses. CalEEMod was used to estimate emissions from operation of the proposed project assuming full build-out.

CalEEMod Inputs

Model Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest year of operation for the

entire project would be 2024 if construction begins in 2022. Emissions associated with build-out later than 2024 would be lower.

Traffic Information

No operational traffic information was available for the maximum buildout scenario. Therefore, the default trip generation, trip lengths, and trip types specified by CalEEMod were used.

EMFAC2017 Adjustment

The vehicle emission factors and fleet mix used in CalEEMod are based on EMission FACtors from 2014 (EMFAC2014), which is an older CARB emission inventory for on road and off road mobile sources. Since the release of CalEEMod Version 2016.3.2, new emission factors have been produced by CARB. EMFAC2017 became available for use in March 2018 and approved by the EPA in August 2019. It includes the latest data on California's car and truck fleets and travel activity. Additionally, CARB has recently released EMFAC off-model adjustment factors to account for the Safer Affordable Efficient (SAFE) Vehicle Rule Part one.[3,4] The SAFE vehicle Rule Part One revoked California's authority to set its own GHG emission standards and set zero emission vehicle mandates in California. As a result of this ruling, mobile criteria pollutant and GHG emissions would increase. Therefore, the CalEEMod vehicle emission factors and fleet mix were updated with the emission rates and fleet mix from EMFAC2017, which were adjusted with the CARB EMFAC off-model adjustment factors. More details about the updates in emissions calculation methodologies and data are available in the EMFAC2017 Technical Support Document.[5]

Summary of Computed Operational Period Emissions

Annual emissions were predicted using CalEEMod and daily emissions were estimating assuming 365 days of operation. Table 4 shows average daily emissions of ROG, NO_X, total PM_{10}, and total $PM_{2.5}$ during operation of the project. The operational period emissions would not exceed the BAAQMD significance thresholds.

[3] California Air Resource Board, 2019. *EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One*. November. Web: https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf
[4] California Air Resource Board, 2020. *EMFAC Off-Model Adjustment Factors for Carbon Dioxide (CO_20 Emissions to Accounts for the SAFE Vehicles Rule Part One and the Final SAFE Rule*. June. Web: https://ww3.arb.ca.gov/msei/emfac_off_model_co2_adjustment_factors_06262020-final.pdf?utm_medium=email&utm_source=govdelivery
[5] See CARB 2018: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-modeling-tools-emfac

Table 4. Maximum Buildout Operational Period Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2024 Project Operational Emissions (*tons/year*)	1.78 tons	0.64 tons	0.99 tons	0.33 tons
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Thresholds?	No	No	No	No
2024 Project Operational Emissions (*lbs./day*)[1]	9.77 lbs.	3.52 lbs.	5.42 lbs.	1.81 lbs.
BAAQMD Thresholds (lbs./day)	*54 lbs.*	*54 lbs.*	*82 lbs.*	*54 lbs.*
Exceed Threshold?	No	No	No	No

Notes: [1] Assumes 365-day operation.

Community Health Risk from Maximum Buildout Scenario

The air quality analysis for the proposed project found that short-term (i.e., during construction) and long-term (i.e., operation) emissions would not cause cancer risk, non-cancer health effects or annual $PM_{2.5}$ concentrations to exceed the community risk thresholds. This was because the closest sensitive receptors to the proposed project were located beyond BAAQMD's recommended 1,000-foot influence area at more than 1,100 feet south of the project site. The maximum buildout scenario's design and layout would be similar to the proposed project but with a higher unit density and would also not be within 1,000 feet of nearby sensitive receptors. Therefore, a community health risk assessment was also not conducted for the maximum buildout scenario. This scenario would also not cause cancer risk, non-cancer health effects or annual $PM_{2.5}$ concentrations to exceed the community risk thresholds.

On-Site Community Risk Assessment for TAC Sources - New Project Residences

The air quality analysis for the proposed project found that with the incorporation of *Project Design Features – Sensitive Receptor Exposure Control* using MERV13 air filtration systems in all residential buildings, the impacts of existing TAC sources (i.e., U.S. 101, SMART rail line, and BAAQMD stationary sources) would not exceed BAAMQD significance thresholds. As discussed above, the maximum buildout scenario's design and layout would be similar to the proposed project but with a higher unit density. Therefore, on-site sensitive receptors would be in similar locations as the proposed project and not any closer to existing TAC sources. The incorporation of *Project Design Features – Sensitive Receptor Exposure Control* using MERV13 air filtration systems in all residential buildings is recommended for the maximum buildout scenario so that the BAAQMD significance community health risk thresholds would not be exceeded.

Greenhouse Gas Emissions

GHG emissions associated with development of the maximum buildout scenario would occur over the short-term from construction activities, consisting primarily of emissions from equipment exhaust and worker and vendor trips. There would also be long-term operational emissions associated with vehicular traffic within the project vicinity, energy and water usage, and solid waste disposal. Emissions for the maximum buildout scenario are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.

The significance impact of GHG emissions would be assessed based on the maximum buildout scenario's consistency with the City of Novato's Climate Action Plan. Emissions from the maximum buildout scenario were computed for informational purposes.

Construction GHG Emissions

GHG emissions associated with construction were computed to be 654 MT of CO_2e for the total construction period. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips.

Operational GHG Emissions

The CalEEMod model was used to estimate daily emissions associated with operation of the fully developed site under the maximum build-out scenario. As shown in Table 5, annual emissions from the proposed project are predicted to be 1,189 MT of CO_2e

Table 5. Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	Maximum Build-Out Scenario in 2024
Area	12
Energy Consumption	290
Mobile	810
Solid Waste Generation	38
Water Usage	39
Metric Ton Total	1,189

Supporting Documentation

Attachment 1 includes the CalEEMod output for project construction criteria air pollutant emissions. Also included are any modeling assumptions.

Attachment 2 includes the EMFAC2017 emissions modeling. The input files for these calculations are voluminous and are available upon request in digital format.

Attachment 1: CalEEMod Modeling Inputs and Outputs

Construction Criteria Air Pollutants						
Unmitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	**CO2e**	
Year	Tons				MT	
Construction Equipment						
2022	0.24	2.27	0.11	0.11	322.12	
2023	1.18	0.26	0.01	0.01	46.06	
EMFAC						
2022	0.04	0.42	0.03	0.01	232.30	
2023	0.01	0.10	0.01	0.00	53.12	
Total Construction Emissions by Year						
2022	0.28	2.69	0.15	0.12	554.42	
2023	1.19	0.36	0.02	0.02	99.18	
	Total Construction Emissions					
Tons	1.48	3.05	0.16	0.14	653.60	
Pounds/Workdays	*Average Daily Emissions*				Workdays	
Pounds	41.95	32.58	1.77	1.44	0.00	
Average	9.23	19.06	1.03	0.86	0.00	320.00
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		

Operational Criteria Air Pollutants						
Unmitigated	ROG	NOX	Total PM10	Total PM2.5		
Year	Tons					
Total	1.78	0.64	0.99	0.33		
	Existing Use Emissions					
Total						
	Net Annual Operational Emissions					
Tons/year	1.78	0.64	0.99	0.33		
Threshold - Tons/year	**10.0**	**10.0**	**15.0**	**10.0**		
	Average Daily Emissions					
Pounds Per Day	9.77	3.52	5.42	1.81		
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		

Category	**CO2e**			
	Project	Existing	Project 2030	Existing
Area	12.72			
Energy	289.92			
Mobile	809.73			
Waste	38.02			
Water	38.74			
TOTAL	1189.13	0.00	0.00	0.00

Redwood Blvd Max Building, Novato - Marin County, Annual

Redwood Blvd Max Building, Novato

Marin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	160.00	Dwelling Unit	4.21	160,000.00	458
General Office Building	2.15	1000sqft	0.05	2,154.00	0
Parking Lot	185.00	Space	1.66	74,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	69
Climate Zone	5			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Max buildout of 160du, same office and parking uses and original report, default land uses

Construction Phase - default construction schedule

Off-road Equipment - default construction equipment

Grading - assumed same hauling as original report, 24,910cy import

Trips and VMT - 0 trips for EMFAC2017 update

Vehicle Trips - default trip gen

Vehicle Emission Factors - EMFAC2017 Vehicle Emissions factors 2024 Marin County

Vehicle Emission Factors -

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	0.01	0.01
tblFleetMix	HHD	0.01	0.01
tblFleetMix	HHD	0.01	0.01
tblFleetMix	LDA	0.60	0.54
tblFleetMix	LDA	0.60	0.54
tblFleetMix	LDA	0.60	0.54
tblFleetMix	LDT1	0.04	0.06
tblFleetMix	LDT1	0.04	0.06
tblFleetMix	LDT1	0.04	0.06
tblFleetMix	LDT2	0.20	0.20
tblFleetMix	LDT2	0.20	0.20
tblFleetMix	LDT2	0.20	0.20
tblFleetMix	LHD1	0.02	0.03
tblFleetMix	LHD1	0.02	0.03
tblFleetMix	LHD1	0.02	0.03
tblFleetMix	LHD2	5.1910e-003	6.0666e-003
tblFleetMix	LHD2	5.1910e-003	6.0666e-003
tblFleetMix	LHD2	5.1910e-003	6.0666e-003
tblFleetMix	MCY	5.6960e-003	0.03
tblFleetMix	MCY	5.6960e-003	0.03
tblFleetMix	MCY	5.6960e-003	0.03
tblFleetMix	MDV	0.11	0.12
tblFleetMix	MDV	0.11	0.12
tblFleetMix	MDV	0.11	0.12
tblFleetMix	MH	7.1100e-004	8.2647e-004
tblFleetMix	MH	7.1100e-004	8.2647e-004
tblFleetMix	MH	7.1100e-004	8.2647e-004

tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.01
tblFleetMix	MHD	0.01	0.01
tblFleetMix	OBUS	2.0410e-003	1.1648e-003
tblFleetMix	OBUS	2.0410e-003	1.1648e-003
tblFleetMix	OBUS	2.0410e-003	1.1648e-003
tblFleetMix	SBUS	7.0700e-004	7.5850e-004
tblFleetMix	SBUS	7.0700e-004	7.5850e-004
tblFleetMix	SBUS	7.0700e-004	7.5850e-004
tblFleetMix	UBUS	2.9270e-003	7.5500e-004
tblFleetMix	UBUS	2.9270e-003	7.5500e-004
tblFleetMix	UBUS	2.9270e-003	7.5500e-004
tblGrading	MaterialImported	0.00	24,910.00
tblTripsAndVMT	HaulingTripNumber	3,114.00	0.00
tblTripsAndVMT	VendorTripNumber	30.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	147.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	29.00	0.00
tblVehicleEF	HHD	0.23	0.03
tblVehicleEF	HHD	0.09	0.10
tblVehicleEF	HHD	0.09	1.0000e-006
tblVehicleEF	HHD	1.48	5.98
tblVehicleEF	HHD	1.28	0.65
tblVehicleEF	HHD	5.79	0.02
tblVehicleEF	HHD	3,608.54	1,018.59
tblVehicleEF	HHD	1,589.52	1,484.17
tblVehicleEF	HHD	17.32	0.27

tblVehicleEF	HHD	13.86	5.58
tblVehicleEF	HHD	2.13	2.96
tblVehicleEF	HHD	18.68	2.39
tblVehicleEF	HHD	0.01	3.9390e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.03	0.04
tblVehicleEF	HHD	6.9280e-003	0.02
tblVehicleEF	HHD	1.8400e-004	2.0000e-006
tblVehicleEF	HHD	0.01	3.7690e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.7390e-003	8.8430e-003
tblVehicleEF	HHD	6.6270e-003	0.02
tblVehicleEF	HHD	1.7000e-004	1.0000e-006
tblVehicleEF	HHD	1.5200e-004	6.0000e-006
tblVehicleEF	HHD	8.7930e-003	2.6700e-004
tblVehicleEF	HHD	0.38	0.41
tblVehicleEF	HHD	1.0000e-004	4.0000e-006
tblVehicleEF	HHD	0.09	0.03
tblVehicleEF	HHD	1.1180e-003	1.3760e-003
tblVehicleEF	HHD	0.15	5.0000e-006
tblVehicleEF	HHD	0.03	9.3400e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.6900e-004	3.0000e-006
tblVehicleEF	HHD	1.5200e-004	6.0000e-006
tblVehicleEF	HHD	8.7930e-003	2.6700e-004
tblVehicleEF	HHD	0.44	0.47
tblVehicleEF	HHD	1.0000e-004	4.0000e-006
tblVehicleEF	HHD	0.19	0.13
tblVehicleEF	HHD	1.1180e-003	1.3760e-003
tblVehicleEF	HHD	0.17	5.0000e-006

tblVehicleEF	LDA	3.2660e-003	1.9420e-003
tblVehicleEF	LDA	4.7260e-003	0.05
tblVehicleEF	LDA	0.45	0.52
tblVehicleEF	LDA	1.09	2.16
tblVehicleEF	LDA	232.62	243.67
tblVehicleEF	LDA	53.01	51.04
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.17
tblVehicleEF	LDA	1.7320e-003	1.4320e-003
tblVehicleEF	LDA	2.2890e-003	1.7410e-003
tblVehicleEF	LDA	1.5970e-003	1.3210e-003
tblVehicleEF	LDA	2.1050e-003	1.6010e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.09	0.09
tblVehicleEF	LDA	0.02	0.04
tblVehicleEF	LDA	8.2670e-003	7.6770e-003
tblVehicleEF	LDA	0.04	0.21
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.3280e-003	1.4200e-004
tblVehicleEF	LDA	5.4800e-004	0.00
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.09	0.09
tblVehicleEF	LDA	0.02	0.04
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.21
tblVehicleEF	LDA	0.07	0.23
tblVehicleEF	LDT1	6.4700e-003	3.5750e-003
tblVehicleEF	LDT1	0.01	0.06
tblVehicleEF	LDT1	0.80	0.80
tblVehicleEF	LDT1	2.33	2.40

tblVehicleEF	LDT1	291.31	296.17
tblVehicleEF	LDT1	67.24	63.11
tblVehicleEF	LDT1	0.08	0.07
tblVehicleEF	LDT1	0.13	0.24
tblVehicleEF	LDT1	2.0840e-003	1.6710e-003
tblVehicleEF	LDT1	2.8790e-003	2.2190e-003
tblVehicleEF	LDT1	1.9190e-003	1.5380e-003
tblVehicleEF	LDT1	2.6470e-003	2.0400e-003
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.21	0.17
tblVehicleEF	LDT1	0.06	0.07
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.15	0.65
tblVehicleEF	LDT1	0.15	0.32
tblVehicleEF	LDT1	2.9210e-003	2.9330e-003
tblVehicleEF	LDT1	7.1300e-004	0.00
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.21	0.17
tblVehicleEF	LDT1	0.06	0.07
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.15	0.65
tblVehicleEF	LDT1	0.16	0.35
tblVehicleEF	LDT2	4.4610e-003	2.7630e-003
tblVehicleEF	LDT2	6.1020e-003	0.06
tblVehicleEF	LDT2	0.58	0.66
tblVehicleEF	LDT2	1.38	2.76
tblVehicleEF	LDT2	328.01	316.82
tblVehicleEF	LDT2	75.03	67.31
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.10	0.26

tblVehicleEF	LDT2	1.7100e-003	1.3960e-003
tblVehicleEF	LDT2	2.3170e-003	1.7180e-003
tblVehicleEF	LDT2	1.5730e-003	1.2850e-003
tblVehicleEF	LDT2	2.1310e-003	1.5790e-003
tblVehicleEF	LDT2	0.03	0.06
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.07	0.44
tblVehicleEF	LDT2	0.08	0.30
tblVehicleEF	LDT2	3.2830e-003	0.01
tblVehicleEF	LDT2	7.7300e-004	1.3500e-004
tblVehicleEF	LDT2	0.03	0.06
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.44
tblVehicleEF	LDT2	0.09	0.32
tblVehicleEF	LHD1	4.8610e-003	4.7860e-003
tblVehicleEF	LHD1	0.02	9.0960e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	1.08	0.85
tblVehicleEF	LHD1	2.51	1.04
tblVehicleEF	LHD1	9.13	9.03
tblVehicleEF	LHD1	677.80	776.55
tblVehicleEF	LHD1	29.60	11.07
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	1.31	0.86
tblVehicleEF	LHD1	0.92	0.30

tblVehicleEF	LHD1	9.4900e-004	9.1400e-004
tblVehicleEF	LHD1	0.01	9.8710e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	9.4300e-004	2.5800e-004
tblVehicleEF	LHD1	9.0800e-004	8.7400e-004
tblVehicleEF	LHD1	2.5580e-003	2.4680e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.6700e-004	2.3700e-004
tblVehicleEF	LHD1	2.2530e-003	1.7690e-003
tblVehicleEF	LHD1	0.10	0.08
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.2810e-003	1.0020e-003
tblVehicleEF	LHD1	0.13	0.10
tblVehicleEF	LHD1	0.36	0.57
tblVehicleEF	LHD1	0.25	0.07
tblVehicleEF	LHD1	9.1000e-005	8.7000e-005
tblVehicleEF	LHD1	6.6420e-003	7.5730e-003
tblVehicleEF	LHD1	3.4300e-004	1.1000e-004
tblVehicleEF	LHD1	2.2530e-003	1.7690e-003
tblVehicleEF	LHD1	0.10	0.08
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.2810e-003	1.0020e-003
tblVehicleEF	LHD1	0.16	0.13
tblVehicleEF	LHD1	0.36	0.57
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD2	3.2070e-003	3.1760e-003
tblVehicleEF	LHD2	6.9240e-003	6.8100e-003
tblVehicleEF	LHD2	6.0420e-003	8.3110e-003
tblVehicleEF	LHD2	0.12	0.14
tblVehicleEF	LHD2	0.53	0.61

tblVehicleEF	LHD2	1.10	0.63
tblVehicleEF	LHD2	13.94	13.84
tblVehicleEF	LHD2	700.36	762.68
tblVehicleEF	LHD2	23.63	7.92
tblVehicleEF	LHD2	0.10	0.09
tblVehicleEF	LHD2	0.59	0.75
tblVehicleEF	LHD2	0.42	0.19
tblVehicleEF	LHD2	1.2130e-003	1.3950e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.9300e-004	1.2800e-004
tblVehicleEF	LHD2	1.1600e-003	1.3340e-003
tblVehicleEF	LHD2	2.6950e-003	2.6840e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.6100e-004	1.1800e-004
tblVehicleEF	LHD2	6.2400e-004	8.8400e-004
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	3.8800e-004	5.2200e-004
tblVehicleEF	LHD2	0.10	0.11
tblVehicleEF	LHD2	0.06	0.25
tblVehicleEF	LHD2	0.08	0.04
tblVehicleEF	LHD2	1.3600e-004	1.3200e-004
tblVehicleEF	LHD2	6.8090e-003	7.3670e-003
tblVehicleEF	LHD2	2.5600e-004	7.8000e-005
tblVehicleEF	LHD2	6.2400e-004	8.8400e-004
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.8800e-004	5.2200e-004
tblVehicleEF	LHD2	0.12	0.13

tblVehicleEF	LHD2	0.06	0.25
tblVehicleEF	LHD2	0.09	0.05
tblVehicleEF	MCY	0.47	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.47	20.71
tblVehicleEF	MCY	10.28	9.13
tblVehicleEF	MCY	176.96	218.01
tblVehicleEF	MCY	45.64	61.90
tblVehicleEF	MCY	1.18	1.19
tblVehicleEF	MCY	0.32	0.28
tblVehicleEF	MCY	2.1650e-003	2.1200e-003
tblVehicleEF	MCY	3.9280e-003	3.2680e-003
tblVehicleEF	MCY	2.0250e-003	1.9820e-003
tblVehicleEF	MCY	3.7010e-003	3.0790e-003
tblVehicleEF	MCY	0.77	1.57
tblVehicleEF	MCY	0.75	0.75
tblVehicleEF	MCY	0.47	0.96
tblVehicleEF	MCY	2.32	2.34
tblVehicleEF	MCY	0.71	2.33
tblVehicleEF	MCY	2.27	2.01
tblVehicleEF	MCY	2.1720e-003	2.1570e-003
tblVehicleEF	MCY	6.9100e-004	6.1300e-004
tblVehicleEF	MCY	0.77	1.57
tblVehicleEF	MCY	0.75	0.75
tblVehicleEF	MCY	0.47	0.96
tblVehicleEF	MCY	2.88	2.89
tblVehicleEF	MCY	0.71	2.33
tblVehicleEF	MCY	2.47	2.19
tblVehicleEF	MDV	7.1540e-003	3.1800e-003
tblVehicleEF	MDV	0.01	0.07

tblVehicleEF	MDV	0.80	0.69
tblVehicleEF	MDV	2.39	2.95
tblVehicleEF	MDV	437.89	382.39
tblVehicleEF	MDV	98.78	79.16
tblVehicleEF	MDV	0.10	0.07
tblVehicleEF	MDV	0.20	0.28
tblVehicleEF	MDV	1.7740e-003	1.5130e-003
tblVehicleEF	MDV	2.3690e-003	1.7730e-003
tblVehicleEF	MDV	1.6350e-003	1.3980e-003
tblVehicleEF	MDV	2.1790e-003	1.6300e-003
tblVehicleEF	MDV	0.05	0.06
tblVehicleEF	MDV	0.15	0.13
tblVehicleEF	MDV	0.05	0.06
tblVehicleEF	MDV	0.02	0.01
tblVehicleEF	MDV	0.10	0.43
tblVehicleEF	MDV	0.17	0.34
tblVehicleEF	MDV	4.3790e-003	3.7010e-003
tblVehicleEF	MDV	1.0290e-003	7.6700e-004
tblVehicleEF	MDV	0.05	0.06
tblVehicleEF	MDV	0.15	0.13
tblVehicleEF	MDV	0.05	0.06
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.10	0.43
tblVehicleEF	MDV	0.19	0.37
tblVehicleEF	MH	0.02	9.2920e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.58	0.87
tblVehicleEF	MH	4.99	1.95
tblVehicleEF	MH	1,200.99	1,478.44
tblVehicleEF	MH	56.20	17.14

tblVehicleEF	MH	1.29	1.42
tblVehicleEF	MH	0.74	0.23
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0200e-003	2.4500e-004
tblVehicleEF	MH	3.2430e-003	3.3100e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	9.3800e-004	2.2500e-004
tblVehicleEF	MH	0.57	0.51
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.22	0.20
tblVehicleEF	MH	0.08	0.06
tblVehicleEF	MH	0.02	1.20
tblVehicleEF	MH	0.29	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.4900e-004	1.7000e-004
tblVehicleEF	MH	0.57	0.51
tblVehicleEF	MH	0.06	0.05
tblVehicleEF	MH	0.22	0.20
tblVehicleEF	MH	0.11	0.08
tblVehicleEF	MH	0.02	1.20
tblVehicleEF	MH	0.31	0.10
tblVehicleEF	MHD	0.02	5.1400e-003
tblVehicleEF	MHD	5.3050e-003	2.8700e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.41	0.53
tblVehicleEF	MHD	0.40	0.36
tblVehicleEF	MHD	6.43	1.65
tblVehicleEF	MHD	116.75	97.84
tblVehicleEF	MHD	1,191.00	1,143.68

tblVehicleEF	MHD	69.07	13.67
tblVehicleEF	MHD	0.35	0.64
tblVehicleEF	MHD	1.11	1.44
tblVehicleEF	MHD	8.84	1.50
tblVehicleEF	MHD	1.5500e-004	5.4200e-004
tblVehicleEF	MHD	3.3090e-003	6.8780e-003
tblVehicleEF	MHD	9.5200e-004	1.6100e-004
tblVehicleEF	MHD	1.4800e-004	5.1900e-004
tblVehicleEF	MHD	3.1580e-003	6.5710e-003
tblVehicleEF	MHD	8.7600e-004	1.4800e-004
tblVehicleEF	MHD	8.6800e-004	5.2300e-004
tblVehicleEF	MHD	0.05	0.03
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	5.2700e-004	3.1400e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.17
tblVehicleEF	MHD	0.38	0.07
tblVehicleEF	MHD	1.1280e-003	9.2900e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	8.0300e-004	1.3500e-004
tblVehicleEF	MHD	8.6800e-004	5.2300e-004
tblVehicleEF	MHD	0.05	0.03
tblVehicleEF	MHD	0.04	0.04
tblVehicleEF	MHD	5.2700e-004	3.1400e-004
tblVehicleEF	MHD	0.05	0.03
tblVehicleEF	MHD	0.03	0.17
tblVehicleEF	MHD	0.42	0.08
tblVehicleEF	OBUS	0.01	9.2480e-003
tblVehicleEF	OBUS	8.5500e-003	7.1260e-003
tblVehicleEF	OBUS	0.03	0.02

tblVehicleEF	OBUS	0.24	0.50
tblVehicleEF	OBUS	0.56	0.76
tblVehicleEF	OBUS	5.80	2.71
tblVehicleEF	OBUS	73.70	64.05
tblVehicleEF	OBUS	1,284.51	1,523.45
tblVehicleEF	OBUS	69.27	21.91
tblVehicleEF	OBUS	0.15	0.22
tblVehicleEF	OBUS	0.82	0.98
tblVehicleEF	OBUS	2.26	0.62
tblVehicleEF	OBUS	1.3000e-005	7.6000e-005
tblVehicleEF	OBUS	2.4610e-003	5.8260e-003
tblVehicleEF	OBUS	8.3400e-004	1.9700e-004
tblVehicleEF	OBUS	1.3000e-005	7.3000e-005
tblVehicleEF	OBUS	2.3320e-003	5.5500e-003
tblVehicleEF	OBUS	7.6700e-004	1.8100e-004
tblVehicleEF	OBUS	1.2620e-003	1.3030e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	6.0400e-004	6.4800e-004
tblVehicleEF	OBUS	0.05	0.04
tblVehicleEF	OBUS	0.06	0.27
tblVehicleEF	OBUS	0.36	0.13
tblVehicleEF	OBUS	7.1500e-004	6.1200e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9400e-004	2.1700e-004
tblVehicleEF	OBUS	1.2620e-003	1.3030e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	6.0400e-004	6.4800e-004
tblVehicleEF	OBUS	0.06	0.05

tblVehicleEF	OBUS	0.06	0.27
tblVehicleEF	OBUS	0.39	0.14
tblVehicleEF	SBUS	0.84	0.05
tblVehicleEF	SBUS	0.01	7.2650e-003
tblVehicleEF	SBUS	0.07	4.5540e-003
tblVehicleEF	SBUS	6.42	2.03
tblVehicleEF	SBUS	0.72	0.60
tblVehicleEF	SBUS	6.63	0.68
tblVehicleEF	SBUS	1,199.51	343.34
tblVehicleEF	SBUS	1,105.22	1,047.06
tblVehicleEF	SBUS	42.31	3.70
tblVehicleEF	SBUS	9.48	4.05
tblVehicleEF	SBUS	3.82	5.97
tblVehicleEF	SBUS	14.08	0.66
tblVehicleEF	SBUS	8.4900e-003	4.5180e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	8.0700e-004	5.4000e-005
tblVehicleEF	SBUS	8.1230e-003	4.3220e-003
tblVehicleEF	SBUS	2.7200e-003	2.7260e-003
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	7.4200e-004	5.0000e-005
tblVehicleEF	SBUS	1.7880e-003	2.8800e-004
tblVehicleEF	SBUS	0.02	3.4530e-003
tblVehicleEF	SBUS	0.77	0.23
tblVehicleEF	SBUS	8.3700e-004	1.4100e-004
tblVehicleEF	SBUS	0.10	0.10
tblVehicleEF	SBUS	9.7680e-003	0.02
tblVehicleEF	SBUS	0.32	0.03
tblVehicleEF	SBUS	0.01	3.2650e-003

tblVehicleEF	SBUS	0.01	9.9940e-003
tblVehicleEF	SBUS	5.3700e-004	3.7000e-005
tblVehicleEF	SBUS	1.7880e-003	2.8800e-004
tblVehicleEF	SBUS	0.02	3.4530e-003
tblVehicleEF	SBUS	1.10	0.33
tblVehicleEF	SBUS	8.3700e-004	1.4100e-004
tblVehicleEF	SBUS	0.12	0.12
tblVehicleEF	SBUS	9.7680e-003	0.02
tblVehicleEF	SBUS	0.35	0.03
tblVehicleEF	UBUS	0.27	0.43
tblVehicleEF	UBUS	0.03	0.03
tblVehicleEF	UBUS	4.70	3.25
tblVehicleEF	UBUS	5.07	2.39
tblVehicleEF	UBUS	2,155.64	1,667.59
tblVehicleEF	UBUS	73.29	24.34
tblVehicleEF	UBUS	11.63	0.44
tblVehicleEF	UBUS	16.53	0.22
tblVehicleEF	UBUS	0.67	0.11
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	0.24	3.7370e-003
tblVehicleEF	UBUS	6.2800e-004	2.6800e-004
tblVehicleEF	UBUS	0.29	0.05
tblVehicleEF	UBUS	3.0000e-003	5.0890e-003
tblVehicleEF	UBUS	0.23	3.5300e-003
tblVehicleEF	UBUS	5.7700e-004	2.4600e-004
tblVehicleEF	UBUS	1.4430e-003	6.6700e-004
tblVehicleEF	UBUS	0.03	7.9120e-003
tblVehicleEF	UBUS	9.1300e-004	4.1100e-004
tblVehicleEF	UBUS	0.61	0.02
tblVehicleEF	UBUS	6.1440e-003	0.04

tblVehicleEF	UBUS	0.42	0.11
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	8.2500e-004	2.4100e-004
tblVehicleEF	UBUS	1.4430e-003	6.6700e-004
tblVehicleEF	UBUS	0.03	7.9120e-003
tblVehicleEF	UBUS	9.1300e-004	4.1100e-004
tblVehicleEF	UBUS	0.94	0.45
tblVehicleEF	UBUS	6.1440e-003	0.04
tblVehicleEF	UBUS	0.46	0.12

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.2409	2.2708	2.1753	3.7000e-003	0.1573	0.1148	0.2721	0.0835	0.1076	0.1911	0.0000	320.0762	320.0762	0.0817	0.0000	322.1180
2023	1.1831	0.2588	0.3264	5.3000e-004	0.0000	0.0128	0.0128	0.0000	0.0120	0.0120	0.0000	45.7606	45.7606	0.0121	0.0000	46.0642
Maximum	**1.1831**	**2.2708**	**2.1753**	**3.7000e-003**	**0.1573**	**0.1148**	**0.2721**	**0.0835**	**0.1076**	**0.1911**	**0.0000**	**320.0762**	**320.0762**	**0.0817**	**0.0000**	**322.1180**

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	0.2409	2.2708	2.1753	3.7000e-003	0.1573	0.1148	0.2721	0.0835	0.1076	0.1911	0.0000	320.0758	320.0758	0.0817	0.0000	322.1176
2023	1.1831	0.2588	0.3264	5.3000e-004	0.0000	0.0128	0.0128	0.0000	0.0120	0.0120	0.0000	45.7605	45.7605	0.0121	0.0000	46.0641
Maximum	**1.1831**	**2.2708**	**2.1753**	**3.7000e-003**	**0.1573**	**0.1148**	**0.2721**	**0.0835**	**0.1076**	**0.1911**	**0.0000**	**320.0758**	**320.0758**	**0.0817**	**0.0000**	**322.1176**

	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**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-3-2022**	**4-2-2022**	0.8087	0.8087
2	**4-3-2022**	**7-2-2022**	0.5630	0.5630
3	**7-3-2022**	**10-2-2022**	0.5691	0.5691
4	**10-3-2022**	**1-2-2023**	0.5682	0.5682
5	**1-3-2023**	**4-2-2023**	1.4248	1.4248
		Highest	1.4248	1.4248

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	1.1584	0.0222	1.6976	1.0700e-003		0.0793	0.0793		0.0793	0.0793	7.2944	4.9401	12.2345	0.0136	4.8000e-004	12.7169
Energy	7.7600e-003	0.0664	0.0291	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	288.6351	288.6351	0.0111	3.3900e-003	289.9214
Mobile	0.6177	0.5543	4.2446	9.4100e-003	0.8985	6.6100e-003	0.9051	0.2401	6.1600e-003	0.2462	0.0000	808.3402	808.3402	0.0557	0.0000	809.7318
Waste						0.0000	0.0000		0.0000	0.0000	15.3461	0.0000	15.3461	0.9069	0.0000	38.0194

Water						0.0000	0.0000		0.0000	0.0000	3.4285	23.9413	27.3697	0.3532	8.5400e-003	38.7448
Total	**1.7839**	**0.6429**	**5.9713**	**0.0109**	**0.8985**	**0.0912**	**0.9897**	**0.2401**	**0.0908**	**0.3309**	**26.0690**	**1,125.8566**	**1,151.9255**	**1.3405**	**0.0124**	**1,189.1342**

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	1.1584	0.0222	1.6976	1.0700e-003		0.0793	0.0793		0.0793	0.0793	7.2944	4.9401	12.2345	0.0136	4.8000e-004	12.7169
Energy	7.7600e-003	0.0664	0.0291	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	288.6351	288.6351	0.0111	3.3900e-003	289.9214
Mobile	0.6177	0.5543	4.2446	9.4100e-003	0.8985	6.6100e-003	0.9051	0.2401	6.1600e-003	0.2462	0.0000	808.3402	808.3402	0.0557	0.0000	809.7318
Waste						0.0000	0.0000		0.0000	0.0000	15.3461	0.0000	15.3461	0.9069	0.0000	38.0194
Water						0.0000	0.0000		0.0000	0.0000	3.4285	23.9413	27.3697	0.3532	8.5400e-003	38.7448
Total	**1.7839**	**0.6429**	**5.9713**	**0.0109**	**0.8985**	**0.0912**	**0.9897**	**0.2401**	**0.0908**	**0.3309**	**26.0690**	**1,125.8566**	**1,151.9255**	**1.3405**	**0.0124**	**1,189.1342**

	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	1/3/2022	1/28/2022	5	20	
2	Site Preparation	Site Preparation	1/29/2022	2/11/2022	5	10	
3	Grading	Grading	2/12/2022	3/11/2022	5	20	

4	Building Construction	Building Construction	3/12/2022	1/27/2023	5	230	
5	Paving	Paving	1/28/2023	2/24/2023	5	20	
6	Architectural Coating	Architectural Coating	2/25/2023	3/24/2023	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 1.66

Residential Indoor: 324,000; Residential Outdoor: 108,000; Non-Residential Indoor: 3,231; Non-Residential Outdoor: 1,077; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	1	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

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	6	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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					
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**		**0.0124**	**0.0124**		**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**		**0.0124**	**0.0124**		**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0903**	**8.0600e-003**	**0.0984**	**0.0497**	**7.4200e-003**	**0.0571**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0903**	**8.0600e-003**	**0.0984**	**0.0497**	**7.4200e-003**	**0.0571**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					0.0669	0.0000	0.0669	0.0339	0.0000	0.0339	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0195	0.2086	0.1527	3.0000e-004		9.4100e-003	9.4100e-003		8.6600e-003	8.6600e-003	0.0000	26.0548	26.0548	8.4300e-003	0.0000	26.2654
Total	**0.0195**	**0.2086**	**0.1527**	**3.0000e-004**	**0.0669**	**9.4100e-003**	**0.0763**	**0.0339**	**8.6600e-003**	**0.0426**	**0.0000**	**26.0548**	**26.0548**	**8.4300e-003**	**0.0000**	**26.2654**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					0.0669	0.0000	0.0669	0.0339	0.0000	0.0339	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0195	0.2086	0.1527	3.0000e-004		9.4100e-003	9.4100e-003		8.6600e-003	8.6600e-003	0.0000	26.0547	26.0547	8.4300e-003	0.0000	26.2654

Total	**0.0195**	**0.2086**	**0.1527**	**3.0000e-004**	**0.0669**	**9.4100e-003**	**0.0763**	**0.0339**	**8.6600e-003**	**0.0426**	**0.0000**	**26.0547**	**26.0547**	**8.4300e-003**	**0.0000**	**26.2654**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.1792	1.6396	1.7182	2.8300e-003		0.0850	0.0850		0.0799	0.0799	0.0000	243.3115	243.3115	0.0583	0.0000	244.7688
Total	**0.1792**	**1.6396**	**1.7182**	**2.8300e-003**		**0.0850**	**0.0850**		**0.0799**	**0.0799**	**0.0000**	**243.3115**	**243.3115**	**0.0583**	**0.0000**	**244.7688**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.1792	1.6396	1.7182	2.8300e-003		0.0850	0.0850		0.0799	0.0799	0.0000	243.3112	243.3112	0.0583	0.0000	244.7685
Total	**0.1792**	**1.6396**	**1.7182**	**2.8300e-003**		**0.0850**	**0.0850**		**0.0799**	**0.0799**	**0.0000**	**243.3112**	**243.3112**	**0.0583**	**0.0000**	**244.7685**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0157	0.1439	0.1624	2.7000e-004		7.0000e-003	7.0000e-003		6.5800e-003	6.5800e-003	0.0000	23.1805	23.1805	5.5100e-003	0.0000	23.3183
Total	**0.0157**	**0.1439**	**0.1624**	**2.7000e-004**		**7.0000e-003**	**7.0000e-003**		**6.5800e-003**	**6.5800e-003**	**0.0000**	**23.1805**	**23.1805**	**5.5100e-003**	**0.0000**	**23.3183**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0157	0.1439	0.1624	2.7000e-004		7.0000e-003	7.0000e-003		6.5800e-003	6.5800e-003	0.0000	23.1805	23.1805	5.5100e-003	0.0000	23.3183
Total	**0.0157**	**0.1439**	**0.1624**	**2.7000e-004**		**7.0000e-003**	**7.0000e-003**		**6.5800e-003**	**6.5800e-003**	**0.0000**	**23.1805**	**23.1805**	**5.5100e-003**	**0.0000**	**23.3183**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0269	20.0269	6.4800e-003	0.0000	20.1888
Paving	2.1700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0125**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0269**	**20.0269**	**6.4800e-003**	**0.0000**	**20.1888**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0268	20.0268	6.4800e-003	0.0000	20.1888
Paving	2.1700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0125**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0268**	**20.0268**	**6.4800e-003**	**0.0000**	**20.1888**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	1.1530					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**1.1549**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	1.1530					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**1.1549**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 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	0.6177	0.5543	4.2446	9.4100e-003	0.8985	6.6100e-003	0.9051	0.2401	6.1600e-003	0.2462	0.0000	808.3402	808.3402	0.0557	0.0000	809.7318
Unmitigated	0.6177	0.5543	4.2446	9.4100e-003	0.8985	6.6100e-003	0.9051	0.2401	6.1600e-003	0.2462	0.0000	808.3402	808.3402	0.0557	0.0000	809.7318

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,064.00	1,022.40	937.60	2,401,992	2,401,992
General Office Building	23.76	5.30	2.26	43,136	43,136
Parking Lot	0.00	0.00	0.00		

Total	1,087.76	1,027.70	939.86	2,445,128	2,445,128

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
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.541308	0.058963	0.198151	0.117012	0.025663	0.006067	0.010470	0.010460	0.001165	0.000755	0.028402	0.000758	0.000826
General Office Building	0.541308	0.058963	0.198151	0.117012	0.025663	0.006067	0.010470	0.010460	0.001165	0.000755	0.028402	0.000758	0.000826
Parking Lot	0.541308	0.058963	0.198151	0.117012	0.025663	0.006067	0.010470	0.010460	0.001165	0.000755	0.028402	0.000758	0.000826

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	211.8709	211.8709	9.5800e-003	1.9800e-003	212.7011
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	211.8709	211.8709	9.5800e-003	1.9800e-003	212.7011
NaturalGas Mitigated	7.7600e-003	0.0664	0.0291	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	76.7641	76.7641	1.4700e-003	1.4100e-003	77.2203

NaturalGas Unmitigated	7.7600e-003	0.0664	0.0291	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	76.7641	76.7641	1.4700e-003	1.4100e-003	77.2203

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					
Apartments Mid Rise	1.39687e+006	7.5300e-003	0.0644	0.0274	4.1000e-004		5.2000e-003	5.2000e-003		5.2000e-003	5.2000e-003	0.0000	74.5422	74.5422	1.4300e-003	1.3700e-003	74.9852
General Office Building	41636.8	2.2000e-004	2.0400e-003	1.7100e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.2219	2.2219	4.0000e-005	4.0000e-005	2.2351
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		**7.7500e-003**	**0.0664**	**0.0291**	**4.2000e-004**		**5.3600e-003**	**5.3600e-003**		**5.3600e-003**	**5.3600e-003**	**0.0000**	**76.7641**	**76.7641**	**1.4700e-003**	**1.4100e-003**	**77.2203**

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					
Apartments Mid Rise	1.39687e+006	7.5300e-003	0.0644	0.0274	4.1000e-004		5.2000e-003	5.2000e-003		5.2000e-003	5.2000e-003	0.0000	74.5422	74.5422	1.4300e-003	1.3700e-003	74.9852
General Office Building	41636.8	2.2000e-004	2.0400e-003	1.7100e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.2219	2.2219	4.0000e-005	4.0000e-005	2.2351
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		**7.7500e-003**	**0.0664**	**0.0291**	**4.2000e-004**		**5.3600e-003**	**5.3600e-003**		**5.3600e-003**	**5.3600e-003**	**0.0000**	**76.7641**	**76.7641**	**1.4700e-003**	**1.4100e-003**	**77.2203**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	675518	196.5161	8.8900e-003	1.8400e-003	197.2861
General Office Building	26881.9	7.8203	3.5000e-004	7.0000e-005	7.8509
Parking Lot	25900	7.5346	3.4000e-004	7.0000e-005	7.5641
Total		**211.8709**	**9.5800e-003**	**1.9800e-003**	**212.7011**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	675518	196.5161	8.8900e-003	1.8400e-003	197.2861
General Office Building	26881.9	7.8203	3.5000e-004	7.0000e-005	7.8509
Parking Lot	25900	7.5346	3.4000e-004	7.0000e-005	7.5641
Total		**211.8709**	**9.5800e-003**	**1.9800e-003**	**212.7011**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	1.1584	0.0222	1.6976	1.0700e-003		0.0793	0.0793		0.0793	0.0793	7.2944	4.9401	12.2345	0.0136	4.8000e-004	12.7169
Unmitigated	1.1584	0.0222	1.6976	1.0700e-003		0.0793	0.0793		0.0793	0.0793	7.2944	4.9401	12.2345	0.0136	4.8000e-004	12.7169

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	0.1153					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6381					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.3692	8.5000e-003	0.5084	1.0100e-003		0.0727	0.0727		0.0727	0.0727	7.2944	2.9961	10.2905	0.0117	4.8000e-004	10.7261
Landscaping	0.0359	0.0137	1.1892	6.0000e-005		6.5900e-003	6.5900e-003		6.5900e-003	6.5900e-003	0.0000	1.9440	1.9440	1.8700e-003	0.0000	1.9907
Total	**1.1584**	**0.0222**	**1.6976**	**1.0700e-003**		**0.0793**	**0.0793**		**0.0793**	**0.0793**	**7.2944**	**4.9401**	**12.2345**	**0.0136**	**4.8000e-004**	**12.7169**

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	0.1153					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6381					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.3692	8.5000e-003	0.5084	1.0100e-003		0.0727	0.0727		0.0727	0.0727	7.2944	2.9961	10.2905	0.0117	4.8000e-004	10.7261
Landscaping	0.0359	0.0137	1.1892	6.0000e-005		6.5900e-003	6.5900e-003		6.5900e-003	6.5900e-003	0.0000	1.9440	1.9440	1.8700e-003	0.0000	1.9907
Total	**1.1584**	**0.0222**	**1.6976**	**1.0700e-003**		**0.0793**	**0.0793**		**0.0793**	**0.0793**	**7.2944**	**4.9401**	**12.2345**	**0.0136**	**4.8000e-004**	**12.7169**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	27.3697	0.3532	8.5400e-003	38.7448
Unmitigated	27.3697	0.3532	8.5400e-003	38.7448

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	10.4246 / 6.57206	26.4085	0.3407	8.2400e-003	37.3814
General Office Building	0.382128 / 0.234207	0.9612	0.0125	3.0000e-004	1.3634
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**27.3697**	**0.3532**	**8.5400e-003**	**38.7448**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	10.4246 / 6.57206	26.4085	0.3407	8.2400e-003	37.3814
General Office Building	0.382128 / 0.234207	0.9612	0.0125	3.0000e-004	1.3634
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**27.3697**	**0.3532**	**8.5400e-003**	**38.7448**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	15.3461	0.9069	0.0000	38.0194
Unmitigated	15.3461	0.9069	0.0000	38.0194

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	73.6	14.9401	0.8829	0.0000	37.0136
General Office Building	2	0.4060	0.0240	0.0000	1.0058
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**15.3461**	**0.9069**	**0.0000**	**38.0194**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	73.6	14.9401	0.8829	0.0000	37.0136

General Office Building	2	0.4060	0.0240	0.0000	1.0058
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**15.3461**	**0.9069**	**0.0000**	**38.0194**

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

Attachment 2: EMFAC2021 Calculations

CalEEMod Construction Inputs

Phase	CalEEMod WORKER TRIPS	CalEEMod VENDOR TRIPS	Total Worker Trips	Total Vendor Trips	CalEEMod HAULING TRIPS	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class	*Worker VMT*	*Vendor VMT*	*Hauling VMT*
Demolition	15	0	300	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	3240	0	0
Site Preparation	18	0	180	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	1944	0	0
Grading	15	0	300	0	3,114	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	3240	0	62280
Building Construction	147	30	33810	6900	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	365148	50370	0
Paving	15	0	300	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	3240	0	0
Architectural Coating	29	0	580	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	6264	0	0

Number of Days Per Year					
2022	1/3/22	12/31/22	363	**260**	
2023	1/1/23	3/24/23	83	**60**	
			446	**320**	***Total Workdays***

Phase	Start Date	End Date	Days/Week	Workdays
Demolition	1/3/2022	1/28/2022	5	20
Site Preparation	1/29/2022	2/11/2022	5	10
Grading	2/12/2022	3/11/2022	5	20
Building Construction	3/12/2022	1/27/2023	5	230
Paving	1/28/2023	2/24/2023	5	20
Architectural Coating	2/25/2023	3/24/2023	5	20

Summary of Construction Traffic Emissions (EMFAC2017)

Pollutants YEAR	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2
					Tons						*Metric Tons*
Criteria Pollutants											
2022	0.0429	0.4236	0.4267	0.0025	0.1330	0.0302	0.1632	0.0200	0.0141	0.0341	232.3024
2023	0.0098	0.0969	0.0976	0.0006	0.0304	0.0069	0.0373	0.0046	0.0032	0.0078	53.1160

CalEEMod EMFAC2017 Emission Factors Input — Year 2024

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.004786	0.003176	0.00514	0.028216434	0.009248	0	0	0.049209	0
A	CH4_RUNEX	0.001942	0.003575	0.002763	0.00318	0.009096	0.00681	0.00287	0.09779824	0.007126	0.428671	0.342849	0.007265	0.009292
A	CH4_STREX	0.046695	0.064361	0.063594	0.06972	0.013954	0.008311	0.013937	9.27828E-07	0.024995	0.027185	0.261141	0.004554	0.021432
A	CO_IDLEX	0	0	0	0	0.177874	0.139461	0.529293	5.977158049	0.501821	0	0	2.031669	0
A	CO_RUNEX	0.519168	0.799006	0.65501	0.694684	0.850548	0.61086	0.358392	0.650444202	0.762594	3.248308	20.7085	0.597205	0.873692
A	CO_STREX	2.162877	2.396768	2.761519	2.952257	1.044972	0.634249	1.645998	0.023604974	2.709177	2.387874	9.131437	0.677854	1.954646
A	CO2_NBIO_IDLEX	0	0	0	0	9.034956	13.83954	97.84412	1018.594036	64.04908	0	0	343.3411	0
A	CO2_NBIO_RUNEX	243.6729	296.1683	316.8207	382.3945	776.5505	762.6793	1143.683	1484.172524	1523.452	1667.594	218.0145	1047.059	1478.444
A	CO2_NBIO_STREX	51.03729	63.11443	67.30844	79.16177	11.06658	7.915692	13.66948	0.267861969	21.9058	24.34497	61.89949	3.698178	17.13798
A	NOX_IDLEX	0	0	0	0	0.065958	0.093396	0.641686	5.583298446	0.224193	0	0	4.04616	0
A	NOX_RUNEX	0.034067	0.069639	0.05642	0.066709	0.864713	0.754814	1.442882	2.955160935	0.984744	0.437412	1.1865	5.966622	1.423827
A	NOX_STREX	0.17384	0.239925	0.256165	0.284518	0.295419	0.186502	1.504232	2.392822362	0.624234	0.217413	0.275575	0.655157	0.228231
A	PM10_IDLEX	0	0	0	0	0.000914	0.001395	0.000542	0.003939309	7.59E-05	0	0	0.004518	0
A	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.08918	0.13034	0.060755278	0.13034	0.105346	0.01176	0.7448	0.13034
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009871	0.010736	0.012	0.035373072	0.012	0.020357	0.004	0.010903	0.013241
A	PM10_RUNEX	0.001432	0.001671	0.001396	0.001513	0.01189	0.014846	0.006878	0.024464854	0.005826	0.003737	0.00212	0.03535	0.026992
A	PM10_STREX	0.001741	0.002219	0.001718	0.001773	0.000258	0.000128	0.000161	1.56625E-06	0.000197	0.000268	0.003268	5.43E-05	0.000245
A	PM25_IDLEX	0	0	0	0	0.000874	0.001334	0.000519	0.003768896	7.26E-05	0	0	0.004322	0
A	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.03822	0.05586	0.026037976	0.05586	0.045148	0.00504	0.3192	0.05586
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002468	0.002684	0.003	0.008843268	0.003	0.005089	0.001	0.002726	0.00331
A	PM25_RUNEX	0.001321	0.001538	0.001285	0.001398	0.011328	0.014178	0.006571	0.023406422	0.00555	0.00353	0.001982	0.033805	0.025783
A	PM25_STREX	0.001601	0.00204	0.001579	0.00163	0.000237	0.000118	0.000148	1.44011E-06	0.000181	0.000246	0.003079	4.99E-05	0.000225
A	ROG_DIURN	0.036197	0.078735	0.055007	0.059115	0.001769	0.000884	0.000523	5.83418E-06	0.001303	0.000667	1.573691	0.000288	0.511045
A	ROG_HTSK	0.094782	0.174252	0.120935	0.126636	0.076244	0.039589	0.02919	0.000266835	0.023789	0.007912	0.754271	0.003453	0.049639
A	ROG_IDLEX	0	0	0	0	0.020237	0.01586	0.025615	0.405298885	0.047817	0	0	0.229421	0
A	ROG_RESTL	0.035019	0.071453	0.057986	0.063356	0.001002	0.000522	0.000314	3.74542E-06	0.000648	0.000411	0.959384	0.000141	0.198037
A	ROG_RUNEX	0.007677	0.015327	0.011037	0.013286	0.102322	0.107956	0.021664	0.029781804	0.037501	0.017402	2.336083	0.100214	0.064496
A	ROG_RUNLS	0.208751	0.65127	0.439764	0.431155	0.573353	0.245198	0.172485	0.001376317	0.274808	0.036773	2.327595	0.021414	1.197606
A	ROG_STREX	0.211156	0.319104	0.295548	0.33908	0.070922	0.041352	0.074345	4.85172E-06	0.127971	0.113914	2.009476	0.026015	0.088299
A	SO2_IDLEX	0	0	0	0	8.75E-05	0.000132	0.000929	0.009340381	0.000612	0	0	0.003265	0
A	SO2_RUNEX	0.000142	0.002933	0.010958	0.003701	0.007573	0.007367	0.010958	0.013189097	0.014861	0.01499	0.002157	0.009994	0.014493
A	SO2_STREX	0	0	0.000135	0.000767	0.00011	7.83E-05	0.000135	2.65071E-06	0.000217	0.000241	0.000613	3.66E-05	0.00017
A	TOG_DIURN	0.036197	0.078735	0.055007	0.059115	0.001769	0.000884	0.000523	5.83418E-06	0.001303	0.000667	1.573691	0.000288	0.511045
A	TOG_HTSK	0.094782	0.174252	0.120935	0.126636	0.076244	0.039589	0.02919	0.000266835	0.023789	0.007912	0.754271	0.003453	0.049639
A	TOG_IDLEX	0	0	0	0	0.028378	0.021387	0.035018	0.470846468	0.064514	0	0	0.328067	0
A	TOG_RESTL	0.035019	0.071453	0.057986	0.063356	0.001002	0.000522	0.000314	3.74542E-06	0.000648	0.000411	0.959384	0.000141	0.198037
A	TOG_RUNEX	0.011128	0.02235	0.01605	0.019237	0.125336	0.126146	0.02841	0.131065955	0.052996	0.450456	2.888591	0.119416	0.083772
A	TOG_RUNLS	0.208751	0.65127	0.439764	0.431155	0.573353	0.245198	0.172485	0.001376317	0.274808	0.036773	2.327595	0.021414	1.197606
A	TOG_STREX	0.231189	0.349379	0.323588	0.371249	0.077651	0.045275	0.081398	5.31203E-06	0.140112	0.124722	2.186629	0.028484	0.096676

CalEEMod EMFAC2017 Fleet Mix Input — Year 2024

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.541308	0.058963	0.198151	0.117012	0.025663	0.006067	0.01047	0.01046	0.001165	0.000755	0.028402	0.000758	0.000826
General Office Building	0.541308	0.058963	0.198151	0.117012	0.025663	0.006067	0.01047	0.01046	0.001165	0.000755	0.028402	0.000758	0.000826
Parking Lot	0.541308	0.058963	0.198151	0.117012	0.025663	0.006067	0.01047	0.01046	0.001165	0.000755	0.028402	0.000758	0.000826

Adjustment Factors for EMFAC2017 Gasoline Light Duty Vehicles						
Year	NOx Exhaust	TOG Evaporative	TOG Exhaust	PM Exhaust	CO Exhaust	CO2 Exhaust
NA	1	1	1	1	1	1
2021	1.0002	1.0001	1.0002	1.0009	1.0005	1.0023
2022	1.0004	1.0003	1.0004	1.0018	1.0014	1.0065
2023	1.0007	1.0006	1.0007	1.0032	1.0027	1.0126
2024	1.0012	1.0010	1.0011	1.0051	1.0044	1.0207
2025	1.0018	1.0016	1.0016	1.0074	1.0065	1.0309
2026	1.0023	1.0022	1.0020	1.0091	1.0083	1.0394
2027	1.0028	1.0028	1.0024	1.0105	1.0102	1.0475
2028	1.0034	1.0035	1.0028	1.0117	1.0120	1.0554
2029	1.0040	1.0042	1.0032	1.0129	1.0138	1.0629
2030	1.0047	1.0051	1.0037	1.0142	1.0156	1.0702
2031	1.0054	1.0061	1.0042	1.0155	1.0173	1.0770
2032	1.0061	1.0072	1.0047	1.0169	1.0189	1.0834
2033	1.0068	1.0083	1.0052	1.0182	1.0204	1.0893
2034	1.0075	1.0095	1.0058	1.0196	1.0218	1.0947
2035	1.0081	1.0108	1.0063	1.0210	1.0232	1.0997
2036	1.0088	1.0121	1.0069	1.0223	1.0244	1.1041
2037	1.0094	1.0134	1.0074	1.0236	1.0255	1.1080
2038	1.0099	1.0148	1.0079	1.0248	1.0265	1.1114
2039	1.0104	1.0161	1.0085	1.0259	1.0274	1.1143
2040	1.0109	1.0174	1.0090	1.0270	1.0281	1.1168
2041	1.0113	1.0186	1.0095	1.0279	1.0288	1.1189
2042	1.0116	1.0198	1.0099	1.0286	1.0294	1.1207
2043	1.0119	1.0207	1.0103	1.0293	1.0299	1.1221
2044	1.0122	1.0216	1.0106	1.0299	1.0303	1.1233
2045	1.0124	1.0225	1.0109	1.0303	1.0306	1.1243
2046	1.0125	1.0233	1.0111	1.0308	1.0309	1.1251
2047	1.0127	1.0240	1.0113	1.0311	1.0311	1.1258
2048	1.0128	1.0246	1.0115	1.0314	1.0313	1.1263
2049	1.0128	1.0252	1.0116	1.0316	1.0315	1.1268
2050	1.0129	1.0257	1.0117	1.0318	1.0316	1.1272
Enter Year: 2022	**1.0004**	**1.0003**	**1.0004**	**1.0018**	**1.0014**	**1.0065**

*PM Exhaust off model factor is only applied to the PM Exhaust emissions not start/idle

The off-model adjustment factors need to be applied only to emissions from gasoline light duty vehicles (LDA, LDT1, LDT2 and MDV). Please note that the adjustment factors are by calendar year and includes all model years.

Enter NA in the date field if adjustments do not apply

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: County
Region: Marin
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	VMT	Trips	NOx_RUNE	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PM	PM2.5_PM	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PM	PM10_PM	CO2_RUNE	CO2_IDLEX	CO2_STREX	CH4_RUNE	CH4_IDLEX	CH4_STREX	N2O_RUNE	N2O_IDLEX	N2O_STREX	ROG_RUNI	ROG_IDLEX	ROG_STRE	ROG_HOTS	ROG_RUNI	ROG_REST	ROG_DIUR	TOG_RUNE	TOG_IDLEX	TOG_STRE	TOG_HOTS	TOG_RUNI	TOG_REST	TOG_DIUR	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Marin	2022	HHDT	Aggregate	Aggregate	Gasoline	2.322679	314.838	46.47216	3.718242	0	0.004003	0.000647	0	0.000249	0.005	0.02646	0.000704	0	0.000271	0.02	0.06174	2183.57	0	46.80932	0.081583	0	0.000175	0.145168	0	0.000195	0.37511	0	0.000916	0.040965	0.207154	0.011396	0.019226	0.54736	0	0.001003	0.040965	0.207154	0.011396	0.019226	32.58226	0	4.160093	0.021608	0	0.000463
Marin	2022	HHDT	Aggregate	Aggregate	Diesel	847.3732	82872.96	7541.85	3.867562	55.40396	2.17317	0.03323	0.041401	0	0.008847	0.026009	0.034732	0.043273	0	0.035387	0.060689	1537.488	9632.918	0	0.003845	0.174373	0	0.241672	1.514161	0	0.082778	3.754212	0	0	0	0	0	0.094236	4.273885	0	0	0	0	0	0.361629	50.23551	0	0.014525	0.091007	0
Marin	2022	HHDT	Aggregate	Aggregate	Natural Ga	60.1787	2454.834	234.6969	1.445264	20.47389	0	0.005097	0.028628	0	0.009	0.02646	0.005327	0.029923	0	0.036	0.06174	3130.749	3960.823	0	3.446276	1.242032	0	0.638224	0.80744	0	0.138227	0.040154	0	0	0	0	0	3.618567	1.293116	0	0	0	0	0	10.82954	21.85143	0	0	0	0
Marin	2022	LDA	Aggregate	Aggregate	Gasoline	129563.8	4355174	608209.8	0.044156	0	0.208071	0.001383	0	0.00183	0.002	0.01575	0.001504	0	0.00199	0.008	0.03675	264.1501	0	55.77464	0.002651	0	0.057532	0.004718	0	0.027024	0.010618	0	0.267457	0.113012	0.238311	0.196588	0.206753	0.015485	0	0.29283	0.113012	0.238311	0.196588	0.206753	0.630963	0	2.418165	0.002614	0	0.000552
Marin	2022	LDA	Aggregate	Aggregate	Diesel	2272.772	73283.39	10501.26	0.116195	0	0	0.00988	0	0	0.002	0.01575	0.010326	0	0	0.008	0.03675	221.232	0	0	0.000876	0	0	0.034775	0	0	0.018852	0	0	0	0	0	0	0.021461	0	0	0	0	0	0.260094	0	0	0.002091	0	0
Marin	2022	LDA	Aggregate	Aggregate	Electricity	3850.387	149672.8	18881.41	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0
Marin	2022	LDT1	Aggregate	Aggregate	Gasoline	15428.61	496265.8	70497.86	0.094578	0	0.28182	0.001736	0	0.002347	0.002	0.01575	0.001888	0	0.002552	0.008	0.03675	310.2879	0	66.01985	0.004892	0	0.077988	0.00741	0	0.030304	0.021449	0	0.397738	0.205105	0.757214	0.3774	0.428284	0.031281	0	0.43547	0.205105	0.757214	0.3774	0.428284	1.00663	0	2.598278	0.003071	0	0.000653
Marin	2022	LDT1	Aggregate	Aggregate	Diesel	10.37569	124.1997	33.04358	1.213652	0	0	0.172221	0	0	0.002	0.01575	0.180008	0	0	0.008	0.03675	417.5434	0	0	0.010819	0	0	0.065632	0	0	0.232932	0	0	0	0	0	0	0.265178	0	0	0	0	0	1.484678	0	0	0.003947	0	0
Marin	2022	LDT1	Aggregate	Aggregate	Electricity	109.0022	4442.41	541.764	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0
Marin	2022	LDT2	Aggregate	Aggregate	Gasoline	50593.24	1685774	235337.4	0.073326	0	0.305114	0.00133	0	0.001702	0.002	0.01575	0.001446	0	0.001852	0.008	0.03675	335.6699	0	71.9273	0.003468	0	0.074109	0.006245	0	0.03378	0.01401	0	0.350403	0.131688	0.465107	0.280768	0.272615	0.020438	0	0.383646	0.131688	0.465107	0.280768	0.272615	0.764729	0	2.983184	0.003322	0	0.000712
Marin	2022	LDT2	Aggregate	Aggregate	Diesel	556.476	20219.11	2678.125	0.039922	0	0	0.004639	0	0	0.002	0.01575	0.004848	0	0	0.008	0.03675	305.0175	0	0	0.000669	0	0	0.047945	0	0	0.014412	0	0	0	0	0	0	0.016408	0	0	0	0	0	0.140502	0	0	0.002884	0	0
Marin	2022	LDT2	Aggregate	Aggregate	Electricity	481.0798	15470.03	2412.355	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0
Marin	2022	LHDT1	Aggregate	Aggregate	Gasoline	3455.817	121161.5	51486.53	0.271723	0.038749	0.536509	0.002314	0	0.000426	0.002	0.03276	0.002516	0	0.000464	0.008	0.07644	1010.412	121.4506	19.13297	0.012929	0.121453	0.026699	0.015961	0.003114	0.041482	0.064121	0.443579	0.136297	0.138453	1.030335	0.026619	0.047963	0.093565	0.64727	0.149229	0.138453	1.030335	0.026619	0.047963	1.191132	3.743966	1.856644	0.009999	0.001202	0.000189
Marin	2022	LHDT1	Aggregate	Aggregate	Diesel	2719.92	102034.5	34213.17	2.026741	2.160834	0	0.025142	0.02701	0	0.003	0.03276	0.026279	0.028231	0	0.012	0.07644	553.7404	135.1688	0	0.007884	0.005098	0	0.08704	0.021247	0	0.169727	0.10976	0	0	0	0	0	0.193223	0.124954	0	0	0	0	0	0.74564	0.909745	0	0.005235	0.001278	0
Marin	2022	LHDT2	Aggregate	Aggregate	Gasoline	465.6701	16573.73	6937.79	0.255682	0.038311	0.535794	0.002036	0	0.000336	0.002	0.03822	0.002215	0	0.000365	0.008	0.08918	1152.319	139.5271	21.68075	0.009421	0.12179	0.025241	0.015902	0.003065	0.041238	0.043396	0.439018	0.126888	0.11632	0.751873	0.022241	0.039108	0.063324	0.640614	0.138927	0.11632	0.751873	0.022241	0.039108	0.80206	3.754459	1.812577	0.011403	0.001381	0.000215
Marin	2022	LHDT2	Aggregate	Aggregate	Diesel	862.0879	33937.49	10843.98	1.294438	2.057558	0	0.021217	0.026825	0	0.003	0.03822	0.022176	0.028038	0	0.012	0.08918	613.9646	213.9782	0	0.006912	0.005098	0	0.096507	0.033634	0	0.148812	0.10976	0	0	0	0	0	0.169412	0.124954	0	0	0	0	0	0.634359	0.909745	0	0.005804	0.002023	0
Marin	2022	MCY	Aggregate	Aggregate	Gasoline	7015.065	51666.26	14030.13	1.193857	0	0.2756	0.00196	0	0.00347	0.001	0.00504	0.002092	0	0.003673	0.004	0.01176	218.4694	0	62.60806	0.347416	0	0.264387	0.067993	0	0.015407	2.384728	0	2.038653	0.789408	2.561423	0.979119	1.588688	2.930841	0	2.217831	0.789408	2.561423	0.979119	1.588688	21.5316	0	9.070736	0.002162	0	0.00062
Marin	2022	MDV	Aggregate	Aggregate	Gasoline	29660.65	955422.8	137072.8	0.092148	0	0.358863	0.001401	0	0.001881	0.002	0.01575	0.001524	0	0.002045	0.008	0.03675	404.8492	0	87.11354	0.004308	0	0.086373	0.007429	0	0.035906	0.018043	0	0.429964	0.144194	0.478125	0.318693	0.303631	0.026283	0	0.47075	0.144194	0.478125	0.318693	0.303631	0.864981	0	3.406087	0.004006	0	0.000862
Marin	2022	MDV	Aggregate	Aggregate	Diesel	1137.649	39734.21	5438.47	0.048401	0	0	0.004773	0	0	0.002	0.01575	0.004989	0	0	0.008	0.03675	398.3749	0	0	0.00056	0	0	0.062619	0	0	0.012064	0	0	0	0	0	0	0.013734	0	0	0	0	0	0.218353	0	0	0.003766	0	0
Marin	2022	MDV	Aggregate	Aggregate	Electricity	200.4776	6795.888	1022.094	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0
Marin	2022	MH	Aggregate	Aggregate	Gasoline	504.9258	4888.784	50.51278	0.424131	0	0.333712	0.001612	0	0.000356	0.003	0.05586	0.001753	0	0.000387	0.012	0.13034	1750.985	0	26.04277	0.014745	0	0.032859	0.025997	0	0.034458	0.063653	0	0.140007	0.085554	2.110139	0.033533	0.089436	0.092882	0	0.15329	0.085554	2.110139	0.033533	0.089436	1.5825	0	3.098997	0.017327	0	0.000258
Marin	2022	MH	Aggregate	Aggregate	Diesel	221.6198	2169.947	22.16198	4.137214	0	0	0.09107	0	0	0.004	0.05586	0.095188	0	0	0.016	0.13034	1024.433	0	0	0.005079	0	0	0.161027	0	0	0.109353	0	0	0	0	0	0	0.124491	0	0	0	0	0	0.387033	0	0	0.009685	0	0
Marin	2022	MHDT	Aggregate	Aggregate	Gasoline	338.6158	17672.47	6775.025	0.568993	0.088411	0.383156	0.001263	0	0.000457	0.003	0.05586	0.001374	0	0.000497	0.012	0.13034	1743.831	538.8171	39.82282	0.018166	0.259948	0.041529	0.027028	0.007264	0.028994	0.090914	1.011571	0.227679	0.094464	0.570819	0.020632	0.03597	0.132662	1.476083	0.24928	0.094464	0.570819	0.020632	0.03597	2.081247	15.10332	5.142999	0.017257	0.005332	0.000394
Marin	2022	MHDT	Aggregate	Aggregate	Diesel	1347.742	70318.68	12193.99	2.374549	11.00489	1.704483	0.041846	0.018096	0	0.003	0.05586	0.043738	0.018914	0	0.012	0.13034	1056.091	1265.645	0	0.004516	0.005759	0	0.166003	0.198942	0	0.097223	0.123987	0	0	0	0	0	0.110681	0.14115	0	0	0	0	0	0.330729	3.359638	0	0.009977	0.011957	0
Marin	2022	OBUS	Aggregate	Aggregate	Gasoline	127.856	6584.562	2558.144	0.466447	0.065188	0.324034	0.000941	0	0.000206	0.003	0.05586	0.001024	0	0.000224	0.012	0.13034	1781.863	379.5718	26.61701	0.013689	0.202274	0.030744	0.023853	0.005697	0.026431	0.06427	0.748207	0.157666	0.026708	0.303349	0.014258	0.029041	0.093782	1.091782	0.172625	0.026708	0.303349	0.014258	0.029041	1.441171	5.786194	3.343722	0.017633	0.003756	0.000263
Marin	2022	OBUS	Aggregate	Aggregate	Diesel	43.84264	3639.916	440.6047	2.446288	18.60711	1.9937	0.03143	0.031053	0	0.003	0.05586	0.032851	0.032458	0	0.012	0.13034	1249.636	3318.7	0	0.003467	0.057066	0	0.196425	0.521653	0	0.074638	1.228605	0	0	0	0	0	0.084969	1.398674	0	0	0	0	0	0.291246	16.27224	0	0.011806	0.031353	0
Marin	2022	SBUS	Aggregate	Aggregate	Gasoline	34.30664	1705.151	137.2265	0.867962	0.91824	0.555039	0.001868	0	0.000697	0.002	0.3192	0.002031	0	0.000759	0.008	0.7448	852.9793	2537.521	51.573	0.025155	2.407311	0.066136	0.039777	0.08499	0.049522	0.126564	10.52036	0.388455	0.107491	0.736091	0.013161	0.035317	0.184683	15.35129	0.425309	0.107491	0.736091	0.013161	0.035317	3.022088	81.50519	10.72465	0.008441	0.025111	0.00051
Marin	2022	SBUS	Aggregate	Aggregate	Diesel	148.3604	4641.985	1712.059	8.674391	53.04736	0.541068	0.048722	0.060646	0	0.003	0.3192	0.050925	0.063388	0	0.012	0.7448	1153.864	3744.252	0	0.005564	0.012385	0	0.181371	0.588544	0	0.119794	0.266644	0	0	0	0	0	0.136376	0.303554	0	0	0	0	0	0.311894	4.776441	0	0.010901	0.035374	0
Marin	2022	UBUS	Aggregate	Aggregate	Gasoline	35.78096	3315.187	143.1238	0.32774	0	0.797042	0.001267	0	0.000463	0.002959	0.055135	0.001378	0	0.000503	0.011836	0.128648	2244.953	0	80.82837	0.00672	0	0.104086	0.027038	0	0.067692	0.022127	0	0.440698	0.053175	0.330527	0.009193	0.013913	0.032287	0	0.482509	0.053175	0.330527	0.009193	0.013913	0.390684	0	7.027006	0.022216	0	0.0008
Marin	2022	UBUS	Aggregate	Aggregate	Diesel	58.27691	2764.351	233.1076	0.864875	0	0	0.005377	0	0	0.007201	0.035273	0.00562	0	0	0.028806	0.082303	1365.814	0	0	0.074581	0	0	0.214687	0	0	0.001066	0	0	0	0	0	0	0.076116	0	0	0	0	0	0.123767	0	0	0.012912	0	0
Marin	2022	UBUS	Aggregate	Aggregate	Natural Ga	11.18311	395.4604	44.73242	0.479123	0	0	0.003122	0	0	0.008183	0.030464	0.003263	0	0	0.032732	0.071082	1980.585	0	0	6.241614	0	0	0.403755	0	0	0.08918	0	0	0	0	0	0	6.370025	0	0	0	0	0	48.33079	0	0	0	0	0

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: County
Region: Marin
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	VMT	Trips	NOx_RUNE	NOx_IDLE	NOx_STRE	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PMB	PM2.5_PMT	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PMB	PM10_PMT	CO2_RUNE	CO2_IDLEX	CO2_STRE	CH4_RUNE	CH4_IDLEX	CH4_STRE	N2O_RUNE	N2O_IDLE	N2O_STRE	ROG_RUNI	ROG_IDLE	ROG_STRE	ROG_HOTS	ROG_RUNI	ROG_REST	ROG_DIUR	TOG_RUNE	TOG_IDLE	TOG_STRE	TOG_HOTS	TOG_RUNI	TOG_REST	TOG_DIUR	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Marin	2024	HHDT	Aggregate	Aggregate	Gasoline	2.393533	295.9956	47.88981	3.419373	0	0.003427	0.000697	0	0.000247	0.005	0.02646	0.000758	0	0.000269	0.02	0.06174	2120.174	0	45.9617	0.078442	0	0.000159	0.139964	0	0.000168	0.355808	0	0.000832	0.045785	0.236158	0.012858	0.020029	0.519194	0	0.000911	0.045785	0.236158	0.012858	0.020029	31.77875	0	4.050312	0.020981	0	0.000455
Marin	2024	HHDT	Aggregate	Aggregate	Diesel	891.3086	86917.04	7923.202	3.00541	50.06378	2.481614	0.024042	0.033058	0	0.008852	0.026024	0.025129	0.034552	0	0.035407	0.060723	1434.59	9114.809	0	0.00121	0.173439	0	0.225498	1.432721	0	0.026051	3.734099	0	0	0	0	0.029657	4.250988	0	0	0	0	0	0.240452	53.5553	0	0.013553	0.086112	0
Marin	2024	HHDT	Aggregate	Aggregate	Natural Ga	63.12546	2574.966	246.1893	1.205673	19.91682	0	0.004572	0.023849	0	0.009	0.02646	0.004779	0.024927	0	0.036	0.06174	3084.699	3896.469	0	3.360325	1.224142	0	0.628836	0.794321	0	0.118247	0.035174	0	0	0	0	3.509482	1.269474	0	0	0	0	0	10.91133	21.88807	0	0	0	0
Marin	2024	LDA	Aggregate	Aggregate	Gasoline	133488.9	4388991	627482.2	0.034651	0	0.182811	0.001268	0	0.001685	0.002	0.01575	0.001379	0	0.001833	0.008	0.03675	249.3805	0	52.64554	0.002044	0	0.049164	0.004055	0	0.024927	0.007873	0	0.222074	0.099515	0.219566	0.173023	0.17852	0.543447	0	2.267239	0.002468	0	0.000521
Marin	2024	LDA	Aggregate	Aggregate	Diesel	2251.126	69765.21	10359.08	0.086272	0	0	0.007743	0	0	0.002	0.01575	0.008093	0	0	0.008	0.03675	211.3346	0	0	0.000718	0	0	0.033219	0	0	0.015467	0	0	0	0	0	0.017608	0	0	0	0	0	0.237686	0	0	0.001998	0	0
Marin	2024	LDA	Aggregate	Aggregate	Electricity	4672.563	187778.5	22811.84	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0
Marin	2024	LDT1	Aggregate	Aggregate	Gasoline	15815.19	498632.8	72444.31	0.070384	0	0.242566	0.001522	0	0.002065	0.002	0.01575	0.001655	0	0.002246	0.008	0.03675	294.4384	0	62.59035	0.003627	0	0.065147	0.005996	0	0.027871	0.015498	0	0.32265	0.176148	0.658573	0.330937	0.364564	0.807197	0	2.415439	0.002914	0	0.000619
Marin	2024	LDT1	Aggregate	Aggregate	Diesel	8.736885	105.9258	27.60266	1.022322	0	0	0.145798	0	0	0.002	0.01575	0.15239	0	0	0.008	0.03675	403.1815	0	0	0.009195	0	0	0.063375	0	0	0.197962	0	0	0	0	0	0.225366	0	0	0	0	0	1.262534	0	0	0.003812	0	0
Marin	2024	LDT1	Aggregate	Aggregate	Electricity	172.3048	7390.27	857.9863	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0
Marin	2024	LDT2	Aggregate	Aggregate	Gasoline	51368.49	1658844	238446.9	0.057335	0	0.262679	0.001256	0	0.001621	0.002	0.01575	0.001366	0	0.001763	0.008	0.03675	314.726	0	67.70123	0.002825	0	0.065289	0.005259	0	0.030688	0.011131	0	0.303093	0.123961	0.451035	0.276015	0.261703	0.616242	0	0.331849	0.123961	0.451035	0.276015	0.261703	0.666926	0	2.822711	0.003114	0	0.00067
Marin	2024	LDT2	Aggregate	Aggregate	Diesel	587.7502	20062.53	2793.428	0.036847	0	0	0.004583	0	0	0.002	0.01575	0.00479	0	0	0.008	0.03675	292.7454	0	0	0.000666	0	0	0.046016	0	0	0.014337	0	0	0	0	0	0.016322	0	0	0	0	0	0.144903	0	0	0.002767	0	0
Marin	2024	LDT2	Aggregate	Aggregate	Electricity	714.0577	22003.07	3562.756	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0
Marin	2024	LHDT1	Aggregate	Aggregate	Gasoline	3402.516	117242.7	50692.42	0.22198	0.036803	0.520249	0.002247	0	0.000402	0.002	0.03276	0.002444	0	0.000438	0.008	0.07644	986.6473	119.4123	18.80704	0.010569	0.116958	0.023713	0.013264	0.00305	0.039621	0.051841	0.421458	0.120529	0.129572	0.974382	0.025382	0.044782	0.075646	0.614991	0.131964	0.129572	0.974382	0.025382	0.044782	0.978645	3.749967	1.775872	0.009764	0.001182	0.000186
Marin	2024	LHDT1	Aggregate	Aggregate	Diesel	2818.765	103049.9	35456.51	1.595968	1.97143	0	0.021659	0.026712	0	0.003	0.03276	0.022638	0.02792	0	0.012	0.07644	537.5175	131.9903	0	0.00742	0.005098	0	0.08449	0.020747	0	0.159755	0.10976	0	0	0	0	0.18187	0.124954	0	0	0	0	0	0.704808	0.909745	0	0.005081	0.001248	0
Marin	2024	LHDT2	Aggregate	Aggregate	Gasoline	471.2057	16449.74	7020.263	0.201801	0.036217	0.500472	0.001984	0	0.000316	0.002	0.03822	0.002158	0	0.000344	0.008	0.08918	1124.039	136.9864	21.24151	0.007171	0.116806	0.022302	0.012976	0.002998	0.039359	0.032032	0.415232	0.110967	0.106236	0.65798	0.02088	0.035332	0.046741	0.605905	0.121495	0.106236	0.65798	0.02088	0.035332	0.598971	3.761634	1.701988	0.011123	0.001356	0.00021
Marin	2024	LHDT2	Aggregate	Aggregate	Diesel	939.5525	35625.43	11818.39	1.010163	1.854479	0	0.019809	0.026757	0	0.003	0.03822	0.020704	0.027967	0	0.012	0.08918	595.8244	208.7904	0	0.006643	0.005098	0	0.093655	0.032819	0	0.143013	0.10976	0	0	0	0	0.16281	0.124954	0	0	0	0	0	0.61635	0.909745	0	0.005633	0.001974	0
Marin	2024	MCY	Aggregate	Aggregate	Gasoline	7171.208	51250.73	14342.42	1.1865	0	0.275575	0.001982	0	0.003079	0.001	0.00504	0.00212	0	0.003268	0.004	0.01176	218.0145	0	61.89949	0.342849	0	0.261141	0.067663	0	0.015422	2.336083	0	2.009476	0.754271	2.327595	0.959384	1.573691	2.888591	0	2.186629	0.754271	2.327595	0.959384	1.573691	20.7085	0	9.131437	0.002157	0	0.000613
Marin	2024	MDV	Aggregate	Aggregate	Gasoline	30339.73	952720.9	140224.7	0.068571	0	0.299514	0.001287	0	0.001718	0.002	0.01575	0.001399	0	0.001869	0.008	0.03675	379.1747	0	81.74213	0.003332	0	0.073483	0.005999	0	0.032056	0.013529	0	0.356988	0.133271	0.45397	0.308274	0.287519	0.719731	0	0.390856	0.133271	0.45397	0.308274	0.287519	0.720284	0	3.097962	0.003752	0	0.000809
Marin	2024	MDV	Aggregate	Aggregate	Diesel	1198.125	39566	5666.444	0.04028	0	0	0.004319	0	0	0.002	0.01575	0.004515	0	0	0.008	0.03675	380.2993	0	0	0.000518	0	0	0.059778	0	0	0.011153	0	0	0	0	0	0.012697	0	0	0	0	0	0.21398	0	0	0.003595	0	0
Marin	2024	MDV	Aggregate	Aggregate	Electricity	375.235	12131.02	1901.584	0	0	0	0	0	0	0.002	0.01575	0	0	0	0.008	0.03675	0	0	0	0	0	0	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0	0.004888	0	0.003309	0.012708	0	0	0	0	0
Marin	2024	MH	Aggregate	Aggregate	Gasoline	497.0312	4893.698	49.723	0.32986	0	0.334889	0.001489	0	0.00033	0.003	0.05586	0.00162	0	0.000359	0.012	0.13034	1693.522	0	25.14699	0.011299	0	0.031448	0.021949	0	0.035856	0.046765	0	0.129563	0.072837	1.757278	0.02907	0.075017	0.068239	0	0.141855	0.072837	1.757278	0.02907	0.075017	1.104267	0	2.8681	0.016759	0	0.000249
Marin	2024	MH	Aggregate	Aggregate	Diesel	232.368	2200.647	23.2368	3.856542	0	0	0.079806	0	0	0.004	0.05586	0.083415	0	0	0.016	0.13034	1000.165	0	0	0.004827	0	0	0.157212	0	0	0.103927	0	0	0	0	0	0.118314	0	0	0	0	0	0.360952	0	0	0.009455	0	0
Marin	2024	MHDT	Aggregate	Aggregate	Gasoline	344.764	18186.05	6898.038	0.38537	0.088796	0.367975	0.001228	0	0.000411	0.003	0.05586	0.001336	0	0.000447	0.012	0.13034	1685.478	525.6716	38.06248	0.01189	0.26735	0.038807	0.020002	0.007713	0.029536	0.057731	1.017334	0.207012	0.081278	0.480283	0.017483	0.02914	0.084241	1.484492	0.226652	0.081278	0.480283	0.017483	0.02914	1.309933	15.1701	4.583258	0.016679	0.005202	0.000377
Marin	2024	MHDT	Aggregate	Aggregate	Diesel	1380.74	71691.19	12309.45	1.711144	8.904333	2.140975	0.007926	0.007213	0	0.003	0.05586	0.008284	0.007539	0	0.012	0.13034	1006.245	1229.853	0	0.000581	0.004752	0	0.158168	0.193316	0	0.012514	0.10231	0	0	0	0	0.014247	0.116472	0	0	0	0	0	0.117013	3.575097	0	0.009507	0.011619	0
Marin	2024	OBUS	Aggregate	Aggregate	Gasoline	124.1141	6015.378	2483.276	0.392333	0.065201	0.320896	0.001001	0	0.000216	0.003	0.05586	0.001089	0	0.000234	0.012	0.13034	1737.435	373.7136	26.0798	0.01143	0.202139	0.029758	0.020723	0.005734	0.026336	0.053395	0.748403	0.152355	0.028322	0.327171	0.015446	0.031048	0.077914	1.092068	0.166809	0.028322	0.327171	0.015446	0.031048	1.170848	5.787382	3.225391	0.017193	0.003698	0.000258
Marin	2024	OBUS	Aggregate	Aggregate	Diesel	47.70089	3983.542	473.1706	1.879319	13.7256	2.216204	0.012418	0.004501	0	0.003	0.05586	0.01298	0.004705	0	0.012	0.13034	1200.325	2997.314	0	0.000627	0.047206	0	0.188674	0.471136	0	0.013499	1.01634	0	0	0	0	0.015367	1.157025	0	0	0	0	0	0.146105	16.04396	0	0.01134	0.028317	0
Marin	2024	SBUS	Aggregate	Aggregate	Gasoline	36.95198	1785.678	147.8079	0.463366	0.92653	0.543438	0.001403	0	0.000637	0.002	0.3192	0.001526	0	0.000693	0.008	0.7448	826.8896	2474.592	47.18208	0.012332	2.461742	0.058099	0.025007	0.09045	0.052089	0.060586	10.64152	0.331909	0.044054	0.273209	0.007192	0.014686	0.088406	15.52808	0.363399	0.044054	0.273209	0.007192	0.014686	1.366438	82.24088	8.6482	0.008183	0.024488	0.000467
Marin	2024	SBUS	Aggregate	Aggregate	Diesel	150.6045	4725.185	1737.955	8.046338	50.43582	0.664658	0.04605	0.054122	0	0.003	0.3192	0.048132	0.05657	0	0.012	0.7448	1130.263	3691.914	0	0.00535	0.012154	0	0.177662	0.580317	0	0.11519	0.261665	0	0	0	0	0.131135	0.297886	0	0	0	0	0	0.306506	5.260683	0	0.010678	0.034879	0
Marin	2024	UBUS	Aggregate	Aggregate	Gasoline	35.81348	3318.201	143.2539	0.187362	0	0.639467	0.00218	0	0.000724	0.002959	0.055135	0.002371	0	0.000788	0.011836	0.128648	1890.425	0	71.60479	0.006818	0	0.079959	0.018107	0	0.061285	0.022124	0	0.335051	0.023271	0.108158	0.004834	0.007846	0.032283	0	0.366838	0.023271	0.108158	0.004834	0.007846	0.281351	0	7.02335	0.018707	0	0.000709
Marin	2024	UBUS	Aggregate	Aggregate	Diesel	56.96356	2736.954	227.8543	0.73604	0	0	0.005241	0	0	0.007247	0.035051	0.005478	0	0	0.028987	0.081786	1355.613	0	0	0.068936	0	0	0.213083	0	0	0.000985	0	0	0	0	0	0.070354	0	0	0	0	0	0.115664	0	0	0.012815	0	0
Marin	2024	UBUS	Aggregate	Aggregate	Natural Ga	12.55959	425.7291	50.23838	0.466513	0	0	0.003047	0	0	0.007823	0.032228	0.003185	0	0	0.031291	0.075199	1936.505	0	0	6.029341	0	0	0.394769	0	0	0.086147	0	0	0	0	0	6.153384	0	0	0	0	0	46.51259	0	0	0	0	0

8161 Redwood Blvd Max Buildout Scenario

Marin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	185.00	Space	1.66	74,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	69
Climate Zone	5			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 185 additional parking spaces for maximum buildout

Construction Phase - Default schedule

Off-road Equipment - Default equipment

Construction Off-road Equipment Mitigation - BAAQMD Best Construction Management Practices project design feature

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1079	0.8358	0.7628	1.5100e-003	0.0329	0.0386	0.0715	0.0127	0.0371	0.0498	0.0000	127.6931	127.6931	0.0195	0.0000	128.1804
2022	0.1061	0.6847	0.7009	1.3800e-003	0.0159	0.0300	0.0459	4.3200e-003	0.0289	0.0333	0.0000	116.8555	116.8555	0.0177	0.0000	117.2977
Maximum	**0.1079**	**0.8358**	**0.7628**	**1.5100e-003**	**0.0329**	**0.0386**	**0.0715**	**0.0127**	**0.0371**	**0.0498**	**0.0000**	**127.6931**	**127.6931**	**0.0195**	**0.0000**	**128.1804**

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					
2021	0.1079	0.8358	0.7628	1.5100e-003	0.0243	0.0386	0.0629	8.3000e-003	0.0371	0.0454	0.0000	127.6930	127.6930	0.0195	0.0000	128.1803
2022	0.1061	0.6847	0.7009	1.3800e-003	0.0159	0.0300	0.0459	4.3200e-003	0.0289	0.0333	0.0000	116.8554	116.8554	0.0177	0.0000	117.2975
Maximum	**0.1079**	**0.8358**	**0.7628**	**1.5100e-003**	**0.0243**	**0.0386**	**0.0629**	**8.3000e-003**	**0.0371**	**0.0454**	**0.0000**	**127.6930**	**127.6930**	**0.0195**	**0.0000**	**128.1803**

	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**	**17.61**	**0.00**	**7.33**	**25.85**	**0.00**	**5.31**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	7-1-2021	9-30-2021	0.3838	0.3838
2	10-1-2021	12-31-2021	0.5544	0.5544
3	1-1-2022	3-31-2022	0.4980	0.4980
4	4-1-2022	6-30-2022	0.2953	0.2953
		Highest	0.5544	0.5544

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	6.4800e-003	2.0000e-005	1.7000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.3100e-003	3.3100e-003	1.0000e-005	0.0000	3.5200e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.5346	7.5346	3.4000e-004	7.0000e-005	7.5641
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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.4800e-003**	**2.0000e-005**	**1.7000e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**7.5379**	**7.5379**	**3.5000e-004**	**7.0000e-005**	**7.5677**

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	6.4800e-003	2.0000e-005	1.7000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.3100e-003	3.3100e-003	1.0000e-005	0.0000	3.5200e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.5346	7.5346	3.4000e-004	7.0000e-005	7.5641
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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.4800e-003**	**2.0000e-005**	**1.7000e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**7.5379**	**7.5379**	**3.5000e-004**	**7.0000e-005**	**7.5677**

	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	Site Preparation	Site Preparation	7/29/2021	7/30/2021	5	2	
2	Grading	Grading	7/31/2021	8/5/2021	5	4	
3	Building Construction	Building Construction	8/6/2021	5/12/2022	5	200	
4	Paving	Paving	5/13/2022	5/26/2022	5	10	
5	Architectural Coating	Architectural Coating	5/27/2022	6/9/2022	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 1.66

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 4,440 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	31.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5600e-003	0.0174	7.5600e-003	2.0000e-005		7.7000e-004	7.7000e-004		7.0000e-004	7.0000e-004	0.0000	1.5118	1.5118	4.9000e-004	0.0000	1.5241
Total	**1.5600e-003**	**0.0174**	**7.5600e-003**	**2.0000e-005**	**5.8000e-003**	**7.7000e-004**	**6.5700e-003**	**2.9500e-003**	**7.0000e-004**	**3.6500e-003**	**0.0000**	**1.5118**	**1.5118**	**4.9000e-004**	**0.0000**	**1.5241**

3.2 Site Preparation - 2021

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	1.7000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0542	0.0542	0.0000	0.0000	0.0543
Total	**3.0000e-005**	**2.0000e-005**	**1.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0542**	**0.0542**	**0.0000**	**0.0000**	**0.0543**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.6100e-003	0.0000	2.6100e-003	1.3300e-003	0.0000	1.3300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5600e-003	0.0174	7.5600e-003	2.0000e-005		7.7000e-004	7.7000e-004		7.0000e-004	7.0000e-004	0.0000	1.5118	1.5118	4.9000e-004	0.0000	1.5241
Total	**1.5600e-003**	**0.0174**	**7.5600e-003**	**2.0000e-005**	**2.6100e-003**	**7.7000e-004**	**3.3800e-003**	**1.3300e-003**	**7.0000e-004**	**2.0300e-003**	**0.0000**	**1.5118**	**1.5118**	**4.9000e-004**	**0.0000**	**1.5241**

3.2 Site Preparation - 2021

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	1.7000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0542	0.0542	0.0000	0.0000	0.0543
Total	**3.0000e-005**	**2.0000e-005**	**1.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0542**	**0.0542**	**0.0000**	**0.0000**	**0.0543**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.8300e-003	0.0000	9.8300e-003	5.0500e-003	0.0000	5.0500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5800e-003	0.0287	0.0127	3.0000e-005		1.2800e-003	1.2800e-003		1.1700e-003	1.1700e-003	0.0000	2.4767	2.4767	8.0000e-004	0.0000	2.4968
Total	**2.5800e-003**	**0.0287**	**0.0127**	**3.0000e-005**	**9.8300e-003**	**1.2800e-003**	**0.0111**	**5.0500e-003**	**1.1700e-003**	**6.2200e-003**	**0.0000**	**2.4767**	**2.4767**	**8.0000e-004**	**0.0000**	**2.4968**

3.3 Grading - 2021

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	5.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1085	0.1085	0.0000	0.0000	0.1085
Total	**5.0000e-005**	**3.0000e-005**	**3.5000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1085**	**0.1085**	**0.0000**	**0.0000**	**0.1085**

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					4.4200e-003	0.0000	4.4200e-003	2.2700e-003	0.0000	2.2700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5800e-003	0.0287	0.0127	3.0000e-005		1.2800e-003	1.2800e-003		1.1700e-003	1.1700e-003	0.0000	2.4767	2.4767	8.0000e-004	0.0000	2.4968
Total	**2.5800e-003**	**0.0287**	**0.0127**	**3.0000e-005**	**4.4200e-003**	**1.2800e-003**	**5.7000e-003**	**2.2700e-003**	**1.1700e-003**	**3.4400e-003**	**0.0000**	**2.4767**	**2.4767**	**8.0000e-004**	**0.0000**	**2.4968**

3.3 Grading - 2021

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	5.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1085	0.1085	0.0000	0.0000	0.1085
Total	**5.0000e-005**	**3.0000e-005**	**3.5000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1085**	**0.1085**	**0.0000**	**0.0000**	**0.1085**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0961	0.7227	0.6837	1.1700e-003		0.0363	0.0363		0.0350	0.0350	0.0000	96.2202	96.2202	0.0172	0.0000	96.6497
Total	**0.0961**	**0.7227**	**0.6837**	**1.1700e-003**		**0.0363**	**0.0363**		**0.0350**	**0.0350**	**0.0000**	**96.2202**	**96.2202**	**0.0172**	**0.0000**	**96.6497**

3.4 Building Construction - 2021

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	2.2600e-003	0.0634	0.0229	1.7000e-004	4.1600e-003	1.5000e-004	4.3100e-003	1.2000e-003	1.4000e-004	1.3500e-003	0.0000	16.1819	16.1819	7.8000e-004	0.0000	16.2013
Worker	5.3400e-003	3.5100e-003	0.0355	1.2000e-004	0.0129	9.0000e-005	0.0130	3.4400e-003	8.0000e-005	3.5200e-003	0.0000	11.1397	11.1397	2.4000e-004	0.0000	11.1458
Total	**7.6000e-003**	**0.0670**	**0.0583**	**2.9000e-004**	**0.0171**	**2.4000e-004**	**0.0173**	**4.6400e-003**	**2.2000e-004**	**4.8700e-003**	**0.0000**	**27.3216**	**27.3216**	**1.0200e-003**	**0.0000**	**27.3471**

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	0.0961	0.7227	0.6837	1.1700e-003		0.0363	0.0363		0.0350	0.0350	0.0000	96.2201	96.2201	0.0172	0.0000	96.6496
Total	**0.0961**	**0.7227**	**0.6837**	**1.1700e-003**		**0.0363**	**0.0363**		**0.0350**	**0.0350**	**0.0000**	**96.2201**	**96.2201**	**0.0172**	**0.0000**	**96.6496**

3.4 Building Construction - 2021

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	2.2600e-003	0.0634	0.0229	1.7000e-004	4.1600e-003	1.5000e-004	4.3100e-003	1.2000e-003	1.4000e-004	1.3500e-003	0.0000	16.1819	16.1819	7.8000e-004	0.0000	16.2013
Worker	5.3400e-003	3.5100e-003	0.0355	1.2000e-004	0.0129	9.0000e-005	0.0130	3.4400e-003	8.0000e-005	3.5200e-003	0.0000	11.1397	11.1397	2.4000e-004	0.0000	11.1458
Total	**7.6000e-003**	**0.0670**	**0.0583**	**2.9000e-004**	**0.0171**	**2.4000e-004**	**0.0173**	**4.6400e-003**	**2.2000e-004**	**4.8700e-003**	**0.0000**	**27.3216**	**27.3216**	**1.0200e-003**	**0.0000**	**27.3471**

3.4 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	0.0775	0.5876	0.5981	1.0400e-003		0.0277	0.0277		0.0267	0.0267	0.0000	85.3412	85.3412	0.0149	0.0000	85.7127
Total	**0.0775**	**0.5876**	**0.5981**	**1.0400e-003**		**0.0277**	**0.0277**		**0.0267**	**0.0267**	**0.0000**	**85.3412**	**85.3412**	**0.0149**	**0.0000**	**85.7127**

3.4 Building Construction - 2022

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	1.8500e-003	0.0532	0.0188	1.5000e-004	3.6900e-003	1.2000e-004	3.8000e-003	1.0700e-003	1.1000e-004	1.1800e-003	0.0000	14.2142	14.2142	6.7000e-004	0.0000	14.2309
Worker	4.4500e-003	2.8000e-003	0.0290	1.1000e-004	0.0115	7.0000e-005	0.0116	3.0500e-003	7.0000e-005	3.1200e-003	0.0000	9.5181	9.5181	2.0000e-004	0.0000	9.5230
Total	**6.3000e-003**	**0.0560**	**0.0478**	**2.6000e-004**	**0.0152**	**1.9000e-004**	**0.0154**	**4.1200e-003**	**1.8000e-004**	**4.3000e-003**	**0.0000**	**23.7323**	**23.7323**	**8.7000e-004**	**0.0000**	**23.7538**

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	0.0775	0.5876	0.5981	1.0400e-003		0.0277	0.0277		0.0267	0.0267	0.0000	85.3411	85.3411	0.0149	0.0000	85.7126
Total	**0.0775**	**0.5876**	**0.5981**	**1.0400e-003**		**0.0277**	**0.0277**		**0.0267**	**0.0267**	**0.0000**	**85.3411**	**85.3411**	**0.0149**	**0.0000**	**85.7126**

3.4 Building Construction - 2022

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	1.8500e-003	0.0532	0.0188	1.5000e-004	3.6900e-003	1.2000e-004	3.8000e-003	1.0700e-003	1.1000e-004	1.1800e-003	0.0000	14.2142	14.2142	6.7000e-004	0.0000	14.2309
Worker	4.4500e-003	2.8000e-003	0.0290	1.1000e-004	0.0115	7.0000e-005	0.0116	3.0500e-003	7.0000e-005	3.1200e-003	0.0000	9.5181	9.5181	2.0000e-004	0.0000	9.5230
Total	**6.3000e-003**	**0.0560**	**0.0478**	**2.6000e-004**	**0.0152**	**1.9000e-004**	**0.0154**	**4.1200e-003**	**1.8000e-004**	**4.3000e-003**	**0.0000**	**23.7323**	**23.7323**	**8.7000e-004**	**0.0000**	**23.7538**

3.5 Paving - 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	3.4400e-003	0.0339	0.0440	7.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	5.8848	5.8848	1.8700e-003	0.0000	5.9315
Paving	2.1700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6100e-003**	**0.0339**	**0.0440**	**7.0000e-005**		**1.7400e-003**	**1.7400e-003**		**1.6000e-003**	**1.6000e-003**	**0.0000**	**5.8848**	**5.8848**	**1.8700e-003**	**0.0000**	**5.9315**

3.5 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	1.3000e-004	1.2900e-003	0.0000	5.1000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4246	0.4246	1.0000e-005	0.0000	0.4248
Total	**2.0000e-004**	**1.3000e-004**	**1.2900e-003**	**0.0000**	**5.1000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4246**	**0.4246**	**1.0000e-005**	**0.0000**	**0.4248**

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	3.4400e-003	0.0339	0.0440	7.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	5.8848	5.8848	1.8700e-003	0.0000	5.9314
Paving	2.1700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6100e-003**	**0.0339**	**0.0440**	**7.0000e-005**		**1.7400e-003**	**1.7400e-003**		**1.6000e-003**	**1.6000e-003**	**0.0000**	**5.8848**	**5.8848**	**1.8700e-003**	**0.0000**	**5.9314**

3.5 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	1.3000e-004	1.2900e-003	0.0000	5.1000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4246	0.4246	1.0000e-005	0.0000	0.4248
Total	**2.0000e-004**	**1.3000e-004**	**1.2900e-003**	**0.0000**	**5.1000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4246**	**0.4246**	**1.0000e-005**	**0.0000**	**0.4248**

3.6 Architectural Coating - 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					
Archit. Coating	0.0154					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0200e-003	7.0400e-003	9.0700e-003	1.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2787
Total	**0.0165**	**7.0400e-003**	**9.0700e-003**	**1.0000e-005**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2787**

3.6 Architectural Coating - 2022

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	9.0000e-005	6.0000e-005	6.0000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1960	0.1960	0.0000	0.0000	0.1961
Total	**9.0000e-005**	**6.0000e-005**	**6.0000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1960**	**0.1960**	**0.0000**	**0.0000**	**0.1961**

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	0.0154					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0200e-003	7.0400e-003	9.0700e-003	1.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2787
Total	**0.0165**	**7.0400e-003**	**9.0700e-003**	**1.0000e-005**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2787**

3.6 Architectural Coating - 2022

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	9.0000e-005	6.0000e-005	6.0000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1960	0.1960	0.0000	0.0000	0.1961
Total	**9.0000e-005**	**6.0000e-005**	**6.0000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1960**	**0.1960**	**0.0000**	**0.0000**	**0.1961**

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
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
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.598301	0.039360	0.198316	0.109153	0.015323	0.005191	0.010619	0.011654	0.002041	0.002927	0.005696	0.000707	0.000711

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7.5346	7.5346	3.4000e-004	7.0000e-005	7.5641
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7.5346	7.5346	3.4000e-004	7.0000e-005	7.5641
NaturalGas 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
NaturalGas 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

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					
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		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					
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		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	25900	7.5346	3.4000e-004	7.0000e-005	7.5641
Total		**7.5346**	**3.4000e-004**	**7.0000e-005**	**7.5641**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	25900	7.5346	3.4000e-004	7.0000e-005	7.5641
Total		**7.5346**	**3.4000e-004**	**7.0000e-005**	**7.5641**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	6.4800e-003	2.0000e-005	1.7000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.3100e-003	3.3100e-003	1.0000e-005	0.0000	3.5200e-003
Unmitigated	6.4800e-003	2.0000e-005	1.7000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.3100e-003	3.3100e-003	1.0000e-005	0.0000	3.5200e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.5400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.7800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.6000e-004	2.0000e-005	1.7000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.3100e-003	3.3100e-003	1.0000e-005	0.0000	3.5200e-003
Total	**6.4800e-003**	**2.0000e-005**	**1.7000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.3100e-003**	**3.3100e-003**	**1.0000e-005**	**0.0000**	**3.5200e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.5400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.7800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.6000e-004	2.0000e-005	1.7000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.3100e-003	3.3100e-003	1.0000e-005	0.0000	3.5200e-003
Total	**6.4800e-003**	**2.0000e-005**	**1.7000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.3100e-003**	**3.3100e-003**	**1.0000e-005**	**0.0000**	**3.5200e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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 B

Biological Resources Assessment and Approved Jurisdiction Determination

Biological Resources Assessment

8161 REDWOOD BLVD, NOVATO, CALIFORNIA

Prepared For:
Maureen Sedonaen
Habitat for Humanity
Greater San Francisco Division
500 Washington Street, Suite 250
San Francisco, California 94111

Prepared By:
WRA, Inc.
2169-G East Francisco Boulevard
San Rafael, California 94901

Contact: Gregory Sproull
sproull@wra-ca.com

Date: May 2021

WRA Project No: 28139





ENVIRONMENTAL CONSULTANTS

This page is intentionally left blank.

TABLE OF CONTENTS

1.0 INTRODUCTION AND PROJECT DESCRIPTION 1
1.1 Introduction 1
1.2 Project Description 1
2.0 REGULATORY BACKGROUND 2
2.1 Federal and State Regulatory Setting 2
2.1.1 Vegetation and Aquatic Communities 2
2.1.2 Special-status Species 4
2.2 Local Regulatory Setting 5
3.0 METHODS 6
3.1 Biological Communities 6
3.1.1 Non-sensitive Biological Communities 7
3.1.2 Sensitive Biological Communities 7
3.2 Special-Status Species 7
3.2.1 Literature Review 7
3.2.2 Site Assessment 8
4.0 RESULTS 9
4.1 Biological Communities 9
4.1.1 Non-Sensitive Biological Communities 10
4.1.2 Sensitive Biological Communities 11
4.2 Special-Status Species 13
4.2.1 Plants 13
4.2.2 Wildlife 14
4.2.3 Wildlife Movement 16
5.0 PROJECT IMPACTS AND MITIGATION MEASURES 17
5.1 Impact BIO-1: Special-Status Species 18
5.2 Impact BIO-2: Sensitive Communities 20
5.3 Impact BIO-3: Aquatic Resources 20
5.4 Impact BIO-4: Wildlife Movement 21
5.5 Impact BIO-5: Conflicts with Local Policies 21
5.6 Impact BIO-6: Conflicts with an Adopted Habitat Conservation Plan 22
5.7 Impact BIO-7: Cumulative Impacts 22
6.0 REFERENCES 24

LIST OF TABLES

Table 1. Summary of Biological Communities on the Property and in the Project Area 10

LIST OF APPENDICES

Appendix A – Figures
Appendix B – List of Observed Plant and Wildlife Species
Appendix C – Potential for Special-Status Species to Occur in the Project Area
Appendix D – Site Photographs

LIST OF ACRONYMS

Cal-IPC	California Invasive Plant Council
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
CSRL	Californian Soil Resources Laboratory
CWA	Clean Water Act
ESA	Federal Endangered Species Act
NCCP	Natural Community Conservation Plan
NMFS	National Marine Fisheries Service
NPPA	California Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
PG&E	Pacific Gas and Electric Company
RWQCB	Regional Water Quality Control Board
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	United Stated Geological Survey
WBWG	Western Bat Working Group
WRA	WRA, Inc.

1.0 INTRODUCTION AND PROJECT DESCRIPTION

1.1 Introduction

This Biological Resources Assessment Report evaluates existing biological resources, potential impacts, and mitigation measures for the 8161 Redwood Boulevard Development Project (Project), located at 8161 Redwood Boulevard in the City of Novato in Marin County, California (Property; Figures 1 and 2, Appendix A). The proposed Project involves the development of an affordable housing residential community within the Property. Portions of the Property that would be impacted by the Project are herein referred to as the Project Area.

This report provides an assessment of biological resources within the Project Area and immediate vicinity. The purpose of the assessment was to develop and gather information on sensitive biological communities and special-status plant and wildlife species to support an evaluation of the Project under the California Environmental Quality Act (CEQA). This report describes the results of the site visits, which assessed the Property for: (1) the presence of sensitive biological communities, special-status plant species, and special-status wildlife species, and (2) the potential for the Project Area to support special-status plant and wildlife species. Based on the results of the site assessment, potential impacts to sensitive biological communities and special status species resulting from the proposed Project were evaluated. If the Project has the potential to result in significant impacts to these biological resources, measures to avoid, minimize, or mitigate for those significant impacts are described.

A biological resources assessment provides general information on the presence, or potential presence, of sensitive species and habitats. Additional focused studies (such as protocol-level species surveys) may be required to support regulatory permit applications or to implement mitigation measures included in this report. This assessment is based on information available at the time of the study and on site conditions that were observed on the dates the site was visited. Conclusions are based on currently available information used in combination with the professional judgement of the biologists completing this study.

1.2 Project Description

The Project proposes to construct 23 residential buildings and associated infrastructure. The 23 buildings would include five different building types, ranging from one to six homes. In addition to the 23 buildings, the Project would include the construction of play areas, a small amphitheater, a dog park, trails and pathways, a community event space, seating areas, benches and tables, and a community garden. The 23 buildings would contain 80 affordable homes, with an expected mix of 18 two-bedroom, 37 three-bedroom, and 25 four-bedroom homes. The Project is anticipated to be developed in two major land development stages over two years. The housing would be phased, with 42 homes in 11 buildings in Phase 1, and 38 homes in 12 buildings in Phase 2. Complete land development and buildout would take approximately five years.

The Project has been designed to avoid sensitive communities to the extent feasible. An on-site ephemeral stream in the western portion of the Project Area and a drainage ditch in the northeastern portion of the Project Area would be avoided and protected in place. Purple needlegrass grassland, a sensitive native community, would be avoided to the extent practicable in the southern and western portions of the Project Area. A small isolated seasonal wetland (<0.01 acre) would be avoided. A large, ordinance-sized valley oak tree (*Quercus lobata*), measuring approximately 40 inches diameter-at-breast height, would be avoided and protected in place. A bioretention basin in the northeastern portion of the Project Area would be piped to

an existing concrete box culvert at a point above the ordinary high water mark to avoid impacts to an existing drainage ditch.

The Project has also been designed to be self-mitigating through the incorporation of Project design components and avoidance and minimization measures intended to offset unavoidable impacts to sensitive habitats. The Project would hydroseed approximately 1.17 acres of purple needlegrass grassland directly west of the proposed residential community to expand the extent and increase the abundance of purple needlegrass grassland in the Project Area. Newly seeded purple needlegrass (*Stipa pulchra*) would replace existing non-native annual grassland and would intergrade with the existing purple needlegrass grassland to create a contiguous habitat. The creation of approximately 1.17 acres of purple needlegrass grassland would offset unavoidable permanent impacts to existing purple needlegrass grassland located elsewhere in the Project Area at a ratio of 1-to-1.

Additionally, the Project would construct an approximately 856-linear foot stream channel in the southwestern portion of the Project Area, which would convey stormwater flows down the existing hillside and into an existing culvert that collects stormwater from an existing drainage ditch that surrounds the Days Inn Parking Lot and the surrounding hillsides. The proposed stream channel would be constructed directly south of an existing 151-linear foot ephemeral stream that would be filled by the Project to adhere to the City of Novato's 30-foot defensible space buffer requirement around all buildings. The existing ephemeral stream currently conveys stormwater into the Project Area from the west and dissipates in the central portion of Project Area, resulting in overland sheet flow across the site. Flows continue into a manmade drainage ditch that surrounds the Days Inn and then into the aforementioned culvert. The newly constructed stream would tie into the existing ephemeral stream at the property line and convey flows directly into the culvert. The proposed stream would mimic existing stream characteristics and would be partially vegetated with locally native vegetation (along more gradual slopes) and partially unvegetated (along steeper slopes). The proposed stream would be buffered from all residential houses by a minimum of 30 feet, would have high ecological functions and values, and would improve on-site hydrologic flow conditions. The proposed 856-linear foot stream would offset unavoidable permanent impacts to the 151-linear foot ephemeral stream and unavoidable permanent grading impacts to a portion of the manmade drainage ditch that surrounds the Days Inn (133 linear feet), as well as unavoidable permanent impacts to a 71-linear foot disturbed, manmade drainage ditch in the northcentral portion of the Project Area, which would be filled as a result of Project activities.

2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological resources assessment, including applicable laws and regulations that were applied to the field investigations and analysis of potential project impacts.

2.1 Federal and State Regulatory Setting

2.1.1 Vegetation and Aquatic Communities

CEQA provides protections for particular vegetation types defined as sensitive by the California Department of Fish and Game (CDFW), and aquatic communities protected by laws and regulations administered by the U.S Army Corps of Engineers (Corps), State Water Resources Control Board (SWRCB), and Regional Water Quality Control Boards (RWQCB). The laws and regulations that provide protection for these resources are summarized below.

Sensitive Natural Communities: Sensitive natural communities include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the CDFW. CDFW ranks sensitive communities as "threatened" or "very threatened" (Californian Department of Fish and Game [CDFG] 2010, CDFW 2020) and keeps records of their occurrences in its California Natural Diversity Database (CNDDB; CDFW 2020). CNDDB vegetation alliances are ranked 1 through 5 based on NatureServe's (2020) methodology, with those alliances ranked globally (G) or statewide (S) as 1 through 3 considered sensitive. Impacts to sensitive natural communities identified in local or regional plans, policies, or regulations or those identified by the CDFW or U.S. Fish and Wildlife Service (USFWS) must be considered and evaluated under CEQA (California Code of Regulations [CCR] Title 14, Div. 6, Chap. 3, Appendix G). In addition, this general class includes oak woodlands that are protected by local ordinances under the Oak Woodlands Protection Act.

Waters of the United States, Including Wetlands: The Corps regulates “Waters of the United States” under Section 404 of the Clean Water Act (CWA). Waters of the United States are defined in the Code of Federal Regulations (CFR) as including the territorial seas, and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, such as tributaries, lakes and ponds, impoundments of waters of the U.S., and wetlands that are hydrologically connected with these navigable features (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands as defined in the Corps Wetlands Delineation Manual (Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Unvegetated waters including lakes, rivers, and streams may also be subject to Section 404 jurisdiction and are characterized by an ordinary high water mark identified based on field indicators such as the lack of vegetation, sorting of sediments, and other indicators of flowing or standing water. The placement of fill material into Waters of the United States generally requires a permit from the Corps under Section 404 of the CWA.

Waters of the State, Including Wetlands: The term “Waters of the State” is defined by the Porter-Cologne Water Quality Control Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” The State Water Resources Control Board (SWRCB) and nine RWQCBs protect waters within this broad regulatory scope through many different regulatory programs. Waters of the State in the context of a CEQA Biological Resources evaluation include wetlands and other surface waters protected by the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*. The SWRCB and RWQCB issue permits for the discharge of fill material into surface waters through the State Water Quality Certification Program, which fulfills requirements of Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require a Clean Water Act permit are also required to obtain a Water Quality Certification. If a project does not require a federal permit, but does involve discharge of dredge or fill material into surface waters of the State, the SWRCB and RWQCB may issue a permit in the form of Waste Discharge Requirements.

Sections 1600-1616 of California Fish and Game Code: Streams and lakes, as habitat for fish and wildlife species, are regulated by CDFW under Sections 1600-1616 of the California Fish and Game Code (CFGC). Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term “stream”, which includes creeks and rivers, is defined in the CCR as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life [including] watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 CCR 1.72). The term “stream” can include ephemeral streams, dry

washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG 1994). Riparian vegetation has been defined as “vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself” (CDFG 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

2.1.2 Special-status Species

Endangered and Threatened Plants, Fish, and Wildlife. Specific species of plants, fish, and wildlife species may be designated as threatened or endangered by the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA). Specific protections and permitting mechanisms for these species differ under each of these acts, and a species’ designation under one law does not automatically provide protection under the other.

The ESA (16 USC 1531 et seq.) is implemented by the USFWS and the National Marine Fisheries Service (NMFS). The USFWS and NMFS maintain lists of "endangered" and "threatened" plant and animal species (referred to as "listed species"). "Proposed" or "candidate" species are those that are being considered for listing, and are not protected until they are formally listed as threatened or endangered. Under the ESA, authorization must be obtained from the USFWS or NMFS prior to take of any listed species. Take under the ESA is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Take under the ESA includes direct injury or mortality to individuals, disruptions in normal behavioral patterns resulting from factors such as noise and visual disturbance, and impacts to habitat for listed species. Actions that may result in “take” of an ESA-listed species may obtain a permit under ESA Section 10, or via the interagency consultation described in ESA Section 7. Federally listed plant species are only protected when take occurs on federal land.

The ESA also provides for designation of critical habitat, which are specific geographic areas containing physical or biological features “essential to the conservation of the species”. Protections afforded to designated critical habitat apply only to actions that are funded, permitted, or carried out by federal agencies. Critical habitat designations do not affect activities by private landowners if there is no other federal agency involvement.

The CESA (CFGC 2050 et seq.) prohibits a "take" of any plant and animal species that the California Fish and Game Commission determines to be an endangered or threatened species in California. CESA regulations include take protection for threatened and endangered plants on private lands, as well as extending this protection to “candidate species” which are proposed for listing as threatened or endangered under CESA. The definition of a "take" under CESA ("hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") only applies to direct impact to individuals, and does not extend to habitat impacts or harassment. CDFW may issue an Incidental Take Permit under CESA to authorize take if it is incidental to otherwise lawful activity and if specific criteria are met. Take of these species is also authorized if the geographic area is covered by a Natural Community Conservation Plan (NCCP), as long as the NCCP covers that activity.

Fully Protected Species and Designated Rare Plant Species. This category includes specific plant and wildlife species that are designated in the CFGC as protected even if not listed under CESA or the ESA. Fully Protected Species include specific lists of birds, mammals, reptiles, amphibians, and fish designated in CFGC. Fully protected species may not be taken or possessed at any time. No licenses or permits may be issued for take of fully protected species,

except for necessary scientific research and conservation purposes. The definition of "take" is the same under the CFGC and the CESA. By law, CDFW may not issue an Incidental Take Permit for Fully Protected Species. The CDFW may authorize take of species protected by the NPPA through the Incidental Take Permit process, or under a NCCP.

Special Protections for Nesting Birds and Bats. The federal Bald and Golden Eagle Protection Act provides relatively broad protections to both of North America's eagle species (bald eagle [*Haliaeetus leucocephalus*] and golden eagle [*Aquila chrysaetos*]) that in some regards are similar to those provided by the ESA. In addition to regulations for special-status species, most native birds in the United States, including non-status species, have baseline legal protections under the Migratory Bird Treaty Act of 1918 and the CFGC, i.e., Sections 3503, 3503.5 and 3513. Under these laws/codes, the intentional harm or collection of adult birds, as well as the intentional collection or destruction of active nests, eggs, and young is illegal. For bat species, the Western Bat Working Group (WBWG) designates conservation status for species of bats, and those with a high or medium-high priority are typically given special consideration under CEQA.

Species of Special Concern, Movement Corridors, and Other Special Status Species under CEQA. To address additional species protections afforded under CEQA, the CDFW has developed a list of special species as "a general term that refers to all of the taxa the CNDDB is interested in tracking, regardless of their legal or protection status." This list includes lists developed by other organizations, including for example, the Audubon Watch List Species, the Bureau of Land Management Sensitive Species, and USFWS Birds of Special Concern. Plant species on the California Native Plant Society (CNPS) Rare and Endangered Plant Inventory with California Rare Plant Ranks of 1, 2, and 3 are also considered special-status plant species and must be considered under CEQA. Rank 4 species are typically only afforded protection under CEQA when such species are particularly unique to the locale (e.g., range limit, low abundance/low frequency, limited habitat) or are otherwise considered locally rare. Additionally, any species listed as sensitive within local plans, policies and ordinances are likewise considered sensitive. Movement and migratory corridors for native wildlife (including aquatic corridors) as well as wildlife nursery sites are given special consideration under CEQA.

2.2 Local Regulatory Setting

City of Novato Tree Ordinance

The City of Novato Tree Ordinance defines a "tree" as any native or non-native woody plant having a major trunk or trunk of a diameter of 6 inches or greater measured at 24 inches above grade, and a "heritage tree" is defined as any tree having a diameter of 24 inches or greater, measured at 24 inches above grade (Ord. No. 1576, § 2 [Exhibit A], 10-23-12). The alteration or removal of a heritage tree is prohibited without a permit from the City of Novato (Ord. No. 1441 § 2(E); Ord. No. 1576, § 2 [Exhibit A], 10-23-2012). The Property contains several trees within the valley oak woodland and non-native grassland communities that may meet the definition of "heritage" trees (City of Novato 2020).

City of Novato Wetland Protection and Restoration

The City of Novato municipal code stipulates that any development shall be designed and constructed to avoid wetlands to the maximum extent feasible (Ord. No. 1576, § 2 [Exhibit A, amd.], 10-23-2012). Wetlands are defined as waters delineated by the Corps under the provisions of the CWA. Permit approval is required for any project within 50 feet of a wetland, requiring wetland protection measures, involving wetland/encroachment, or requiring wetland

mitigation; and, for all wetland protection, restoration, enhancement, and/or mitigation projects (Ord. No. 1576, § 2 [Exhibit A, amd.], 10-23-2012) (City of Novato 2020). The Project Area contains one isolated seasonal wetland, which likely would not qualify a "wetland" as defined by the City of Novato municipal code since it is likely be exempt from CWA regulation under the Navigable Waters Protection Rule (33 CFR 28.3).

City of Novato Waterways and Riparian Protection

The City of Novato municipal code stipulates that all lands adjoining or encompassing watercourses and their significant tributaries shall be subject to a Stream Protection Zone (Ord. No. 1576, § 2 [Exhibit A, amd.], 10-23-2012). These lands are shown on "EN Map 1" within the General Plan. A Stream Protection Zone includes the streambed, stream banks, all riparian vegetation, and an upland buffer at least 50 feet wide measured from top of the channel bank (City of Novato 2020). Proposed development, land uses and activities including any proposed development application, land division, use permit, grading or building permit for any excavation, fill, grading, or paving; removal or planting of vegetation; construction, alteration, or removal of any structure; or alteration of any embankment within the Stream Protection Zone requires Use Permit approval (Ord. No. 1576, § 2 [Exhibit A, amd.], 10-23-2012). However, the Project Area is not subject to this protection because it is located outside of the areas defined in the General Plan Area (i.e., outside of the boundaries of EN Map 1) and manmade drainage ditches would not qualify as "significant tributaries" protected under this ordinance (V. Damodaran, City of Novato Planner, personal communication, November 28, 2018).

3.0 METHODS

On May 29, 2018, WRA biologists conducted a biological resources assessment throughout the Property (and Project Area) to: (a) map vegetation, aquatic communities, and unvegetated land cover types, (b) document plant and wildlife species present, and (c) evaluate habitat on-site for the potential to support special-status species as defined by CEQA. Prior to the site visit, WRA biologists reviewed literature resources and performed database searches to assess the potential for sensitive biological communities (e.g., wetlands) and special-status species (e.g., endangered plants). All plant and wildlife species encountered were recorded and are summarized in Appendix B. Plant nomenclature follows Baldwin et al. (2012) and subsequent revisions by the Jepson Flora Project (2020).

3.1 Biological Communities

Prior to the site visit, the *Soil Survey of Marin County* (U.S. Department of Agriculture [USDA] 1985), the California Soil Resources Laboratory (CSRL) online soil viewer (CSRL 2020), and the National Wetland Inventory (NWI; USFWS 2020a) were reviewed as background information. The Property (and Project Area) was examined to determine if any unique soil types that could support sensitive plant communities and/or aquatic features were present. Biological communities present on the Property were classified based on existing plant community descriptions described in *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986). Biological communities were classified as sensitive or non-sensitive as defined by CEQA and other applicable laws and regulations discussed in Section 2.1 above.

3.1.1 Non-sensitive Biological Communities

Non-sensitive biological communities are those communities that are not afforded special protection under CEQA, and other state, federal, and local laws, regulations and ordinances. These communities may, however, provide suitable habitat for some special-status plant or wildlife species and are identified or described in Section 4.2 below.

3.1.2 Sensitive Biological Communities

Sensitive biological communities are defined as those communities that are given special protection under CEQA and other applicable federal, state, and local laws, regulations and ordinances. Methods used to identify sensitive biological communities are discussed below.

Wetlands and Non-wetland Waters

The Property was surveyed to determine if any wetlands and/or non-wetland waters potentially subject to jurisdiction by the Corps, RWQCB, or CDFW were present. The assessment was based primarily on the presence of wetland plant indicators, but also included any observed indicators of wetland hydrology or wetland soils. Potential wetland areas were identified as areas dominated by plant species with a wetland indicator status[1] of OBL, FACW, or FAC as given on the Corps National Wetlands Plant List (Lichvar et al. 2016). Evidence of wetland hydrology can include direct evidence (primary indicators), such as visible inundation or saturation, algal mats, and oxidized root channels, or indirect (secondary) indicators, such as a water table within two feet of the soil surface during the dry season. Indicators of wetland soils can include dark-colored soils, soils with a sulfidic odor, and soils that contain redoximorphic features as defined by the Corps Manual (Environmental Laboratory 1987) and Field Indicators of Hydric Soils in the United States (NRCS 2010). WRA conducted a formal, protocol-level Corps wetland delineation concurrently with the biological resources assessment on May 29, 2018. WRA also conducted follow-up site visit on September 15, 2020 to determine if biological conditions had changed over time, which informed a subsequent Jurisdictional Delineation Report (WRA 2020).

Other Sensitive Biological Communities

The Property was evaluated for the presence of other sensitive biological communities, including riparian areas and sensitive plant communities recognized by the CDFW and discussed in Section 2.1 above. Prior to the site visit, aerial photographs, local soil maps, and *A Manual of California Vegetation, Online Edition* (CNPS 2020a) were reviewed to assess the potential for sensitive biological communities to occur on the Property.

3.2 Special-Status Species

3.2.1 Literature Review

The potential occurrence of special-status species on the Property was evaluated by first determining which special-status species occur in the vicinity of the Property through a literature and database search. Database searches for known occurrences of special-status species focused on the *Cotati, Glen Ellen, Sonoma, Sears Point, Petaluma, San Geronimo, Petaluma*

[1] OBL = Obligate, always found in wetlands (> 99% frequency of occurrence); FACW = Facultative wetland, usually found in wetlands (67-99% frequency of occurrence); FAC = Facultative, equal occurrence in wetland or non-wetlands (34-66% frequency of occurrence).

River (where the Property is situated), *Petaluma Point*, and *Novato* 7.5-minute United States Geological Survey (USGS) quadrangles. The following sources were reviewed to determine which special-status plant and wildlife species have been documented to occur in the vicinity of the Property:

- CNDDB records (CDFW 2020)
- USFWS Information for Planning and Conservation Species Lists (USFWS 2020b)
- CNPS Inventory records (CNPS 2020b)
- California Department of Fish and Game publication "California's Wildlife, Volumes I-III" (Zeiner et al. 1990)
- CDFG publication *California Bird Species of Special Concern* (Shuford and Gardali 2008)
- CDFW and University of California Press publication *California Amphibian and Reptile Species of Special Concern* (Thomson et al. 2016)
- *A Field Guide to Western Reptiles and Amphibians* (Stebbins 2003)

3.2.2 Site Assessment

A site visit was completed to search the Property for suitable habitats for special-status species. Habitat conditions observed were evaluated for the potential for presence of special-status species based on these searches and the professional expertise of the investigating biologists. The potential for each special-status species to occur on the Property was then evaluated according to the following criteria:

- No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- Present. Species is observed on the site or has been recorded (i.e., CNDDB, other reports) on the site recently.

The site assessment identified the presence or absence of suitable habitat for each special-status species known to occur in the vicinity of the Property to determine each species' potential to occur on the Property. In cases where little information is known about species occurrences and habitat requirements, the species evaluation was based on best professional judgment of WRA biologists with experience working with the species and habitats. The biological resources assessment site visit does not constitute a protocol-level survey and is not intended to determine the actual presence or absence of a species; however, if special-status species were observed during the site visit, their presence was recorded. A focused, protocol-level rare plant survey was conducted on April 19, 2019 to determine if special-status plant species with potential to occur on the Property were present during their published bloom period (WRA 2019).

4.0 RESULTS

The Property is located on the southern border of the Petaluma River USGS 7.5-minute quadrangle, approximately 1.5 miles north of downtown Novato. The Property consists of Assessor Parcel Number 125-180-49, just west of Highway 101. The Property is bound by a partially developed property to the north, an undeveloped hill to the west, the Days Inn Novato motel (and parking lot) and Redwood Boulevard to the east, and an undeveloped hill and Buck Center Drive to the south. The surrounding area contains undeveloped parcels and grassy hillsides, except for a building just north of the Property, a large subdivision approximately 0.5 mile southwest of the Property, and the Buck Research Institute to the west of the Property.

The Property is a mostly undeveloped parcel of land that borders Highway 101 and the Days Inn Novato motel. The Property gradually slopes west-to-east with steep hillsides in the southern and western portions of the Property. Elevations range from 7 feet (near the northeastern portion of the Property) to 72 feet (the western portion of the Property) above mean sea level (Google Earth 2020). Vegetation in non-native annual grassland in the central portion of the Property is regularly maintained. Additionally, an approximately 2.3-acre area in the northeastern portion of both the Property and Project Area was noted as being disturbed by Pacific Gas and Electric Company (PG&E) activities during the September 15, 2020 site visit. Two subsurface PG&E natural gas transmission pipelines run through the central portion of the Property. Additional information on the soils and hydrology within the Property is provided in the Jurisdictional Delineation Report (WRA 2020). An Approved Jurisdictional Determination was completed by the Corps on February 11, 2021 (Corps 2021). The Approved Jurisdictional Determination concluded that all aquatic features, except the drainage ditch in the northeastern portion of the Project Area (which would be avoided by the Project), would not qualify as Waters of the U.S. A soils map of the Property is included as Figure 3 of Appendix A.

4.1 Biological Communities

Table 1 summarizes the area of each biological community type observed on the Property and within the Project Area. Non-sensitive biological communities located on the Property include coast live oak woodland, non-native annual grassland, and landscaped land cover. Sensitive biological communities located on the Property include purple needlegrass grassland, a seasonal wetland, two ephemeral streams, and three manmade drainage ditches. Descriptions of communities are found below. Biological communities are depicted in Figure 4 of Appendix A.

Table 1. Summary of Biological Communities on the Property and in the Project Area

Biological Community Type	Property (acres [linear feet])	Project Area (acres [linear feet])
Coast live oak woodland	0.17	0.04
Non-native annual grassland	11.01	10.64
Landscaped land cover	0.11	0.05
Subtotal:	**11.29**	**10.73**
Purple needlegrass grassland	2.16	1.65
Seasonal wetland	<0.01	<0.01
Ephemeral stream	0.04 (190)	0.04 (151)
Manmade drainage ditch	0.07 (428)	0.03 (204)
Subtotal:	**2.27 (618)**	**1.72 (355)**
Total:	**13.56 (618)**	**12.45 (355)**

4.1.1 Non-Sensitive Biological Communities

Three non-sensitive biological communities were observed during the site visit, including coast live oak woodland, non-native annual grassland, and landscaped areas. These communities are depicted on Figure 4 of Appendix A. Representative photos of these communities can be found in Appendix D. A detailed description of these communities is provided below.

Non-native Annual Grassland

Non-native annual grasslands are known throughout California, but are dominant in the Great Valley, the Coast Ranges, Transverse Ranges, Modoc Plateau, and South Coast. This vegetation community is located on a range of topographic settings (Sawyer et al. 2009, Baldwin et al. 2012). Substrates are varied, though are often composed of clays and clay loams with low permeability. These communities are dominated by non-native annual grasses, which often consist of species ranked as “moderate” to “high” by the Californica Invasive Plant Council (Cal-IPC) for their ability to invade wildlands (Cal-IPC 2020).

Non-native annual grassland occurs throughout the Property (and Project Area). Dominant species within the non-native annual grassland varied throughout the Property and include bull thistle (*Cirsium vulgare*), oat (*Avena* sp.), ripgut brome (*Bromus diandrus*), Harding’s grass (*Phalaris aquatica*), and Italian thistle (*Carduus pycnocephalus* ssp*. pycnocephalus*). In some portions of this community, these species grow in dense uniform patches, whereas in other portions of this community, these species grow in codominant mixtures. Non-native annual grassland is not considered sensitive under CEQA.

Coast Live Oak Woodland (CNDDB Rarity Rank G5/S4)

Coast live oak woodland is typically found on alluvial terraces, canyon bottoms, stream banks, slopes and flats. Soils are usually deep, sandy or loamy, with high organic matter. Coast live oak (*Quercus agrifolia*) is typically dominant or codominant in the tree canopy with other native trees or shrubs, including arroyo willow (*Salix lasiolepis*), valley oak, western sycamore (*Platanus racemosa*), Fremont’s cottonwood (*Populus fremontii*), and California black walnut (*Juglans*

californica) (Sawyer et al. 2009). Sawyer et al. (2009) defines the coast live oak woodland alliance has a minimum relative cover of over 50 percent in the tree canopy, unless California bay (*Umbellularia californica*) is present.

Coast live oak woodland occurs in the southeastern portion of the Property on a northeast-facing, grass-covered hillside. The vast majority of coast live oak woodland is situated outside of the Project Area. This community consists of mature coast live oak trees, which grow amid small valley oak saplings. The understory is primarily composed of patches of non-native grasses and forbs, including oat and bristly ox-tongue (*Helminthotheca echioides*). Coast live oak woodland is not considered sensitive under CEQA since it does not carry a Rarity Rank of G3 or lower, or S3 or lower.

Landscaped Land Cover

A small portion of the Property is landscaped with horticultural plantings. This area is located in the southeastern portion of the Property, directly adjacent to the Days Inn and outside of the Project Area. Here, vegetation is maintained for ornamental, aesthetic purposes. Vegetation includes mature coastal redwood trees (*Sequoia sempervirens*), olive mats (*Olea europaea*), and small mixtures of invasive ice plant (*Carpobrotus edulis*; Cal-IPC rank of highly invasive) (Cal-IPC 2020). Portions of the landscaped habitat contain bare ground and non-native grasses.

4.1.2 Sensitive Biological Communities

Four sensitive biological communities were observed during the biological resources assessment, including purple needlegrass grassland, seasonal wetland (one total), ephemeral streams (two total), and manmade drainage ditches (three total). These communities are depicted on Figure 4 of Appendix A. Representative photos of these communities can be found in Appendix D. A detailed description of these communities is provided below.

Purple Needlegrass Grassland (CNDDB Rarity Rank G4/S3)

Purple needlegrass grassland occurs in the Central Valley, Coast Ranges, Transverse Ranges, and South Coast, and extends from Del Norte County to San Diego County (Sawyer et al. 2009). This vegetation community is typically located in valleys and on hillslopes (on all aspects) and is often underlain by a clay substrate in the Central Valley and by shallow, rocky serpentine substrate in coastal areas (Sawyer et al. 2009). Per Sawyer et al. (2009), purple needlegrass must contribute to greater than 5 percent absolute cover to be considered purple needlegrass grassland. A large variety of associated species occur in purple needlegrass grasslands, including oat, bromes (*Bromus* spp.), bindweed (*Calystegia* spp.), clarkia (*Clarkia* spp.), lupine (*Lupinus* spp.), clover (*Trifolium* spp.), oak (*Quercus* spp.), California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and saw toothed goldenbush (*Hazardia squarrosa*).

Purple needlegrass grassland occurs in patches on east and northeast facing hillslopes of the Property (and Project Area). Aside from the purple needlegrass, other species present in the purple needlegrass grassland in the Property include oat, Italian thistle, and bromes. This community is ranked as globally secure (G4), but vulnerable statewide (S3), according to the CDFW and is therefore considered sensitive under CEQA (CDFW).

Seasonal Wetland

One seasonal wetland occurs on the Property (and in the Project Area), which can be classified as palustrine, emergent, non-persistent, seasonally flooded/saturated (PEM2E) (Cowardin et al. 1979). This feature is located at the confluence of two drainage ditches (one of which is directly off-site and adjacent to the Property and one of which is situated on the Property). During storm events, precipitation flows down the hills in the west, into the drainage ditch east of the Property, through the wetland, and into a culvert that extends below Redwood Boulevard (located outside of the Property). The seasonal wetland is dominated by non-native annual hydrophytic vegetation, including annual beard grass (*Polypogon monspeliensis*) and Italian rye grass (*Festuca perennis*). This feature contains hydric soils and exhibited evidence of hydrology (i.e., saturation and surface soil cracks). Boundaries of the seasonal wetland were mapped based on subtle changes in topography and vegetation composition shifts. As this feature exhibited all three Corps wetland parameters, it qualifies as a wetland and is considered sensitive under CEQA. However, per the February 2021 Approved Jurisdictional Determination that was issued by the Corps, it is exempt from CWA regulation under the Navigable Waters Protection Rule (Corps 2021). This feature would be avoided by all Project activities.

Ephemeral Stream

Two ephemeral streams occur in the southwestern portion of the Property. The shorter and substantially narrower of the two streams is situated outside of the Project Area and would be avoided by the Project. Both features extend beyond the Property to the southwest and convey stormwater flows down the hillside slopes to the south and east. Where the bed and banks of these features are no longer discernible, stormwater sheet flows to the east and into the drainage ditch that surrounds the Days Inn. Both streams are considered sensitive under CEQA. Per the February 2021 Approved Jurisdictional Determination that was issued by the Corps, both ephemeral streams are exempt from CWA regulation under the Navigable Waters Protection Rule (Corps 2021).

The larger ephemeral stream that is situated on the Property and within the Project Area conveys flows from west-to-east down a hillside. The width of this stream varies greatly but averages approximately 10 feet between top of banks and 18 to 24 inches between ordinary high water marks. The incised channel is approximately 12 to 16 inches deep. The stream is approximately 4 to 6 feet tall from bed to top of bank. Vegetation along the northern bank of the stream is composed of non-native annual grassland, whereas the southern bank of the stream is composed of a combination of non-native annual grassland and oak woodland. The steeper portion of the channel (i.e., located to the west) contains an unvegetated bed with gravels, whereas the flatter portions of the channel contain a vegetated bed (non-native annual grasses). This stream is mapped by the NWI as a portion of a larger stream that extends beyond the Property to the west (USFWS 2020a). The NWI depicts this stream as extending through the Project Area and into the manmade drainage ditch that surrounds the Days Inn; however, this is inaccurate since the stream dissipates in the Project Area after approximately 151 linear feet (i.e., no discernable bed or banks are present after approximately 151 linear feet). The spatial extent of this stream was determined by examining incision points and a discernible bed and banks. Sparse vegetation, litter, and silt deposits were observed within this feature. This stream would be graded by the Project to allow for the installation of the 856-linear foot mitigation stream, which would convey flows across the Project Area and into an existing culvert.

The smaller ephemeral stream that is situated on the Property but outside of the Project Area is a very narrow feature that conveys water south-to-north down a hillside in the southwestern corner

of the Property. This stream dissipates before reaching the southern border of the Project Area. This stream is approximately 1 foot in width and relatively uniform. The incised portion of the stream, which is approximately 6 inches in depth, is the full extent of the channel. This stream is situated in oak woodland and is generally devoid of vegetation. This feature was identified via observable incision points and its denuded bed. Small amounts of litter were observed within this feature. This feature would be avoided by the Project.

Manmade Drainage Ditch

The Property contains three manmade drainage ditches, one of which is situated outside of the Project Area and would be avoided by the Project. These ditches are situated on the eastern side of the Property. These features collect stormwater as sheetflow from the surrounding hillslopes and convey flows below Redwood Boulevard via three separate culverts. Per the February 2021 Approved Jurisdictional Determination that was issued by the Corps, two of the three drainage ditches would exempt from CWA regulation under the Navigable Waters Protection Rule (Corps 2021). Only the northernmost drainage ditch would be regulated by the Corps under the Navigable Waters Protection Rule; however, this ditch would be avoided by the Project.

The drainage ditch that is situated in the mid-eastern portion of the Project Area begins north of the Days Inn parking lot and conveys stormwater flows from the northeast to the southwest. The ditch connects to a large drainage ditch that surrounds the Days Inn motel. This drainage ditch is approximately 3 feet wide and 1 foot deep. This feature was identified by its denuded, incised bed and defined banks. The low-flow channel is the full extent of this feature. This feature would be graded by the Project.

The Property also contains a portion of the drainage ditch that borders the Days Inn to the north, west, and south (located outside of the Project Area). This feature conveys stormwater flows bilaterally to two different culverts, situated directly north and directly south of the Days Inn. The portion of the drainage ditch that conveys stormwater from south-to-north and then west-to east is not shown on Figure 4 of Appendix A. The portion of the drainage ditch that conveys stormwater from north-to-south and then west-to-east is shown on Figure 4 of Appendix A, as it is within the Property's boundaries. This drainage ditch was constructed as a means of stormwater management. This ditch is approximately 8 to 12 feet in width from top of bank to top of bank and was identified by its gravelly bed. The low-flow channel in this ditch is approximately 3 feet wide and 1 foot deep. A portion of this feature would be graded to accommodate the 856-linear foot mitigation stream that would overlap with this feature.

The third drainage ditch, which is located north of the Project Area, conveys flows along the northeastern boundary of the Property into a large concrete culvert that extends below Redwood Boulevard. This feature is approximately 3 feet wide and 1 foot deep. It was identified by its denuded bed, as well as observable evidence of sediment sorting and water pooling at the sloped entrance of the concrete culvert. The low-flow channel is the full extent of this feature as well. This feature would be avoided by the Project.

4.2 Special-Status Species

4.2.1 Plants

Based on a review of the resources and databases listed in Section 3.2.1, 28 special-status plant species have been documented in a 5-mile radius of the Property (Figure 5 in Appendix A). Appendix C summarizes the potential for occurrence for each special-status plant species occurring in the vicinity of the Property.

No special-status plant species were observed on the Property during the site visits. However, one special-status plant species has a high potential to occur on the Property and in the Project Area, which is discussed below. The remaining species documented to occur in the vicinity of the Property are unlikely or have no potential to occur due to a lack of suitable habitats or substrates, such as chaparral, serpentine soils, coastal habitats, or certain freshwater habitats (e.g., vernal pools, marshes, and seeps).

High Potential

Fragrant fritillary (*Fritillaria liliacea*). Rank 1B.2. High potential. Fragrant fritillary is a low-growing, bulbiferous perennial forb in the lily family (Liliaceae) that blooms from February to April. It typically occurs in open, grassy areas in valley and foothill grassland, coastal scrub, and coastal prairie habitat at elevations ranging from 10 to 1,345 feet (CDFW 2020, CNPS 2020b). Soil survey data at known locations suggest that this species is typically located on moderately acidic (pH 5.8) to neutral (pH 6.7) clay loams to clays derived from volcanics or serpentine (CDFW 2020, CSRL 2020). This species has a serpentine affinity rank of weak indicator (1.8) (Safford et al. 2005). Observed associated species include soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*), coyote brush (*Baccharis pilularis*), purple needlegrass, California oat grass (*Danthonia californica*), large flowered star tulip (*Calochortus uniflorus*), California buttercup (*Ranunculus californicus*), sun cups (*Camissonia ovata*), shooting stars (*Dodecatheon hendersonii*), needleleaf pincushion plant (*Navarretia intertexta*), one-sided bluegrass (*Poa secunda*), and Greene's popcornflower (*Plagiobothrys greenei*) (CDFW 2020).

Fragrant fritillary is known to occur in 38 USGS 7.5-minute quadrangles in Alameda, Contra Costa, Marin, Monterey, San Benito, Santa Clara, San Francisco, San Mateo, Solano, and Sonoma counties (CNPS 2020b). There are two CNDDB records within 1 mile of the Property. The occurrence nearest to the Property (#43) was documented approximately 0.8 mile southeast of the Property in February of 2018 in Mt. Burdell Open Space, Novato, Marin County (CDFW 2020). A similar occurrence (#42) was documented just west of previously mentioned occurrence and can be seen on Figure 5 in Appendix A.

A targeted protocol-level survey was conducted by WRA on the Property on April 19, 2019 (i.e., during its published bloom period). No special-status plants, including fragrant fritillary, were observed on the Property during the April 2019 survey (WRA 2019).

4.2.2 Wildlife

Twenty-one special-status wildlife species have been documented in the CNDDB within 5 miles of the Property (Figure 6 in Appendix A). Six special-status species have moderate potential to be present based on the habitats on the Property. No special-status species were observed on the Property (or in the Project Area) during the site assessment, but those with moderate or high potential to occur are discussed below.

Moderate Potential

Pallid bat (*Antrozous pallidus*). CDFW Species of Special Concern, WBWG High Priority. Moderate potential. The pallid bat (*Antrozous pallidus*) is broadly distributed throughout much of western North America and typically occurs in association with open, rocky areas. Occupied habitats are highly variable and range from deserts to forests in lowland areas, and include higher-elevation forests. Roosting may occur singly or in groups of up to hundreds of individuals. Roosts must offer protection from high temperatures and are typically in rock crevices, mines, caves, or

tree hollows; manmade structures are also used, including buildings (both vacant and occupied) and bridges. Pallid bats are primarily insectivorous, feeding on large prey that is usually taken on the ground but sometimes in flight (WBWG 2020).

The Property does not contain open, rocky habitat, caves, or mines. However, a maternity roost was recorded approximately 1.0 mile north of the Property as recently as 2004 (CDFW 2020). Small tree cavities were observed in the Property during the May 29, 2018 site visit, where pallid bat could roost singly or in small aggregations and this species therefore has moderate potential to occur. No suitable maternity or hibernation roost habitat is present.

Fringed myotis (*Myotis thysanodes*), WBWG High Priority. Moderate Potential. The fringed myotis (*Myotis thysanodes*) ranges throughout much of western North America from southern British south to southern Mexico. This species is most common in drier woodlands (e.g. oaks, pinyons-junipers); a variety of other habitats are used including desert scrubland, grassland, and coniferous and mixed (coniferous-deciduous) forests. Maternity roosting occurs in colonies of 10 to 2,000 individuals, although large colonies are rare (WBWG 2020). Caves, buildings, mines, rock crevices in cliff faces, and bridges are used for maternity and night roosts; tree cavities/hollows are also commonly used (WBWG 2020).

Tree cavities were observed on the Property during the May 29, 2018 site visit, where fringed myotis could roost singly or in small aggregations and this species therefore has moderate potential to occur. No suitable maternity or hibernation roost habitat is present.

Hoary bat (*Lasiurus cinereus*), WBWG Medium Priority. Moderate Potential. Hoary bats (*Lasiurus cinereus*) are highly associated with forested habitats in the western United States, particularly in the Pacific Northwest. They are a solitary species and roost primarily in foliage of both coniferous and deciduous trees, near the ends of branches, usually at the edge of a clearing. Roosts are typically 10 to 30 feet above the ground. They have also been documented roosting in caves, beneath rock ledges, in woodpecker holes, in grey squirrel nests, under driftwood, and clinging to the side of buildings, though this behavior is not typical. Hoary bats are thought to be highly migratory, however, wintering sites and migratory routes have not been well documented. This species tolerates a wide range of temperatures and has been captured at air temperatures between 0 and 22 degrees Celsius. Hoary bats probably mate in the fall, with delayed implantation leading to birth in May through July. They usually emerge late in the evening to forage, typically from just over one hour after sunset to after midnight. This species reportedly has a strong preference for moths, but is also known to eat beetles, flies, grasshoppers, termites, dragonflies, and wasps (WBWG 2020).

Tree cavities were observed in the Property during the May 29, 2018 site visit, where fringed myotis could roost singly or in small aggregations and this species therefore has moderate potential to occur. No suitable maternity or hibernation roost habitat is present.

Burrowing owl (*Athene cunicularia*). CDFW Species of Special Concern. Moderate potential. The burrowing owl (*Athene cunicularia*) occurs as a year-round resident and winter visitor in much of California's lowlands, inhabiting open areas with sparse or non-existent tree or shrub canopies. Typical habitat is annual or perennial grassland, although human-modified areas such as agricultural lands and airports are also used (Poulin et al. 2020). This species is dependent on burrowing mammals to provide the burrows that are characteristically used for shelter and nesting, and in northern California is typically found in close association with California ground squirrels (*Spermophilus beecheyi*). Manmade substrates such as pipes or debris piles

may also be occupied in place of burrows. Prey consists of insects and small vertebrates. Breeding typically takes place from March to July.

A small number of ground squirrel burrows were observed on the Property, concentrated along drainage ditches during the May 29, 2018 site visit. At the time of the site visit, vegetation was tall (between 20 and 40 inches) making it less favorable for burrowing owl. Burrowing owl is rarely documented in the vicinity of the Property (CDFW 2020). However, because suitable refugia is present and the Property is within this species range, burrowing owl has a moderate potential to occur.

White-tailed kite (*Elanus leucurus*). CDFW Fully Protected Species. Moderate potential. The white-tailed kite (*Elanus leucurus*) is resident in open to semi-open habitats throughout the lower elevations of California, including grasslands, savannahs, woodlands, agricultural areas and wetlands. Vegetative structure and prey availability seem to be more important habitat elements than associations with specific plants or vegetative communities (Dunk 1995). Nests are constructed mostly of twigs and placed in trees, often at habitat edges. Nest trees are highly variable in size, structure, and immediate surroundings, ranging from shrubs to trees greater than 150 feet tall (Dunk 1995). This species preys upon a variety of small mammals, as well as other vertebrates and invertebrates.

The Property contains open grassland for foraging and multiple trees and shrubs which may provide nesting structure for white-tailed kite. Therefore, this species has moderate potential to occur on the Property.

Grasshopper sparrow (*Ammodramus savannarum*), CDFW Species of Special Concern. Moderate Potential. The grasshopper sparrow (*Ammodramus savannarum*) is a summer resident in California, wintering in Mexico and Central America. This species occurs in open grassland and prairie-like habitats with short- to moderate-height vegetation, and often scattered shrubs (Shuford and Gardali 2008). Both perennial and annual (non-native) grasslands are used. Nests are placed on the ground and well concealed, often adjacent to grass clumps (Shuford and Gardali 2008). Grasshopper sparrows are secretive and generally detected by voice. Insects comprise the majority of the diet. The Property contains open grassland that may support nesting and foraging by this species.

4.2.3 Wildlife Movement

Wildlife movement between suitable habitats can occur via open space areas lacking substantial barriers. The terms “landscape linkage” and “wildlife corridor” are often used when referring to these areas. The key to a functioning corridor or linkage is that it connects two larger habitat blocks, also referred to as core habitat areas (Beier and Loe 1992, Soulé and Terborgh 1999). It is useful to think of a “landscape linkage” as being valuable in a regional planning context, a broad scale mapping of natural habitat that functions to join two larger habitat blocks. The term “wildlife corridor” is useful in the context of smaller, local area planning, where wildlife movement may be facilitated by specific local biological habitats or passages and/or may be restricted by barriers to movement. Above all, wildlife corridors must link two areas of core habitat and should not direct wildlife to developed areas or areas that are otherwise void of core habitat (Hilty et al. 2006).

The Property is not located within a designated wildlife corridor (California Department of Transportation 2010). The Property is bordered by Highway 101 to the east, which serves as a barrier to movement for terrestrial species and lies just north of the densely developed City of Novato. The Property is bordered by a large expanse of undeveloped grassland and woodland

to the west. As such, the Property does not provide connectivity between blocks of core habitat and does not serve as a wildlife corridor.

5.0 PROJECT IMPACTS AND MITIGATION MEASURES

The State CEQA Guidelines provide direction for assessing the impacts of projects on biological resources and determining which impacts will be significant. CEQA defines a "significant effect on the environment" as "a substantial adverse change in the physical conditions which exist in the area affected by the proposed project." Under State CEQA Guidelines Section 15065, a project's impacts on biological resources are deemed significant if the project would:

A. substantially reduce the habitat of a fish or wildlife species
B. cause a fish or wildlife population to drop below self-sustaining levels
C. threaten to eliminate a plant or animal community
D. reduce the number or restrict the range of a rare or endangered plant or animal

Additionally, Appendix G of State CEQA Guidelines provides a checklist of other potential impacts to consider when analyzing the significance of project effects. The impacts listed in Appendix G may or may not be significant, depending on the level of the impact. For biological resources, these impacts include whether the project would:

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 CDFW or USFWS;

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS;

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 (HCP), Natural Community Conservation Plan, or other approved local, regional, or state HCP.

This report uses these thresholds in the analysis of impacts and determination of the significance of those impacts. The assessment of impacts under CEQA is based on the change caused by the Project relative to the CEQA baseline, which in this case are the existing conditions in the Project Area.

Potential impacts on existing biological resources were evaluated by comparing the quantity and quality of habitats present in the Project Area under baseline conditions to the anticipated

conditions after implementation of proposed Project activities. Project impacts are depicted in Figure 7 of Appendix A. Direct and indirect impacts on special-status species and sensitive natural communities were assessed based on the potential for the species, their habitat, or the natural community in question to be disturbed or enhanced by the proposed Project. Determinations of whether or not Project activities will result in a substantial adverse effect to biological resources are provided in the following sections.

5.1 Impact BIO-1: Special-Status Species

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 CDFW or USFWS.

The following impact analysis describes the Project's adverse effects on special-status species. Appendix C lists the potentially occurring special-status plant and wildlife species, along with their listing status and basis for the determination of their absence from the Project Area.

Potential Impact BIO-1a: Federally and State-Listed Special-Status Plants and CRPR 1 or 2 Plants

Only one special-status plant species, fragrant fritillary, was determined to have moderate or high potential to occur in the Project Area. A focused, protocol-level rare plant survey was conducted in the Project Area on April 19, 2019, which occurred within this species' bloom period (February through April). Fragrant fritillary was not detected during the focused, protocol-level rare plant survey. No other federally or state-listed plants, special-status plants, or CRPR 1 or 2 plant species have a moderate or high potential to occur within the Project Area. Therefore, the Project would have a less than significant impact to special-status plant species under CEQA.

Level of Significance: Less Than Significant

Potential Impact BIO-1b: Burrowing owl

Burrows within the Project Area may be suitable for use by burrowing owl. Direct impacts to burrowing owl habitat would include loss of potentially suitable grassland habitat. Given that there were few suitable burrows within the Project Area, and few documented observations of burrowing owl in the vicinity, potential impacts to existing grassland habitat would be considered less than significant. If burrowing owls are present during construction, individuals may be injured or killed by vehicles or construction equipment, or they may be flushed from protective burrows by vehicle traffic or ground disturbance. Burrows, if present, may also be impacted or made inaccessible through ground disturbance or stockpiling of equipment and materials. This may result in injury or mortality to burrowing owl individuals. Therefore, the Project would have a potentially significant impact to burrowing owl under CEQA if applicable mitigation measures are not employed.

Level of Significance: Potentially Significant

Mitigation Measure BIO-1: A pre-construction survey will be performed in accordance with the Staff Report on Burrowing Owl Mitigation (CDFG 2012) within 14 days of initial ground disturbance associated with the Project. The pre-construction survey will include suitable habitat within the Project Area and areas up to 656 feet (200 meters) from the Project Area. The pre-construction survey will be conducted prior to the start of staging and construction, regardless of the time of year. If burrowing owl is detected within the Project Area's proposed limits of grade (i.e., where

ground-disturbing activities would occur) during the non-nesting season and the burrow cannot be avoided, a burrowing owl exclusion plan will be prepared and implemented. Mitigation may be required by the CDFW as part of the exclusion plan. If burrowing owl is detected within the Project Area, but outside of the proposed limits of grade during the non-nesting season, vehicular traffic, construction noise and visual disturbance will be minimized to the extent feasible to minimize the potential for flushing overwintering owls from protective burrows. Occupied burrows will not be disturbed during the nesting season (February 1 through August 31) unless, after consultation with the CDFW, a qualified biologist verifies that either: (1) burrowing owls have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and capable of independent survival.

Level of Significance After Mitigation: Less Than Significant

Potential Impact BIO-1c: Special-status and non-status native nesting birds

The Project has the potential to impact special-status and non-special-status native nesting birds protected by the CFGC, including white-tailed kite and grasshopper sparrow. Project activities, such as vegetation removal and ground disturbance, have the potential to impact these species by causing direct mortality of eggs or young, or by causing auditory, vibratory, and/or visual disturbance of a sufficient level to cause abandonment of an active nest. If Project activities occur during the nesting season, which generally extends from February 1 through August 31, nests of both special-status and non-special-status native birds could be impacted by construction and other ground-disturbing activities. Disturbance to nesting birds would be considered a potentially significant impact under CEQA.

Level of Significance: Potentially Significant

Mitigation Measure BIO-2: Initiation of construction activities during the avian nesting season (February 1 through August 31) will be avoided to the extent feasible. If the commencement of construction activities begins during the nesting season, pre-construction nesting bird surveys will be conducted within 14 days of initial ground disturbance or vegetation removal to avoid disturbance to active nests, eggs, and/or young of nesting birds. Surveys can be used to detect the nests of special-status, as well as non-special-status birds. Surveys will occur throughout the limits of grade portion of the Project Area and the surrounding 500 feet. If any active avian nests are found, an exclusion zone where no construction would be allowed will be established around any active nests until a qualified biologist has determined that all young have fledged and are independent of the nest. Suggested exclusion zone distances differ depending on species, location, and placement of nest, and will be at the discretion of the biologist. These surveys will remain valid as long as construction activity is consistently occurring in a given area and will be completed again if there is a lapse in construction activities of more than 14 consecutive days during the breeding bird season.

Level of Significance After Mitigation: Less Than Significant

Potential Impact BIO-1d: Roosting bats

Special-status bats, including fringed myotis, hoary bat and pallid bat, have the potential to use trees in the Project Area for day or night roosts. Common bats protected under the CFGC may also roost within the Project Area. No habitat suitable for maternity roosting was observed in the Project Area (or on the Property). No tree removal will occur as part of the Project. Noise generating construction activities may temporarily displace day or night roosting bats. However,

given the limited amount of suitable habitat that may be indirectly impacted and the temporary nature of the disturbance, Project impacts to roosting bats would be less than significant under CEQA.

Level of Significance: Less than Significant

5.2 Impact BIO-2: Sensitive Communities

The CDFW defines sensitive natural communities and vegetation alliances using NatureServe's standard heritage program methodology (CDFG 2007), as described above in Section 2.1. Project impacts to CDFW sensitive natural communities, vegetation alliances/associations, or any such community identified in local or regional plans, policies, and regulations, were considered and evaluated.

The Project would result in permanent unavoidable impacts to approximately 1.17 acres of purple needlegrass grassland (G4/S3), a CDFW sensitive community that is considered sensitive under CEQA. However, the Project has been designed to incorporate the hydroseeding of purple needlegrass across 1.17 acres of land in the western section of the Project Area, which is currently composed of non-native annual grassland. This would result in the creation of 1.17 acres of purple needlegrass grassland to offset Project impacts to existing purple needlegrass grassland at a 1-to-1 ratio. The newly created purple needlegrass grassland community would intergrade with an existing purple needlegrass grassland community to create a contiguous and more expansive habitat west of the Project's limits of grade. A maintenance and monitoring program will be adopted to ensure that newly created purple needlegrass grassland and the existing purple needlegrass grassland that would be avoided by the Project are monitored, maintained, and protected. Through the creation of 1.17 acres of purple needlegrass grassland, the Project would have a less than significant impact to sensitive communities under CEQA.

Level of Significance: Less Than Significant

5.3 Impact BIO-3: Aquatic Resources

Wetlands are considered sensitive environmental resources protected at federal, state, and local levels. They provide unique habitat functions and values for wildlife, and provide habitat for plant species adapted to wetland hydrology. Throughout California, the quality and quantity of wetlands has dramatically declined owing to the construction of dams, dikes, and levees, as well as because of water diversions, the filling of wetlands for development, and the overall degradation of water quality by inputs of runoff from agricultural, urban, and infrastructure development and other sources**.**

A formal delineation of the Property was conducted in May of 2018 (WRA 2020). The Property contains three manmade drainage ditches, two ephemeral streams, and one seasonal wetland. The Project has been designed to avoid the seasonal wetland, one of the ephemeral streams, and one of the manmade drainage ditches that occur on the Property. The Project would result in permanent unavoidable impacts to one ephemeral stream (0.04 acre; 151 linear feet) and two manmade drainage ditches (<0.01 acre; 71 linear feet and 0.03 acre; 133 linear feet, respectively). The ephemeral stream and drainage ditches that would be permanently impacted by the Project would be filled and graded during the initial phase of construction. Impacts to these aquatic features would be considered significant under CEQA and would require applicable aquatic resource permits. The Project proponent has applied for a Waste Discharge Requirements permit from the RWQCB and a Section 1602 Lake and Streambed Alteration Agreement from the CDFW.

A Section 404 permit from the Corps is not required because all features that would be impacted by the Project are exempt from the CWA under the Navigable Waters Protection Rule, per the February 2021 Approved Jurisdictional Determination that was issued by the Corps (Corps 2021).

The Project has been designed to include the construction of an 856-linear foot in the western portion of the Project Area. The proposed stream would tie into the off-site portion of the existing ephemeral stream that would be impacted by the Project and would convey flows directly into a culvert located south of the Days Inn. Since the existing ephemeral stream that would be impacted by the Project dissipates after 151 linear feet, resulting in sheet flow across the Project Area, construction of the new stream would result in improved on-site hydrologic conditions. The proposed stream would mimic existing stream characteristics and would be partially vegetated with locally native vegetation (along more gradual slopes) and partially unvegetated (along steeper slopes). A maintenance and monitoring program will be adopted to ensure that the newly created stream functions as designed. Through the construction of a new 856-linear foot stream, and through the obtainment of applicable aquatic resource permits, the Project would have a less than significant impact on aquatic resources under CEQA.

Level of Significance: Less Than Significant

5.4 Impact BIO-4: Wildlife Movement

For many species, the landscape is a mosaic of suitable and unsuitable habitat types. Environmental corridors are segments of land that provide a link between these different habitats while also providing cover. Development that fragments natural habitats (i.e., breaks them into smaller, disjunct pieces) can have a twofold impact on wildlife: (1) as habitat patches become smaller they are unable to support as many individuals (patch size), and (2) the area between habitat patches may be unsuitable for wildlife species to traverse (connectivity). The Project Area does not serve as a wildlife corridor, thus impacts to wildlife movement would be considered less than significant under CEQA.

Level of Significance: Less Than Significant

5.5 Impact BIO-5: Conflicts with Local Policies

Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Potential Impact BIO-5a: Novato Tree Ordinance

The Project Area contains several trees within the coast live oak woodland and non-native grassland communities that may meet the definition of heritage trees as defined by the City of Novato tree ordinance. However, the Project would not involve the removal or trimming of trees, as all trees within the Project Area would be avoided. Therefore, the Project would result in a less than significant impact to trees, per the City of Novato Tree Ordinance, under CEQA.

Level of Significance: Less Than Significant

Potential Impact BIO-5b: City of Novato Wetland Protection Ordinance

The Project Area contains one seasonal wetland, which would be avoided by the Project. A Use Permit is required for work on any project within 50 feet of a wetland (or a variance agreed upon by the City of Novato) or requiring wetland protection measures or involving wetland

fill/encroachment and/or mitigation projects. The City defines wetlands as any wetland delineated by the Corps under provision of the CWA. However, this wetland would be exempt from regulation under the CWA based on guidance in the Navigable Waters Protection, which states that only "adjacent wetlands" would qualify as Waters of the U.S. Rule (33 CFR 328.3 (b) (1); 33 CFR 328.3 (c) (1)). An Approved Jurisdiction Determination from the Corps (2021) verified that this wetland is exempt from regulation under the CWA. Thus, the wetland in the Project Area would not qualify as a wetland under the City of Novato's Wetland Protection Ordinance. Therefore, the Project would result in a less than significant impact to wetlands, per the City of Novato Wetland Protection Ordinance, under CEQA.

Level of Significance After Mitigation: Less Than Significant

Potential Impact BIO-5c: City of Novato Waterways and Riparian Protection Ordinance

The City of Novato requires all lands adjoining or encompassing watercourses and their significant tributaries to be subject to a Stream Protection Zone. These lands are shown on "EN Map 1" within the General Plan. A Stream Protection Zone includes the streambed, stream banks, all riparian vegetation, and an upland buffer at least 50 feet wide measured from top of the channel bank. Proposed development, land uses and activities including any proposed development application, land division, use permit, grading or building permit for any excavation, fill, grading, or paving; removal or planting of vegetation; construction, alteration, or removal of any structure; or alteration of any embankment within the Stream Protection Zone requires Use Permit approval from the City of Novato. The Project Area is situated outside of the boundaries of EN Map 1 and on-site manmade drainage ditches would not qualify as significant tributaries protected under this ordinance. Therefore, the Project would have no impact on City of Novato waterways and riparian corridors, per the City of Novato Waterways and Riparian Protection Ordinance, under CEQA.

Level of Significance: No Impact

5.6 Impact BIO-6: Conflicts with an Adopted Habitat Conservation Plan

Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. The Project would not conflict with the provisions of an adopted HCP, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. The Project Area is not within a geographic area covered by an adopted HCP or a natural community conservation plan.

Level of Significance: No Impact

5.7 Impact BIO-7: Cumulative Impacts

Cumulative impacts on the biological resources that could be affected by the Project may result from a number of past, current, and reasonably foreseeable future projects that occur in the area. Although such projects could result in impacts on these sensitive habitats and species, it is expected that most current and future projects that impact these species and their habitats would be required to mitigate these impacts through the CEQA, Section 1602, or Section 404/401 permitting process, as well as through the ESA Section 7 consultation process. As a result, most projects in the region will mitigate their impacts on these resources, minimizing cumulative impacts on these species.

Through implementation of the avoidance and minimization, and/ or mitigation measures, incorporated into the Project, the proposed Project will not result in a considerable contribution to any significant cumulative impacts to biological resources.

Level of Significance: No Impact

6.0 REFERENCES

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (eds.). 2012. The Jepson Manual: Vascular Plants of California, second edition. University of California Press, Berkeley, CA.

Beier, P. and S. Loe. 1992. A checklist for evaluating impacts to wildlife movement corridors. Wildlife Society bulletin. 20: 434-440.

California Department of Transportation. 2010. California Essential Habitat Connectivity Project. Available at: https://www.wildlife.ca.gov/conservation/planning. Most recently accessed: October 2020.

[Cal-IPC] California Invasive Plant Council. 2020. California Invasive Plant Inventory Database. California Invasive Plant Council, Berkeley, CA. Online at: http://www.cal-ipc.org/paf/; Most recently accessed: October 2020.

[CDFG] California Department of Fish and Game. 1994. A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Fish and Game Code. Environmental Services Division, Sacramento, CA.

[CDFG] California Department of Fish and Game. 2010. List of Vegetation Alliances and Associations. Vegetation Classification and Mapping Program, California Department of Fish and Game, Sacramento, CA. September 2010.

[CDFW] California Department of Fish and Wildlife. 2020. California Natural Diversity Database. Wildlife and Habitat Data Analysis Branch, Sacramento, CA.

City of Novato. City of Novato Municipal Code. 2020. Available online at: https://library.municode.com/ca/novato/codes/code_of_ordinances; Most recently accessed: October 2020.

[CNPS] California Native Plant Society. 2020a. A Manual of California Vegetation, Online Edition. Sacramento, California. Online at: http://vegetation.cnps.org/; Most recently accessed: October 2020.

[CNPS] California Native Plant Society. 2020b. Inventory of Rare and Endangered Plants (online edition, v8-02). Sacramento, California. Online at: http://rareplants.cnps.org/; Most recently accessed: October 2020.

[Corps] U.S. Army Corps of Engineers. 2021. Approved Jurisdictional Determination for 8161 Redwood Boulevard, Novato, CA. February 11, 2021.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish & Wildlife Service, Washington, D.C. 131 pp.

[CSRL] California Soil Resources Lab. 2020. UC Davis Soils Laboratory. Available at: http://casoilresource.lawr.ucdavis.edu/drupal/. Most recently accessed: October 2020.

Dunk, J.R. 1995. White-tailed Kite (*Elanus leucurus*), The Birds of North America Online (A Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/178. Most recently accessed: October 2020.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi 39180-0631.

Google Earth. 2020. Aerial Imagery 1993-2020. Most recently accessed: October 2020.

Hilty, J.A., W.Z. Lidicker Jr., and A.M. Merenlender, eds. 2006. Corridor Ecology: the Science and Practice of Linking Landscapes for Biodiversity Conservation. Washington, DC: Island Press. 323 pp.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Prepared for the California Department of Fish and Game, Sacramento, CA.

Jepson Flora Project (eds.). 2020. Jepson eFlora. Online at: http://ucjeps.berkeley.edu/IJM.html; Most recently accessed: October 2020.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17.

[NRCS] Natural Resources Conservation Service. 2010. Field Indicators of Hydric Soils in the United States, version 7.0. In cooperation with the National Technical Committee for Hydric Soils, Fort Worth, TX.

NatureServe. 2020. NatureServe Conservation Status. Available online at: http://explorer.natureserve.org/ranking.html. Most recently accessed: October 2020.

Poulin, Ray, L.D. Todd, E.A. Haug, B.A. Millsap, and M.S. Martell. 2020. Burrowing Owl (Athene cunicularia), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America. Available online: http://bna.birds.cornell.edu/bna/species/061doi:10.2173/bna.61. Most recently accessed: October 2020.

Safford, H.D., J.H. Viers, and S.P. Harrison. 2005. Serpentine Endemism in the California Flora: A Database of Serpentine Affinity Madrono, Vol 52(4):222-257

Sawyer, J.O., T. Keeler-Wolf, and J. Evens. 2009. A Manual of California Vegetation, 2nd Edition. California Native Plant Society in collaboration with California Department of Fish and Game, Sacramento, CA.1300 pp.

Shuford, W.D., and T. Gardali (eds). 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and CDFG, Sacramento.

Soulé, M.E., and J. Terborgh. 1999. Protecting nature at regional and continental scales: A conservation biology program for the new millennium. BioScience 49: 809–817

Stebbins, R.C. 2003. A Field Guide to Western Reptiles and Amphibians, third edition. The Peterson Field Guide Series, Houghton Mifflin Company, NY.

Thomson, R.C., A.N. Wright, and H.B. Shaffer. 2016. California Amphibian and Reptile Species of Special Concern. Co-published by the California Department of Fish and Wildlife and University of California Press. Oakland, California.

[USDA] U.S. Department of Agriculture, Soil Conservation Service (SCS). 1985. Soil Survey of Marin County, California. In cooperation with the U.C. Agricultural Experiment Station.

[USFWS] U.S. Fish and Wildlife Service. 2020a. National Wetlands Inventory website. U.S. Department of the Interior, USFWS, Washington, D.C. http://www.fws.gov/nwi/. Most recently accessed: October 2020.

[USFWS] U.S. Fish and Wildlife Service. 2020b. Information for Conservation and Planning Database. Available online at: https://ecos.fws.gov/ipac/; Most recently accessed: October 2020.

[WBWG] Western Bat Working Group. 2020. Species Accounts. Available online at: http://wbwg.org/western-bat-species/; Most recently accessed October 2020.

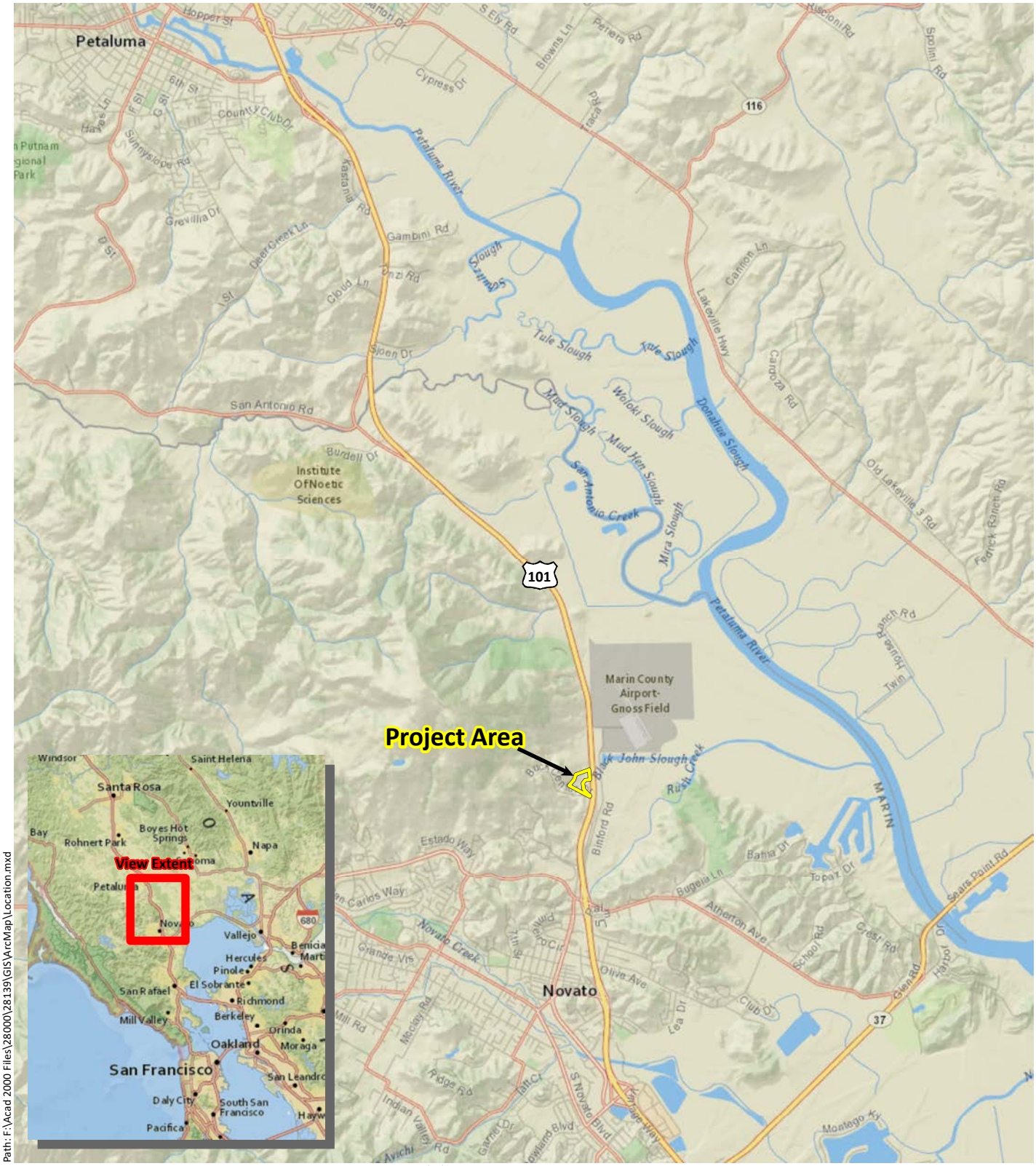
[WRA] WRA, Inc. 2019. Rare Plant Survey Results Memorandum for 8161 Redwood Boulevard, Novato, Marin County, California. April 2019.

[WRA] WRA, Inc. 2020. Jurisdictional Delineation Report for 8161 Redwood Boulevard, Novato, Marin County, California. October 2020.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White. 1990. California's Wildlife, Volume I-III: Amphibians and Reptiles, Birds, Mammals. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game, Sacramento, CA.

APPENDIX A
FIGURES

This page intentionally left blank.



Path: F:\Acad 2000 Files\28000\28139\GIS\ArcMap\Location.mxd

Sources: National Geographic, WRA | Prepared By: mrochelle, 10/7/2020

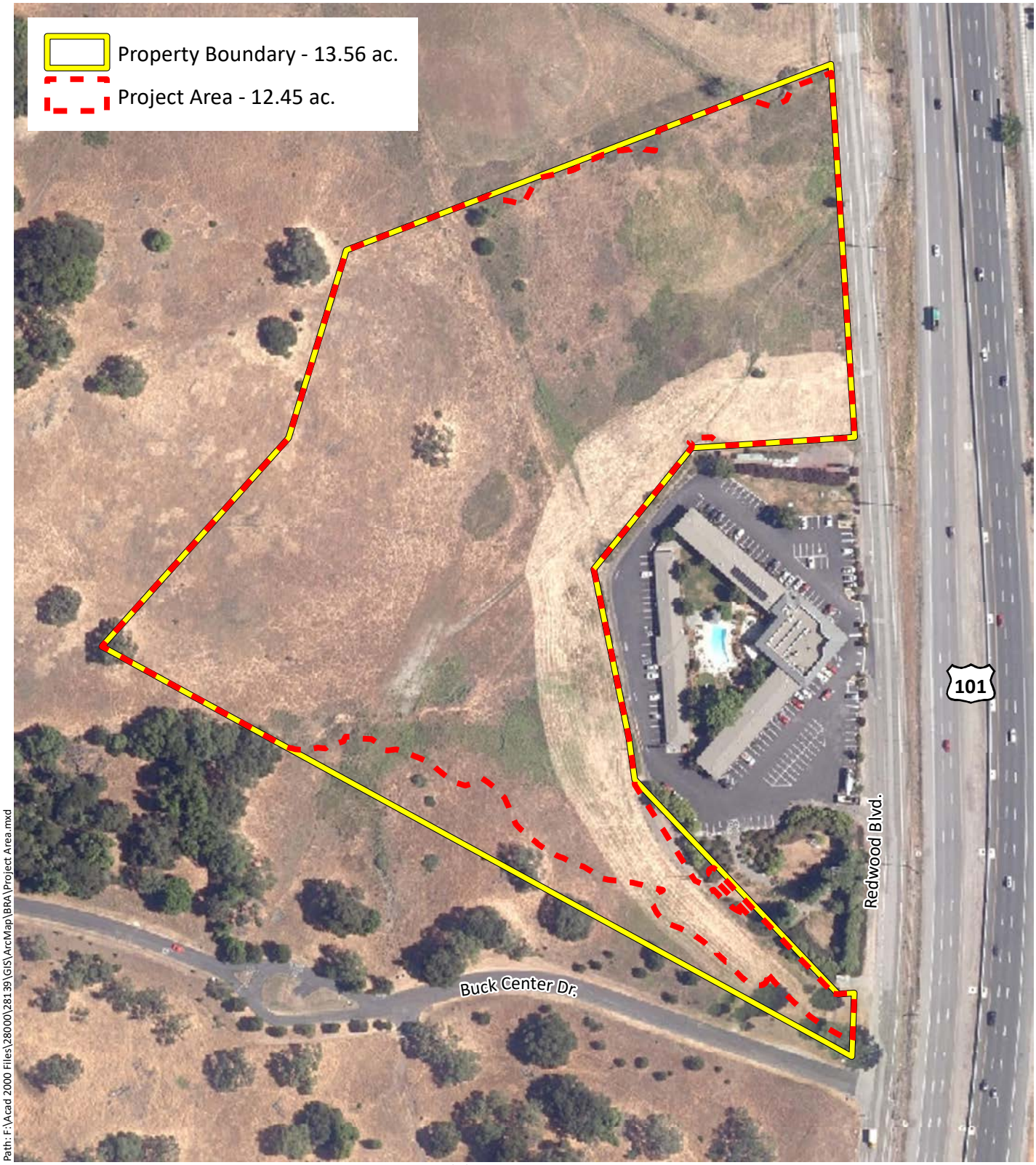
Figure 1. Project Area Location

8161 Redwood Boulevard
Novato, California

0 1 2 Miles

N

wra
ENVIRONMENTAL CONSULTANTS



Sources: Marin County 2018 Aerial, WRA | Prepared By: mrochelle, 5/4/2021

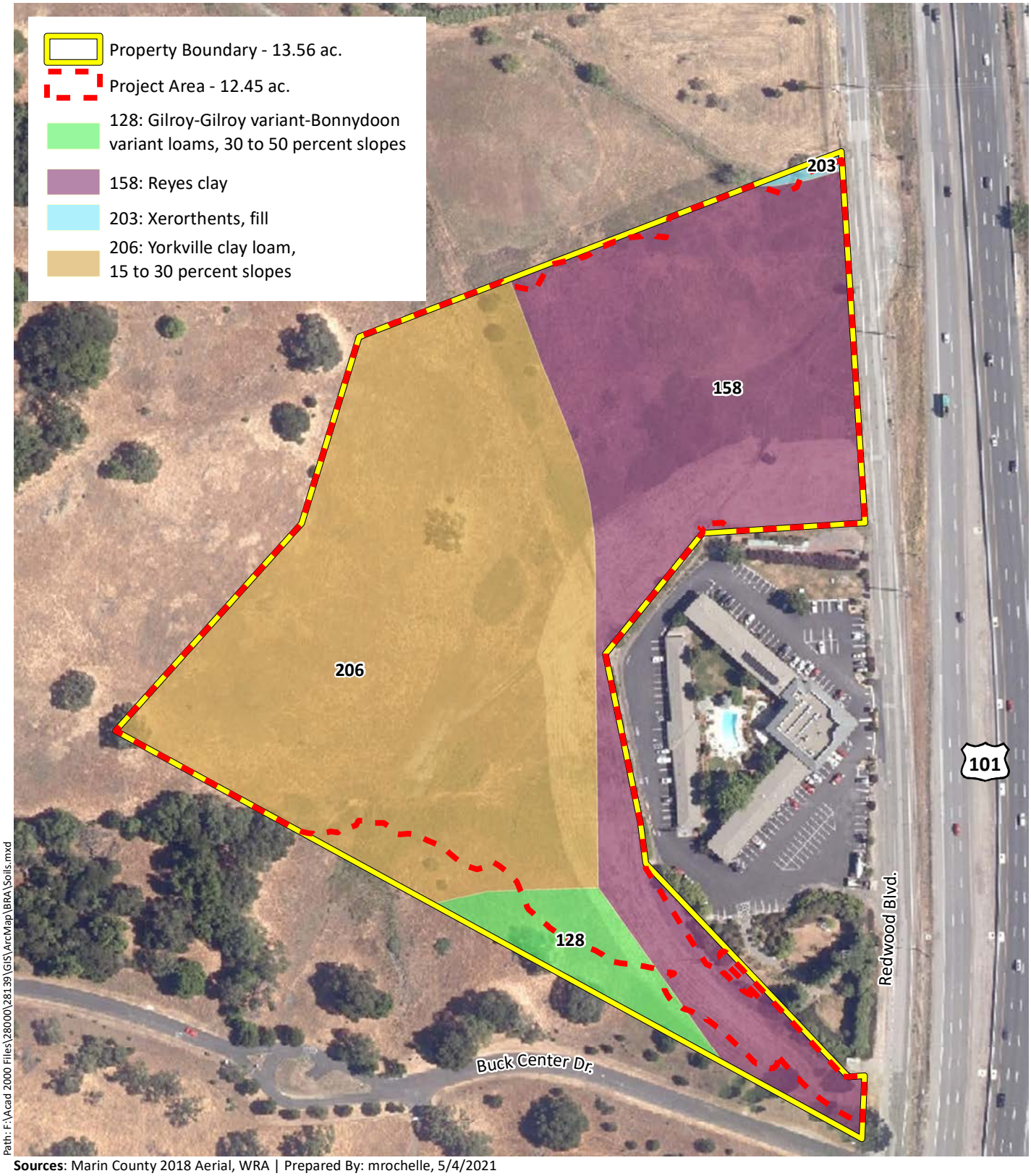
Figure 2. Project Area Map

8161 Redwood Boulevard
Novato, California

0 100 200 Feet

N

wra
ENVIRONMENTAL CONSULTANTS



Sources: Marin County 2018 Aerial, WRA | Prepared By: mrochelle, 5/4/2021

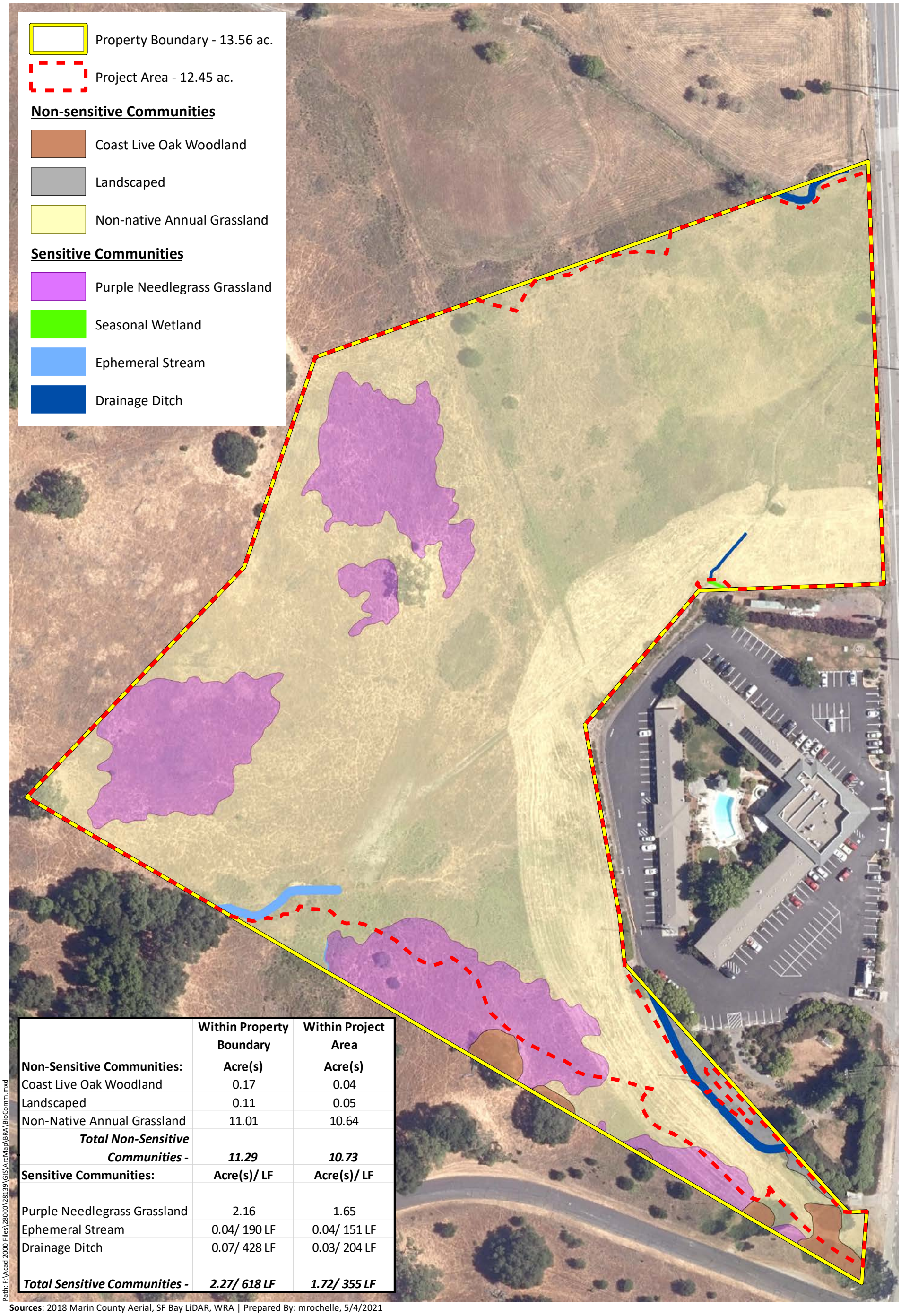
Figure 3. Soils Map

8161 Redwood Boulevard
Novato, California

0 100 200 Feet

N

wra
ENVIRONMENTAL CONSULTANTS



	Within Property Boundary	Within Project Area
Non-Sensitive Communities:	**Acre(s)**	**Acre(s)**
Coast Live Oak Woodland	0.17	0.04
Landscaped	0.11	0.05
Non-Native Annual Grassland	11.01	10.64
Total Non-Sensitive Communities -	***11.29***	***10.73***
Sensitive Communities:	**Acre(s)/ LF**	**Acre(s)/ LF**
Purple Needlegrass Grassland	2.16	1.65
Ephemeral Stream	0.04/ 190 LF	0.04/ 151 LF
Drainage Ditch	0.07/ 428 LF	0.03/ 204 LF
Total Sensitive Communities -	***2.27/ 618 LF***	***1.72/ 355 LF***

Path: F:\Acad 2000 Files\28000\28139\GIS\ArcMap\BRA\BioComm.mxd

Sources: 2018 Marin County Aerial, SF Bay LiDAR, WRA | Prepared By: mrochelle, 5/4/2021

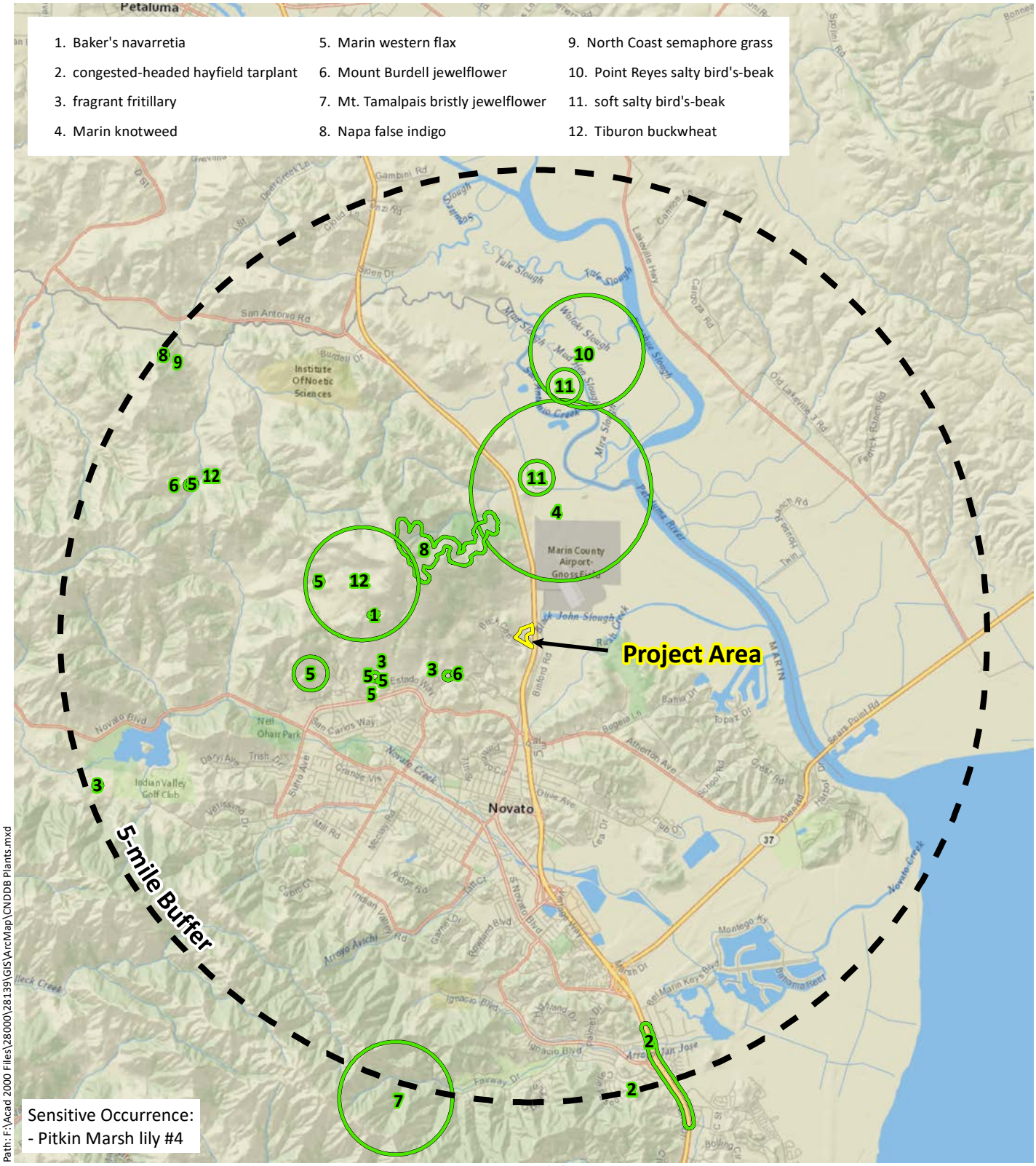
Figure 4. Biological Communities within the Project Area

8161 Redwood Boulevard
Novato, California

0 200 400 Feet

N

wra ENVIRONMENTAL CONSULTANTS



Sources: National Geographic, CNDDB June 2018, WRA | Prepared By: mrochelle, 10/8/2020

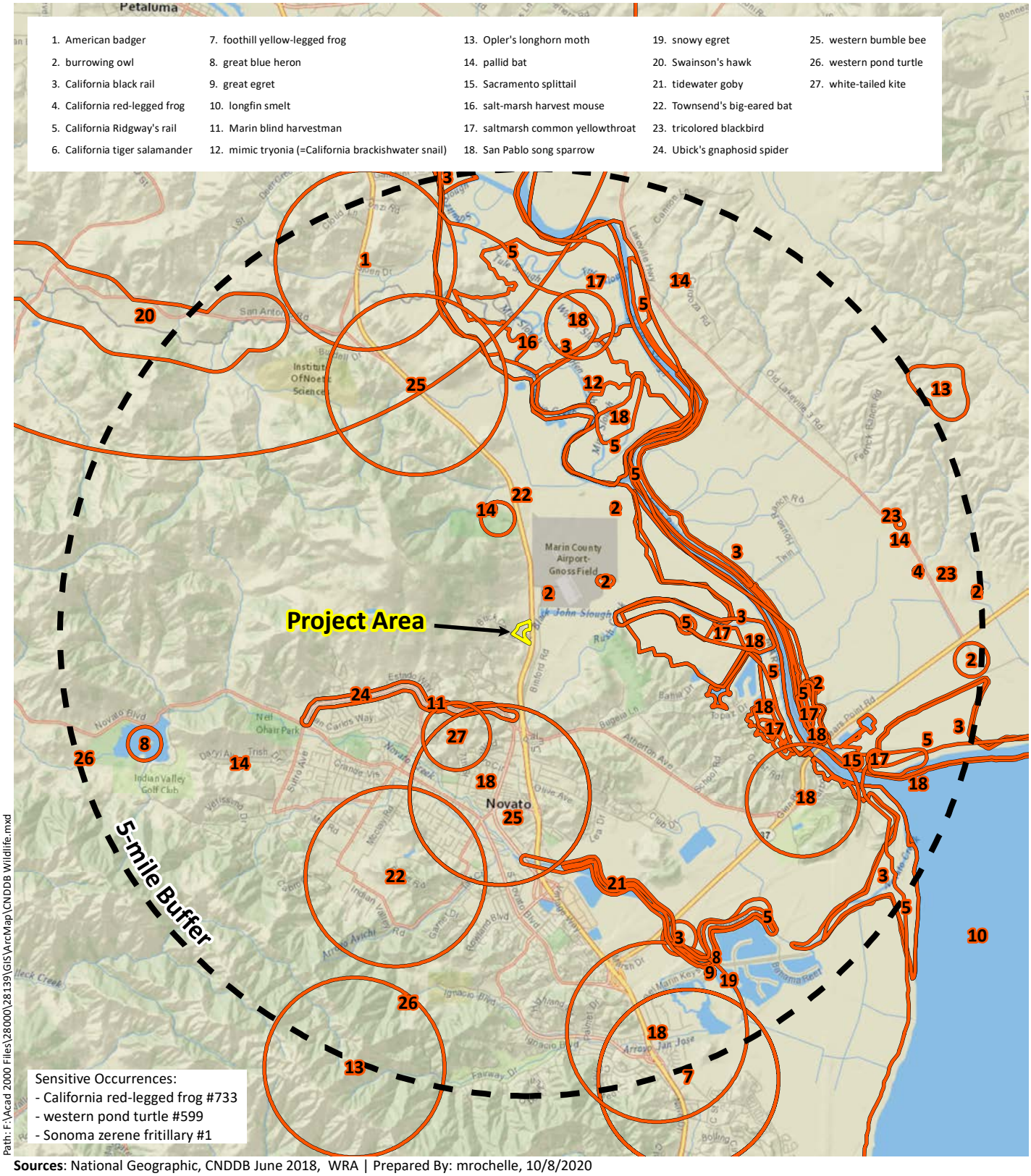
Figure 5. Special-Status Plant Species Documented within 5 miles of the Project Area

8161 Redwood Boulevard
Novato, California

0 1 2 Miles

N

ENVIRONMENTAL CONSULTANTS



Path: F:\Acad 2000 Files\28000\28139\GIS\ArcMap\CNDDB Wildlife.mxd

Sources: National Geographic, CNDDB June 2018, WRA | Prepared By: mrochelle, 10/8/2020

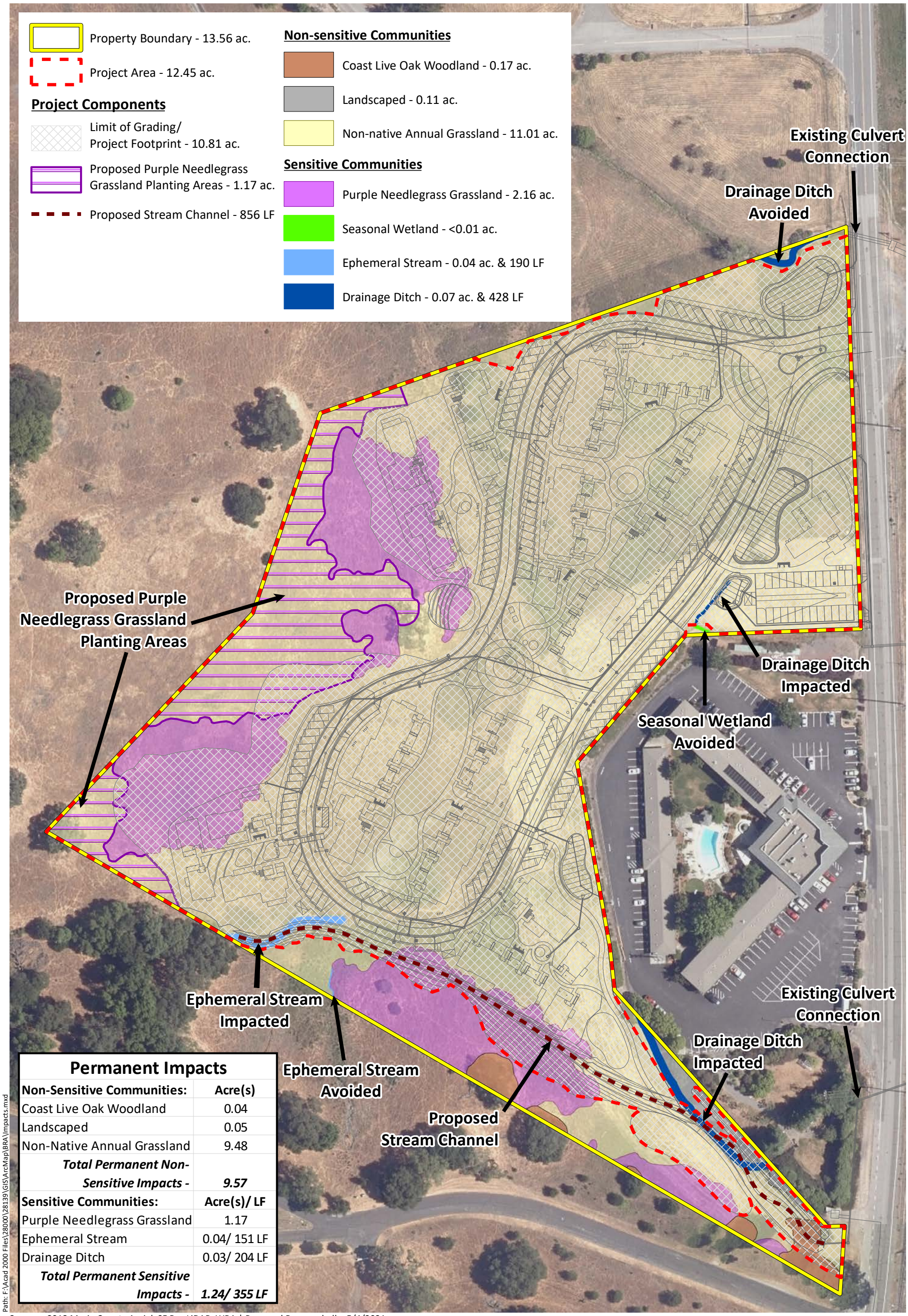
Figure 6. Special-Status Wildlife Species Documented within 5 miles of the Project Area

8161 Redwood Boulevard
Novato, California

0 1 2 Miles

N

wra
ENVIRONMENTAL CONSULTANTS



Permanent Impacts	
Non-Sensitive Communities:	**Acre(s)**
Coast Live Oak Woodland	0.04
Landscaped	0.05
Non-Native Annual Grassland	9.48
Total Permanent Non-Sensitive Impacts -	***9.57***
Sensitive Communities:	**Acre(s)/ LF**
Purple Needlegrass Grassland	1.17
Ephemeral Stream	0.04/ 151 LF
Drainage Ditch	0.03/ 204 LF
Total Permanent Sensitive Impacts -	***1.24/ 355 LF***

Path: F:\Acad 2000 Files\28000\28139\GIS\ArcMap\BRA\Impacts.mxd

Sources: 2018 Marin County Aerial, SF Bay LiDAR, WRA | Prepared By: mrochelle, 5/4/2021

Figure 7. Biological Communities Impacts within the Project Area

8161 Redwood Boulevard
Novato, California

0 200 400 Feet

N

wra ENVIRONMENTAL CONSULTANTS

APPENDIX B
LIST OF OBSERVED PLANT AND WILDLIFE SPECIES

This page intentionally left blank.

Appendix B-1. Plant species observed on the Property on May 29, 2018.

Plant Species					
Scientific Name	**Common Name**	**Origin**	**Form**	**Cal-IPC Ranking***	**Wetland Status (Arid West 2016)+**
Achillea millefolium	Yarrow	native	perennial herb	-	FACU
Asclepias sp.	-	-	-	-	-
Avena barbata	Slim oat	non-native (invasive)	annual, perennial grass	Moderate	-
Avena fatua	Wildoats	non-native (invasive)	annual grass	Moderate	-
Avena sativa	Wild oat	non-native	annual, perennial grass	-	UPL
Baccharis pilularis	Coyote brush	native	shrub	-	-
Brassica nigra	Black mustard	non-native (invasive)	annual herb	Moderate	-
Briza maxima	Rattlesnake grass	non-native (invasive)	annual grass	Limited	-
Bromus diandrus	Ripgut brome	non-native (invasive)	annual grass	Moderate	-
Bromus hordeaceus	Soft chess	non-native (invasive)	annual grass	Limited	FACU
Bromus madritensis	Foxtail chess, foxtail brome	non-native	annual grass	-	UPL
Carpobrotus edulis	Ice plant	non-native	perennial herb	High	-
Carduus pycnocephalus ssp. *pycnocephalus*	Italian thistle	non-native (invasive)	annual herb	Moderate	-
Cirsium vulgare	Bullthistle	non-native (invasive)	perennial herb	Moderate	FACU

Plant Species					
Scientific Name	**Common Name**	**Origin**	**Form**	**Cal-IPC Ranking***	**Wetland Status (Arid West 2016)+**
Convolvulus arvensis	Field bindweed	non-native	perennial herb, vine	-	-
Cyperus eragrostis	Tall cyperus	native	perennial grasslike herb	-	FACW
Dichelostemma capitatum	Blue dicks	native	perennial herb	-	FACU
Eleocharis sp.	-	-	-	-	-
Epilobium brachycarpum	Willow herb	native	annual herb	-	-
Erodium cicutarium	Coastal heron's bill	non-native (invasive)	annual herb	Limited	-
Eschscholzia californica	California poppy	native	annual, perennial herb	-	-
Festuca perennis	Italian rye grass	non-native (invasive)	annual, perennial grass	Moderate	FAC
Foeniculum vulgare	Fennel	non-native (invasive)	perennial herb	High	-
Genista monspessulana	French broom	non-native (invasive)	shrub	High	-
Gentiana sp.	-	-	-	-	-
Helminthotheca echioides	Bristly ox-tongue	non-native (invasive)	annual, perennial herb	Limited	FAC
Hordeum brachyantherum	Meadow barley	native	perennial grass	-	FACW
Hordeum murinum	Foxtail barley	non-native (invasive)	annual grass	Moderate	FACU

Plant Species					
Scientific Name	**Common Name**	**Origin**	**Form**	**Cal-IPC Ranking***	**Wetland Status (Arid West 2016)+**
Juncus balticus ssp. *ater*	Baltic rush	native	perennial grasslike herb	-	FACW
Lotus corniculatus	Bird's foot trefoil	non-native	perennial herb	-	FAC
Lysimachia arvensis	Scarlet pimpernel	non-native	annual herb	-	FAC
Lythrum hyssopifolia	Hyssop loosestrife	non-native (invasive)	annual, perennial herb	Limited	OBL
Olea europaea	Olive	non-native (invasive)	shrub	Limited	-
Phalaris aquatica	Harding grass	non-native (invasive)	perennial grass	Moderate	FACU
Polypogon monspeliensis	Annual beard grass	non-native (invasive)	annual grass	Limited	FACW
Quercus agrifolia	Coast live oak	native	tree	-	-
Quercus lobata	Valley oak	native	tree	-	FACU
Rumex crispus	Curly dock	non-native (invasive)	perennial herb	Limited	FAC
Sequoia Sempervirens	Coastal redwood	native	tree	-	-
Silybum marianum	Milk thistle	non-native (invasive)	annual, perennial herb	Limited	-
Sisyrinchium bellum	Blue eyed grass	native	perennial herb	-	FACW
Stipa pulchra	Purple needle grass	native	perennial grass	-	-
Taraxacum sp.	-	-	-	-	-

Plant Species					
Scientific Name	**Common Name**	**Origin**	**Form**	**Cal-IPC Ranking***	**Wetland Status (Arid West 2016)+**
Torilis arvensis	Field hedge parsley	non-native (invasive)	annual herb	Moderate	-
Toxicodendron diversilobum	Poison oak	native	vine, shrub	-	FACU
Trifolium hirtum	Rose clover	non-native (invasive)	annual herb	Limited	-
Vicia sp.	-	-	-	-	-
Xanthium strumarium	Cocklebur	native	annual herb	-	FAC

Appendix B-2. Wildlife species observed on the Property on May 29, 2018.

Wildlife Species	
Scientific Name	**Common Name**
Callipepla californica	California quail
Cathartes aura	turkey vulture
Corvus brachyrhynchos	American crow
Euphagus cyanocephalus	Brewer's blackbird
Haemorhous mexicanus	house finch
Melanerpes formicivorus	acorn woodpecker
Odocoileus hemionus	black-tailed deer
Petrochelidon pyrrhonota	cliff swallow
Psaltriparus minimus	bushtit
Sayornis nigricans	black phoebe
Sceloporus occidentalis	western fence lizard
Sturnus vulgaris	European starling

* California Invasive Plant Council (Cal-IPC). 2020. California Invasive Plant Inventory Database. California Invasive Plant Council, Berkeley, CA. Online at: http://www.cal-ipc.org/paf/; most recently accessed: October 2020.

+ Corps. U.S. Army Corps of Engineers. 2008a. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). September.

APPENDIX C
POTENTIAL FOR SPECIAL-STATUS SPECIES TO OCCUR IN THE PROJECT AREA

.

This page intentionally left blank.

Appendix C. Potential for Special-Status Plant and Wildlife Species to Occur in the Project Area. List compiled from the California Department of Fish and Wildlife (CDFW) Natural Diversity Database (2020), U.S. Fish and Wildlife Service (USFWS) Species Lists (2020), and California Native Plant Society (CNPS) Electronic Inventory (2020) searches of the Petaluma River and eight surrounding USGS 7.5-minute quadrangles.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Plants				
Franciscan onion *Allium peninsulare* var. *franciscanum*	Rank 1B.2	Cismontane woodland, valley and foothill grassland. Elevation ranges from 170 to 1000 feet (52 to 305 meters). Blooms (Apr)May-Jun.	**No Potential:** Project Area contains no serpentine, area has been heavily invaded by non-native species. Project Area also out of species elevation range.	No further actions are recommended for this species.
Napa false indigo *Amorpha californica* var. *napensis*	Rank 1B.2	Broadleaved upland forest (openings), chaparral, cismontane woodland. Elevation ranges from 390 to 6560 feet (120 to 2000 meters). Blooms Apr-Jul.	**No Potential:** Project Area has no broadleaved forests, chaparral or cismontane woodlands.	No further actions are recommended for this species.
bent-flowered fiddleneck *Amsinckia lunaris*	Rank 1B.2	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Elevation ranges from 5 to 1640 feet (3 to 500 meters). Blooms Mar-Jun.	**Unlikely:** Project Area has no coastal communities or suitable grassland habitats.	No further actions are recommended for this species.
twig-like snapdragon *Antirrhinum virga*	Rank 4.3	Chaparral, lower montane coniferous forest. Elevation ranges from 325 to 6610 feet (100 to 2015 meters). Blooms Jun-Jul.	**No Potential:** Project Area contains no serpentine, area has been heavily invaded by non-native species. Project Area also out of species elevation range.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
coast rockcress *Arabis blepharophylla*	Rank 4.3	Broadleaved upland forest, coastal bluff scrub, coastal prairie, coastal scrub. Elevation ranges from 5 to 3610 feet (3 to 1100 meters). Blooms Feb-May.	**No Potential:** Project Area has no broadleaved forests or coastal communities.	No further actions are recommended for this species.
Baker's manzanita *Arctostaphylos bakeri ssp. bakeri*	SR, Rank 1B.1	Broadleafed upland forest, chaparral. Elevation ranges from 245 to 985 feet (75 to 300 meters). Blooms Feb-Apr.	**No Potential:** Project Area has no chaparral habitat. Project Area also out of species elevation range.	No further actions are recommended for this species.
Mt. Tamalpais manzanita *Arctostaphylos montana* ssp. *montana*	Rank 1B.3	Chaparral, valley and foothill grassland. Elevation ranges from 520 to 2495 feet (160 to 760 meters). Blooms Feb-Apr.	**No Potential:** Project Area has no chaparral or serpentine soils. Project Area also out of species elevation range.	No further actions are recommended for this species.
Marin manzanita *Arctostaphylos virgata*	Rank 1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, north coast coniferous forest. Elevation ranges from 195 to 2295 feet (60 to 700 meters). Blooms Jan-Mar.	**No Potential:** Project Area has no chaparral or forest habitat. Project Area also out of species elevation range.	No further actions are recommended for this species.
alkali milk-vetch *Astragalus tener* var. *tener*	Rank 1B.2	Playas, valley and foothill grassland (adobe clay), vernal pools. Elevation ranges from 0 to 195 feet (1 to 60 meters). Blooms Mar-Jun.	**No Potential:** Project Area has no adobe clay or vernal pools. Project Area has also heavily been invaded by non-native species.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
big-scale balsamroot *Balsamorhiza macrolepis*	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 145 to 5100 feet (45 to 1555 meters). Blooms Mar-Jun.	**No Potential:** Project Area has no suitable chaparral or cismontane woodland habitat. Project Area also out of species elevation range.	No further actions are recommended for this species.
Sonoma sunshine *Blennosperma bakeri*	FE, SE. Rank 1B.1	Valley and foothill grassland (mesic), vernal pools. Elevation ranges from 30 to 360 feet (10 to 110 meters). Blooms Mar-May.	**Unlikely:** Project Area has no vernal pools habitat. Project Area has also heavily been invaded by non-native species	No further actions are recommended for this species.
narrow-anthered brodiaea *Brodiaea leptandra*	Rank 1B.2	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Elevation ranges from 360 to 3000 feet (110 to 915 meters). Blooms May-Jul.	**Unlikely:** Project Area has no suitable forest or chaparral habitat. Grassland within the Project Area has also heavily been invaded by non-native species	No further actions are recommended for this species.
Oakland star-tulip *Calochortus umbellatus*	Rank 4.2	Broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Elevation ranges from 325 to 2295 feet (100 to 700 meters). Blooms Mar-May.	**No Potential:** Project Area has no broadleaved forests, chaparral or coniferous forests. Project Area also out of species elevation range.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
seaside bittercress *Cardamine angulata*	Rank 2B.2	Lower montane coniferous forest, north coast coniferous forest. Elevation ranges from 80 to 3000 feet (25 to 915 meters). Blooms (Jan) Mar-Jul.	**No Potential:** Project Area has no suitable forest habitat.	No further actions are recommended for this species.
Tiburon paintbrush *Castilleja affinis var. neglecta*	FE, ST, Rank 1B.2	Valley and foothill grassland (serpentine). Elevation ranges from 195 to 1310 feet (60 to 400 meters). Blooms Apr-Jun.	**No Potential:** Project Area has no serpentine soils. Project Area also out of species elevation range.	No further actions are recommended for this species.
johnny-nip *Castilleja ambigua* var. *ambigua*	Rank 4.2	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, vernal pools margins. Elevation ranges from 0 to 1425 feet (0 to 435 meters). Blooms Mar-Aug.	**Unlikely:** Project Area has no coastal communities, marshes, swamps or vernal pools.	No further actions are recommended for this species.
Rincon Ridge ceanothus *Ceanothus confusus*	Rank 1B.1	Closed-cone coniferous forest, chaparral, cismontane woodland. Elevation ranges from 245 to 3495 feet (75 to 1065 meters). Blooms Feb-Jun.	**No Potential:** Project Area has no chaparral or coniferous forest habitat. Project Area also out of species elevation range	No further actions are recommended for this species.
Nicasio ceanothus *Ceanothus decornutus*	Rank 1B.2	Chaparral (maritime). Elevation ranges from 770 to 950 feet (235 to 290 meters). Blooms Mar-May.	**No Potential:** Project Area has no chaparral habitat. Project Area also out of species elevation range	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Mason's ceanothus *Ceanothus masonii*	SR, Rank 1B.2	Chaparral (openings, rocky, serpentine). Elevation ranges from 750 to 1640 feet (230 to 500 meters). Blooms Mar-Apr.	**No Potential:** Project Area has no chaparral or serpentine. Project Area also out of species elevation range.	No further actions are recommended for this species.
Sonoma ceanothus *Ceanothus sonomensis*	Rank 1B.2	Chaparral (sandy, serpentine or volcanic). Elevation ranges from 705 to 2625 feet (215 to 800 meters). Blooms Feb-Apr.	**No Potential:** Project Area has no chaparral or serpentine soils. Project Area also out of species elevation range.	No further actions are recommended for this species.
pappose tarplant *Centromadia parryi ssp. parryi*	Rank 1B.2	Chaparral, coastal prairie, meadows and seeps, marshes and swamps (coastal salt), valley and foothill grassland (vernally mesic). Elevation ranges from 0 to 1380 feet (0 to 420 meters). Blooms May-Nov.	**Unlikely:** Project Area has no suitable marsh or swamp habitat. Grassland habitat in the Project Area is mostly dominated by non-native plant species.	No further actions are recommended for this species.
Point Reyes bird's-beak *Chloropyron maritimum ssp. palustre*	Rank 1B.2	Marshes and swamps (coastal salt). Elevation ranges from 0 to 35 feet (0 to 10 meters). Blooms Jun-Oct.	**No Potential:** Project Area has no marshes or swamps.	No further actions are recommended for this species.
soft bird's-beak *Chloropyron molle ssp. molle*	FE, SR, Rank 1B.1	Marshes and swamps (coastal salt). Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms Jun-Nov.	**No Potential:** Project Area has no marshes or swamps.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Sonoma spineflower *Chorizanthe valida*	FE, SE, Rank 1B.1	Coastal prairie (sandy). Elevation ranges from 30 to 1000 feet (10 to 305 meters). Blooms Jun-Aug.	**No Potential:** Project Area has no coastal prairies.	No further actions are recommended for this species.
Mt. Tamalpais thistle *Cirsium hydrophilum var. vaseyi*	Rank 1B.2	Broadleafed upland forest, chaparral, meadows and seeps. Elevation ranges from 785 to 2035 feet (240 to 620 meters). Blooms May-Aug.	**No Potential:** Project Area has no chaparral or mesic habitat. Project Area also out of species elevation range.	No further actions are recommended for this species
Baker's larkspur *Delphinium bakeri*	FE, SE, Rank 1B.1	Broadleaved upland forest, coastal scrub, valley and foothill grassland. Elevation ranges from 260 to 1000 feet (80 to 305 meters). Blooms Mar-May.	**No Potential:** Project Area has no broadleaved upland forest or coastal communities. Project Area is also out of species elevation range.	No further actions are recommended for this species.
golden larkspur *Delphinium luteum*	FE, SR, Rank 1B.1	Chaparral, coastal prairie, coastal scrub. Elevation ranges from 0 to 330 feet (0 to 100 meters). Blooms Mar-May.	**No Potential**: Project Area has no chaparral or coastal communities.	No further actions are recommended for this species.
western leatherwood *Dirca occidentalis*	Rank 1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland. Elevation ranges from 80 to 1395 feet (25 to 425 meters). Blooms Jan-Mar (Apr).	**Unlikely:** Project Area has no suitable forest, chaparral, or riparian habitat.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
dwarf downingia *Downingia pusilla*	Rank 2B.2	Valley and foothill grassland (mesic), vernal pools. Elevation ranges from 0 to 1460 feet (1 to 445 meters). Blooms Mar-May.	**Unlikely**: Project Area has no suitable vernal pool or mesic grassland habitat.	No further actions are recommended for this species.
small spikerush *Eleocharis parvula*	Rank 4.3	Marshes and swamps. Elevation ranges from 0 to 9910 feet (1 to 3020 meters). Blooms (Apr)Jun-Aug(Sep).	**No Potential:** Project Area has no marshes or swamps.	No further actions are recommended for this species.
California bottle-brush grass *Elymus californicus*	Rank 4.3	Broadleafed upland forest, cismontane woodland, north coast coniferous forest, riparian woodland. Elevation ranges from 45 to 1540 feet (15 to 470 meters). Blooms May-Aug(Nov).	**No Potential**: Project Area has no suitable forest or riparian woodland habitat.	No further actions are recommended for this species.
streamside daisy *Erigeron biolettii*	Rank 3	Broadleafed upland forest, cismontane woodland, north coast coniferous forest. Elevation ranges from 95 to 3610 feet (30 to 1100 meters). Blooms Jun-Oct.	**No Potential**: Project Area has no suitable forest or woodland habitat.	No further actions are recommended for this species.
Tiburon buckwheat *Eriogonum luteolum* var. *caninum*	Rank 1B.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Elevation ranges from 0 to 2295 feet (0 to 700 meters). Blooms May-Sep.	**Unlikely:** Project Area has no chaparral, cismontane woodland or coastal communities. No serpentine present.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Marin checker lily *Fritillaria lanceolata var. tristulis*	Rank 1B.1	Coastal bluff scrub, coastal prairie, coastal scrub. Elevation ranges from 45 to 490 feet (15 to 150 meters). Blooms Feb-May.	**No Potential**: Project Area has no suitable coastal habitat.	No further actions are recommended for this species.
fragrant fritillary *Fritillaria liliacea*	Rank 1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland. Elevation ranges from 5 to 1345 feet (3 to 410 meters). Blooms Feb-Apr.	**High:** Project Area has no cismontane woodland or coastal communities. However, an occurrence of fragrant fritillary (#43) was observed approximately 0.8 mile southwest of the Project Area in February of 2018. Due to proximity and regency of this occurrence, fragrant fritillary has a moderate potential to occur in the Project Area.	A targeted, protocol-level rare plant survey was conducted on April 19, 2019. The species was not identified within the Project Area and determined to be absent, therefore no further actions are recommended for this species.
San Francisco gumplant *Grindelia hirsutula var. maritima*	Rank 3.2	Coastal bluff scrub, coastal scrub, valley and foothill grassland. Elevation ranges from 45 to 1310 feet (15 to 400 meters). Blooms Jun-Sep.	**No Potential**: Project Area has no suitable coastal habitat.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
congested-headed hayfield tarplant *Hemizonia congesta* ssp. *congesta*	Rank 1B.2	Valley and foothill grassland. Elevation ranges from 65 to 1835 feet (20 to 560 meters). Blooms Apr-Nov.	**Unlikely:** Project Area is slightly out of elevation range.	No further actions are recommended for this species.
coast iris *Iris longipetala*	Rank 4.2	Coastal prairie, lower montane coniferous forest, meadows and seeps. Elevation ranges from 0 to 1970 feet (0 to 600 meters). Blooms Mar-May.	**No Potential:** Project Area has no suitable forest or mesic habitat.	No further actions are recommended for this species.
Contra Costa goldfields *Lasthenia conjugens*	FE, Rank 1B.1	Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools. Elevation ranges from 0 to 1540 feet (0 to 470 meters). Blooms Mar-Jun.	**No Potential:** Project Area has no suitable alkaline soils or vernal pool habitat.	No further actions are recommended for this species.
Burke's goldfields *Lasthenia burkei*	FE, SE, Rank 1B.1	Meadows and seeps (mesic), vernal pools. Elevation ranges from 45 to 1970 feet (15 to 600 meters). Blooms Apr-Jun.	**No Potential:** Project Area has no suitable mesic habitats.	No further actions are recommended for this species.
thin-lobed horkelia *Horkelia tenuiloba*	Rank 1B.2	Broadleafed upland forest, chaparral, valley and foothill grassland. Elevation ranges from 160 to 1640 feet (50 to 500 meters). Blooms May-Jul(Aug).	**Unlikely:** Project Area is slightly out of elevation range.	No further actions are recommended for this species.
Marin western flax *Hesperolinon congestum*	FT, ST, Rank 1B.1	Chaparral, valley and foothill grassland. Elevation ranges from 15 to 1215 feet (5 to 370 meters). Blooms Apr-Jul.	**Unlikely:** Project Area has no chaparral. No serpentine present.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
bristly leptosiphon *Leptosiphon acicularis*	Rank 4.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Elevation ranges from 180 to 4920 feet (55 to 1500 meters). Blooms Apr-Jul.	**Unlikely:** Project Area has no chaparral, cismontane woodland or coastal communities. Project Area also slightly out of species elevation range.	No further actions are recommended for this species.
legenere *Legenere limosa*	Rank 1B.1	Vernal pools. Elevation ranges from 0 to 2885 feet (1 to 880 meters). Blooms Apr-Jun.	**No Potential:** Project Area has no suitable vernal pools.	No further actions are recommended for this species.
Jepson's leptosiphon *Leptosiphon jepsonii*	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 325 to 1640 feet (100 to 500 meters). Blooms Mar-May.	**Unlikely:** Project Area has no chaparral, cismontane woodland communities. Project Area also out of species elevation range.	No further actions are recommended for this species.
woolly-headed lessingia *Lessingia hololeuca*	Rank 3	Broadleaved upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland. Elevation ranges from 45 to 1000 feet (15 to 305 meters). Blooms Jun-Oct.	**Unlikely:** Project Area has no broadleaved forests or coastal communities. No serpentine present.	No further actions are recommended for this species.
Tamalpais lessingia *Lessingia micradenia* var. *micradenia*	Rank 1B.2	Chaparral, valley and foothill grassland. Elevation ranges from 325 to 1640 feet (100 to 500 meters). Blooms (Jun)Jul-Oct.	**No Potential:** Project Area has no chaparral. No serpentine present. Project Area also out of species range.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Pitkin Marsh lily *Lilium pardalinum* ssp. *pitkinense*	FE, SE, Rank 1B.1	Cismontane woodland, meadows and seeps, marshes and swamps (freshwater). Elevation ranges from 110 to 215 feet (35 to 65 meters). Blooms Jun-Jul.	**No Potential:** Project Area has no cismontane woodland, meadows, seeps, marshes or standing freshwater. Project Area also out of species range	No further actions are recommended for this species.
redwood lily *Lilium rubescens*	Rank 4.2	Broadleafed upland forest, chaparral, lower montane coniferous forest, north coast coniferous forest, upper montane coniferous forest. Elevation ranges from 95 to 6265 feet (30 to 1910 meters). Blooms Apr-Aug(Sep).	**No Potential:** Project Area has no broadleaved forest, chaparral or coniferous forest.	No further actions are recommended for this species.
Sebastopol meadowfoam *Limnanthes vinculans*	FE, SE, rank 1B.1	Meadows and seeps, valley and foothill grassland, vernal pools. Elevation ranges from 45 to 1000 feet (15 to 305 meters). Blooms Apr-May.	**No Potential:** Project Area has no vernal pools, meadows, seeps, marshes or standing freshwater.	No further actions are recommended for this species.
Napa lomatium *Lomatium repostum*	Rank 4.3	Chaparral, cismontane woodland. Elevation ranges from 295 to 2725 feet (90 to 830 meters). Blooms Mar-Jun.	**No Potential:** Project Area has no suitable woodland or chaparral habitat.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Cobb Mountain lupine *Lupinus sericatus*	Rank 1B.2	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest. Elevation ranges from 900 to 5005 feet (275 to 1525 meters). Blooms Mar-Jun.	**No Potential:** Project Area has no broadleaved forest, chaparral or coniferous forest.	No further actions are recommended for this species.
Mt. Diablo cottonweed *Micropus amphibolus*	Rank 3.2	Broadleaved upland forest, chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 145 to 2705 feet (45 to 825 meters). Blooms Mar-May.	**No Potential:** Project Area has no broadleaved forest, chaparral or cismontane woodland. Project Area also out of species elevation range.	No further actions are recommended for this species.
marsh microseris *Microseris paludosa*	Rank 1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Elevation ranges from 15 to 1165 feet (5 to 355 meters). Blooms Apr-Jun(Jul).	**No Potential:** Project Area has no forest, woodland, or coastal scrub habitat.	No further actions are recommended for this species.
green monardella *Monardella viridis*	Rank 4.3	Broadleafed upland forest, chaparral, cismontane woodland. Elevation ranges from 325 to 3315 feet (100 to 1010 meters). Blooms Jun-Sep.	**No Potential:** Project Area has no broadleaved forest, chaparral or cismontane woodland. Project Area also out of species elevation range.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
cotula navarretia *Navarretia cotulifolia*	Rank 4.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 10 to 6005 feet (4 to 1830 meters). Blooms May-Jun.	**Unlikely:** Project Area has no suitable chaparral or cismontane woodland habitat.	No further actions are recommended for this species.
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	Rank 1B.1	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools. Elevation ranges from 15 to 5710 feet (5 to 1740 meters). Blooms Apr-Jul.	**No Potential:** Project Area has no cismontane woodland, meadows or seeps. Project Area also generally dry throughout.	No further actions are recommended for this species.
Marin County navarretia *Navarretia rosulata*	Rank 1B.2	Closed-cone coniferous forest, chaparral. Elevation ranges from 655 to 2085 feet (200 to 635 meters). Blooms May-Jul.	**Unlikely:** Project Area has no suitable chaparral or coniferous forest habitat.	No further actions are recommended for this species.
Petaluma popcornflower *Plagiobothrys mollis* var. *vestitus*	Rank 1A	Marshes and swamps (coastal salt), valley and foothill grassland (mesic). Elevation ranges from 30 to 165 feet (10 to 50 meters). Blooms Jun-Jul.	**No Potential:** Project Area has no marshes or swamps. Project Area also generally dry throughout.	No further actions are recommended for this species.
North Coast semaphore grass *Pleuropogon hooverianus*	ST, Rank 1B.1	Broadleaved upland forest, meadows and seeps, north coast coniferous forest. Elevation ranges from 30 to 2200 feet (10 to 671 meters). Blooms Apr-Jun.	**No Potential:** Project Area has no broadleaved forests, meadows or seeps. Project Area also generally dry throughout.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
nodding semaphore grass *Pleuropogon refractus*	Rank 4.2	Lower montane coniferous forest, meadows and seeps, north coast coniferous forest, riparian forest. Elevation ranges from 0 to 5250 feet (0 to 1600 meters). Blooms (Mar)Apr-Aug.	**No Potential:** Project Area has no coniferous forests, meadows or seeps. Project Area also generally dry throughout.	No further actions are recommended for this species.
Marin knotweed *Polygonum marinense*	Rank 3.1	Marshes and swamps (coastal salt or brackish). Elevation ranges from 0 to 35 feet (0 to 10 meters). Blooms (Apr)May-Aug(Oct).	**No Potential:** Project Area has no marshes or swamps. Project Area also generally dry throughout.	No further actions are recommended for this species.
Lobb's aquatic buttercup *Ranunculus lobbii*	Rank 4.2	Cismontane woodland, north coast coniferous forest, valley and foothill grassland, vernal pools. Elevation ranges from 45 to 1540 feet (15 to 470 meters). Blooms Feb-May.	**Unlikely:** Project Area has no cismontane woodland or vernal pools. Project Area is at the edge of species elevation range.	No further actions are recommended for this species.
round-headed beaked-rush *Rhynchospora globularis*	Rank 2B.1	Marshes and swamps (freshwater). Elevation ranges from 145 to 195 feet (45 to 60 meters). Blooms Jul-Aug.	**No Potential:** Project Area has no marshes or swamps. Project Area also generally dry throughout.	No further actions are recommended for this species.
Victor's gooseberry *Ribes victoris*	Rank 4.3	Broadleaved upland forest, chaparral. Elevation ranges from 325 to 2460 feet (100 to 750 meters). Blooms Mar-Apr.	**No Potential:** Project Area has no broadleaved forest or chaparral. Project Area is also out of species elevation range	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Point Reyes checkerbloom *Sidalcea calycosa* ssp. *rhizomata*	Rank 1B.2	Marshes and swamps (freshwater, near coast). Elevation ranges from 5 to 245 feet (3 to 75 meters). Blooms Apr-Sep.	**No Potential:** Project Area has no marshes or swamps.	No further actions are recommended for this species.
Tamalpais jewelflower *Streptanthus batrachopus*	Rank 1B.3	Closed-cone coniferous forest, chaparral. Elevation ranges from 1000 to 2135 feet (305 to 650 meters). Blooms Apr-Jul.	**No Potential:** Project Area has no chaparral or coniferous forest habitat.	No further actions are recommended for this species.
Mt. Tamalpais bristly jewelflower *Streptanthus glandulosus* ssp. *pulchellus* *Trifolium amoenum*	Rank 1B.2	Chaparral, valley and foothill grassland. Elevation ranges from 490 to 2625 feet (150 to 800 meters). Blooms May-Jul(Aug).	**No Potential:** Project Area has no chaparral. No serpentine present. Project Area also out of species elevation range.	No further actions are recommended for this species.
two-fork clover *Streptanthus glandulosus* ssp. *pulchellus* *Trifolium amoenum*	FE, Rank 1B.1	Coastal bluff scrub, valley and foothill grassland (sometimes serpentine). Elevation ranges from 15 to 1360 feet (5 to 415 meters). Blooms Apr-Jun.	**Unlikely:** Project Area has no coastal communities. No serpentine present.	No further actions are recommended for this species.
saline clover *Trifolium hydrophilum*	Rank 1B.2	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. Elevation ranges from 0 to 985 feet (0 to 300 meters). Blooms Apr-Jun.	**No Potential:** Project Area has no marshes or swamps. Project Area also generally dry throughout	No further actions are recommended for this species.
Pacific Grove clover *Trifolium polyodon*	SR, Rank 1B.1	Closed-cone coniferous forest, coastal prairie, meadows and seeps, valley and foothill grassland. Elevation ranges from 15 to 1395 feet (5 to 425 meters).	**No Potential:** Project Area has no meadows or seeps. Project Area also generally dry throughout. No suitable forest or prairie habitat present.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
dark-mouthed triteleia *Triteleia lugens*	Rank 4.3	Broadleafed upland forest, chaparral, coastal scrub, lower montane coniferous forest. Elevation ranges from 325 to 3280 feet (100 to 1000 meters). Blooms Apr-Jun.	**No Potential:** Project Area has no broadleaved forest or chaparral. Project Area is also out of species elevation range	No further actions are recommended for this species.
oval-leaved viburnum *Viburnum ellipticum*	Rank 2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation ranges from 705 to 4595 feet (215 to 1400 meters). Blooms May-Jun.	**No Potential:** Project Area has no broadleaved forest or chaparral. Project Area is also out of species elevation range	No further actions are recommended for this species.
Mammals				
American badger *Taxidea taxus*	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	**Unlikely.** No indication of badger presence was observed within the property during the May 29, 2018 site visit. The nearest documented occurrence of this species is approximately 4.5 miles north of the site (CDFW 2020). The Property is adjacent to Highway 101 and is subject to a high level of anthropogenic disturbance, reducing suitability for badger.	No further actions are recommended for this species.
fringed myotis *Myotis thysanodes*	WBWG High	Associated with a wide variety of habitats including dry woodlands, desert scrub, mesic coniferous forest, grassland, and sage-	**Moderate Potential.** The Property contains several oak trees that may provide potential day or night roost habitat. The Property does	No large trees (dbh >12 inches) are to planned for removal as part of the Project. No further actions are recommended for this

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
		grass steppes. Buildings, mines and large trees and snags are important day and night roosts.	not contain large buildings, snags, or other habitat to support maternity or hibernation roosts.	species.
hoary bat *Lasiurus cinereus*	WBWG Medium	Prefers open forested habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths.	**Moderate Potential.** The Property contains several oak trees that may provide potential day or night roost habitat. The Property does not contain large buildings, snags, or other habitat to support maternity or hibernation roosts.	No large trees (dbh >12 inches) are to planned for removal as part of the Project. No further actions are recommended for this species.
long-legged myotis *Myotis volans*	WBWG High	Primarily found in coniferous forests, but also occurs seasonally in riparian and desert habitats. Large hollow trees, rock crevices and buildings are important day roosts. Other roosts include caves, mines and buildings.	**Unlikely.** The Property does not contain coniferous forest typically associated with this species.	No further actions are recommended for this species.
pallid bat *Antrozous pallidus*	SSC, WBWG High	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, forages along river channels. Roost sites include old ranch buildings, rocky outcrops and caves within sandstone outcroppings. Roosts must protect bats from high temperatures. Very sensitive to disturbance of	**Moderate Potential.** CNDDB records show maternity colonies of this species in residential buildings surrounded by oak-bay woodland 1.2 miles from the Property (CDFW 2020). Trees within the Property may provide day or night roosting habitat for this species.	No large trees (dbh >12 inches) are to planned for removal as part of the Project. No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
		roosting sites.		
Point Reyes mountain beaver *Aplodontia rufa phaea*	SSC	Occurs only in western Marin County, almost entirely within Point Reyes National Seashore. Found on moist slopes within areas of coastal scrub and other habitats with herbaceous vegetation. Lives in extensive burrow systems and forages on a variety of herbaceous plants.	**No Potential.** The Property does not contain coastal scrub habitat and is outside of this species range.	No further actions are recommended for this species.
ringtail (ring-tailed cat) *Bassariscus astutus*	CFP	Is widely distributed throughout most of California, but absent from some portions of the Central Valley and northeastern California. The species is nocturnal, primarily carnivorous and is associated with a mixture of dry forest and shrubland in close association with rocky areas and riparian habitat, using hollow trees and cavities for shelter. Usually not found more than 1 km (0.6 mi) from permanent water.	**Unlikely.** The Property does not contain forest, shrubland, rocky area, or riparian habitat to support this species. In addition, the Property is adjacent to Highway 101 and is subject to a high level of anthropogenic disturbance, further reducing suitability for ringtail.	No further actions are recommended for this species.
salt-marsh harvest mouse *Reithrodontomys raviventris*	FE, SE, CFP	Found only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat, but can be found in various types of	**No Potential.** The Property contains no tidal or brackish wetland and provides no habitat for this species. The nearest recorded occurrences are over 2 miles	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
		vegetation with a dense thatch layer. Does not burrow, builds loosely organized nests. Requires higher areas for flood escape.	from the Property in association with Petaluma Marsh (CDFW 2020).	
Suisun shrew *Sorex ornatus sinuosus*	SSC	Tidal marshes of the northern shores of San Pablo and Suisun Bays. Require dense low-lying cover and driftweed and other litter above the mean hightide line for nesting and foraging.	**No Potential.** The Property does not contain tidal marsh habitat to support this species.	No further actions are recommended for this species.
Townsend's big-eared bat *Corynorhinus townsendii*	SSC, WBWG High	Primarily found in rural settings in a wide variety of habitats including oak woodlands and mixed coniferous-deciduous forest. Day roosts are highly associated with caves and mines, but have also been reported to utilize buildings, bridges, rock crevices and hollow trees as roost sites. Very sensitive to human disturbance.	**Unlikely.** The Property does not contain mines, caves, or buildings suitable for roosting by this species.	No further actions are recommended for this species.
Birds				
bank swallow *Riparia riparia*	ST	Migrant in riparian and other lowland habitats in western California. Colonial nester in riparian areas with vertical cliffs and bands with fine-textured or fine-textured	**No Potential.** The Property and adjacent areas do not contain cliffs or riparian habitats suitable for this species. The nearest documented occurrence of	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
		sandy soils near streams, rivers, lakes or the ocean. Historical range in southern and central areas of California has been eliminated by loss of nesting habitat due to flood and erosion-control projects, but currently is known to breed in Siskiyou, Shasta, and Lassen Cos., and along Sacramento River from Shasta Co. south to Yolo Co.	this species occurred along the Sonoma River, over 10 miles northeast of the site (CDFW 2020).	
black swift *Cypseloides niger*	SSC	Summer resident with a fragmented breeding distribution; most occupied areas in California either montane or coastal. Breeds in small colonies on cliffs behind or adjacent to waterfalls, in deep canyons, and sea-bluffs above surf. Forages aerially over wide areas.	**No Potential.** The Property does not contain cliffs or waterfalls to support nesting by this species.	No further actions are recommended for this species.
burrowing owl *Athene cunicularia*	SSC	Inhabits, dry annual or perennial grassland, desert and scrubland characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably California ground squirrel.	**Moderate potential**. Ground squirrel burrows were observed in the Property, concentrated along ditches. During the May 29, 2018 site visit, the vegetation was tall (between 20-40") making it less favorable for burrowing owl. In addition, burrowing owl is not frequently	Prior to the onset of Project activities, one pre-construction survey no more than 14 days prior to initial ground disturbance shall be performed. If burrowing owl is detected, a burrowing owl exclusion plan shall be prepared and implemented. See section

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
			documented in grassland in the vicinity of the Property (eBird 2020, CNDDB 2020). However, due to seasonal changes in vegetation height and presence of suitably sized burrows, burrowing owl has a moderate potential to occur.	5.1 for further details.
California black rail *Laterallus jamaicensis coturniculus*	ST, CFP	Extremely secretive year-round resident of emergent marshes in the northern San Francisco Bay Estuary and portions of the Central Valley. Occurs in salt, brackish and freshwater marshes. Nests on the ground in dense stands of emergent vegetation, usually near bodies of waters.	**No Potential.** The Property does not provide any suitable marsh habitat for this species. The nearest recorded occurrences are in association with the marsh habitat adjacent to Petaluma River, east of the Property (CDFW 2020).	No further actions are recommended for this species.
California least tern *Sternula* (formerly *Sterna) antillarum browni*	FE, SE, CFP	Summer resident, nesting colonially in coastal and estuarine areas from San Francisco Bay south. Breeding colonies in the San Francisco Bay Estuary found on protected estuarine shores and salt ponds. Prefers barren or sparsely vegetated, flat substrates near water. Forages for small surface fish along shores, coasts, etc.	**No Potential.** The Property does not contain beaches, shoreline, or other suitable sparsely vegetated substrate to support a nesting colony. Least terns within the San Francisco Bay are generally found in Alameda and Santa Clara Counties. This species may occasionally fly over the Property.	No further actions are recommended for this species.
California Ridgway's (clapper)	FE, SE, CFP	Year-round resident in tidal and brackish marshes of the	**No Potential.** The Property does not contain marsh	No further actions are recommended for this

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
rail *Rallus obsoletus obsoletus*		San Francisco Bay Estuary. Requires networks of tidal sloughs and mud flats for foraging, and dense marsh vegetation for nesting. Associated with abundant growth of cordgrass and pickleweed. Largest populations in south San Francisco Bay.	habitat to support this species. The nearest recorded occurrences are in association with the marsh habitat adjacent to Petaluma River, east of the Property (CDFW 2020).	species.
golden eagle *Aquila chrysaetos*	CFP	Resident in rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also nests in large trees in open areas.	**Unlikely.** The Property is does not contain cliffs or suitable large trees to support nesting by this species. This species may occasionally fly over the Property.	No further actions are recommended for this species.
grasshopper sparrow *Ammodramus savannarum*	SSC	Summer resident. Breeds in open grasslands in lowlands and foothills, generally with low- to moderate-height grasses and scattered shrubs. Well-hidden nests are placed on the ground.	**Moderate Potential.** The Property contains grassland that may support nesting and foraging by this species.	Future project activities should occur to the extent feasible between September 1 and January 31, which is outside of the nesting season. If this is not possible, and project activities are initiated during the nesting season (February 1 through August 31), then a nesting bird survey shall be conducted by a qualified wildlife biologist no more than 14 days prior to the start of Project activities. If nests are identified, a no-disturbance buffer should be implemented to avoid

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
				impacts to nesting birds. See Section 5.2 for further details.
northern spotted owl *Strix occidentalis caurina*	FT, ST	Year-round resident of dense, structurally-complex forests in western California north of San Francisco Bay. Old-growth coniferous stands provide typical habitat. Favors a high incidence of trees with large cavities, snags, and an abundance of large, dead wood on the ground. Nests on platform-like substrates in the canopy. Also requires open space within and below the upper canopy to fly. Preys on nocturnal mammals.	**Unlikely.** There are two observations of this species within 2 miles of the Property (CDFW 2020). However, the Property is primarily grassland and does not contain structurally complex forest to support this species. The Property lacks the habitat elements favored by this subspecies.	No further actions are recommended for this species.
San Francisco (saltmarsh) common yellowthroat *Geothlypis trichas sinuosa*	SSC, BCC	Year-round resident of marshes and wetlands with dense vegetation, including tidal, brackish and freshwater. Requires continuous, thick cover down to water for foraging.	**Unlikely.** The Property does contain marshes or wetlands with suitably dense emergent vegetation to support this species.	No further actions are recommended for this species.
Samuels (San Pablo) song sparrow *Melospiza melodia samuelis*	SSC	Year round-resident of San Pablo Bay and northwestern San Francisco Bay tidal marshes. Associated with dense upper marsh vegetation, where nests are placed high enough to avoid flooding by high tides. Also	**Unlikely.** The Property does not contain tidal marsh to support nesting by this species.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
		requires relatively open adjacent ground for foraging.		
Swainson's hawk *Buteo swainsonii*	ST	Summer resident in the region. Forages in grasslands and nests in the immediate vicinity, often in relatively isolated, trees or tree groves. Most of the California population breeds in the Central Valley. Forages on insects and rodents, also other vertebrates.	**Unlikely.** The Property is outside of the general breeding range of this species. There are no recent documented occurrences within 5 miles of the Property (CDFW 2020). Swainson's hawk may be seen flying through during migration.	No further actions are recommended for this species.
tricolored blackbird *Agelaius tricolor*	ST, SSC	Nearly endemic to California, where it is most numerous in the Central Valley and vicinity. Highly colonial, nesting in dense aggregations over or near freshwater in emergent growth or riparian thickets. Also uses flooded agricultural fields. Abundant insect prey near breeding areas essential.	**Unlikely.** The Property does not contain freshwater emergent vegetation to support a nesting colony. The nearest documented occurrence is over 4 miles east of the Property in association with a pond (CDFW 2020). This species may occasionally fly over the Property.	No further actions are recommended for this species.
western snowy plover *Charadrius alexandrinus nivosus*	FT, SSC	Federal listing applies only to the Pacific coastal population. Year-round resident and winter visitor on sandy beaches, salt pond levees and shores of large alkali lakes. Requires sandy, gravelly or friable soils for nesting.	**Unlikely.** The Property does not contain beaches, salt pond levees, alkali lakes, or other suitable unvegetated habitat to support nesting by this species.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT, SE	Summer resident, breeding in dense riparian forests and jungles, typically with early successional vegetation present. Utilizes densely-foliaged deciduous trees and shrubs. Eats mostly caterpillars. Current breeding distribution within California very restricted.	**No Potential.** The Property does not contain dense riparian forest to support nesting by this species and is outside of this species known breeding range.	No further actions are recommended for this species.
white-tailed kite *Elanus leucurus*	CFP	Year-round resident in coastal and valley lowlands with scattered trees and large shrubs, including grasslands, marshes and agricultural areas. Nests in trees, of which the type and setting are highly variable. Preys on small mammals and other vertebrates.	**Moderate potential.** The Property contains open grassland for foraging and multiple trees and shrubs which may provide nesting structure for white-tailed kite.	Future project activities should occur to the extent feasible between September 1 and January 31, which is outside of the nesting season. If this is not possible, and project activities are initiated during the nesting season (February 1 through August 31), then a nesting bird survey shall be conducted by a qualified wildlife biologist no more than 14 days prior to the start of Project activities. If nests are identified, a no-disturbance buffer should be implemented to avoid impacts to nesting birds. See Section 5.2 for further details.
yellow rail *Coturnicops noveboracensis*	SSC	Summer resident in eastern Sierra Nevada in Mono County, breeding in shallow	**No Potential.** The Property does not contain freshwater marsh and is outside of this	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
		freshwater marshes and wet meadows with dense vegetation. Also a rare winter visitor along the coast and other portions of the state. Extremely cryptic.	species breeding range.	
Reptiles and Amphibians				
California giant salamander *Dicamptodon ensatus*	SSC	Occurs in the north-central Coast Ranges. Moist coniferous and mixed forests are typical habitat; also uses woodland and chaparral. Adults are terrestrial and fossorial, breeding in cold, permanent or semi-permanent streams. Larvae usually remain aquatic for over a year.	**Unlikely.** The Property does not contain suitable aquatic habitat to support breeding or larvae. The Property does not contain forest habitat typically associated with this species.	No further actions are recommended for this species.
California red-legged frog *Rana draytonii*	FT, SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Must have access to estivation habitat.	**Unlikely.** The Property does not contain aquatic habitat suitable for breeding by this species. There are no nearby documented breeding occurrences of this species; the closest occurrence west of the Petaluma River is over 6 miles from the Property (CDFW 2020).	No further actions are recommended for this species.
California tiger salamander *Ambystoma californiense*	FT, ST	Inhabits grassland, oak woodland, ruderal and seasonal pool habitats. Seasonal ponds and vernal pools are crucial to breeding. Adults utilize mammal	**Unlikely.** The Property does not contain aquatic habitat suitable for breeding by this species. There are no documented occurrences of California tiger salamander	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
		burrows as estivation habitat.	within 7 miles of the Property (CDFW 2020).	
foothill yellow-legged frog *Rana boylii*	SSC	Occurs in direct association with perennial rocky creeks and streams in a variety of habitats. Favors an open canopy that allows for sunlit areas. Feed on both aquatic and terrestrial invertebrates.	**Unlikely.** The Property does not contain rocky stream habitat to support this species.	No further actions are recommended for this species.
green sea turtle *Chelonia mydas*	FT (west coast populations)	Found in fairly shallow waters inside reefs, bays and inlets with marine grass and algae. Open beaches with a sloping platform and minimal disturbance are required for nesting. This species exhibits high site fidelity.	**No potential.** There is no marine aquatic habitat within or adjacent to the Property.	No further actions are recommended for this species.
red-bellied newt *Taricha rivularis*	SSC	Inhabits coastal forests from southern Sonoma County northward, with an isolated population in Santa Clara County. Redwood forest provides typical habitat, though other forest types (e.g., hardwood) are also occupied. Adults are terrestrial and fossorial. Breeding occurs in streams, usually with relatively strong flow.	**Unlikely.** The Property is outside of the know range of this species and does not contain the redwood forest or strong flowing streams associated with this species.	No further actions are recommended for this species.
western pond turtle *Actinemys marmorata*	SSC	Occurs in perennial ponds, lakes, rivers and streams with suitable basking habitat	**Unlikely.** The Property does not contain perennial aquatic habitat to support this	No further actions are recommended for this

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
		(mud banks, mats of floating vegetation, partially submerged logs) and submerged shelter.	species.	species.
Fishes				
Coho salmon - central CA coast ESU *Oncorhynchus kisutch*	FE, SE	Federal listing includes populations between Punta Gorda and San Lorenzo River. State listing includes populations south of San Francisco Bay only. Occurs inland and in coastal marine waters. Requires beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water and sufficient dissolved oxygen.	**No Potential.** The Property does not contain suitable aquatic environments to support fish.	No further actions are recommended for this species.
Delta smelt *Hypomesus transpacificus*	FT, SE	Lives in the Sacramento-San Joaquin estuary in areas where salt and freshwater systems meet. Occurs seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt; most often at salinities < 2 ppt.	**No Potential.** The Property does not contain suitable aquatic environments to support fish.	No further actions are recommended for this species.
longfin smelt *Spirinchus thaleichthys*	FC, ST	Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15 to 30 ppt, but can be found in completely freshwater to almost pure	**No Potential.** The Property does not contain suitable aquatic environments to support fish.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
		seawater.		
Sacramento splittail *Pogonichthys macrolepidotus*	SSC	Formerly endemic to the lakes and rivers of the Central Valley, but now confined to the Sacramento Delta, Suisun Bay and associated marshes. Occurs in slow-moving river sections and dead-end sloughs. Requires flooded vegetation for spawning and foraging for young. A freshwater species, but tolerant of moderate salinity (10-18 parts per thousand).	**No Potential.** The Property does not contain suitable aquatic environments to support fish.	No further actions are recommended for this species.
steelhead - central valley DPS *Oncorhynchus mykiss irideus*	FT	The Central Valley ESU includes all naturally spawned populations (and their progeny) in the Sacramento and San Joaquin Rivers and their tributaries, excluding San Francisco and San Pablo bays and their tributaries. Preferred spawning habitat for steelhead is in cool to cold perennial streams with high dissolved oxygen levels and fast flowing water. Abundant riffle areas for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful breeding.	**No Potential.** The Property does not contain suitable aquatic environments to support fish.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
tidewater goby *Eucyclogobius newberryi*	FE, SSC	Habitat is characterized by brackish water in shallow lagoons and in lower stream reaches where the water is fairly still, but not stagnant. Restricted to waters with low to moderate salinities in California's coastal wetland habitats.	**No Potential.** The Property does not contain suitable aquatic environments to support fish.	No further actions are recommended for this species.
Tomales roach *Lavinia symmetricus ssp.* 2	SSC	Known from Walker Creek and other tributaries to Tomales Bay. Generally found in small, relatively warm intermittent streams. Dense populations are frequently found in isolated pools.	**No Potential.** The Property does not contain suitable aquatic environments to support fish.	No further actions are recommended for this species.
Invertebrates				
California freshwater shrimp *Syncaris pacifica*	FE, SE	Inhabits lowland perennial streams in Sonoma, Marin and Napa counties. Found within stream pools, in areas away from the main current, where there are often undercut banks, exposed root systems, and vegetation hanging into the water.	**No Potential.** The Property does not provide perennial stream habitat to support this species.	No further actions are recommended for this species.
Crotch bumblebee *Bombus crotchii*	SC	Range largely restricted to California, favoring grassland and scrub habitats. Typical of bumble bees, nests are usually constructed underground.	**Unlikely.** The Property is outside of this species known current distribution. There are no recent documented occurrences of this species in the vicinity of the Property	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
			(CDFW 2020).	
monarch butterfly *Danaus plexippus*	none (winter roost sites protected by CDFW)	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, Monterey cypress), with nectar and water sources nearby.	**No Potential.** The Property does not contain tree groves to support roosting by this species. This species may occasionally fly through the Property.	No further actions are recommended for this species.
San Bruno elfin butterfly *Callophrys mossii bayensis*	FE	Inhabits coastal mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on steep, north-facing slopes within the fog belt. Larval host plant is *Sedum spathulifolium.*	**No Potential.** The Property is outside of the very restricted known range of this species and does not contain suitable habitat or the host plant.	No further actions are recommended for this species.
western bumble bee *Bombus occidentalis*	SC	Formerly common throughout much of western North America; populations from southern British Columbia to central California have nearly disappeared (Xerces 2015). Occurs in a wide variety of habitat types. Nests are constructed annually in pre-existing cavities, usually on the ground (e.g. mammal burrows). Many plant species are visited and pollinated.	**Unlikely.** The Property is outside of this species known current distribution. There are no recent documented occurrences of this species in the vicinity of the Property (CDFW 2020).	No further actions are recommended for this species.

*** Key to status codes:**

FE	Federal Endangered
FT	Federal Threatened
FC	Federal Candidate
SE	State Endangered
ST	State Threatened
SC	State Candidate
SSC	CDFW Species of Special Concern
CFP	CDFW Fully Protected Animal
WBWG	Western Bat Working Group (High or Medium) Priority species
Rank 1A	CRPR Rank 1A: Presumed extirpated in California and either rare or extinct elsewhere
Rank 1B	CRPR Rank 1B: Plants rare, threatened or endangered in California and elsewhere
Rank 2B	CRPR Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3	CRPR Rank 3: Plants about which CNPS needs more information (a review list)
Rank 4	CRPR Rank 4: Plants of limited distribution – a watch list
Rank X.1	Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
Rank X.2	Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
Rank X.3	Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

APPENDIX D
SITE PHOTOGRAPHS

This page intentionally left blank.



(A) Representative site photos facing west towards the larger ephemeral stream. Photo taken May 29, 2018.



(B) Representative site photo facing south with Days Inn in view. Photo taken May 29, 2018.



(C) Representative site photo facing northwest. Photo taken May 29, 2018.



(D) Representative site photo facing southwest with coast live oak woodlands in view. Photo taken May 29, 2018.



(E) Non-native annual grassland in the Project Area. Photo taken May 29, 2018.



(F) Soil in non-native annual grassland. Photo taken May 29, 2018.



(G) Soil in non-native annual grassland. Photo taken May 29, 2018.



(H) View of area in central portion of the Project Area. Photo taken May 29, 2018.



(I) View of seasonal wetland. Photo taken May 29, 2018.



(J) Non-native annual grassland in the Project Area. Photo taken May 29, 2018.



(K) Soil in the seasonal wetland in the Project Area. Photo taken May 29, 2018.



(L) Soil adjacent to the seasonal wetland. Photo taken May 29, 2018.



(M) View of the larger ephemeral stream facing west. Photo taken May 29, 2018.



(N) View of the large ephemeral stream facing west. Photo taken May 29, 2018.



(O) View of the larger ephemeral stream facing west. Photo taken May 29, 2018.



(P) View of the smaller ephemeral stream facing south. Photo taken May 29, 2018.



(Q) Manmade drainage ditch that surrounds the Days Inn facing southeast. Photo taken May 29, 2018.



(R) Culvert directly outside of the Property that conveys flows from the Days Inn drainage ditch (northern end) under Redwood Boulevard. Photo taken May 29, 2018.



(S) Culvert directly outside of the Property that conveys flows from the Days Inn drainage ditch (southern end) under Redwood Boulevard. Photo taken May 29, 2018.



(T) Manmade drainage ditch that surrounds the Days Inn facing southeast. Photo taken May 29, 2018.



(U) Manmade drainage ditch situated north of the Days Inn facing north. Photo taken May 29, 2018.



(V) Manmade drainage ditch situated north of the Days Inn. Existing culvert is buried. Photo taken May 29, 2018.



(W) Manmade drainage ditch situated north of the Days Inn facing north. Photo taken May 29, 2018.



(Y) Manmade drainage ditch situated north of the Days Inn facing south. Photo taken May 29, 2018.



(X) Manmade drainage ditch in the far northern portion of the Property (outside of the Project Area) facing east. Photo taken May 29, 2018.



(Z) Manmade drainage ditch in the far northern portion of the Property (outside of the Project Area) facing west. Photo taken May 29, 2018.



(AA) Cement culvert associated with the manmade drainage ditch in the far northern portion of the Property (outside of the Project Area). Photo taken May 29, 2018.



(BB) Manmade drainage ditch in the far northern portion of the Property (outside of the Project Area) facing west. Photo taken May 29, 2018.



(CC) View of larger ephemeral stream facing east. Photo taken September 15, 2020.



(DD) View of larger ephemeral stream 2 facing northwest. Photo taken September 15, 2020.



(EE) View of manmade drainage ditch situated north of the Days Inn facing southwest. Areas northeast of the ditch have been disturbed by recent construction activities. Photo taken September 15, 2020.



(FF) View of manmade drainage ditch situated north of the Days Inn facing northeast. Photo taken September 15, 2020.

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
450 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102

February 11, 2021

Regulatory Division

Subject: File No. SPN-2015-00154

Mr. Gregory Sproull
WRA, Inc.
2169-G East Francisco Blvd
San Rafael, California 94901
sproull@wra-ca.com

Dear Mr. Sproull:

This correspondence is in reference to your submittal of November 18, 2020, on behalf of Habitat for Humanity, requesting an approved jurisdictional determination of the extent of waters of the United States occurring on a 8161 Redwood Boulevard located at in the City of Novato, Marin County, California; Latitude 38.13380°, Longitude -122.56584°.

All proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States; or below the high tide line in tidal waters of the United States; or within the lateral extent of wetlands adjacent to these waters, typically require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 *et seq*.). Waters of the United States generally include the territorial seas, and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide; tributaries; lakes and ponds, and impoundments of jurisdictional waters; and adjacent wetlands.

The enclosed delineation map titled "Approved Jurisdictional Determination, pursuant to Section 404 Clean Water Act, 8161 Redwood Boulevard, Marin County, California," in 1 sheet date certified February 1, 2021, accurately depicts the extent and location of wetlands and other waters of the United States within the boundary area of the site that are and are not subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act. This approved jurisdictional determination is based on the current conditions of the site, as verified during a review of available digital photographic imagery and other data included in your submittal. This approved jurisdictional determination will expire in five years from the date of this letter unless new information or a change in field conditions warrants a revision to the delineation map prior to the expiration date. The basis for this approved jurisdictional determination is explained in the enclosed *Approved Jurisdictional Determination Form*.

The current absence of jurisdictional waters of the United States within the boundary area of the site does not obviate any requirement to obtain other Federal, State, or local approvals necessitated by law. Any impacts to federally-listed threatened or endangered species and/or designated critical habitat may be subject to regulation by the U.S. Fish and Wildlife Service

and/or the National Marine Fisheries Service under Section 10 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq*.). If "waters of the state" are potentially present, the site may be subject to regulation by the California Regional Water Quality Control Board, San Francisco Bay Region, under the Porter-Cologne Water Quality Control Act, as amended (California Water Code § 1300 *et seq*.). You are, therefore, urged to contact these agencies directly to determine the need for other authorizations or permits.

You are advised that the approved jurisdictional determination may be appealed through the U.S. Army Corps of Engineers' *Administrative Appeal Process*, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000) and outlined in the enclosed flowchart and *Notification of Administrative Appeal Options, Process, and Request for Appeal* (NAO-RFA) Form. If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to this office for reconsideration of this decision. If you do not provide new information to this office, you may elect to submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process; the completed NAO-RFA Form must be submitted directly to the Appeal Review Officer at the address specified on the NAO-RFA Form. You will relinquish all rights to a review or an appeal unless this office or the Division Engineer receives new information or a completed NAO-RFA Form within 60 days of the date on the NAO-RFA Form. If you intend to accept the approved jurisdictional determination, you do not need to take any further action associated with the Administrative Appeal Process.

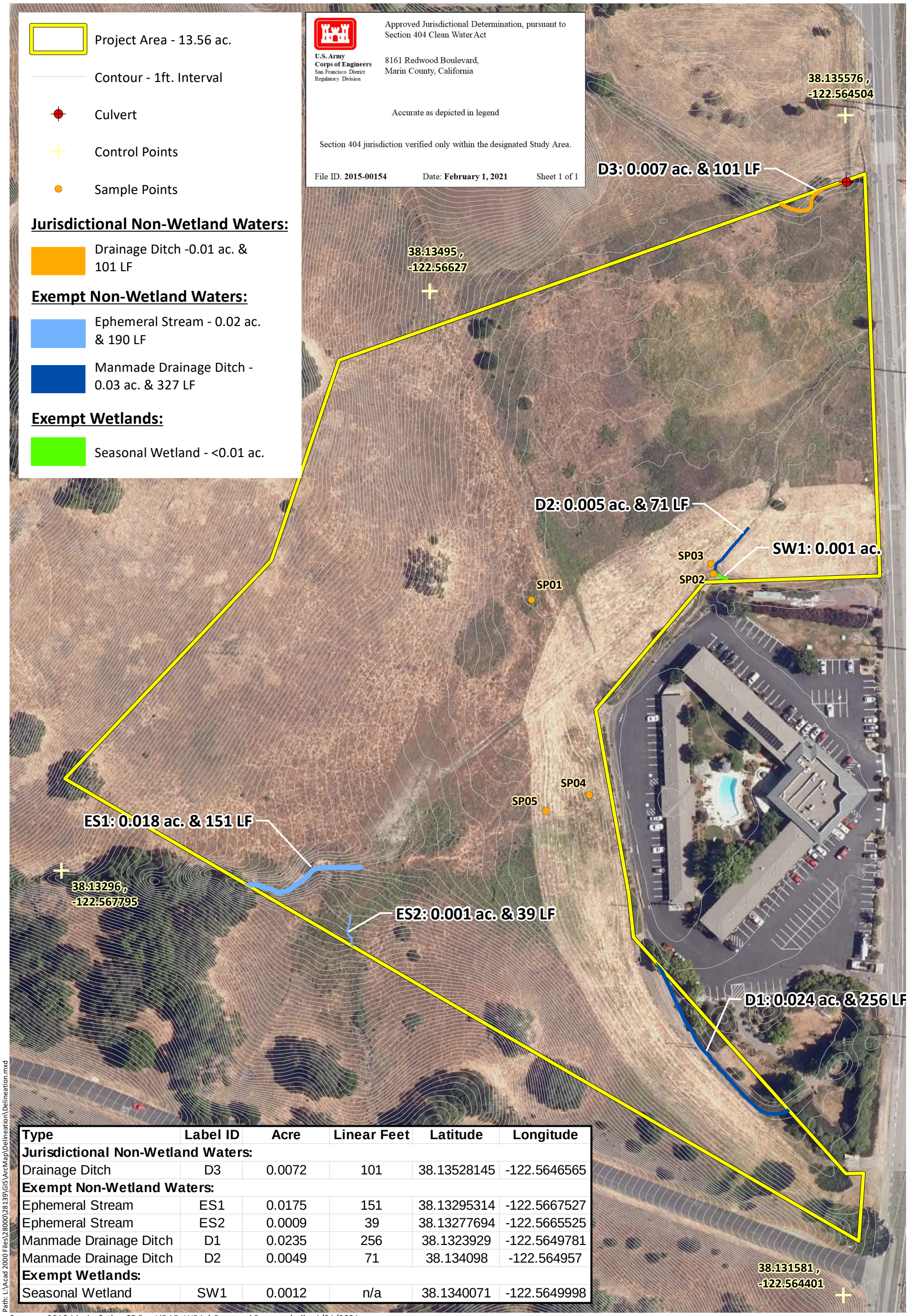
You may refer any questions on this matter to William Connor by telephone at (415) 503-6631 or by e-mail at William.M.Connor@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter. The San Francisco District is committed to improving service to our customers. The Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: https://www.spn.usace.army.mil/Missions/Regulatory.aspx.

Sincerely,

William M. Connor
Senior Project Manager
Regulatory Division

Enclosures

cc:
CA RWRCB, Nicole Fairley, Nicole.Fairley@Waterboards.ca.gov



Type	Label ID	Acre	Linear Feet	Latitude	Longitude
Jurisdictional Non-Wetland Waters:					
Drainage Ditch	D3	0.0072	101	38.13528145	-122.5646565
Exempt Non-Wetland Waters:					
Ephemeral Stream	ES1	0.0175	151	38.13295314	-122.5667527
Ephemeral Stream	ES2	0.0009	39	38.13277694	-122.5665525
Manmade Drainage Ditch	D1	0.0235	256	38.1323929	-122.5649781
Manmade Drainage Ditch	D2	0.0049	71	38.134098	-122.564957
Exempt Wetlands:					
Seasonal Wetland	SW1	0.0012	n/a	38.1340071	-122.5649998

Path: L:\Acad 2000 Files\28000\28139\GIS\ArcMap\Delineation\Delineation.mxd

Sources: 2018 Marin Ortho, SF Bay LiDAR, WRA | Prepared By: mrochelle, 1/21/2021

Figure 4. Wetlands and Non-Wetland Waters within the Study Area

8161 Redwood Boulevard
Novato, California

0 200 400 Feet

N

wra ENVIRONMENTAL CONSULTANTS

U.S. ARMY CORPS OF ENGINEERS
REGULATORY PROGRAM
APPROVED JURISDICTIONAL DETERMINATION FORM (INTERIM)
NAVIGABLE WATERS PROTECTION RULE

I. ADMINISTRATIVE INFORMATION

Completion Date of Approved Jurisdictional Determination (AJD): February 3, 2020
ORM Number: SPN-2015-00154
Associated JDs:
Review Area Location[1]:
State/Territory: CA City: Novato County/Parish/Borough: Marin County
Center Coordinates of Review Area: Latitude 38.133802 Longitude -122.565842

II. FINDINGS

A. Summary: Check all that apply. At least one box from the following list MUST be selected. Complete the corresponding sections/tables and summarize data sources.

- ☐ The review area is comprised entirely of dry land (i.e., there are no waters or water features, including wetlands, of any kind in the entire review area). Rationale: N/A or describe rationale.
- ☐ There are "navigable waters of the United States" within Rivers and Harbors Act jurisdiction within the review area (complete table in section II.B).
- ☒ There are "waters of the United States" within Clean Water Act jurisdiction within the review area (complete appropriate tables in section II.C).
- ☒ There are waters or water features excluded from Clean Water Act jurisdiction within the review area (complete table in section II.D).

B. Rivers and Harbors Act of 1899 Section 10 (§ 10)[2]

§ 10 Name	§ 10 Size	§ 10 Criteria	Rationale for § 10 Determination
N/A	N/A	N/A	N/A

C. Clean Water Act Section 404

Territorial Seas and Traditional Navigable Waters ((a)(1) waters)[3]

(a)(1) Name	(a)(1) Size	(a)(1) Criteria	Rationale for (a)(1) Determination
N/A	N/A	N/A	N/A

Tributaries ((a)(2) waters):

(a)(2) Name	(a)(2) Size	(a)(2) Criteria	Rationale for (a)(2) Determination
SPN-2015-00154-D3	101 feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year	Identified as R4 feature in NWI Map, standing water present through multiple site visits.

Lakes and ponds, and impoundments of jurisdictional waters ((a)(3) waters):

(a)(3) Name	(a)(3) Size	(a)(3) Criteria	Rationale for (a)(3) Determination
N/A	N/A	N/A	N/A

[1] Map(s)/Figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
[3] A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where independent upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD form.
[4] Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps Districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.
[5] Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.

Adjacent wetlands ((a)(4) waters):

(a)(4) Name	(a)(4) Size	(a)(4) Criteria	Rationale for (a)(4) Determination
N/A	N/A	N/A	N/A

D. Excluded Waters or Features

Excluded waters ((b)(1) – (b)(12))[4]:

Exclusion Name	Exclusion Size	Exclusion[5]	Rationale for Exclusion Determination
SPN-2015-00154-D1	256 feet	(b)(5) Ditch that is not an (a)(1) or (a)(2) water, and those portions of a ditch constructed in an (a)(4) water that do not satisfy the conditions of (c)(1)	Excavated in uplands. No evidence of more than ephemeral flow
SPN-2015-00154-D2	71 feet	(b)(5) Ditch that is not an (a)(1) or (a)(2) water, and those portions of a ditch constructed in an (a)(4) water that do not satisfy the conditions of (c)(1)	Excavated in uplands. No evidence of more than ephemeral flow
SPN-2015-00154-ES1	151 feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool	No evidence of more than ephemeral flow
SPN-2015-00154-ES2	39 feet	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool	No evidence of more than ephemeral flow
SPN-2015-00154-SW1	0.0012 acres	(b)(1) Non-adjacent wetland	No connection to (a)(1) – (a)(2) water identified

III. SUPPORTING INFORMATION

A. Select/enter all resources that were used to aid in this determination and attach data/maps to this document and/or references/citations in the administrative record, as appropriate.

__X__ Information submitted by, or on behalf of, the applicant/consultant: *Jurisdictional Delineation Report, 8161 Redwood Boulevard, Novato, Marin County, California. October 2020.*
This information *is not* sufficient for purposes of this AJD.
Rationale: *Insufficient justification provided for determination that D3 was a ditch constructed in uplands. This report is partially sufficient for the purpose of this AJD*

___ Data sheets prepared by the Corps: *N/A*

__X__ Photographs: *Google Earth, accessed January 2021.*

__X__ Corps Site visit(s) conducted on: *July 28, 2015.*

___ Previous Jurisdictional Determinations (AJDs or PJDs): *SPN-2015-00154, September 2015*

___ Antecedent Precipitation Tool: *N/A.*

___ USDA NRCS Soil Survey: *N/A*

__X__ USFWS NWI maps: *National Map, accessed January 2021*

___ USGS topographic maps:

[1] Map(s)/Figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
[3] A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where independent upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD form.
[4] Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps Districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.
[5] Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.

Other data sources used to aid in this determination:

Data Source (select)	Name and/or date and other relevant information
USGS Sources	N/A.
USDA Sources	N/A.
NOAA Sources	N/A.
USACE Sources	N/A.
State/Local/Tribal Sources	N/A.
Other Sources	N/A.

B. Typical year assessment(s): N/A

C. Additional comments to support AJD: N/A

[1] Map(s)/Figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
[3] A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where independent upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD form.
[4] Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps Districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.
[5] Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: WRA, Inc.	File Number: SPN-2015-00154	Date: 2/1/21
Attached is:		See Section below
☐	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
☐	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
☐	PERMIT DENIAL	C
☑	APPROVED JURISDICTIONAL DETERMINATION	D
☐	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/cecw/pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Sahrye Cohen
North Branch Chief, Regulatory Division
San Francisco District, U.S. Army Corps of Engineers
450 Golden Gate Avenue, 4th Floor
San Francisco, CA 94102-3404
Phone: (415) 503-6779 Email: Sahrye.E.Cohen@usace.army.mil

If you only have questions regarding the appeal process you may also contact: Thomas J. Cavanaugh
Administrative Appeal Review Officer,
U.S. Army Corps of Engineers
South Pacific Division
450 Golden Gate Avenue, 6th Floor
San Francisco, California 94102-3406
Phone: (415) 503-6574 Fax: (415) 503-6646
Email: thomas.j.cavanaugh@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

Appendix C

Cultural Resources Assessment

CULTURAL RESOURCES STUDY

HABITAT FOR HUMANITY – HABITAT REDWOOD BOULEVARD

MARIN COUNTY, CALIFORNIA



CONFIDENTIAL

CONFIDENTIAL - NOT FOR REPRODUCTION

This report contains confidential cultural resources location information; report distribution should be restricted to those with a need to know. Cultural resources are nonrenewable and their scientific, cultural, and aesthetic values can be significantly impaired by disturbance. To deter vandalism, artifact hunting, and other activities that can damage cultural resources, the locations of cultural resources should be kept confidential. The legal authority to restrict cultural resources information is in Section 304 of the National Historic Preservation Act of 1966, as amended, and California Government Section Code 6254.10 exempts archaeological sites from the California Public Records Act requiring that public records be open to public inspection.

LSA

January 2021

Appendix D

Energy Calculations

Habitat Redwood Boulevard

Last Updated: 7/1/2021

Compression-Ignition Engine Brake-Specific Fuel Consumption (BSFC) Factors **[1]**:

HP: 0 to 100	0.0588	HP: Greater than 100	0.0529

Values above are expressed in gallons per horsepower-hour/BSFC.

CONSTRUCTION EQUIPMENT - PHASE 1

Construction Equipment	#	Hours per Day	Horsepower	Load Factor	Construction Phase	Fuel Used (gallons)
Concrete/Industrial Saws	1	0.5	81	0.73	Site Development	208.48
Excavators	2	3.3	158	0.38	Site Development	2,513.53
Rubber Tired Dozers	2	2.2	247	0.4	Site Development	2,757.46
Graders	2	4.4	187	0.41	Site Development	4,279.65
Pavers	1	0.5	130	0.42	Site Development	173.17
Paving Equipment	1	0.5	132	0.36	Site Development	150.71
Rollers	1	0.5	80	0.38	Site Development	107.19
Graders	1	0.2	187	0.41	Office Building Construction	136.17
Excavators	1	0.5	158	0.38	Office Building Construction	266.59
Rollers	1	0.5	80	0.38	Office Building Construction	150.06
Aerial Lifts	1	0.5	63	0.31	Office Building Construction	96.40
Air Compressors	3	2.5	78	0.48	Office Building Construction	2,772.17
Cranes	1	0.1	231	0.29	Office Building Construction	59.49
Skid Steer Loaders	1	1	65	0.37	Office Building Construction	237.43
Tractors/Loaders/Backhoes	1	1	97	0.37	Office Building Construction	354.32
Plate Compactors	2	2.9	8	0.43	Home Foundations	422.09
Concrete/Industrial Saws	1	0.5	81	0.73	Home Foundations	625.45
Air Compressors	3	1.4	78	0.48	Home Foundations	3,326.60
Cranes	1	0.1	231	0.29	Home Foundations	127.48
Skid Steer Loaders	2	2.2	65	0.37	Home Foundations	2,238.63
Tractors/Loaders/Backhoes	2	5.4	97	0.37	Home Foundations	8,199.98
Aerial Lifts	4	4.6	63	0.31	Home Framing, Enclosure	10,136.18
Air Compressors	6	4.6	78	0.48	Home Framing, Enclosure	29,147.36
Cranes	1	0.3	231	0.29	Home Framing, Enclosure	509.91
Skid Steer Loaders	2	0.6	65	0.37	Home Framing, Enclosure	814.05
Tractors/Loaders/Backhoes	2	1.1	97	0.37	Home Framing, Enclosure	2,227.15
Excavators	1	8	158	0.38	Home Trim & Finish	13,177.01
Air Compressors	1	8	78	0.48	Home Trim & Finish	9,134.95
Skid Steer Loaders	1	8	65	0.37	Home Trim & Finish	5,867.94
Tractors/Loaders/Backhoes	1	8	97	0.37	Home Trim & Finish	8,756.77
Pressure Washers	1	8	13	0.3	Home Trim & Finish	951.56
					Total Fuel Used	**109,925.92**
						(Gallons)

Construction Phase	Days of Operation
Site Development	120
Office Building Construction	168
Home Foundations	360
Home Framing, Enclosure	480
Home Trim & Finish	519
Total Days	1647

WORKER TRIPS

Constuction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)

Site Development	24.4	25	10.8	1327.87
Office Building Construction	24.4	50	10.8	3718.03
Home Foundations	24.4	28	10.8	4461.64
Home Framing, Enclosure	24.4	20	10.8	4249.18
Home Trim & Finish	24.4	10	10.8	2297.21
			Total	**16,053.93**

HAULING AND VENDOR TRIPS

Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
		HAULING TRIPS		
Site Development	7.5	3,247	20.0	8,658.67
Office Building Construction	7.5	20	20.0	53.33
Home Foundations	7.5	240	20.0	640.00
Home Framing, Enclosure	7.5	0	20.0	0.00
Home Trim & Finish	7.5	89	20.0	237.33
			Total	**9,589.33**
		VENDOR TRIPS		
Site Development	7.5	0	7.3	0.00
Office Building Construction	7.5	12	7.3	1,962.24
Home Foundations	7.5	0	7.3	0.00
Home Framing, Enclosure	7.5	12	7.3	5,606.40
Home Trim & Finish	7.5	0	7.3	0.00
			Total	**7,568.64**

Total Gasoline Consumption (gallons)	**16,053.93**
Total Diesel Consumption (gallons)	**127,083.90**

Sources:

[1] United States Environmental Protection Agency. 2018. *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b* . July 2018. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf.

[2] United States Department of Transportation, Bureau of Transportation Statistics. 2019. *National Transportation Statistics 2019* . Available at: https://www.bts.gov/topics/national-transportation-statistics.

Habitat Redwood Boulevard

Last Updated: 7/1/2021

Compression-Ignition Engine Brake-Specific Fuel Consumption (BSFC) Factors **[1]**:

HP: 0 to 100	0.0588	HP: Greater than 100	0.0529

Values above are expressed in gallons per horsepower-hour/BSFC.

CONSTRUCTION EQUIPMENT - PHASE 2

Construction Equipment	#	Hours per Day	Horsepower	Load Factor	Construction Phase	Fuel Used (gallons)
Concrete/Industrial Saws	1	0.5	81	0.73	Site Development	208.48
Excavators	2	3.3	158	0.38	Site Development	2,513.53
Rubber Tired Dozers	2	2.2	247	0.4	Site Development	2,757.46
Graders	2	4.4	187	0.41	Site Development	4,279.65
Pavers	2	0.5	130	0.42	Site Development	346.33
Paving Equipment	2	0.5	132	0.36	Site Development	301.42
Rollers	2	0.5	80	0.38	Site Development	214.37
Excavators	4	0.2	158	0.38	Home Foundations	426.54
Plate Compactors	2	0.5	8	0.43	Home Foundations	33.96
Concrete/Industrial Saws	1	0.5	81	0.73	Home Foundations	291.88
Air Compressors	3	0.5	78	0.48	Home Foundations	554.43
Cranes	1	2.5	231	0.29	Home Foundations	1,487.23
Skid Steer Loaders	2	0.1	65	0.37	Home Foundations	47.49
Tractors/Loaders/Backhoes	2	1	97	0.37	Home Foundations	708.64
Aerial Lifts	4	2.9	63	0.31	Home Framing, Enclosure	4,792.65
Air Compressors	6	0.5	78	0.48	Home Framing, Enclosure	2,376.14
Cranes	1	1.4	231	0.29	Home Framing, Enclosure	1,784.68
Skid Steer Loaders	2	0.1	65	0.37	Home Framing, Enclosure	101.76
Tractors/Loaders/Backhoes	2	5.4	97	0.37	Home Framing, Enclosure	8,199.98
Excavators	2	4.6	158	0.38	Home Trim & Finish	14,014.86
Aerial Lifts	2	4.6	63	0.31	Home Trim & Finish	5,068.09
Air Compressors	3	4.6	78	0.48	Home Trim & Finish	14,573.68
Skid Steer Loaders	2	4.6	65	0.37	Home Trim & Finish	6,241.04
Tractors/Loaders/Backhoes	2	4.6	97	0.37	Home Trim & Finish	9,313.56
Pressure Washers	1	0.6	13	0.3	Home Trim & Finish	66.00
					Total Fuel Used	**80,703.86**
						(Gallons)

Construction Phase	Days of Operation
Site Development	120
Home Foundations	168
Home Framing, Enclosure	360
Home Trim & Finish	480
Total Days	1128

WORKER TRIPS

Constuction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Site Development	24.4	33	10.8	1752.79
Home Foundations	24.4	38	10.8	2825.70
Home Framing, Enclosure	24.4	46	10.8	7329.84
Home Trim & Finish	24.4	9	10.8	1912.13
			Total	**13,820.46**

HAULING AND VENDOR TRIPS

Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
		HAULING TRIPS		
Site Development	7.5	3247	20.0	8,658.67
Home Foundations	7.5	222	20.0	592.00
Home Framing, Enclosure	7.5	0	20.0	0.00
Home Trim & Finish	7.5	89	20.0	237.33
			Total	**9,488.00**
		VENDOR TRIPS		
Site Development	7.5	0	7.3	0.00
Home Foundations	7.5	0	7.3	0.00
Home Framing, Enclosure	7.5	11	7.3	3,854.40
Home Trim & Finish	7.5	0	7.3	0.00
			Total	**3,854.40**

Total Gasoline Consumption (gallons)	**13,820.46**
Total Diesel Consumption (gallons)	**94,046.26**

Sources:

[1] United States Environmental Protection Agency. 2018. *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b* . July 2018. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf.

[2] United States Department of Transportation, Bureau of Transportation Statistics. 2019. *National Transportation Statistics 2019* . Available at: https://www.bts.gov/topics/national-transportation-statistics.

Habitat Redwood Boulevard

Last Updated: 4/28/2021

Populate one of the following tables (Leave the other blank):

Annual VMT		Daily Vehicle Trips
Annual VMT: 1,367,488	**OR**	Daily Vehicle Trips:
		Average Trip Distance:

Fleet Class	Fleet Mix
Light Duty Auto (LDA)	0.544586
Light Duty Truck 1 (LDT1)	0.059189
Light Duty Truck 2 (LDT2)	0.194842
Medium Duty Vehicle (MDV)	0.116655
Light Heavy Duty 1 (LHD1)	0.025323
Light Heavy Duty 2 (LHD2)	0.006187
Medium Heavy Duty (MHD)	0.010605
Heavy Heavy Duty (HHD)	0.010839
Other Bus (OBUS)	0.001143
Urban Bus (UBUS)	0.000752
Motorcycle (MCY)	0.028270
School Bus (SBUS)	0.000785
Motorhome (MH)	0.000824

Fuel Economy (MPG) [1]	
Passenger Vehicles	24.4
Light-Med Duty Trucks	17.9
Heavy Trucks/Other	7.5
Motorcycles	44

Fleet Mix

Vehicle Type	Percent	Fuel Type	Annual VMT: VMT	Vehicle Trips: VMT	Fuel Consumption (Gallons)
Passenger Vehicles	*54.46%*	*Gasoline*	744,715	0.00	30,521
Light-Medium Duty Trucks	*37.07%*	*Gasoline*	506,909	0.00	28,319
Heavy Trucks/Other	*5.65%*	*Diesel*	77,206	0.00	10,294
Motorcycle	*2.83%*	*Gasoline*	38,659	0.00	879

Total Gasoline Consumption (gallons)	**59,719**
Total Diesel Consumption (gallons)	**10,294**

Sources:

[1] United States Department of Transportation, Bureau of Transportation Statistics. 2019. National Transportation Statistics 2019. Available at: https://www.bts.gov/topics/national-transportation-statistics.

8161 Redwood Boulevard Maximum Buildout - I&R

Last Updated: 7/1/2021

Compression-Ignition Engine Brake-Specific Fuel Consumption (BSFC) Factors **[1]**:

HP: 0 to 100	0.0588	HP: Greater than 100	0.0529

Values above are expressed in gallons per horsepower-hour/BSFC.

CONSTRUCTION EQUIPMENT - PHASE 1

Construction Equipment	#	Hours per Day	Horsepower	Load Factor	Construction Phase	Fuel Used (gallons)
Excavators	3	8	158	0.38	Demolition	1,523.35
Concrete/Industrial Saws	1	8	81	0.73	Demolition	555.96
Rubber Tired Dozers	2	8	247	0.4	Demolition	1,671.19
Rubber Tired Dozers	3	8	247	0.4	Site Preparation	1,253.39
Tractors/Loaders/Backhoes	4	8	97	0.37	Site Preparation	674.90
Excavators	1	8	158	0.38	Grading	507.78
Rubber Tired Dozers	1	8	247	0.4	Grading	835.59
Graders	1	8	187	0.41	Grading	648.43
Tractors/Loaders/Backhoes	3	8	97	0.37	Grading	1,012.34
Cranes	1	7	231	0.29	Building Construction	5,701.05
Forklifts	3	8	89	0.2	Building Construction	5,773.94
Generator Sets	1	8	84	0.74	Building Construction	6,721.12
Tractors/Loaders/Backhoes	3	7	97	0.37	Building Construction	10,186.70
Welders	1	8	46	0.45	Building Construction	2,238.21
Pavers	1	8	130	0.42	Paving	461.78
Rollers	1	8	80	0.38	Paving	285.83
Paving Equipment	1	8	132	0.36	Paving	401.90
Air Compressors	1	6	78	0.48	Architectural Coating	264.02
					Total Fuel Used (Gallons)	**40,717.48**

Construction Phase	Days of Operation
Demolition	20
Site Preparation	10
Grading	20
Building Construction	230
Paving	20
Architectural Coating	20
Total Days	300

WORKER TRIPS

Constuction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Demolition	24.4	15	10.8	132.79
Site Preparation	24.4	18	10.8	79.67
Grading	24.4	15	10.8	132.79
Building Construction	24.4	147	10.8	14965.08
Paving	24.4	15	10.8	132.79
Architectural Coating	24.4	29	10.8	256.72
			Total Fuel Used	**15,699.84**

HAULING AND VENDOR TRIPS

Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
HAULING TRIPS				

Demolition	7.5	0	20.0	0.00
Site Preparation	7.5	0	20.0	0.00
Grading	7.5	3,114	20.0	8,304.00
Building Construction	7.5	0	20.0	0.00
Paving	7.5	0	20.0	0.00
Architectural Coating	7.5	0	20.0	0.00
			Total Fuel Used	**8,304.00**
		VENDOR TRIPS		
Demolition	7.5	0	7.3	0.00
Site Preparation	7.5	0	7.3	0.00
Grading	7.5	0	7.3	0.00
Building Construction	7.5	30	7.3	6,716.00
Paving	7.5	0	7.3	0.00
Architectural Coating	7.5	0	7.3	0.00
			Total Fuel Used	**6,716.00**

Total Gasoline Consumption (gallons)	**15,699.84**
Total Diesel Consumption (gallons)	**55,737.48**

Sources:

[1] United States Environmental Protection Agency. 2018. *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b* . July 2018. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf.

[2] United States Department of Transportation, Bureau of Transportation Statistics. 2019. *National Transportation Statistics 2019* . Available at: https://www.bts.gov/topics/national-transportation-statistics.

8161 Redwood Boulevard Maximum Buildout - Parking

Last Updated: 7/1/2021

Compression-Ignition Engine Brake-Specific Fuel Consumption (BSFC) Factors **[1]**:

HP: 0 to 100	0.0588	HP: Greater than 100	0.0529

Values above are expressed in gallons per horsepower-hour/BSFC.

CONSTRUCTION EQUIPMENT - PHASE 1

Construction Equipment	#	Hours per Day	Horsepower	Load Factor	Construction Phase	Fuel Used (gallons)
Graders	1	8	187	0.41	Site Preparation	648.43
Rubber Tired Dozers	1	7	247	0.4	Site Preparation	731.15
Tractors/Loaders/Backhoes	1	8	97	0.37	Site Preparation	337.45
Graders	1	6	187	0.41	Grading	486.32
Rubber Tired Dozers	1	6	247	0.4	Grading	626.70
Tractors/Loaders/Backhoes	1	7	97	0.37	Grading	295.27
Cranes	1	6	231	0.29	Building Construction	4,886.61
Forklifts	1	6	89	0.2	Building Construction	1,443.48
Generator Sets	1	8	84	0.74	Building Construction	6,721.12
Tractors/Loaders/Backhoes	1	6	97	0.37	Building Construction	2,910.49
Welders	3	8	46	0.45	Building Construction	6,714.64
Pavers	1	6	130	0.42	Paving	346.33
Paving Equipment	1	8	132	0.36	Paving	401.90
Rollers	1	7	80	0.38	Paving	250.10
Tractors/Loaders/Backhoes	1	8	97	0.37	Paving	337.45
Cement and Mortar Mixers	1	6	9	0.56	Paving	35.54
Air Compressors	1	6	78	0.48	Architectural Coating	264.02
					Total Fuel Used	**27,436.99**
						(Gallons)

Construction Phase	Days of Operation
Site Preparation	20
Grading	20
Building Construction	230
Paving	20
Architectural Coating	20
Total Days	290

WORKER TRIPS

Constuction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Site Preparation	24.4	8	10.8	70.82
Grading	24.4	8	10.8	70.82
Building Construction	24.4	31	10.8	3155.90
Paving	24.4	13	10.8	115.08
Architectural Coating	24.4	6	10.8	53.11
			Total	**3,465.74**

HAULING AND VENDOR TRIPS

Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
		HAULING TRIPS		
Site Preparation	7.5	0	20.0	0.00
Grading	7.5	0	20.0	0.00
Building Construction	7.5	0	20.0	0.00

Paving	7.5	0	20.0	0.00
Architectural Coating	7.5	0	20.0	0.00
			Total	**0.00**

		VENDOR TRIPS		
Site Preparation	7.5	0	7.3	0.00
Grading	7.5	0	7.3	0.00
Building Construction	7.5	12	7.3	2,686.40
Paving	7.5	0	7.3	0.00
Architectural Coating	7.5	0	7.3	0.00
			Total	**2,686.40**

Total Gasoline Consumption (gallons)	**3,465.74**
Total Diesel Consumption (gallons)	**30,123.39**

Sources:

[1] United States Environmental Protection Agency. 2018. *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b* . July 2018. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf.

[2] United States Department of Transportation, Bureau of Transportation Statistics. 2019. *National Transportation Statistics 2019* . Available at: https://www.bts.gov/topics/national-transportation-statistics.

8161 Redwood Boulevard Maximum Buildout

Last Updated: 7/1/2021

Populate one of the following tables (Leave the other blank):

Annual VMT		OR	Daily Vehicle Trips	
Annual VMT:	2,445,128		Daily Vehicle Trips:	
			Average Trip Distance:	

Fleet Class	Fleet Mix
Light Duty Auto (LDA)	0.541308
Light Duty Truck 1 (LDT1)	0.058963
Light Duty Truck 2 (LDT2)	0.198151
Medium Duty Vehicle (MDV)	0.117012
Light Heavy Duty 1 (LHD1)	0.025663
Light Heavy Duty 2 (LHD2)	0.006067
Medium Heavy Duty (MHD)	0.010470
Heavy Heavy Duty (HHD)	0.010460
Other Bus (OBUS)	0.001165
Urban Bus (UBUS)	0.000755
Motorcycle (MCY)	0.028402
School Bus (SBUS)	0.000758
Motorhome (MH)	0.000826

Fuel Economy (MPG) [1]	
Passenger Vehicles	24.4
Light-Med Duty Trucks	17.9
Heavy Trucks/Other	7.5
Motorcycles	44

Fleet Mix

Vehicle Type	Percent	Fuel Type	Annual VMT: VMT	Vehicle Trips: VMT	Fuel Consumption (Gallons)
Passenger Vehicles	*54.13%*	*Gasoline*	1,323,567	0.00	54,245
Light-Medium Duty Trucks	*37.41%*	*Gasoline*	914,786	0.00	51,105
Heavy Trucks/Other	*5.62%*	*Diesel*	137,328	0.00	18,310
Motorcycle	*2.84%*	*Gasoline*	69,447	0.00	1,578

Total Gasoline Consumption (gallons)	**106,928**
Total Diesel Consumption (gallons)	**18,310**

Sources:

[1] United States Department of Transportation, Bureau of Transportation Statistics. 2019. National Transportation Statistics 2019. Available at: https://www.bts.gov/topics/national-transportation-statistics.

Appendix E

Geotechnical Investigation Report

GEOTECHNICAL INVESTIGATION
RESIDENTIAL DEVELOPMENT
APN 125-180-49
8161 REDWOOD ROAD
NOVATO, CALIFORNIA

January 6, 2021

Job No. 1834.011

Prepared for:
Habitat for Humanity, Greater San Francisco
Attn: Maureen Sedonaen, Executive Director
500 Washington Street, #250
San Francisco, CA 94111

CERTIFICATION

This document is an instrument of service, prepared by or under the direction of the undersigned professionals, in accordance with the current ordinary standard of care. The service specifically excludes the investigation of polychlorinated byphenols, radon, asbestos or any other hazardous materials. The document is for the sole use of the client and consultants on this project. No other use is authorized. If the project changes, or more than two years have passed since issuance of this report, the findings and recommendations must be updated.

MILLER PACIFIC ENGINEERING GROUP
(a California corporation)

REVIEWED BY:



Monica Thornton
Project Engineer

Scott Stephens
Geotechnical Engineer No. 2398
(Expires 6/30/21)

MILLER PACIFIC ENGINEERING GROUP

GEOTECHNICAL INVESTIGATION
RESIDENTIAL DEVELOPMENT
APN 125-180-49
8161 REDWOOD ROAD
NOVATO, CALIFORNIA

TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 PROJECT DESCRIPTION 1
3.0 SITE CONDITIONS 1
3.1 Regional Geology 1
3.2 Seismicity 2
3.2.1 Regional Active Faults 2
3.2.2 Historic Fault Activity 2
3.2.3 Probability of Future Earthquakes 2
3.3 Site History 3
3.4 Surface Conditions 3
3.5 Subsurface Exploration 3
3.6 Reference Data 4
3.7 Subsurface Conditions 4
3.8 Groundwater and Percolation Testing 4
4.0 GEOLOGIC HAZARDS 5
4.1 Fault Surface Rupture 5
4.2 Seismic Shaking 5
4.3 Landsliding and Slope Stability 7
4.4 Liquefaction and Related Effects 7
4.5 Settlement 8
4.6 Seismic Densification 8
4.7 Expansive Soils 8
4.8 Erosion 9
4.9 Flooding 9
4.10 Tsunami and Seiche 10
5.0 CONCLUSIONS AND RECOMMENDATIONS 10
5.1 Seismic Design 10
5.2 Site Grading 10
5.2.1 Site Preparation 11
5.2.2 Excavations 11
5.2.3 Fill Materials, Placement and Compaction 11
5.3 Shallow Foundation Design 12
5.4 Deep Foundation Design 12
5.5 Retaining Walls 13
5.6 Interior Concrete Slabs-On-Grade 14
5.7 Exterior Concrete Slabs 14
5.8 Site and Foundation Drainage 15
5.9 Underground Utilities 15
5.10 Pavements 16
6.0 SUPPLEMENTAL GEOTECHNICAL SERVICES 16
7.0 LIMITATIONS 16
8.0 LIST OF REFERENCES 17

FIGURE 1: SITE LOCATION MAP
FIGURE 2: SITE PLAN
FIGURE 3: SITE SPECIFIC GEOLOGIC MAP
FIGURE 4: REGIONAL GEOLOGIC MAP
FIGURE 5: ACTIVE FAULT MAP
FIGURE 6: HISTORIC EARTHQUAKE MAP
FIGURE 7: TYPICAL WALL BACKDRAIN
FIGURE 8: TYPICAL FOUNDATION DRAIN DETAIL

TABLE 1: PERCOLATION TEST RESULTS
TABLE 2: DETERMINISTIC PEAK GROUND ACCELRATIONS FOR ACTIVE FAULTS
TABLE 3: PROBABILISTIC PEAK GROUND ACCELRATIONS FOR ACTIVE FAULTS
TABLE 4: 2019 CALIFORNIA BUILDING CODE SEISMIC DESIGN CRITERIA
TABLE 5: SHALLOW FOUNDATION DESIGN CRITERIA
TABLE 6: DRILLED PIER FOUNDATION DESIGN CRITERIA
TABLE 7: RETAINING WALL DESIGN CRITERIA
TABLE 8: ASPHALT-CONCRETE PAVEMENT SECTIONS

APPENDIX A – SUBSURFACE EXPLORATION AND LABORATORY TESTING

Soil Classification Chart..... Figure A-1
Rock Classification Chart A-2
Boring Logs .....A-3 through A-8
Plasticity Index Test Results.....A-9 through A-10
Expansion Index Test Results.....A-11 through A-15
Percolation Test Results A-16

APPENDIX B – REFERENCE BORING LOGS

MILLER PACIFIC ENGINEERING GROUP

GEOTECHNICAL INVESTIGATION
RESIDENTIAL DEVELOPMENT
APN 125-180-49
8161 REDWOOD ROAD
NOVATO, CALIFORNIA

1.0 INTRODUCTION

This report presents the results of our Geotechnical Investigation for the proposed residential development at 8161 Redwood Boulevard in Novato, California. As shown on Figure 1, the project site is in the northernmost portion of Novato. It is bounded to the north by open space, to the west and southwest by Buck Center Drive, and to the east by commercial development and Redwood Boulevard.

Our work was performed in accordance with our Agreement for Professional Services dated July 27, 2020. The purpose of our investigation was to develop geotechnical criteria for design and construction of the proposed improvements. The scope of our services includes:

- Review of available, published geologic mapping and geotechnical background information from our files, public sources, and any geologic/geotechnical background information supplied by you.
- Exploration of subsurface conditions with six exploratory soil borings.
- Review of aerial photographs to evaluate the history of previous site development.
- Site reconnaissance to observe and document existing conditions.
- Evaluation of relevant geologic hazards including seismic shaking, liquefaction, settlement, and other hazards.
- Preparation of this report summarizing our findings.

2.0 PROJECT DESCRIPTION

Based on our review of preliminary plans and discussions with the project team, we understand that project details are not yet fully developed. However, the project would generally consist of grading an undeveloped parcel to create building pads and access roads for 23 residential and 1 commercial (office) structures. Ancillary improvements are expected to include extensive exterior hardscape/flatwork and asphalt paving, new underground utilities, new site drainage, landscaping, lighting, and other improvements typical of such developments. No structural information is available at this time. We anticipate light to moderate foundation loads. The site plan showing the project area, subsurface exploration, and anticipated geologic conditions is presented on Figure 2.

3.0 SITE CONDITIONS

3.1 Regional Geology

The project site is located within the Coast Ranges geomorphic province of California. It is typified by generally northwest-trending ridges and intervening valleys that formed as a result of movement along a group of northwest-trending fault systems, including the San Andreas Fault. Bedrock geology within the San Francisco bay area is dominated by sedimentary, igneous, and metamorphic rocks of the Jurassic-Cretaceous age Franciscan Complex. Most of Franciscan rock types are composed of sandstone and pervasively sheared shale. It also includes less common rocks such as chert, serpentinite, basalt, greenstone, and exotic low- to high-grade metamorphic rocks, including phyllite, schist, and eclogite.

The project site is located within moderately sloping terrain on the north side of Novato, just east of the Buck Institute for Aging. Regional geologic mapping by the United States Geological Survey (Dibblee, 2007) indicates the site is underlain by the Holocene age colluvial sediments from old landslide deposits originating from Mount Burdell. Colluvium can be described as unconsolidated deposits of gravel, sand, silt, and clay, deposited at or on the bases of slopes by natural gravitational or slope wash processes. Our recent project mapping and exploration indicates different geologic conditions, compared to the information provided by the regional Rice maps. The interpreted geologic conditions at the project site are presented on Figure 3, Site Specific Geologic Map. A Regional Geologic Map and descriptions of the mapped geologic units are shown on Figure 4.

3.2 Seismicity

The project site is located within the seismically active San Francisco Bay Area and will therefore experience the effects of future earthquakes. Earthquakes are the product of the build-up and sudden release of strain along a “fault” or zone of weakness in the earth's crust. Stored energy may be released as soon as it is generated, or it may be accumulated and stored for long periods of time. Individual releases may be so small that they are detected only by sensitive instruments, or they may be violent enough to cause destruction over vast areas.

Faults are seldom single cracks in the earth's crust but are typically composed of localized shear zones which link together to form larger fault zones. Within the Bay Area, faults are concentrated along the San Andreas Fault zone. The movement between rock formations along either side of a fault may be horizontal, vertical, or a combination, and is radiated outward in the form of energy waves. The amplitude and frequency of earthquake ground motions partially depends on the material through which it is moving. The earthquake force is transmitted through hard rock in short, rapid vibrations, while this energy becomes a long, high-amplitude motion when moving through soft ground materials, such as Bay Mud.

3.2.1 Regional Active Faults

An “active” fault is one that shows displacement within the last 11,000 years (i.e., Holocene) and has a reported average slip rate greater than 0.1 mm per year. The California Division of Mines and Geology has mapped various active and inactive faults in the region. These faults are shown in relation to the project site on the attached Active Fault Map, Figure 5. The nearest known active faults are the Rodgers Creek San Andreas, and Hayward Faults which are located roughly 10.4 kilometers (6.4 miles) northeast, 21.9 kilometers (13.6 miles) west, and 18.8 kilometers (11.7 miles) southeast of the site, respectively.

3.2.2 Historic Fault Activity

Numerous earthquakes have occurred in the region within historic times. A map showing the distribution of M>2.0 earthquakes since 1985 in the San Francisco Bay Region is shown on Figure 6. The site will likely experience moderate to strong ground shaking from future earthquakes originating on any of several active faults in the San Francisco Bay region.

3.2.3 Probability of Future Earthquakes

The site will likely experience moderate to strong ground shaking from future earthquakes originating on any of several active faults in the San Francisco Bay region. The historical records do not directly indicate either the maximum credible earthquake or the probability of such a future event. To evaluate earthquake probabilities in California, the USGS has assembled a group of researchers into the “Working Group on California Earthquake

Probabilities" (USGS 2003, 2008, 2013) to estimate the probabilities of earthquakes on active faults. These studies have been published cooperatively by the USGS, CGS, and Southern California Earthquake Center (SCEC) as the Uniform California Earthquake Rupture Forecast, Versions 1, 2, and 3. In these studies, potential seismic sources were analyzed considering fault geometry, geologic slip rates, geodetic strain rates, historic activity, micro-seismicity, and other factors to arrive at estimates of earthquakes of various magnitudes on a variety of faults in California.

Conclusions from the most recent UCERF3 and USGS' 2016 Fact Sheet indicate there is a 72% chance of an M>6.7 earthquake in the San Francisco Bay Region between 2014 and 2043. The highest probability of a M>6.7 earthquake on any of the active faults in the region is assigned to the Hayward Fault at 33%. The San Andreas Fault is assigned a 22% probability of a M>6.7 earthquake by 2043. Additional studies regarding earthquake probabilities in the Bay Area are ongoing.

3.3 Site History

In addition to available geotechnical and geologic reference information, we reviewed several historic aerial photographs and topographic maps to assess the site history. We reviewed two aerial photos from the UC Santa Barbara Aerial Photo Archive taken in 1952 and 1965. The photo from 1952 shows minor grading in and around the project area and a small, house-like structure is present on the north end of the site. The majority of the project area is generally undeveloped. By 1965, the Days Inn hotel was constructed, and the small structures on the north end of the site had been replaced by a different, t-shaped structure. The surrounding project area remained undeveloped. We also reviewed historical Google Earth aerial imagery. The photographs were taken between 1993 and 2018 at a variety of scales and show that the site has experienced little to no changes or improvements over the years. The t-shaped structure is still there in the 1993 image but is gone in the next available image taken in 2002. In 2017, a small landslide occurred off-site on the east side of the access road to Buck Institute. This slide was repaired by Miller Pacific and James Grossi Construction and is not on the subject property.

3.4 Surface Conditions

The project site encompasses an unusually shaped parcel located just west of Highway 101. The site is moderately sloping in the south and western portions and is relatively level in the northeast. It is currently undeveloped. The surface is generally moderately vegetated with native grasses, shrubs, and sparse trees. Major PG&E gas lines traverse the site delineated with surface markers to identify locations.

3.5 Subsurface Exploration

We explored subsurface conditions in the general vicinity of the planned improvements on September 29th and 30th, 2020, with six exploratory soil borings utilizing track-mounted drilling equipment to maximum explored depth of 17.5-feet below the ground surface. The approximate boring locations are shown on Figure 2. Our Engineer logged the borings in the field and collected soil samples at select intervals for laboratory testing.

Brief descriptions of the terms and methodology used in classifying earth materials are provided on the Soil and Rock Classification Charts, Figures A-1, and A-2, respectively. The exploratory boring logs are shown on Figures A-3 through A-8. Our subsurface exploration program is discussed in more detail in Appendix A.

Laboratory testing of select soil samples recovered from our soil borings included determination of moisture content, dry density, unconfined compressive strength, expansion index, and plasticity

index. The results of the moisture content, dry density, and unconfined compressive strength are presented on the boring logs. The results of the plasticity index and expansion index tests are presented on Figures A- 9 through A-14. The laboratory testing program is also discussed in further detail in Appendix A.

3.6 Reference Data

We reviewed subsurface boring data from Alan Kropp and Associates from their 1995 soils investigation from the nearby Buck Center Institute for Aging. We also performed borings in 2018 for the landslide below the Buck Center access road. Borings, test pits, and geologic mapping from their study were reviewed for this report. The locations of reference borings are shown on Figure 2 and previously mapped geology is shown on Figure 3.

3.7 Subsurface Conditions

The subsurface conditions encountered in our borings, the reference borings, and test pits differ from the mapped geologic conditions at the site (Rice, 1974). Deep landslide deposits were not encountered. Based on the subsurface exploration, the site is underlain by colluvial and alluvial soils of various depths over Franciscan Melange bedrock. The native soils are generally sandy clay with varying amounts of gravel. The clayey soils vary from low to high expansion potential with the more expansive soil noted on the sloping terrain. Bedrock encountered is Franciscan Melange, composed primarily of shale, metasiltstone, and sandstone. Other rock types include serpentinite, schist, and greenstone which are common in Franciscan Melange bedrock. In the project vicinity the different rock types are layered. The bedrock is highly fractured and sheared.

3.8 Groundwater and Percolation Testing

Groundwater was measured in Boring 1 at 15.0 feet, in Boring 5 at 12.5 feet, and in Boring 6 at 13.0 feet. Borings 2, 3, and 4 did not encounter any groundwater during the exploration. Monitoring wells were installed in Borings 1 and 6 and read multiple times over a month-long period. The readings are presented on the associated boring logs and represent summertime conditions. We also conducted a cursory search of the State Water Resources Control Board's GeoTracker website, but no monitoring well data was present for the project area. Although groundwater was not encountered in all our borings, shallow groundwater may be encountered in surface colluvial soils following heavy rains. For design, we recommend that groundwater be anticipated at approximately 10 feet below ground surface in the hillside and 5 feet below ground surface around the drainage channel and level portion of the project site in the northeast.

Percolation tests were taken at three locations across the site. The pipes were installed on September 29th and 30th, 2020. The final reading was taken on November 6th at 3:30 pm. The approximate locations of the tests are shown on Figure 2. The results and locations of the surface percolation tests are presented below in Table 1 and on Figure A-16.

Table 1 – Percolation Test Results

Test Number	Date and Time Installed	Min. Percolation Rate (in./hr.)
P1	9/29/2020 at 3:00 pm	1.6
P2	9/29/2020 at 1:00 pm	0.5
P3	9/30/2020 at 8:58 am	1.8

4.0 GEOLOGIC HAZARDS

This section summarizes our review of commonly considered geologic hazards and discusses their potential impacts on the planned improvements. The primary geologic hazards which could affect the proposed development are strong seismic ground shaking and expansive soils. Other geologic hazards are judged less than significant regarding the proposed project. Geologic hazards, potential impacts and mitigation measures are discussed in further detail in the following sections.

4.1 Fault Surface Rupture

Under the Alquist-Priolo Earthquake Fault Zoning Act, the California Division of Mines and Geology (now known as the California Geological Survey) produced 1:24,000 scale maps showing known active and potentially active faults and defining zones within which special fault studies are required. The nearest known active fault to the site is the Rodgers Creek Fault located approximately 6.9 kilometers (4.3 miles) to the east. The Burdell Mountain Fault Zone is also shown on the Regional Geologic Map (Figure 3) roughly 1.0 kilometers (0.6 miles) northeast of the site. While this fault is characterized as potentially active, it is not included as an Alquist-Priolo Special Studies Zone.

The site is not located within an Alquist-Priolo Special Studies Zone and the projected trace of the Mt. Burdell Fault is overlain with a thick soil layer. We therefore judge the potential for fault surface rupture in the development area to be low.

Evaluation: *Less than significant.*
Recommendations: *No mitigation measures are required.*

4.2 Seismic Shaking

The site will likely experience seismic ground shaking similar to other areas in the seismically active Bay Area. The intensity of ground shaking will depend on the characteristics of the causative fault, distance from the fault, the earthquake magnitude and duration, and site-specific geologic conditions. Estimates of peak ground accelerations are based on either deterministic or probabilistic methods.

Deterministic methods use empirical attenuation relations that provide approximate estimates of median peak ground accelerations. A summary of the active faults that could most significantly affect the planning area, their maximum credible magnitude, closest distance to the center of the planning area, probable peak ground accelerations, and 84th percentile peak ground accelerations are summarized in Table 2. The calculated accelerations should only be considered as reasonable estimates. Many factors (e.g., soil conditions, orientation to the fault, etc.) can influence the actual ground surface accelerations.

Table 2 – Deterministic Peak Ground Accelerations for Active Faults

Fault	Moment Magnitude for Characteristic Earthquake(1)	Closest Estimated Distance (km)(1)	Median Peak Ground Acceleration (g)(2,3)	84% Peak Ground Acceleration (g)(2,3)
Rodgers Creek	7.3	10.4	0.31	0.55
San Andreas	8.0	21.9	0.24	0.44
Hayward	7.3	18.8	0.21	0.37
San Gregorio	7.4	27.8	0.16	0.28
Maacama	7.4	45.0	0.10	0.19
Burdell Mountain	n/a	0.92	n/a	n/a

1.) Values determined using Google Earth KML Files showing Quaternary Faults & Folds in the US obtained from USGS website September 30, 2020.
2.) Values determined using Vs^{30} = 560 m/s for Site Class "C" ("Very Dense Soil and Soft Rock" Conditions) in accordance with the 2019 CBC and 2016 ASCE-7. See additional discussion regarding Site Class determination and recommended seismic design criteria in Section 5.1.
3.) Values determined using Pacific Earthquake Engineering Research Center (PEER) NGS-West2 Excel Spreadsheet, http://peer.berkeley.edu/ngawest2/databases/.

Probabilistic Seismic Hazard Analysis analyzes all possible earthquake scenarios while incorporating the probability of each individual event to occur. The probability is determined in the form of the recurrence interval, which is the average time for a specific earthquake acceleration to be exceeded. The design earthquake is not solely dependent on the fault with the closest distance to the site and/or the largest magnitude, but rather the probability of given seismic events occurring on both known and unknown faults.

We calculated the peak ground acceleration for the 10 percent chance of exceedance in 50 years (475-year statistical return period). The peak ground acceleration value was calculated utilizing the USGS Unified Hazard Tool (USGS, 2020). The results of the probabilistic analysis are presented below in Table 3.

Table 3 – Probabilistic Peak Ground Accelerations for Active Faults

Probability of Exceedance	Statistical Return Period	Magnitude	Peak Ground Acceleration (g)
2% in 50 years	2,475 years	7.26	0.79
10% in 50 years	475 years	7.21	0.45

Reference: USGS Unified Hazard Tool accessed on September 30, 2020.

Ground shaking can result in structural failure and collapse of structures or cause non-structural building elements (such as light fixtures, shelves, cornices, etc.) to fall, presenting a hazard to building occupants and contents. Compliance with provisions of the most recent version of the California Building Code (2019 CBC) should result in structures that do not collapse in an earthquake. Damage may still occur, and hazards associated with falling objects or non-structural building elements will remain.

The potential for strong seismic shaking at the project site is high. Due to their proximity and historic rates of activity, the Rodgers Creek and San Andreas Faults present the highest potential for severe ground shaking. The significant adverse impact associated with strong seismic shaking is potential damage to structures and improvements.

Evaluation: *Less than significant with mitigation.*
Recommendations: *Minimum mitigation includes design of new structures in accordance with the provisions of the 2019 California Building Code or subsequent codes in effect when final design occurs. Seismic design coefficients are presented in Section 5.1 of this report.*

4.3 Landsliding and Slope Stability

The site is partially located on a moderately steep bedrock slope with a surficial soil layer. Review of previous work in the area, published geologic maps, and our own nearby projects indicate potential for slope instability. Further upslope to the west of the site, many small to large landslides are present within the Buck Institute property. Additionally, aerial images showing topography of the hillside reveal moderately hummocky topography. The hillside is generally covered in clayey colluvium that is susceptible to soil creep or shallow landsliding. In addition, soils near the drainage channel have potential for bank instability. Natural weathering will slowly increase the potential for slope instability. Cuts into the hillside may accelerate soil creep or induce shallow landsliding.

Evaluation: *Less than significant with mitigation.*
Recommendations: *If possible, improvements should maintain a 20-foot setback from the top of the deeply incised drainage channel bank in the Southwestern corner of the property. The approximate location of the incised drainage channel is shown on Figure 3. If improvements are within 20-feet of the channel, we should be consulted to provide supplemental foundation criteria for drilled piers that extent below the potential influence zone. Careful consideration should be given to global stability of the site in post construction conditions, especially on the steeper sloping areas of the site. Deep unsupported excavations should be avoided. Any new cut slopes should not exceed 2:1 (horizontal:vertical) and the upper portion of the cut (soil layer) should be supported by retaining walls designed for soil creep loads, or the soils 20 feet upslope of the cut replaced with a non-expansive, engineered fill buttress with subsurface drainage. Design criteria and recommendations for foundation and retaining wall systems are presented in Section 5.4 of this report.*

4.4 Liquefaction and Related Effects

Liquefaction refers to the sudden, temporary loss of soil strength during strong ground shaking. The strength loss occurs as a result of the build-up of excess pore water pressures and subsequent reduction of effective stress. While liquefaction most commonly occurs in saturated, loose, granular deposits, recent studies indicate that it can also occur in materials with relatively high fines content provided the fines exhibit lower plasticity.

The effects of liquefaction can vary from cyclic softening resulting in limited strain potential to flow failure which cause large settlements and lateral ground movements. Lateral spreading refers to a specific type of liquefaction-induced ground failure characterized primarily by horizontal displacement of surficial soil layers due to liquefaction of a subsurface granular layer (Youd, 1995). Lateral spreads generally move down gentle slopes or slip toward a free face such as an

incised river channel. Regional mapping of seismic hazard zones (ArcGIS, 2020) indicates the site does not lie within a zone of high liquefaction potential.

Evaluation: *Less than significant.*
Recommendations: *No mitigation measures are required.*

4.5 Settlement

Significant settlement can occur when new loads are placed over soft, compressible clays or loose granular soils. While medium stiff clayey soils over bedrock is expected over most of the site, alluvial soils in the northeast would have a higher potential for settlement. We judge the risk of damage due to consolidation settlement is low in the hillside and moderate in the low lying, alluvial portion of the site. Building pads that span cut to fill can result in settlement of new structures due to variable support conditions.

Evaluation: *Less than significant with mitigation.*
Recommendations: *In these areas the planned improvements need to be designed to provide support from the bedrock underlying the project site.*

4.6 Seismic Densification

Seismic ground shaking can induce settlement in unsaturated, loose, granular soils. Settlement occurs as the loose soil particles rearrange into a denser configuration when subjected to seismic ground shaking. Varying degrees of settlement can occur throughout a deposit, resulting in differential settlement of structures founded on such deposits. The project site has sandy clay surface soils and shallow bedrock. Therefore, the risk of seismic densification impacting the project is generally low.

Evaluation: *Less than significant.*
Recommendations: *No mitigation measures are required.*

4.7 Expansive Soils

Soil expansion occurs when clay particles interact with water causing seasonal volume changes in the soil matrix. The clay soil swells when saturated and then contracts when dried. This phenomenon generally decreases in magnitude with increasing confinement pressures at increasing depths. These volume changes may damage lightly loaded foundations, concrete slabs, pavements, retaining walls and other improvements. Expansive soils also cause soil creep on sloping ground.

The near-surface soils encountered in our borings consist of clayey materials which exhibit variable expansion potential. The results of Atterberg Limits testing indicate the clayey soils in Borings 1, 2, 5, and 6 exhibit a plasticity index between 15 and 19, and an expansion index between 32 and 64 which suggests a low to medium expansion potential. Borings 3 and 4 exhibit a plasticity index between 27 and 28, and an expansion index of 132 which suggests a high to very high expansion potential. The Franciscan mélange matrix material also tends to weather to potentially expansive clay. Based on the results of our subsurface exploration, the risk of expansive soil affecting the proposed improvements is considered moderate.

Evaluation: *Less than significant with mitigation.*

Recommendations: *Fill materials used for site grading should conform to the recommendations outlined in Section 5.2.3. Mitigation measures should include using non-expansive soils within the upper three feet below the new buildings and other improvements. Soils should be moisture conditioned to slightly above the optimum moisture content during site grading and maintained at this moisture content until imported aggregate base and/or surface flatwork is completed. Alternatively, the foundations can be designed for expansive soil conditions with void boxes under grade beams, rigid shallow foundations that can withstand seasonal soil movement with minimal deflection, or other measures aimed at mitigating expansive soil conditions.*

4.8 Erosion

Sandy soils on moderately steep slopes or clayey soils on steep slopes are susceptible to erosion when exposed to concentrated surface water flow. The potential for erosion is increased when established vegetation is disturbed or removed during normal construction activity.

The proposed improvements indicate that much of the site will require moderate grading for building pads and access roads. Therefore, erosion is considered a moderate geologic hazard. Flow conditions of the creek should be considered in assessing erosion and scour near the proposed improvements. Intense rainfall and elevated surface run-off during strong storm events will increase the potential for erosion of the creek banks. Ongoing erosion and scour will reduce stability of the banks and could potentially damage the proposed improvements located close to the creek.

Evaluation: *Less than significant with mitigation.*

Recommendations: *Mitigation measures include the project Civil Engineer implementing bank stability and erosion control measures. Erosion control measures during and after construction, at a minimum, should conform to the most recent version of the Erosion and Sediment Control Field Manual (California Regional Water Quality Control Board, 2009). Deep foundations should be utilized to reduce risk of loss of bearing support due to erosion undermining the footings. Periodic monitoring of the creek bank and foundations is recommended.*

4.9 Flooding

The project site is located at about elevations ranging from 10 to 100 feet. It is not mapped within a designated 500-year flood zone based upon the preliminary Flood Insurance Rate Map prepared by FEMA (ArcGIS, 2020), but directly east across Highway 101 is mapped within a designated 100-year flood zone. Therefore, large scale flooding is considered a low hazard at the project site.

Evaluation: *Less than significant with mitigation.*

Recommendations: *The project Civil Engineer or Architect is responsible for site drainage and should evaluate localized flooding potential and provide appropriate mitigation. Additionally, finished floor elevations should be above potential future flood levels.*

4.10 Tsunami and Seiche

Seiche and tsunamis are short duration, earthquake-generated water waves in large, enclosed bodies of water and the open ocean, respectively. The extent and severity of a seiche or tsunami would be dependent upon ground motions and fault offset from nearby active faults. Tsunami hazard mapping of the project area (ArcGIS, 2020) indicates the site is not located within an area that is susceptible to tsunami inundation. Therefore, the likelihood of inundation by seiche or tsunami is low.

Evaluation: *Less than significant.*
Recommendations: *No mitigation measures are required.*

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our investigation, we conclude the project is geotechnically feasible and site conditions are suitable for the proposed improvements. The primary geotechnical considerations for the project will include designing the improvements to resist strong seismic ground shaking, site grading for hillside terrain, expansive soil conditions, and appropriate foundation systems for cut and fill pads. Additional discussion and our conclusions and recommendations addressing these, and other considerations are presented in the following sections.

5.1 Seismic Design

Minimum mitigation of ground shaking includes seismic design of new structures in conformance with the provisions of the most recent edition (2019) of the California Building Code. The magnitude and character of these ground motions will depend on the earthquake and the site response characteristics. Based on the interpreted subsurface conditions and close proximity of the Rodgers Creek and San Andreas Faults, we recommend the CBC coefficients and site values shown in Table 3 be used to calculate the design base shear of new improvements as applicable. This analysis does not include the Burdell Mountain Fault. The values presented in Table 4 should be confirmed based on supplemental exploration.

Table 4 – 2019 California Building Code Seismic Design Criteria

Parameter	Design Value
Site Class	C
Site Latitude	38.1332°N
Site Longitude	-121.5659°W
Spectral Response (short), S_S	1.50 g
Spectral Response (1-sec), S_1	0.60 g
Site Coefficient, F_a	1.2
Site Coefficient, F_V	1.4

Reference: USGS US Seismic Design Maps, accessed on September 30, 2020.

5.2 Site Grading

The general grading recommendations presented below are appropriate for construction in the late spring through fall months. From winter through the early spring months, on-site soils may be saturated due to rainfall and may be difficult to compact without drying by aeration or the addition

of lime and/or cement (or a similar product) to dry the soils. Site preparation and grading should conform to the recommendations and criteria outlined below. General recommendations for wintertime construction are provided later in this report.

5.2.1 Site Preparation

Clear organic material from areas to be graded. Vegetation is not suitable for structural fill and should be removed from the site. Any utilities which are to be abandoned as part of the work should be removed from structural areas. In non-structural areas, utilities could be abandoned in place provided cement grout completely fills any void in the utility.

To reduce the potential for expansive soil movement, the upper 30 inches of soil beneath proposed new structures and extending five feet beyond the building lines in all directions, should consist of imported select, non-expansive, compacted fill, or lime-cement treatment of existing soils. The existing clayey surface soil should be over-excavated, as needed, to permit the construction of a 30-inch-thick compacted, select fill building pad. After the excavation has been made, the bottom of the excavation should be scarified, and moisture conditioned to within 3% of optimum moisture content. Once the subgrade has been moisture conditioned, the subgrade should be compacted to at least 90% relative compaction[1] (R.C.) and to achieve a firm and unyielding surface.

In areas where new vehicle loaded asphalt or concrete pavements will be installed, the upper 8-inches of subgrade soil should be moisture conditioned as described above and further compacted to at least 95% R.C. Subgrades should be maintained in a moist condition up until final pavement, flatwork, or structures are constructed to prevent shrinkage cracks due to drying.

5.2.2 Excavations

Based on our subsurface exploration, site excavations will likely encounter very stiff clay over bedrock. The clay generally classifies as OSHA Type B soil. Temporary support of confined space excavations in excess of 5 feet will be required to ensure the safety of workers and to reduce the potential for failure of the excavation sidewalls and damage to surrounding improvements. Excavation stability and the structural design of temporary shoring should be the responsibility of the Contractor.

5.2.3 Fill Materials, Placement and Compaction

Fill materials should consist of non-expansive materials that are free of organic matter, have a Liquid Limit of less than 40 (ASTM D 4318), a Plasticity Index of less than 20 (ASTM D 4318), and a minimum R-value of 20 (California Test 301). The fill material should contain no more than 50 percent of particles passing a No. 200 sieve and should have a maximum particle size of 4 inches. Onsite soils may be suitable for use as fill provided, they meet the criteria specified above. Any imported fill material needs to be tested to determine its suitability.

Fill materials should be moisture conditioned to above the optimum moisture content prior to compaction. Properly moisture conditioned fill materials should subsequently be placed in loose, horizontal lifts of 8 inches-thick or less and uniformly compacted to at least 90 percent relative compaction. Where fill thicknesses are greater than 5 feet, fill materials should be compacted to at least 92 percent relative compaction. In pavement areas, the

[1] Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density, as determined by laboratory test procedure (ASTM 1557).

upper 12 inches of fill should be compacted to at least 95 percent relative compaction. The maximum dry density and optimum moisture content of fill materials should be determined in accordance with ASTM D1557.

5.3 Shallow Foundation Design

As previously discussed, portions (lower elevation areas) of the project site are blanketed with highly expansive clay. In addition, grading in the hillside areas is anticipated to create cut/fill transitions under the proposed structure that vary from bedrock to fill.

In the lower elevation areas of the project site, foundations bearing on at least 3 feet of non-expansive, compacted fill can utilize traditional shallow foundations designed using the criteria for select fill in Table 5.

If the existing expansive soils are not removed, rigid, interconnected shallow foundations design for expansive soil movement would be required. Rigid, interconnect continuous footings or rigid post-tensioned, concrete, mat slabs-on-grade may be utilized on the existing soils. Mat slab should be designed to withstand seasonal movement due to the shrink/swell potential of the underlying expansive soils. Geotechnical design criteria for foundations on existing native, expansive soil are presented in Table 5.

Table 5 – Shallow Foundation Design Criteria

Parameter	Design Value	
Soil Type	Expansive Soil	Select Fill
Minimum Footing Width1	15 inches	15 inches
Minimum Embedment	18 inches	18 inches
Allowable Bearing Pressure[1,2]	2,000 psf	2,500 psf
Base Friction Coefficient	0.30	0.30
Lateral Passive Resistance[3]	250 pcf	300 pcf
Modulus of Subgrade Reaction	150 psi per inch	n/a
e_m (edge/center)[4]	5 / 10 feet	n/a
Y_m (edge/center)[4]	0.5 /1 inches	n/a

Notes:
1.) Design shallow foundations to similar bearing pressures (i.e., size footing widths to maintain relatively uniform bearing loads).
2.) Increase design values by 1/3 for total design loads including seismic.
3.) Equivalent fluid pressure, not to exceed 3,000 psf. Neglect upper 12 inches unless confined by concrete.
4.) Needed for slab design for non-treated/remove and replace condition.

5.4 Deep Foundation Design

For the hillside areas which span cut to fill transitions, we recommend structures be supported on a drilled pier and grade beam foundation system which is embedded into bedrock. However, where site grading exposes bedrock, shallow spread footings could be utilized. Bearing capacity and lateral passive resistance for bedrock would be 3500 psf and 400 pcf, respectively.

Deep foundation system could be utilized in expansive soil areas. Deep foundations may require depths on the order of 15 to 20-feet below the ground surface. Deep foundation design criteria are presented below on Table 6. Void boxes should be utilized under grade beams and slabs to eliminate uplift pressures.

Table 6 – Deep Foundation Design Criteria

Parameter	Design Value	
Minimum Diameter	18 inches	
Minimum Embedment	15 feet	
Uplift Pressure[1]	500 psf	
Condition	Soil	Rock
Skin Friction[2,3]	500 psf	2,000 psf
Lateral Passive Resistance[2,4,5,6]	300 pcf	400 pcf

Notes:
1.) Apply to the upper 5-feet of formed pier. Check adequate embedment below the expansive zone to resist upward movement.
2.) May increase design values by 1/3 for total design loads including seismic.
3.) Uplift capacity is equal to 80% of the downward skin resistance.
4.) Equivalent fluid pressure, not to exceed 3,000 psf.
5.) Ignore uppermost 12-inches unless concrete or asphalt surfacing exists adjacent to foundation.
6.) Apply passive resistance over two pier diameters.

5.5 Retaining Walls

Retaining walls are likely anticipated for the development. Retaining walls should be designed to resist lateral pressures from earth and surcharge loads, as shown in Table 7. Retaining walls that can slightly deflect at the top can be designed using the unrestrained criteria shown below. Walls that are structurally connected and not allowed to deflect (e.g., tied-back walls) are restrained and are commonly designed using a uniform active earth pressure distribution rather than an equivalent fluid pressure. In cut areas, soil nail with shotcrete, concrete, or soldier pile walls are likely well-suited. For walls greater than 10.0-feet, tiebacks could be used to reduce foundation size and depth.

Table 7 – Active Earth Pressure for Retaining Wall Design

Backfill Inclination[1]	Unrestrained[2,3]	Restrained[3,4]
Level	40 pcf	30 x H psf
3:1[5]	50 pcf	35 x H psf
2:1[5]	60 pcf	40 x H psf

Notes:
(1) Interpolate earth pressures for intermediate slopes
(2) Equivalent fluid pressure
(3) Wall design should account for a seismic surcharge of 15 x H (in psf) in addition to active pressure
(4) Rectangular distribution, H is wall height in feet
(5) A 200 psf creep surcharge should be applied to the upper 3 feet of the wall.

Wall drainage is required for all retaining walls taller than 3 feet. Wall drainage should consist of Caltrans Class 1B permeable material within filter fabric or Caltrans Class 2 permeable material. A composite drainage panel such as Miradrain 6000 (or approved equivalent) could also be used. The drainage should be collected in a 4-inch perforated PVC drain line at the base of the wall and discharged to an appropriate discharge location. The permeable material should extend at least 12 inches from the back of the wall and be continuous from the bottom of the wall to within 12

inches of the ground surface. Waterproofing should be provided for any walls adjacent to living spaces. Typical wall drainage and backfill is shown on Figure 7.

5.6 Interior Concrete Slabs-On-Grade

Concrete slabs-on-grade may be poured monolithically or separated with a cold joint. We recommend that interior concrete slabs have a minimum thickness of 5 inches and be reinforced with steel reinforcing bars (not mesh) with rebar extending through crack control joints. Slabs should be placed on a moist subgrade to reduce potential for future expansive behavior. The project Structural Engineer should specifically design the concrete slabs, including locations of crack control joints.

To reduce the potential for moisture to move upward through the slab, a four-inch layer of clean, free draining, ¾-inch angular gravel should be placed beneath interior concrete slabs to form a capillary moisture break. The gravel must be placed on a properly moisture conditioned and compacted subgrade that has been approved by the Geotechnical Engineer. A plastic membrane vapor barrier, 15 mils or thicker, should be placed over the compacted base rock. The vapor barrier shall meet the ASTM E1745 Class A requirements and be installed per ASTM E1643. Eliminating the capillary moisture break and/or plastic vapor barrier may result in excess moisture intrusion through the floor slabs resulting in poor performance of floor coverings, mold growth, or other adverse conditions.

We note that over time, placing sand between the vapor barrier and concrete is becoming less common because of elevated interior moisture contents. If sand is used, it should be dry, and if it is not used, the slab should be carefully designed with a lower water-cement ratio (generally less than 0.45) since eliminating the sand can cause cracking or “curling” of the new concrete. For slabs that are not sensitive to moisture vapor, we recommend at least four inches of Class 2 aggregate base (Caltrans, 2015) compacted to 95 percent relative compaction.

5.7 Exterior Concrete Slabs

Exterior concrete slabs for pedestrian walkways and hardscaping are likely going to be included in the project. Exterior walkway slabs and other concrete slabs that are not subjected to vehicle loads should be a minimum of 4 inches thick and underlain with 4 inches or more of Class 2 aggregate base. The aggregate base should be moisture conditioned to near optimum and compacted to at least 95 percent relative compaction. The upper 8 inches of subgrade on which aggregate base is placed should be prepared as previously discussed under Section 5.2.

Where improved performance is desired (i.e., reduced risks of cracking or small movements), exterior slabs can be thickened to 5 inches and reinforced with steel reinforcing bars (not welded wire mesh). We recommend crack control joints no farther than 6 feet apart in both directions and that the reinforcing bars extend through the control joints. Some movement or offset at sidewalk joints should be expected as the underlying soils expand and shrink from seasonal moisture changes.

All site drainage should be conveyed via nonperforated pipe away from the development areas and discharged at an appropriate location unlikely to result in significant erosion. If no connection to an established storm drain system is available, then runoff should be conveyed to an established existing drainage channel. Ideally, the drainage system would be designed to reduce peak flow rates to pre-development conditions via use of bio-retention or detention basins and appropriately designed outflow works.

5.8 Site and Foundation Drainage

New grading could result in adverse drainage patterns causing water to pond around the development. Careful consideration should be given to design of finished grades at the site. We recommend that the building areas be raised slightly and that the adjoining landscaped areas be sloped downward at least 0.25 feet for 5 feet (5 percent) from the perimeter of building foundations. Where hard surfaces, such as concrete or asphalt adjoin foundations, slope these surfaces at least 0.10 feet in the first 5 feet (2 percent).

Roof gutter downspouts may discharge onto the pavements but should not discharge onto landscaped areas immediately adjacent to the buildings. Provide area drains for landscape planters adjacent to buildings and collect downspout discharges into a tight pipe collection system that discharges well away from the building foundations. Site drainage should be discharged away from the building area and outlets should be designed to reduce erosion. Site drainage improvements should be connected into an established storm drainage system.

Where no retaining walls are planned along the upslope side of new structures, foundation drains consisting of perforated pipe within drain rock and filter fabric or Caltrans Class II permeable material should be considered. Seepage should be collected into a nonperforated pipe system and conveyed to an appropriate discharge point as with other drainage. As noted above, the foundation drains should not be connected to the roof gutter discharge system. A typical detail for foundation drainage is shown on Figure 8. We recommend the use of Schedule 40 PVC, SDR-35 PVC or equivalent materials for subdrain and unperforated pipe construction; lower-strength and lesser-quality materials such as ABS plastic and corrugated, or slotted pipe should be avoided for best future performance.

It should be pointed out that where the gravel capillary break layer is placed beneath floor slabs, there is a possibility that water will tend to collect in the gravel layer and become trapped. If this condition occurs, the potential for moisture problems at the surface of the slab will be increased. One method of minimizing the potential for this to occur would be to construct a subdrain trench through and just below the gravel layer so that water collected in this area can escape. The subdrain should extend at least 12 inches below the base of the slab and 6 inches below the bottom of the gravel layer, and would consist of a four-inch diameter, perforated pipe (Schedule 40 PVC) surrounded by gravel. The subdrain would connect to the gravel layer beneath the slab, and the pipe should lead (at a minimum one percent slope) to a storm drain or another suitable outlet point. The outlet pipe should transition to nonperforated pipe at a point three feet inside the perimeter footing of the structure. A compacted clayey soil plug or other type of moisture barrier should be used at the point where the outlet pipe penetrates the perimeter footing to prevent seepage from backflowing into the underslab gravel layer.

5.9 Underground Utilities

Excavations for utilities will generally encounter stiff sandy clay with varying gravel content overlying shallow bedrock. Trench excavations having a depth of 5 feet or more must be excavated and shored in accordance with OSHA regulations, as discussed in Section 5.2.

Unless otherwise recommended by the pipe manufacturer, pipe bedding and embedment materials should consist of well-graded sand with 90 to 100 percent of particles passing the No. 4 sieve and no more than 5 percent finer than the No. 200 sieve. Crushed rock or pea gravel may also be considered for pipe bedding. Provide the minimum bedding thickness beneath the pipe in accordance with the manufacturer's recommendations (typically 3 to 6 inches). Trench backfill may consist of on-site soils, provided that the soil meets the fill criteria outlined in Section 5.2.3 or imported aggregate baserock. Trench backfill should be moisture conditioned and placed in

thin lifts and compacted to at least 90 percent. Use equipment and methods that are suitable for work in confined areas without damaging utility conduits.

5.10 Pavements

We have calculated thicknesses for asphalt pavements in accordance with Caltrans procedures for flexible pavement design. Our calculations assume an R-value of 10 for subgrade soils and a range of Traffic Indices from 4.0 to 7.0 depending on the expected traffic loads for a twenty-year design life. The R-value should be confirmed with laboratory testing. In general, areas expected to experience loading from heavy vehicles should be designed using the higher Traffic Index, while parking areas and other lightly loaded areas can utilize a thinner pavement section based on the lower Traffic Index. The recommended pavement sections are presented in Table 8.

Table 8 –Asphalt-Concrete Pavement Sections

Traffic Index[1]	Asphalt Concrete (inches)	Aggregate Base (inches)
4.0	3.0	7.0
5.0	3.5	8.0
6.0	4.5	10.5
7.0	5.0	13.0

(1) Traffic Index for final pavement design to be determined by the project Civil Engineer.

In pavement areas, the upper 12 inches of subgrade should be compacted to at least 95 percent relative compaction. The aggregate base and asphalt-concrete should conform to the most recent version of Caltrans Standard Specifications and should be compacted to at least 95 percent relative compaction. Additionally, the subgrade and aggregate base should be firm and unyielding under heavy, rubber-tired construction equipment. If heavier truck traffic or “superior” performance is desired, the thickness of the aggregate base and asphalt may be increased.

6.0 SUPPLEMENTAL GEOTECHNICAL SERVICES

Following review and consideration of this report, we should consult with the project team regarding any questions or comments. We will also be available to provide consultation throughout the design process on other geotechnical-related items.

As project plans near completion, we should review them to ensure that the intent of our recommendations has been sufficiently incorporated. During construction, we should be present intermittently to observe and test the geotechnical portions of the work. The purpose of our observation and testing is to confirm that site conditions are as anticipated, to adjust our recommendations and design criteria if needed, and to confirm that the Contractor’s work is performed in accordance with the project plans and specifications.

7.0 LIMITATIONS

We believe this report has been prepared in accordance with generally accepted geotechnical engineering practices in the San Francisco Bay Area at the time the report was prepared. This report has been prepared for the exclusive use of the project Owner and/or their assignees specifically for this project. No other warranty, expressed or implied, is made. Our evaluations and recommendations are based on the data obtained during our subsurface exploration program and our experience with soils in this geographic area.

8.0 LIST OF REFERENCES

Alan Kropp & Associates, “Geotechnical Investigation, Buck Research Center, Marin County, California, Volume 1” March 1995.

American Society of Civil Engineers (ASCE) (2016), “Minimum Design Loads for Buildings and Other Structures” (2016 ASCE-7), Structural Engineering Institute of the American Society of Civil Engineers.

American Concrete Institute, “318-14: Building Code Requirements for Structural Concrete and Commentary”.

American Society for Testing and Materials, (2019) “2019 Annual Book of ASTM Standards, Section 4, Construction, Volume 4.08, Soil and Rock; Dimension Stone; Geosynthetics,” ASTM, Philadelphia.

Association of Bay Area Governments, “Resilience Program: Bay Area Hazards Maps”. Online, date accessed September 30, 2020.

California Building Code, 2019 Edition, California Building Standards Commission/International Conference of Building Officials, Whittier, California.

California Department of Conservation, California Geologic Survey, “Digital Images of the Alquist Priolo Maps” http://www.conservation.ca.gov/cgs/rghm/ap/Pages/Index.aspx, 2018.

California Department of Transportation (Caltrans) (2018), 2018 Standard Specifications.

California Department of Transportation (Caltrans) (2020), Highway Design Manual, 7th Edition.

California State Water Resources Control Board (2020), “GeoTracker (web-based groundwater resources database), https://documents.geotracker.waterboards.ca.gov/esi/uploads/geo_report/6426409244/T0601300401.PDF, accessed September 30, 2020.

Campbell, K., Borzognia, Y., “NGA Ground Motion Model for the Geometric Mean Horizontal Component of PGA, PGV, PGD and 5% Damped Linear Elastic Response Spectra for Periods Ranging from 0.01 to 10 s,” EERI Earthquakes Spectra, Volume 24, Number 1, February 2008.
Chiou, B. and Youngs, R., “An NGA Model for the Average Horizontal Component of Peak Ground Motion and Response Spectra,” EERI Earthquakes Spectra, Volume 24, Number 1, February 2008.

Occupational Safety and Health Administration (OSHA)(2005), Title 29 Code of Federal Regulations, Part 1926 (www.OSHA.gov).

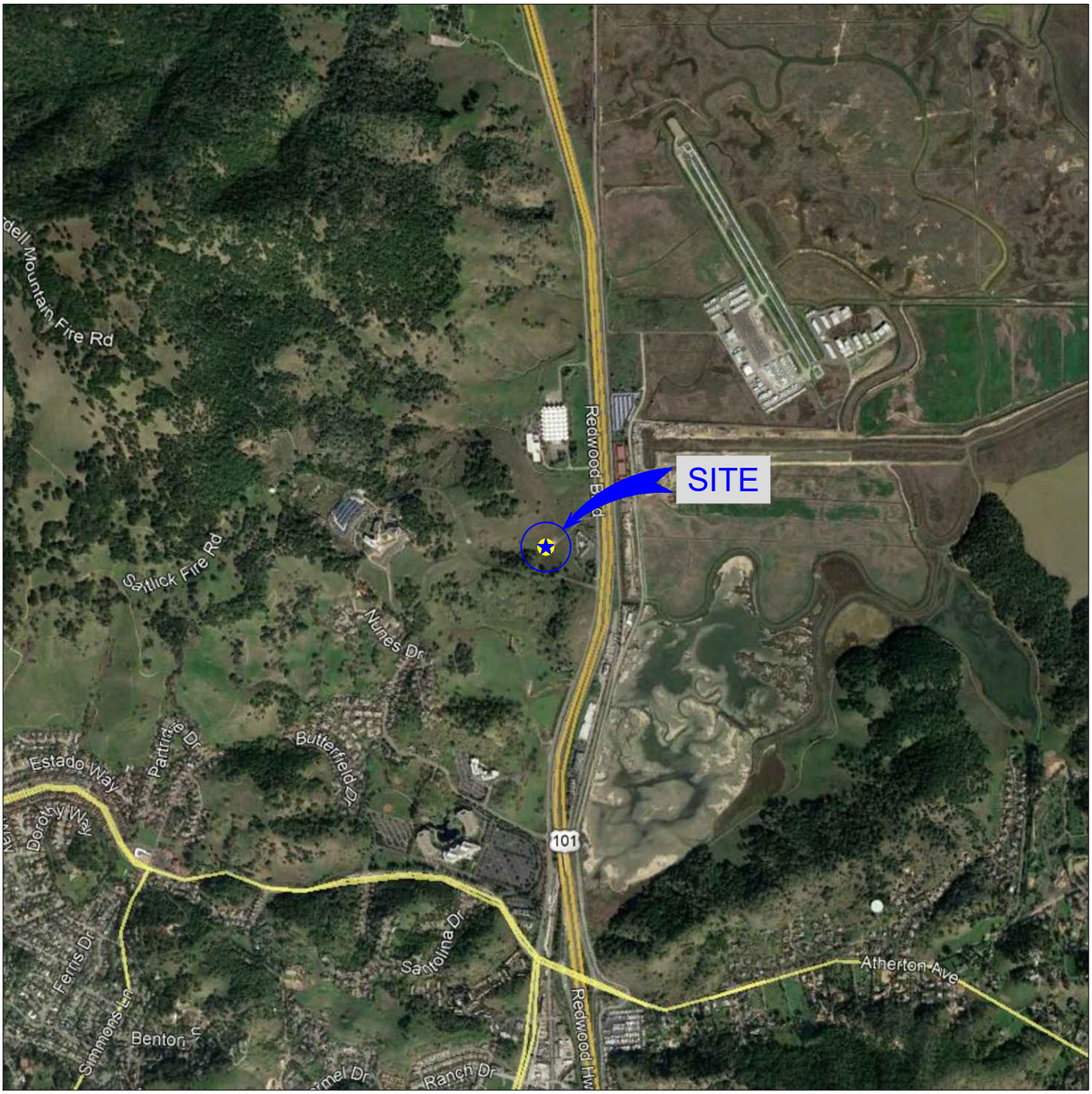
Rice, Salem J. 1974. Geology of the Western Novato Area, Marin County, California. California Division of Mines and Geology, open file report 75-1. Plate 1 West. Map scale 1:12,000

United States Geological Survey (2003), “Summary of Earthquake Probabilities in the San Francisco Bay Region, 2002 to 2032,” The 2003 Working Group on California Earthquake Probabilities, 2003.

United States Geological Survey (2008), “The Uniform California Earthquake Rupture Forecast, Version 2,” The 2007 Working Group on California Earthquake Probabilities, Open File Report 2007-1437, 2008.

United States Geological Survey (2013), “The Uniform California Earthquake Rupture Forecast, Version 3 (UCERF3) – The Time Independent Model”, USGS Open-File Report 2013-1165, CGS Special Report 228, Southern California Earthquake Center Publication 1792.

Youd, T.L. “Liquefaction-Induced Lateral Ground Displacement” (April 2, 1995). *International Conferences on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics.* Paper 3.



SITE COORDINATES
LAT. 38.1332°
LON. -122.5659°

SITE LOCATION

N.T.S.

NORTH

REFERENCE: Google Earth, 2018

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED

FILENAME: 1834.011 Std Figures.dwg

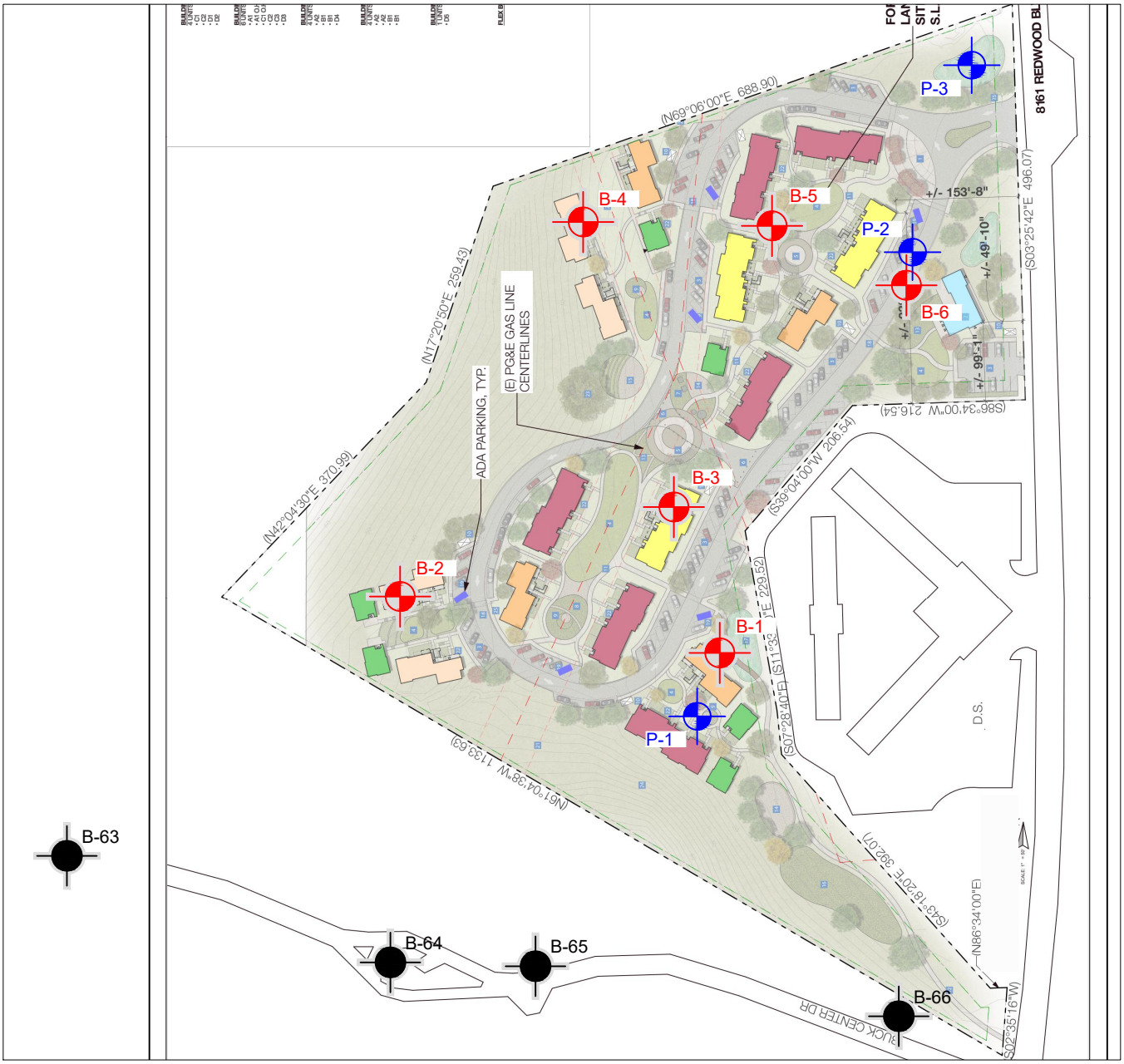
SITE LOCATION MAP

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 11/4/2020

Drawn ZMS
Checked

1
FIGURE



SITE PLAN

SCALE

0 100 200 400 FEET

NORTH

Approximate location of boring completed by MPEG, 2020

Approximate location of percoloation pipe installed by MPEG, 2020

Approximate location of boring completed by Alan Kropp and Associates, 1995

REFERENCE: Dorman Associates, "Habitat for Humanity Greater San Francisco - Habitat Redwood Boulevard" March 2, 2020.

MPEG MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED

FILENAME: 1834.011 Std Figures.dwg

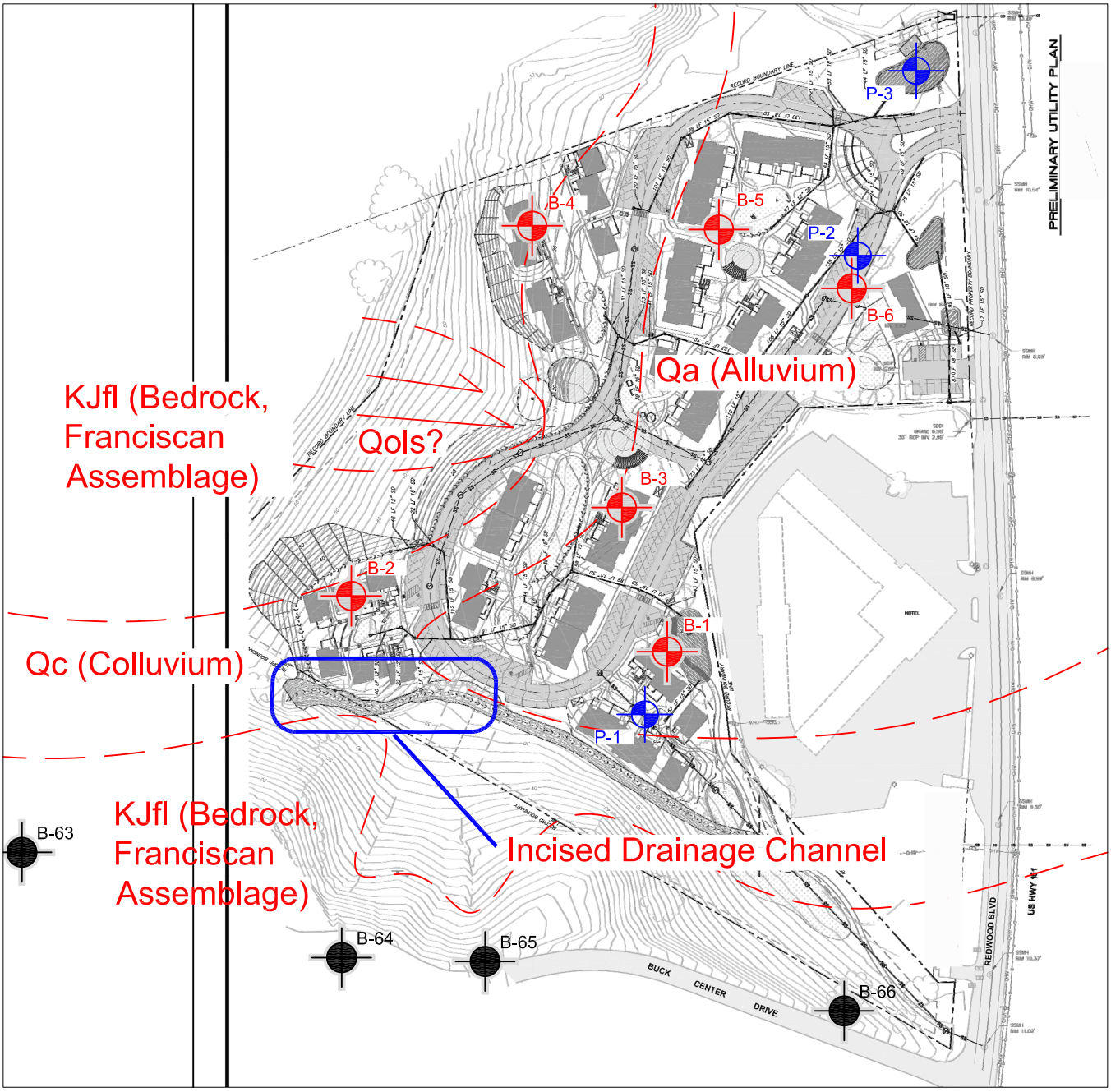
SITE PLAN

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 11/4/2020

Drawn ZMS
Checked

2
FIGURE



SITE PLAN

SCALE

0 100 200 400 FEET

NORTH

REFERENCE: DWC Group Inc., "Habitat for Humanity Preliminary Utility Plan" February 28, 2020.

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED

FILENAME: 1834.011 Std FIgures.dwg

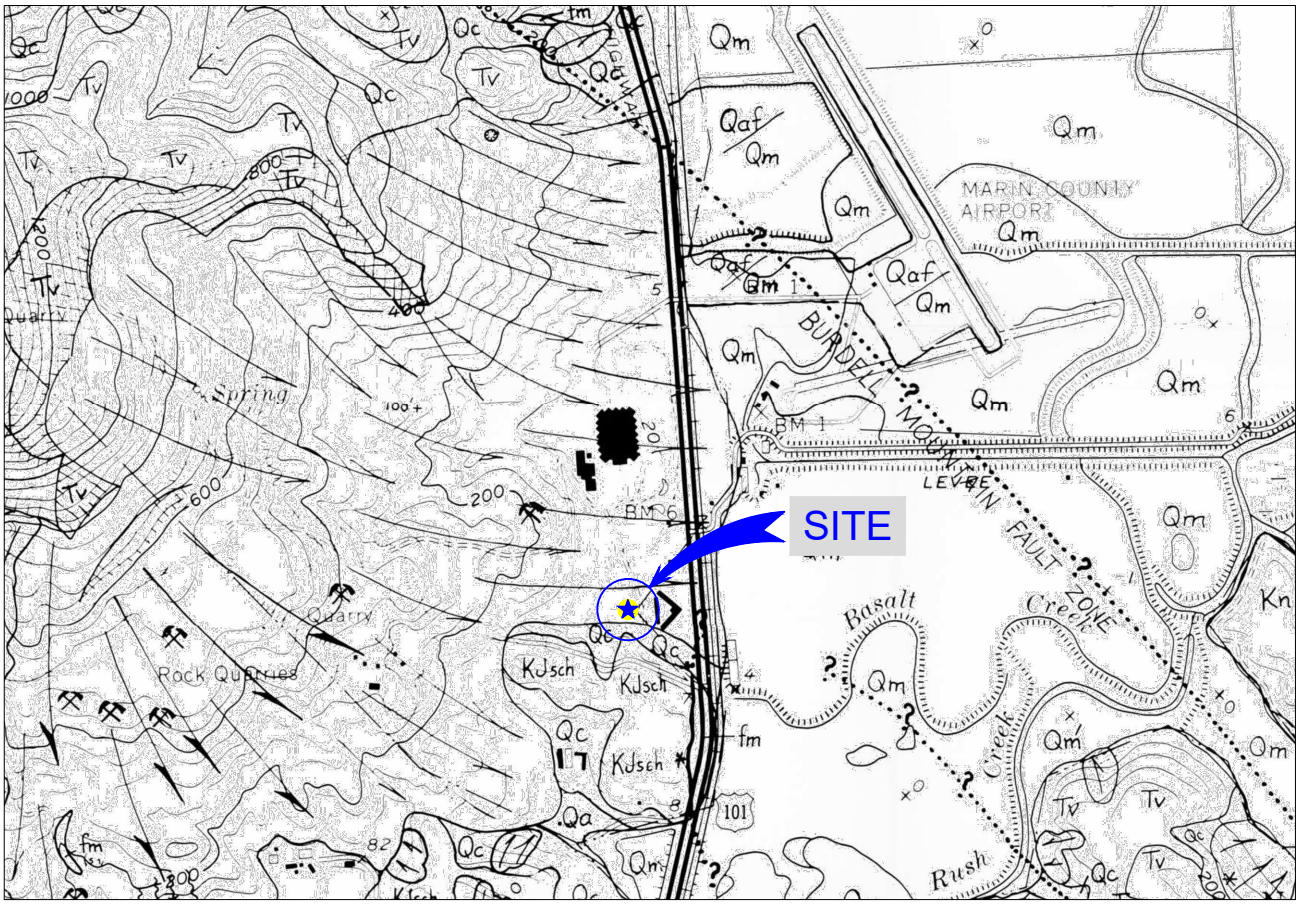
SITE SPECIFIC GEOLOGIC MAP

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 11/4/2020

Drawn ZMS
Checked

3
FIGURE



REGIONAL GEOLOGIC MAP

(NOT TO SCALE)

NORTH

LEGEND

Qc — Colluvium: Loosely consolidated and unsorted soil and rock debris derived from parent material, deposited at or below the bottom of slopes by natural gravitational or slope wash processes.

Qm — Bay Mud: Highly plastic, highly expansive, highly compressible silty clay with decomposed organic material deposited at and around the San Francisco and San Pablo Bays.

KJsch — Semi-schist, Phyllite and Schist: with associated metachert and metavolcanic rocks. Primarily metasedimentary rocks, most of which were orginally thinkly bedded graywacke and shale, are typically fine grained and dark bluish gray where fresh.

Landslide Deposit: Colluvium deposited downslope en masse or in increments by flow or creep processes.

Reference: Rice, Salem J. 1974. *Geology of the Western Novato Area, Marin County, California*. California Division of Mines and Geology, open file report 75-1. Plate 1 West. Map scale 1:12,000

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED

FILENAME: 1834.011 Std Figures.dwg

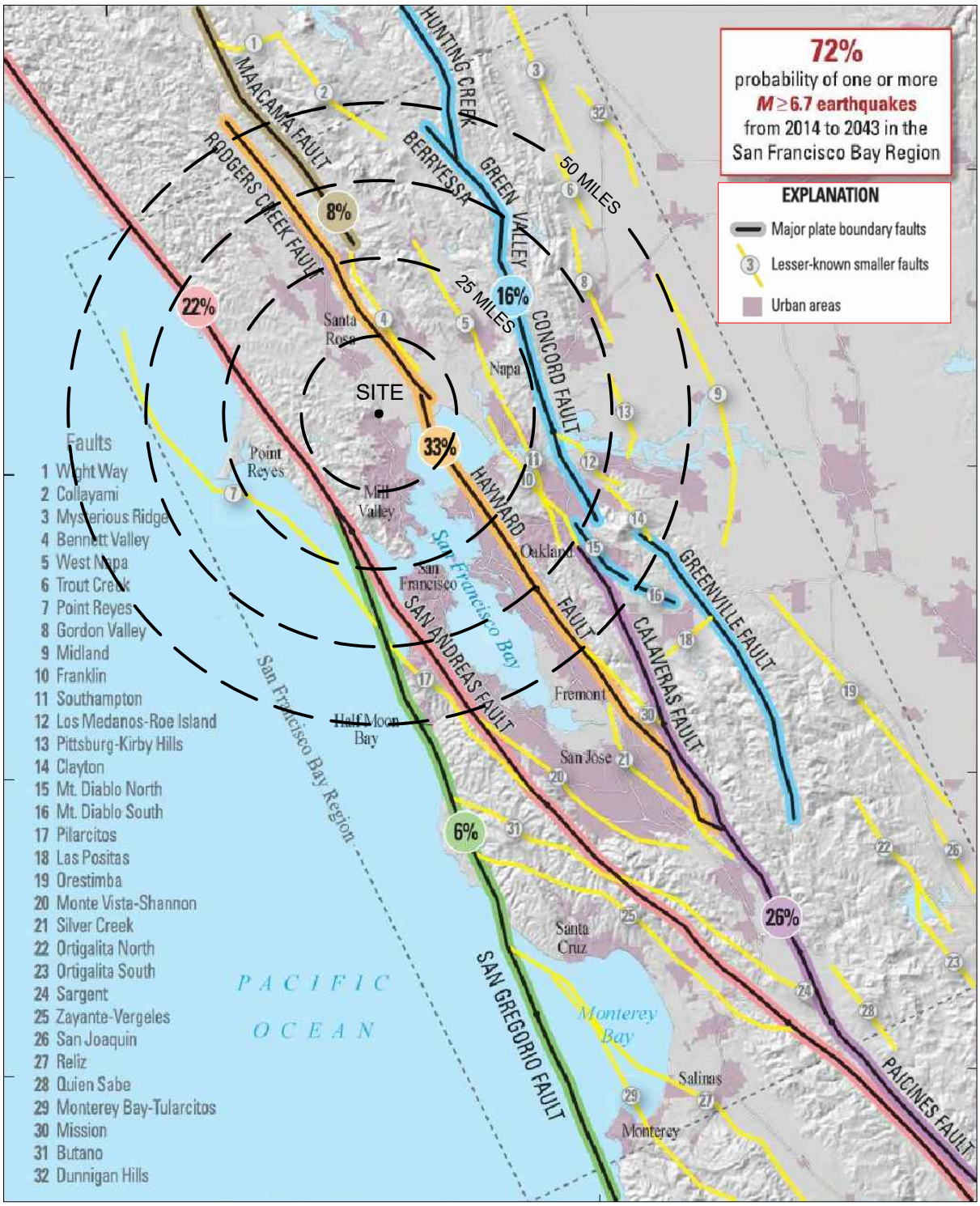
REGIONAL GEOLOGIC MAP

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 11/4/2020

Drawn ZMS
Checked

4
FIGURE



SITE COORDINATES
LAT. 38.1332°
LON. -122.5659°

SCALE
0 12.5 25 50 MILES

NORTH

DATA SOURCE:
1) U.S. Geological Survey, U.S. Department of the Interior, "Earthquake Outlook for the San Francisco Bay Region 2014-2043", Map of Known Active Faults in the San Francisco Bay Region, Fact Sheet 2016-3020, Revised August 2016 (ver. 1.1).

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED

FILENAME: 1834.011 Std Figures.dwg

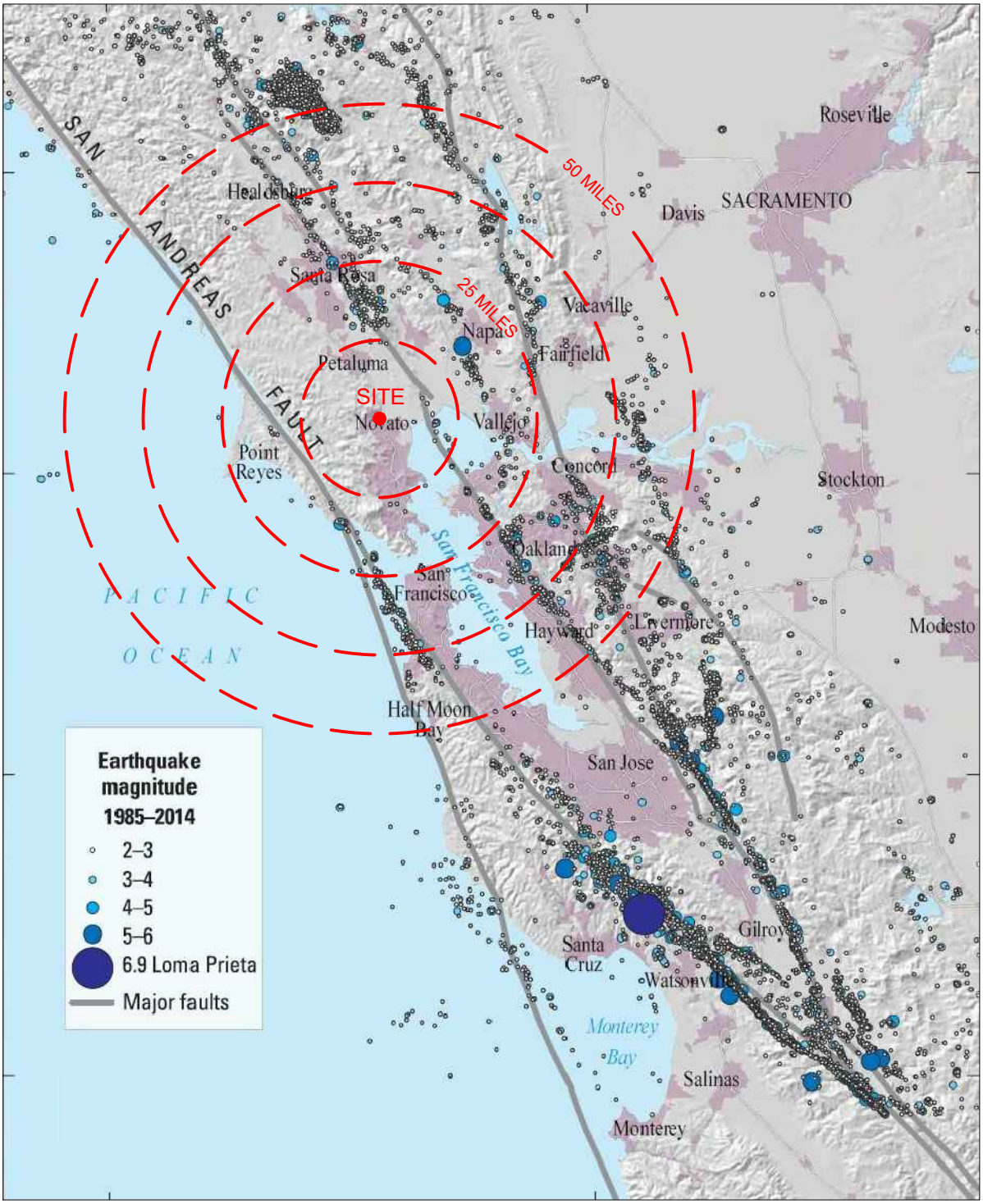
ACTIVE FAULT MAP

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 11/4/2020

Drawn ZMS
Checked

5
FIGURE



SITE COORDINATES
LAT. 38.1332°
LON. -122.5659°

SCALE
0 12.5 25 50 MILES

NORTH

DATA SOURCE:
1) U.S. Geological Survey, U.S. Department of the Interior, "Earthquake Outlook for the San Francisco Bay Region 2014-2043", Map of Earthquakes Greater Than Magnitude 2.0 in the San Francisco Bay Region from 1985-2014, Fact Sheet 2016-3020, Revised August 2016 (ver. 1.1).

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED
FILENAME: 1834.011 Std Figures.dwg

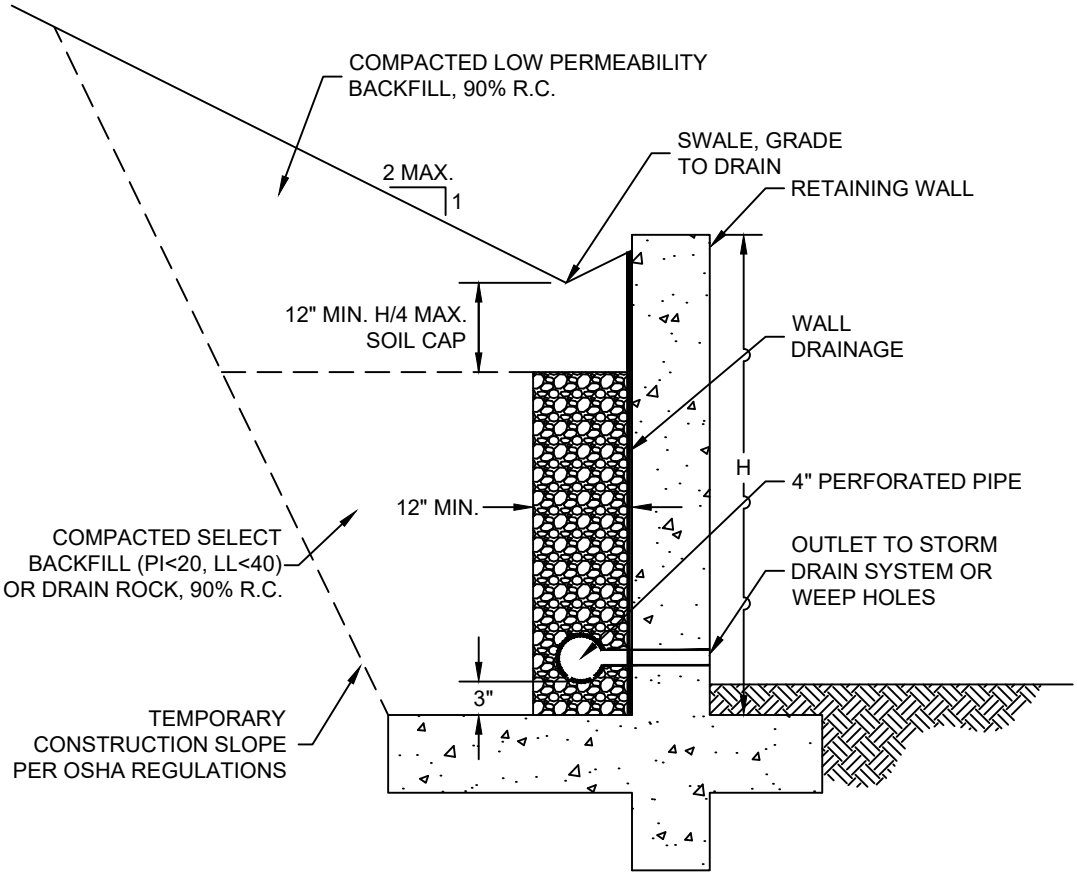
HISTORIC EARTHQUAKE MAP

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 11/4/2020

Drawn ZMS
Checked

6
FIGURE



NOTES:

1. Wall drainage should consist of clean, free draining 3/4 inch crushed rock (Class 1B Permeable Material) wrapped in filter fabric (Mirafi 140N or equivalent) or Class 2 Permeable Material. Alternatively, pre-fabricated drainage panels (Miradrain G100N or equivalent), installed per the manufacturers recommendations, may be used in lieu of drain rock and fabric.

2. All retaining walls adjacent to interior living spaces shall be water/vapor proofed as specified by the project architect or structural engineer.

3. Perforated pipe shall be SCH 40 or SDR 35 for depths less than 20 feet. Use SCH 80 or SDR 23.5 perforated pipe for depths greater than 20 feet. Place pipe perforations down and slope at 1% to a gravity outlet. Alternatively, drainage can be outlet through 3" diameter weep holes spaced approximately 20' apart.

4. Clean outs should be installed at the upslope end and at significant direction changes of the perforated pipe. Additionally, all angled connectors shall be long bend sweep connections.

5. During compaction, the contractor should use appropriate methods (such as temporary bracing and/or light compaction equipment) to avoid over-stressing the walls. Walls shall be completely backfilled prior to construction in front of or above the retaining wall.

6. Refer to the geotechnical report for lateral soil pressures.

7. All work and materials shall conform with Section 68, of the latest edition of the Caltrans Standard Specifications.

MPEG MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com
A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED
FILENAME: 1834.011 Std Figures.dwg

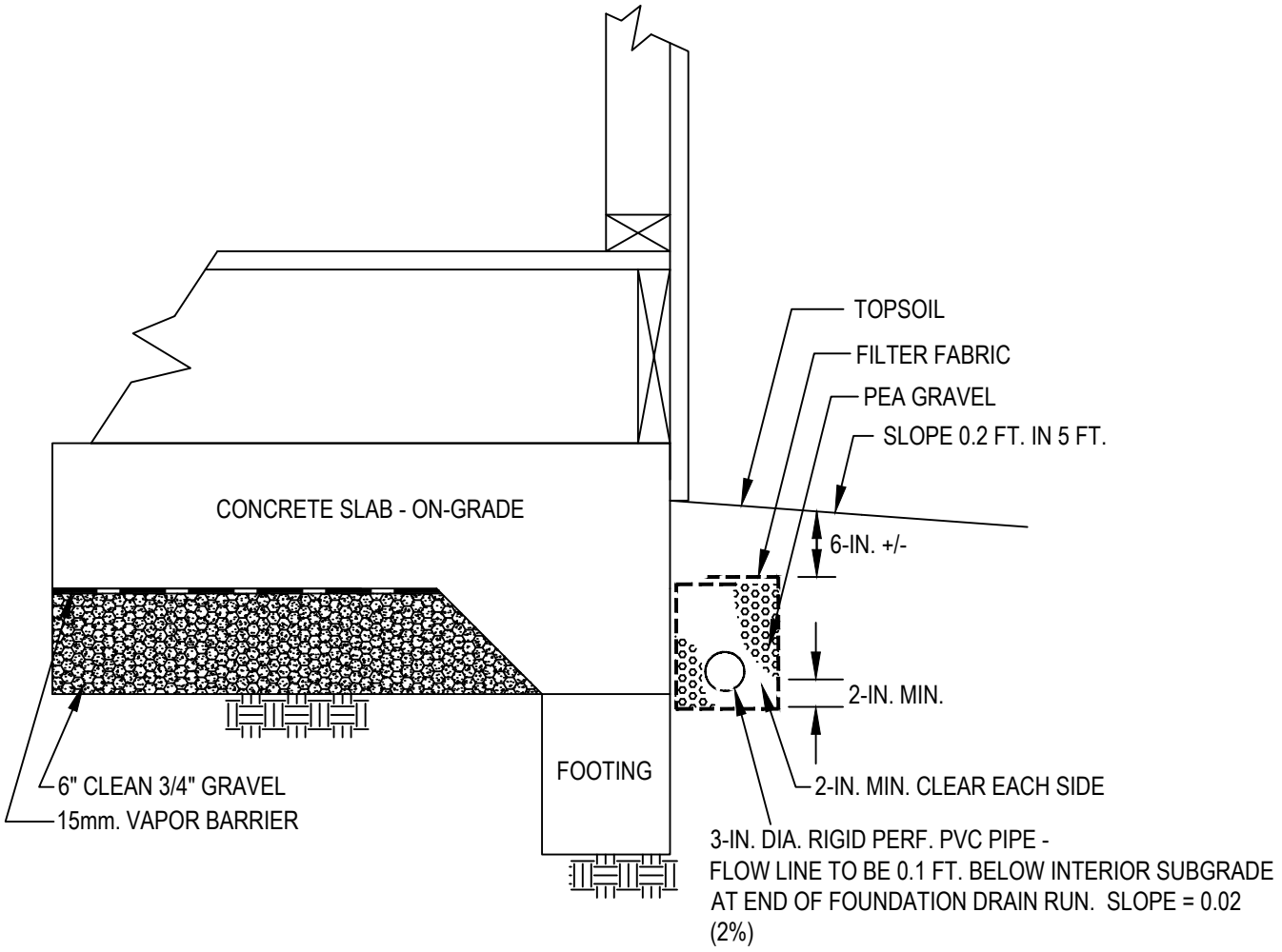
TYPICAL WALL BACKDRAIN DETAIL

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 11/4/2020

Drawn ZMS
Checked

7
FIGURE



NOTES:

(1.) DO NOT CONNECT DOWNSPOUT LEADER TO FOUNDATION DRAIN

(2.) DISCHARGE THROUGH 4-1N. DIAMETER, RIGID PVC PIPE

(3.) DISCHARGE THROUGH RIGID, NON-PERFORATED PIPE, SLOPE 0.02 (2%) UNLESS OTHERWISE SPECIFIED

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED

FILENAME: 1834.011 Std Figures.dwg

TYPICAL FOUNDATION DRAIN DETAIL

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 11/4/2020

Drawn ZMS
Checked

8
FIGURE

APPENDIX A
SUBSURFACE EXPLORATION (BORINGS) AND LABORATORY TESTING

1.0 Subsurface Exploration

We explored subsurface conditions at the site by drilling six test borings using a track-mounted drill rig equipped with 4-inch solid flight augers on September 29th and 30th, 2020. The approximate boring locations are shown on Figure 2. The borings were drilled to a maximum explored depth of 17.5-feet below the ground surface.

The soils encountered were logged and identified in the field by our Geologist in general accordance with ASTM Standard D 2487, "Field Identification and Description of Soils (Visual-Manual Procedure)." This standard is briefly explained on Soil and Rock Classification Charts. Figures A-1 and A-2, respectively. The Boring Logs are presented on Figures A-3 through A-8.

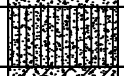
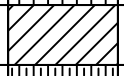
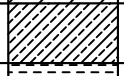
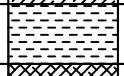
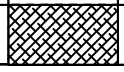
We obtained “undisturbed” samples using a 3-inch diameter, split-barrel modified California sampler with 2.5 by 6-inch brass tube liners or with a 2-inch diameter, split-barrel Standard Penetration Test (SPT) sampler. The sampler was driven with a 140-pound hammer falling 30 inches. The number of blows required to drive the samplers 18 inches was recorded and is reported on the boring logs as blows per foot for the last 12 inches of driving. The samples obtained were examined in the field, sealed to prevent moisture loss, and transported to our laboratory.

2.0 Laboratory Testing

We conducted laboratory tests on selected intact samples to verify field identifications and to evaluate engineering properties. The following laboratory tests were conducted in accordance with the ASTM standard test method cited:

- Laboratory Determination of Water (Moisture Content) of Soil, Rock, and Soil-Aggregate Mixtures, ASTM D 2216;
- Density of Soil in Place by the Drive-Cylinder Method, ASTM D 2937;
- Unconfined Compressive Strength of Cohesive Soil, ASTM D 2166;
- Standard Test Method for Expansion Index of Soils, ASTM D4829; and
- Liquid Limit, Plastic Limit, and Plasticity Index of Soils, ASTM D4318.

The moisture content, dry density, unconfined compressive strength, expansion index, and plasticity index results are shown on the exploratory Boring Logs, Figures A-3 through A-8. Plasticity Charts are presented on Figures A-9 and A-10. The results of the expansion index tests are presented on Figures A-11 through A-15. The exploratory boring logs, description of soils encountered, and the laboratory test data reflect conditions only at the location of the boring at the time they were excavated or retrieved. Conditions may differ at other locations and may change with the passage of time due to a variety of causes including natural weathering, climate, and changes in surface and subsurface drainage.

MAJOR DIVISIONS		SYMBOL		DESCRIPTION
COARSE GRAINED SOILS over 50% sand and gravel	CLEAN GRAVEL	GW		Well-graded gravels or gravel-sand mixtures, little or no fines
		GP		Poorly-graded gravels or gravel-sand mixtures, little or no fines
	GRAVEL with fines	GM		Silty gravels, gravel-sand-silt mixtures
		GC		Clayey gravels, gravel-sand-clay mixtures
	CLEAN SAND	SW		Well-graded sands or gravelly sands, little or no fines
		SP		Poorly-graded sands or gravelly sands, little or no fines
	SAND with fines	SM		Silty sands, sand-silt mixtures
		SC		Clayey sands, sand-clay mixtures
FINE GRAINED SOILS over 50% silt and clay	SILT AND CLAY liquid limit <50%	ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL		Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays
		OL		Organic silts and organic silt-clays of low plasticity
	SILT AND CLAY liquid limit >50%	MH		Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
		CH		Inorganic clays of high plasticity, fat clays
		OH		Organic clays of medium to high plasticity
HIGHLY ORGANIC SOILS		PT		Peat, muck, and other highly organic soils
ROCK				Undifferentiated as to type or composition

KEY TO BORING AND TEST PIT SYMBOLS

CLASSIFICATION TESTS

PI	PLASTICITY INDEX
LL	LIQUID LIMIT
SA	SIEVE ANALYSIS
HYD	HYDROMETER ANALYSIS
P200	PERCENT PASSING NO. 200 SIEVE
P4	PERCENT PASSING NO. 4 SIEVE

SAMPLER TYPE

- MODIFIED CALIFORNIA
- STANDARD PENETRATION TEST
- THIN-WALLED / FIXED PISTON
- HAND SAMPLER
- ROCK CORE
- X DISTURBED OR BULK SAMPLE

NOTE: Test boring and test pit logs are an interpretation of conditions encountered at the excavation location during the time of exploration. Subsurface rock, soil or water conditions may vary in different locations within the project site and with the passage of time. Boundaries between differing soil or rock descriptions are approximate and may indicate a gradual transition.

STRENGTH TESTS

TV	FIELD TORVANE (UNDRAINED SHEAR)
UC	LABORATORY UNCONFINED COMPRESSION
TXCU	CONSOLIDATED UNDRAINED TRIAXIAL
TXUU	UNCONSOLIDATED UNDRAINED TRIAXIAL
	UC, CU, UU = 1/2 Deviator Stress

SAMPLER DRIVING RESISTANCE

Modified California and Standard Penetration Test samplers are driven 18 inches with a 140-pound hammer falling 30 inches per blow. Blows for the initial 6-inch drive seat the sampler. Blows for the final 12-inch drive are recorded onto the logs. Sampler refusal is defined as 50 blows during a 6-inch drive. Examples of blow records are as follows:

- 25 sampler driven 12 inches with 25 blows after initial 6-inch drive
- 85/7" sampler driven 7 inches with 85 blows after initial 6-inch drive
- 50/3" sampler driven 3 inches with 50 blows during initial 6-inch drive or beginning of final 12-inch drive

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED

FILENAME: 1834.011 BL.dwg

SOIL CLASSIFICATION CHART

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-1
FIGURE

FRACTURING AND BEDDING

Fracture Classification	Spacing	Bedding Classification
Crushed	less than 3/4 inch	Laminated
Intensely fractured	3/4 to 2-1/2 inches	Very thinly bedded
Closely fractured	2-1/2 to 8 inches	Thinly bedded
Moderately fractured	8 to 24 inches	Medium bedded
Widely fractured	2 to 6 feet	Thickly bedded
Very widely fractured	greater than 6 feet	Very thickly bedded

HARDNESS

Low	Carved or gouged with a knife
Moderate	Easily scratched with a knife, friable
Hard	Difficult to scratch, knife scratch leaves dust trace
Very hard	Rock scratches metal

STRENGTH

Friable	Crumbles by rubbing with fingers
Weak	Crumbles under light hammer blows
Moderate	Indentations <1/8 inch with moderate blow with pick end of rock hammer
Strong	Withstands few heavy hammer blows, yields large fragments
Very strong	Withstands many heavy hammer blows, yields dust, small fragments

WEATHERING

Complete	Minerals decomposed to soil, but fabric and structure preserved
High	Rock decomposition, thorough discoloration, all fractures are extensively coated with clay, oxides or carbonates
Moderate	Fracture surfaces coated with weathering minerals, moderate or localized discoloration
Slight	A few stained fractures, slight discoloration, no mineral decomposition, no affect on cementation
Fresh	Rock unaffected by weathering, no change with depth, rings under hammer impact

NOTE: Test boring and test pit logs are an interpretation of conditions encountered at the location and time of exploration. Subsurface rock, soil and water conditions may differ in other locations and with the passage of time.

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED

FILENAME: 1834.011 BL.dwg

ROCK CLASSIFICATION CHART

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-2
FIGURE

BORING 1

EQUIPMENT: Track-Mounted Drill Rig with 4.0-inch Solid Flight Auger
DATE: 9/30/2020
ELEVATION: 16 - feet*
*REFERENCE: Google Earth, 2020

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
0	0			Sandy CLAY (CL) Medium gray brown, dry to moist, very stiff, medium plasticity clay, ~25-35% fine to coarse grained sand, occasional small weathered sandstone gravels. [Alluvium]	34	105	8.4	UC 1640	LL:35 PI:15	EI 37
1	5			CLAY with Sand (CH) Dark brown, moist, very stiff, medium to high plasticity clay, ~10-20% fine to coarse grained sand, trace gravel. [Alluvium]	32	111	13.7	UC 6600		
2	10			Grades medium brown.	38	108	18.1			
3	15			BLUESCHIST Medium olive brown, strong, abundant micas, highly to moderately weathered. [Bedrock]	50/6"	131	9.9			
4	20			Boring terminated at 16.0 feet. Groundwater measured at 15.0 feet upon completion of exploration. Monitoring well and pea gravel installed with 2 foot cohesive soil cap. Groundwater measured at 13.0 feet on 11/5/2020 at 3:00pm.						
5										
6										

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED

FILENAME: 1834.011 BL.dwg

BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-3
FIGURE

BORING 2

EQUIPMENT: Track-Mounted Drill Rig with 4.0-inch Solid Flight Auger
DATE: 9/30/2020
ELEVATION: 44 - feet*
*REFERENCE: Google Earth, 2020

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
0	0			Sandy CLAY (CL)						
				Medium brown mottled light and dark gray, brown and red, dry to moist, very stiff, medium plasticity clay, ~15-35% fine to coarse grained sand, completely weathered sandstone gravels. [Alluvium]	41	120	10.5	UC 5090	LL:42 PI:19	EI 49
1	5			Grades contain sandstone and shale gravels.	40	120	12.1	UC 4310		
2	10				37	120	12.3			
3	15				75/6"		6.9			
4				Boring terminated at 15.0 feet. No groundwater encountered during exploration.						
5										
6	20									

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED
FILENAME: 1834.011 BL.dwg

BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-4
FIGURE

BORING 3

EQUIPMENT: Track-Mounted Drill Rig with 4.0-inch Solid Flight Auger
DATE: 9/29/2020
ELEVATION: 13 - feet*
*REFERENCE: Google Earth, 2020

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
0	0			Sandy CLAY (CL) Medium brown, dry to moist, stiff, medium plasticity clay, ~30% fine to coarse grained sand. [Alluvium]						
				Sandy CLAY (CL-CH) Dark brown, dry to moist, very stiff, medium plasticity clay, ~30% fine to coarse grained sand, trace gravel. [Alluvium]	23	119	11.7	UC 6020	LL:50 PI:28	
1	5			Grades mottled light and dark gray, red, brown.	35	102	15.9			
2				METASILTSTONE Medium olive brown, low hardness, weak, completely weathered. [Bedrock]						
3	10				40	108	19.4			
4										
	15				71/8"		7.0			
5				Boring terminated at 15.5 feet. No groundwater encountered during exploration.						
6	20									

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED
FILENAME: 1834.011 BL.dwg

BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California

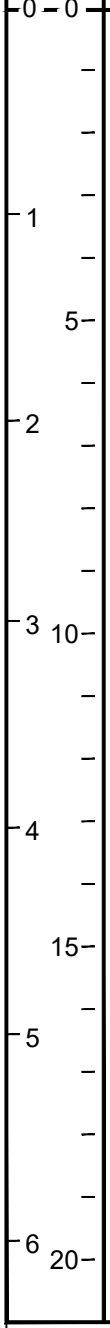
Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-5
FIGURE

BORING 4

EQUIPMENT: Track-Mounted Drill Rig with 4.0-inch Solid Flight Auger
DATE: 9/30/2020
ELEVATION: 37 - feet*
*REFERENCE: Google Earth, 2020



DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
0	0			Sandy CLAY (CL-CH) Medium brown, dry to moist, stiff, medium plasticity clay, ~20% fine to coarse grained sand, trace gravel. [Qls]	57	123	9.4	UC 6590	LL:50 PI:27	EI 132
	5			SANDSTONE Light gray brown, fine grained, low hardness, weak, highly to completely weathered. [Bedrock]	40		9.3			
3	10				74		8.6			
				Boring terminated at 11.5 feet. No groundwater encountered during exploration.						
4	15									
5										
6	20									

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED
FILENAME: 1834.011 BL.dwg

BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California
Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-6
FIGURE

BORING 5

EQUIPMENT: Track-Mounted Drill Rig with 4.0-inch Solid Flight Auger
DATE: 9/29/2020
ELEVATION: 31 - feet*
*REFERENCE: Google Earth, 2020

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
0	0			Sandy CLAY (CL) Medium brown, dry to moist, stiff, medium plasticity clay, ~30% fine to coarse grained sand. [Fill]						
				CLAY (CL) Dark brown, moist, stiff, medium plasticity clay, trace sand. [Alluvium]	17	100	15.0	UC 1780	LL:38 PI:15	EI 32
1	5				23	108	18.2	UC 3070		
2										
3	10			Grades medium brown, very stiff.	31	113	20.4	UC 2940		
4										
	15				35	115	19.0			
5				Boring terminated at 16.5 feet. Groundwater measured at 12.5 feet upon completion of exploration.						
6	20									

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED
FILENAME: 1834.011 BL.dwg

BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-7
FIGURE

BORING 6

EQUIPMENT: Track-Mounted Drill Rig with 4.0-inch Solid Flight Auger
DATE: 9/29/2020
ELEVATION: 12 - feet*
*REFERENCE: Google Earth, 2020

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
0	0			Sandy CLAY (CL-ML) Medium brown, dry to moist, stiff, medium plasticity clay, ~30% fine to coarse grained sand, ~10-15% gravel. [Fill]	17	87	16.5	UC 1730	LL:41 PI:15	EI 65
1	5			CLAY (CH) Dark brown, moist, stiff, medium to high plasticity clay, trace sand. [Alluvium]	15	97	22.7	UC 2040		
2	10			Grades very stiff.	26		21.9			
3	15				39	108	21.2	UC 5030		
4	20			Boring terminated at 17.5 feet. Groundwater encountered at 13.0 feet during exploration. Groundwater measured at 7.7 feet upon completion of exploration. Monitoring well and pea gravel installed with 2 foot cohesive soil cap. Groundwater measured at 5.5 feet on 11/5/2020 at 3:30pm.						
5										
6										

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED
FILENAME: 1834.011 BL.dwg

BORING LOG

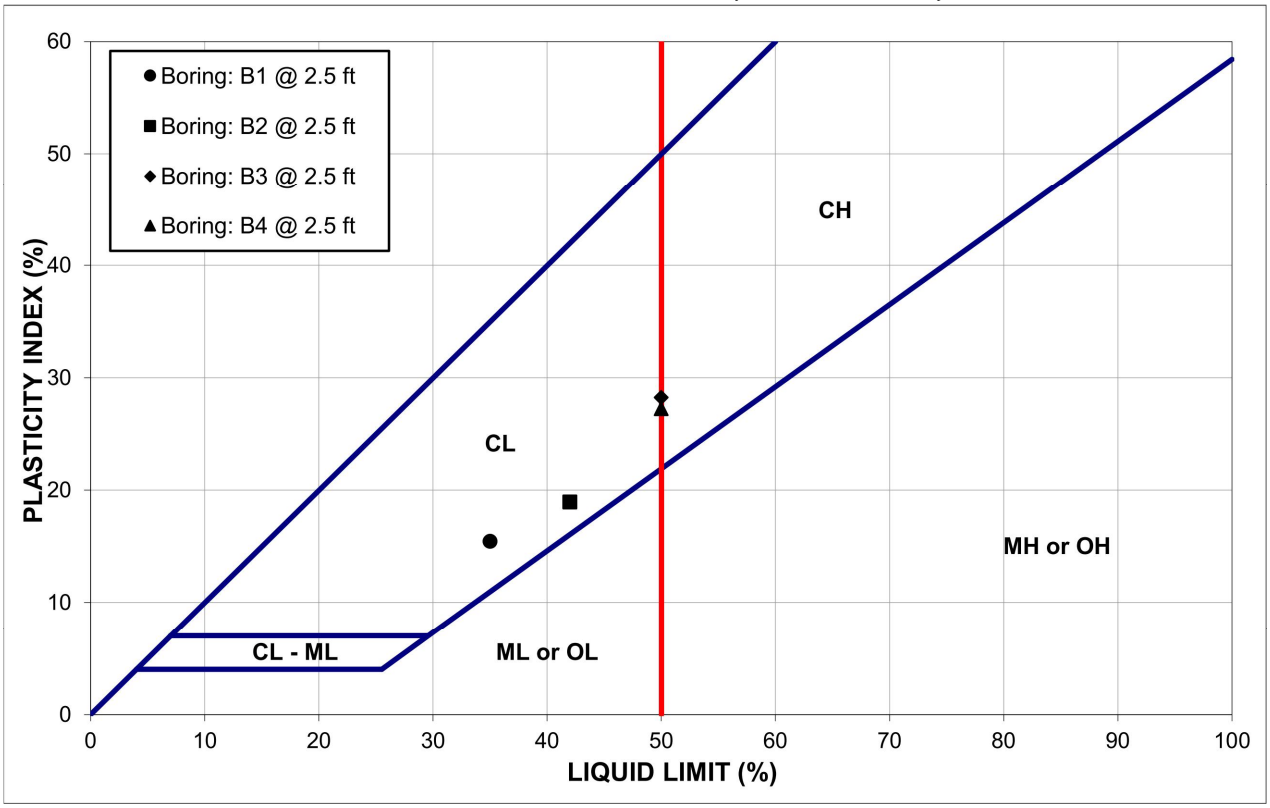
Habitat for Humanity
8161 Redwood Blvd
Novato, California
Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-8
FIGURE

MILLER PACIFIC ENGINEERING GROUP

ATTERBERG LIMITS TEST (ASTM D 4318)



Sample	Classification	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
Boring: B1 @ 2.5 ft	Sandy CLAY (CL) medium brown	35	20	15
Boring: B2 @ 2.5 ft	CLAY with Sand (CL) medium brown	42	23	19
Boring: B3 @ 2.5 ft	Sandy CLAY (CL-CH) medium brown	50	22	28
Boring: B4 @ 2.5 ft	Sandy CLAY (CL-CH) medium brown	50	23	27

PI = 0-3: Non-Plastic
PI = 3-15: Slightly Plastic
PI = 15-30: Medium Plasticity
PI = >30: High Plasticity

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED

FILENAME: 1834.011 BL.dwg

PLASTICITY INDEX TEST RESULTS

Habitat for Humanity
8161 Redwood Blvd
Novato, California

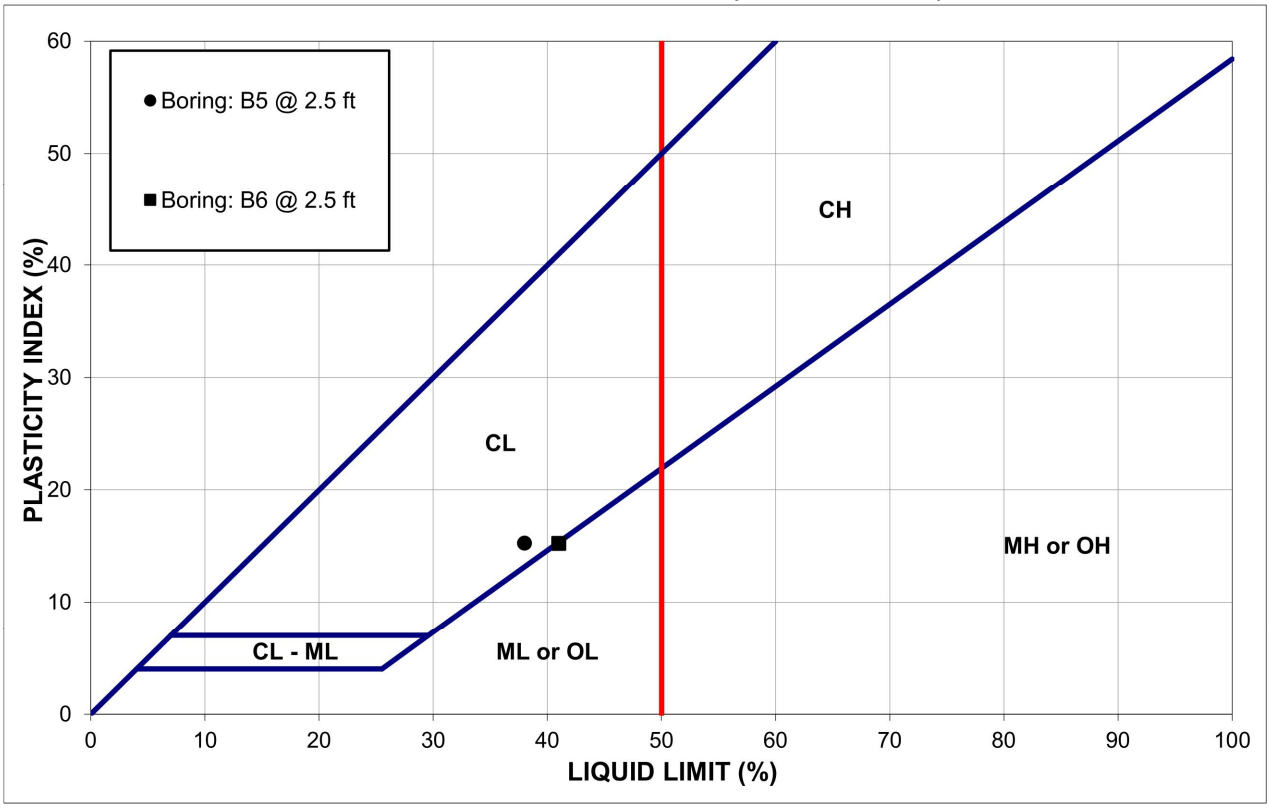
Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-9
FIGURE

MILLER PACIFIC ENGINEERING GROUP

ATTERBERG LIMITS TEST (ASTM D 4318)



Sample	Classification	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
Boring: B5 @ 2.5 ft	Sandy CLAY (CL) medium brown	38	23	15
Boring: B6 @ 2.5 ft	Sandy CLAY (CL-ML) medium brown	41	26	15

PI = 0-3: Non-Plastic
PI = 3-15: Slightly Plastic
PI = 15-30: Medium Plasticity
PI = >30: High Plasticity

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED

FILENAME: 1834.011 BL.dwg

PLASTICITY INDEX TEST RESULTS

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-10
FIGURE

EXPANSION INDEX (ASTM D4829)

Project Name: 8161 Redwood Blvd Tested By: BPC Date: 10/6/2020

Project Number: 1834.011 Sample Source: B1@2.5

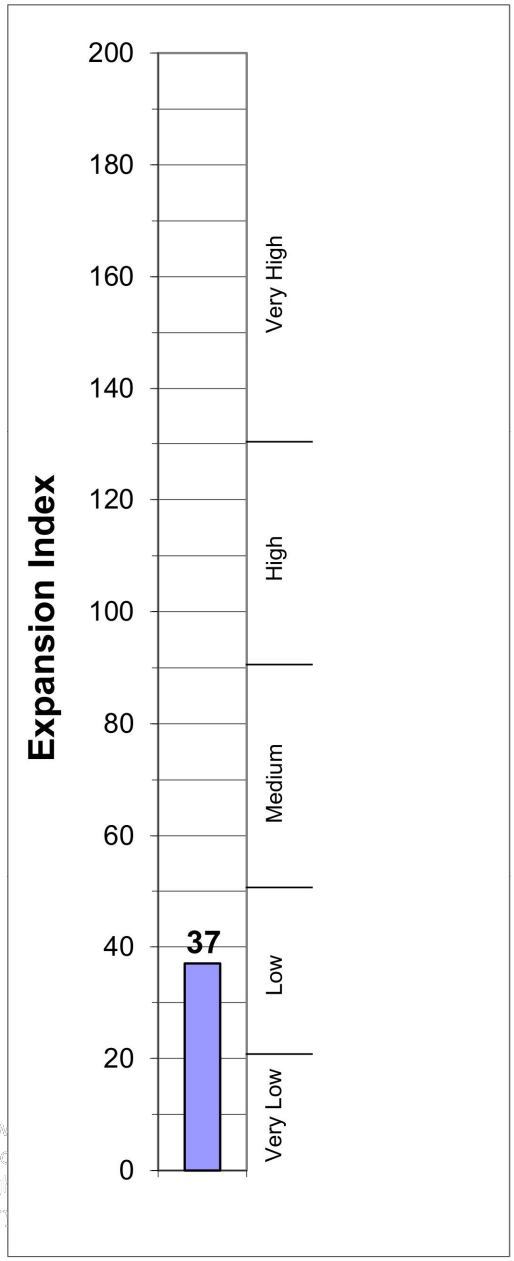
Sample Description: Sandy CLAY, Medium brown

Sample Height before Saturation (in.):	1.000
Sample/Ring Diameter: (in.):	4.000
Sample Volume before Saturation (cu.ft.):	0.007272
Ring Number:	EI-0
Ring Tare (gm):	366.2
Weight Ring + Moist Soil (gm):	761.4
Approx. Moisture Content (%):	
Estimated Specific Gravity (2.60-2.70):	2.68
Approx. EI Dry Density (pcf):	
Approximate Saturation:	50.0%

Dial Readings with 1 psi Load:

Start Time:	7:44	Dial Reading T0:	0.0000
Time 1:	7:51	Dial Reading T1:	0.0131
Time 2:	10:55	Dial Reading T2:	0.0371
Time 3:	12:07	Dial Reading T3:	0.0375
Time 4:	1:30	Dial Reading T4:	0.0377
Time 5:		Dial Reading T5:	

Final Height of Sample (in.):	1.038
Pan Identification:	22T
Weight of Ring + Wet Soil + Pan (gm):	1250.5
Pan Tare (gm):	447.7
Weight of Ring + Dry Soil + Pan (gm):	1174.2
Initial Moisture Content:	9.7%
Initial Dry Density (pcf):	109.2
Prepared Sample Saturation:	48.9%
Percent Expansion:	3.8%
Final Moisture Content:	21.2%
Final Dry Density (pcf):	105.3
***EI*$_{50}$:**	37
Potential Expansion	Low



20.5 Low
50.5 Med
90.5 High
130.5 Very

MPEG MILLER PACIFIC ENGINEERING GROUP

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED

FILENAME: 1834.011 BL.dwg

504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

EXPANSION INDEX TEST RESULTS

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-11
FIGURE

EXPANSION INDEX (ASTM D4829)

Project Name: 8161 Redwood Blvd Tested By: MNT Date: 10/13/2020

Project Number: 1834.011 Sample Source: B2@2.5

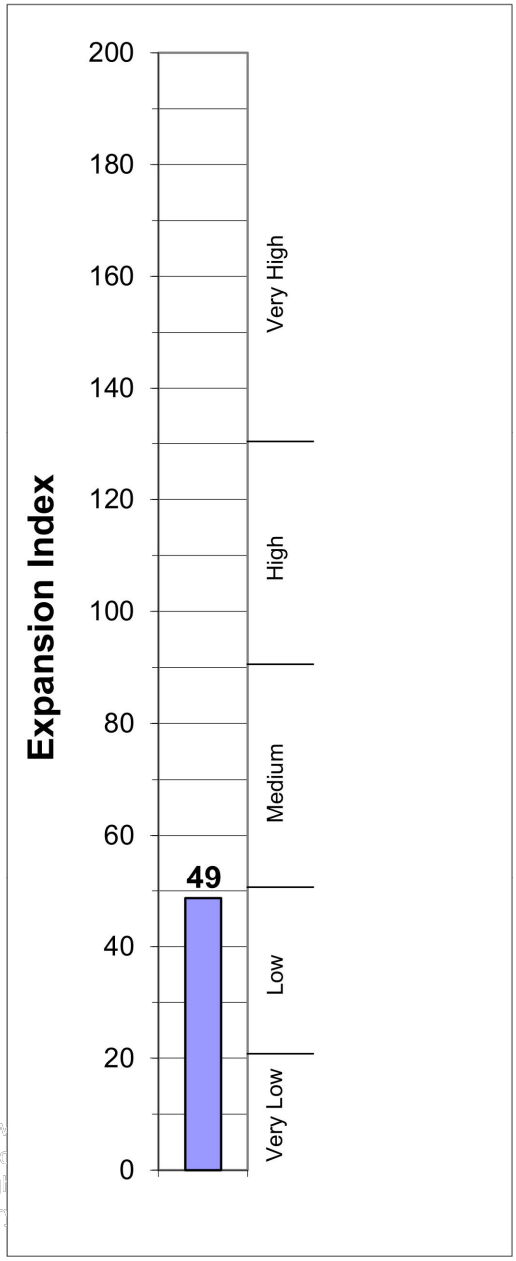
Sample Description: CLAY with Sand, medium brown

Sample Height before Saturation (in.):	1.000
Sample/Ring Diameter: (in.):	4.000
Sample Volume before Saturation (cu.ft.):	0.007272
Ring Number:	EI4
Ring Tare (gm):	367.1
Weight Ring + Moist Soil (gm):	790.3
Approx. Moisture Content (%):	
Estimated Specific Gravity (2.60-2.70):	2.68
Approx. EI Dry Density (pcf):	
Approximate Saturation:	50.0%

Dial Readings with 1 psi Load:

Start Time:	10:15	Dial Reading T0:	0.0000
Time 1:	10:22	Dial Reading T1:	0.0018
Time 2:	11:15	Dial Reading T2:	0.0076
Time 3:	12:02	Dial Reading T3:	0.0128
Time 4:	2:02	Dial Reading T4:	0.0333
Time 5:	4:46	Dial Reading T5:	0.0377

Final Height of Sample (in.):	1.034
Pan Identification:	5T
Weight of Ring + Wet Soil + Pan (gm):	1251.1
Pan Tare (gm):	438.5
Weight of Ring + Dry Soil + Pan (gm):	1181.3
Initial Moisture Content:	12.6%
Initial Dry Density (pcf):	113.9
Prepared Sample Saturation:	72.4%
Percent Expansion:	3.4%
Final Moisture Content:	18.6%
Final Dry Density (pcf):	110.2
***EI*$_{50}$:**	49
Potential Expansion	Low



MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED

FILENAME: 1834.011 BL.dwg

EXPANSION INDEX TEST RESULTS

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-12
FIGURE

EXPANSION INDEX (ASTM D4829)

Project Name: 8161 Redwood Blvd Tested By: BPC Date: 10/6/2020

Project Number: 1834.011 Sample Source: B4@2.5

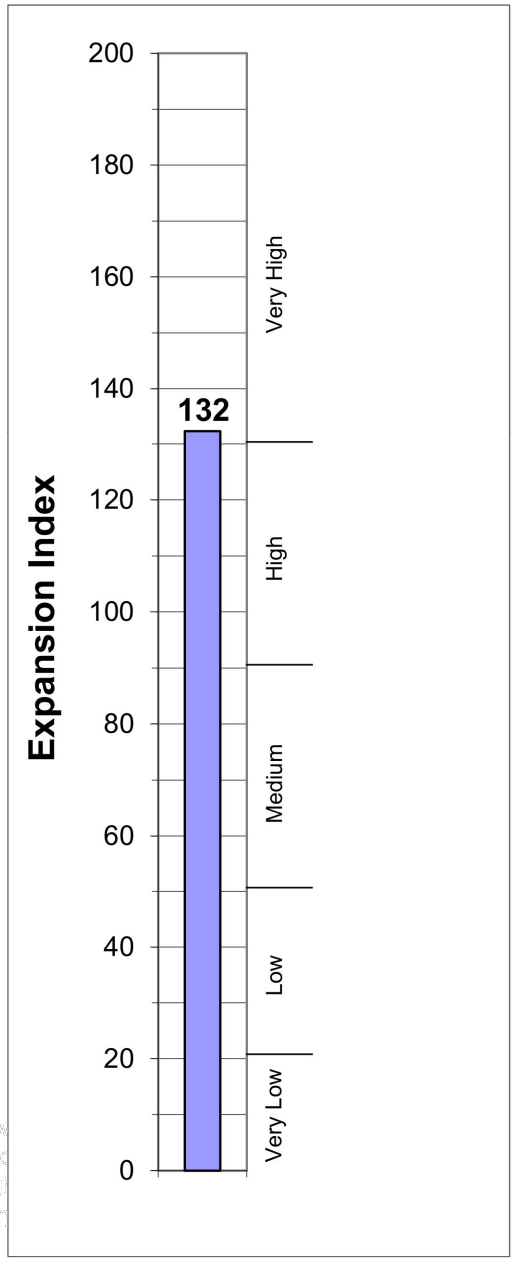
Sample Description: CLAY w/ Silt, Medium brown

Sample Height before Saturation (in.):	1.000
Sample/Ring Diameter: (in.):	4.000
Sample Volume before Saturation (cu.ft.):	0.007272
Ring Number:	EI4
Ring Tare (gm):	367.1
Weight Ring + Moist Soil (gm):	766.6
Approx. Moisture Content (%):	
Estimated Specific Gravity (2.60-2.70):	2.68
Approx. EI Dry Density (pcf):	
Approximate Saturation:	50.0%

Dial Readings with 1 psi Load:

Start Time:	10:03	Dial Reading T0:	0.0000
Time 1:	10:06	Dial Reading T1:	0.0072
Time 2:	10:56	Dial Reading T2:	0.0673
Time 3:	11:21	Dial Reading T3:	0.0866
Time 4:	1:45	Dial Reading T4:	0.1220
Time 5:	4:30	Dial Reading T5:	0.1262

Final Height of Sample (in.):	1.126
Pan Identification:	17T
Weight of Ring + Wet Soil + Pan (gm):	1259.2
Pan Tare (gm):	437.9
Weight of Ring + Dry Soil + Pan (gm):	1164.9
Initial Moisture Content:	11.0%
Initial Dry Density (pcf):	109.1
Prepared Sample Saturation:	55.3%
Percent Expansion:	12.6%
Final Moisture Content:	26.2%
Final Dry Density (pcf):	96.9
***EI*$_{50}$:**	132
Potential Expansion	Very High



MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED

FILENAME: 1834.011 BL.dwg

EXPANSION INDEX TEST RESULTS

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-13
FIGURE

EXPANSION INDEX (ASTM D4829)

Project Name: 8161 Redwood Blvd Tested By: MNT Date: 10/12/2020

Project Number: 1834.011 Sample Source: B5@2.5

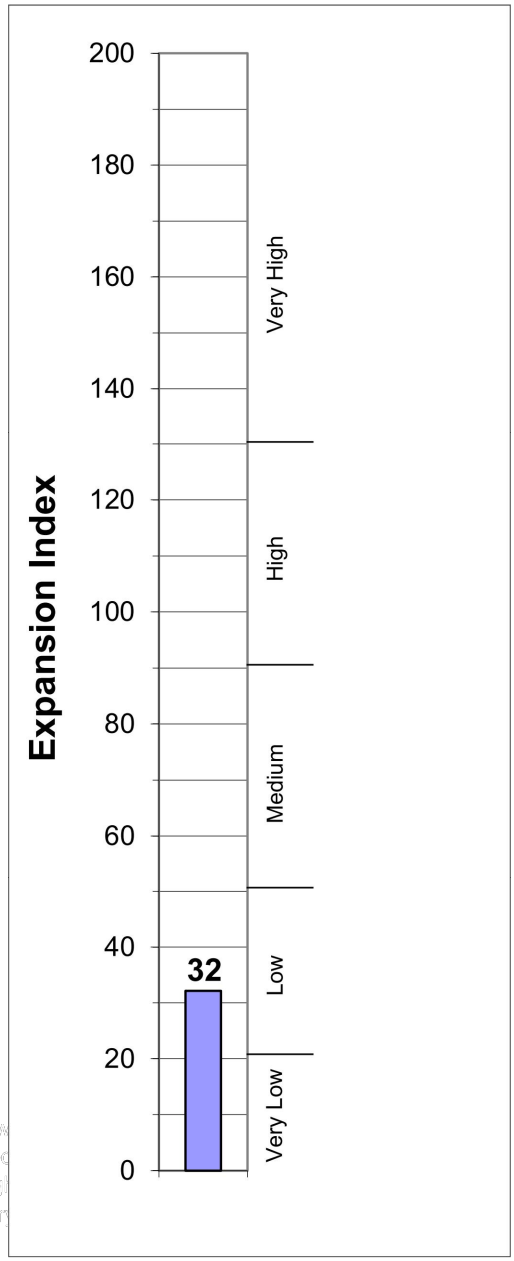
Sample Description: Sandy CLAY, Medium brown

Sample Height before Saturation (in.):	1.000
Sample/Ring Diameter: (in.):	4.000
Sample Volume before Saturation (cu.ft.):	0.007272
Ring Number:	EI4
Ring Tare (gm):	367
Weight Ring + Moist Soil (gm):	744.4
Approx. Moisture Content (%):	
Estimated Specific Gravity (2.60-2.70):	2.68
Approx. EI Dry Density (pcf):	
Approximate Saturation:	50.0%

Dial Readings with 1 psi Load:

Start Time:	10:34	Dial Reading T0:	0.0000
Time 1:	10:41	Dial Reading T1:	0.0350
Time 2:	12:20	Dial Reading T2:	0.0369
Time 3:	1:44	Dial Reading T3:	0.0377
Time 4:	4:10	Dial Reading T4:	0.0384
Time 5:	4:22	Dial Reading T5:	0.0384

Final Height of Sample (in.):	1.038
Pan Identification:	14T
Weight of Ring + Wet Soil + Pan (gm):	1222.0
Pan Tare (gm):	428.0
Weight of Ring + Dry Soil + Pan (gm):	1142.7
Initial Moisture Content:	8.5%
Initial Dry Density (pcf):	105.4
Prepared Sample Saturation:	39.0%
Percent Expansion:	3.8%
Final Moisture Content:	22.8%
Final Dry Density (pcf):	101.5
***EI*$_{50}$:**	32
Potential Expansion	Low



MILLER PACIFIC ENGINEERING GROUP	504 Redwood Blvd.	EXPANSION INDEX TEST RESULTS	
	Suite 220	Habitat for Humanity 8161 Redwood Blvd Novato, California	Drawn MMT Checked
	Novato, CA 94947		A-14
	T 415 / 382-3444		FIGURE
	F 415 / 382-3450	Project No. 1834.011 Date: 10/15/2020	
	www.millerpac.com		

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED

FILENAME: 1834.011 BL.dwg

EXPANSION INDEX (ASTM D4829)

Project Name: 8161 Redwood Blvd Tested By: BPC Date: 10/9/2020

Project Number: 1834.011 Sample Source: B6@2.5

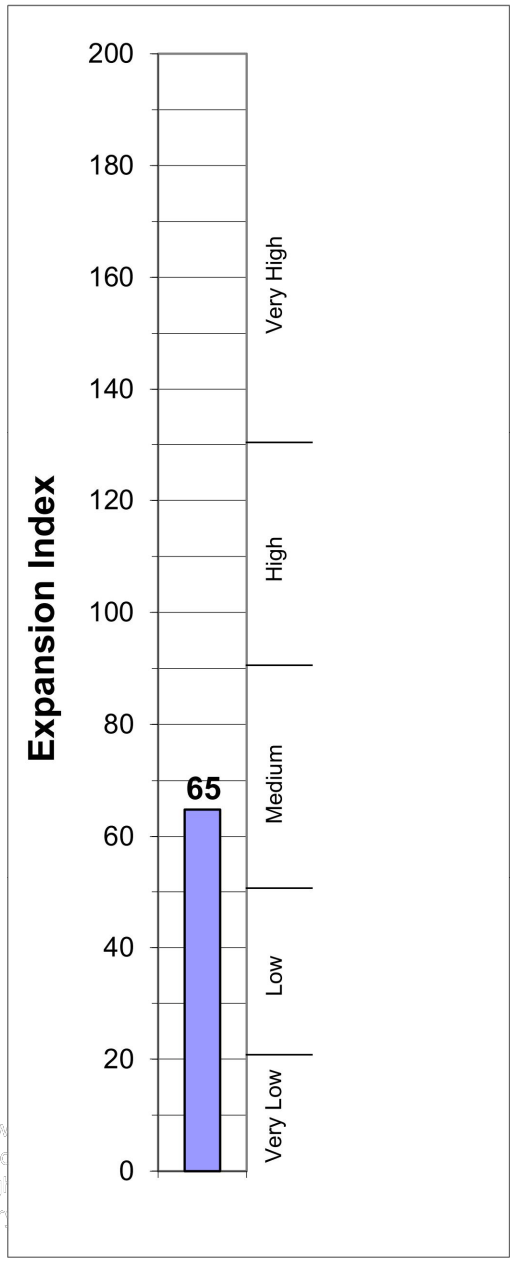
Sample Description: Sandy CLAY, Medium brown

Sample Height before Saturation (in.):	1.000
Sample/Ring Diameter: (in.):	4.000
Sample Volume before Saturation (cu.ft.):	0.007272
Ring Number:	EI-0
Ring Tare (gm):	366.2
Weight Ring + Moist Soil (gm):	761.3
Approx. Moisture Content (%):	
Estimated Specific Gravity (2.60-2.70):	2.68
Approx. EI Dry Density (pcf):	
Approximate Saturation:	50.0%

Dial Readings with 1 psi Load:

Start Time:	10:19	Dial Reading T0:	0.0000
Time 1:	10:35	Dial Reading T1:	0.0109
Time 2:	11:59	Dial Reading T2:	0.0425
Time 3:	1:05	Dial Reading T3:	0.0425
Time 4:	4:20	Dial Reading T4:	0.0598
Time 5:	5:20	Dial Reading T5:	0.0615

Final Height of Sample (in.):	1.062
Pan Identification:	QS
Weight of Ring + Wet Soil + Pan (gm):	1005.5
Pan Tare (gm):	204.6
Weight of Ring + Dry Soil + Pan (gm):	926.1
Initial Moisture Content:	11.2%
Initial Dry Density (pcf):	107.7
Prepared Sample Saturation:	54.3%
Percent Expansion:	6.2%
Final Moisture Content:	22.3%
Final Dry Density (pcf):	101.5
***EI*$_{50}$:**	65
Potential Expansion	Medium



MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED

FILENAME: 1834.011 BL.dwg

EXPANSION INDEX TEST RESULTS

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-15
FIGURE

JOB: 8161 Redwood Road JOB #: 1834.011

PERCOLATION TESTS

Perc 1 Start Sep 29, 2020, 3:00 pm

TIME IN MIN	DISTANCE IN INCHES	INCHES/ HOUR
1	4	240.0
10	5	30.0
20	6	18.0
120	10	5.0
1020	27	1.6

Average 58.9 Min 1.6

hole dia. 4 inches
depth 36 inches
Q=kia Q (in3/min) = 7.908148 I = 2 A = 464.72
k = 0.008509 in./min.
0.00036 cm/sec

Perc 2 Start Sep 29, 2020, 1:00 pm

TIME IN MIN	DISTANCE IN INCHES	INCHES/ HOUR
1	0	0.0
10	3	18.0
20	5	15.0
30	7	14.0
60	9	9.0
1140	10	0.5

Average 9.4 Min 0.5

hole dia. 4 inches
depth 36 inches
Q=kia Q (in3/min) = 0.001836 I = 2 A = 464.72
k = 1.98E-06 in./min.
8.36E-08 cm/sec

Perc 3 Start Sep 30, 2020, 8:58 am

TIME IN MIN	DISTANCE IN INCHES	INCHES/ HOUR
1	2	120.0
10	9	54.0
20	10	30.0
30	10	20.0
60	12	12.0
120	14	7.0
900	27	1.8

Average 35.0 Min 1.8

hole dia. 4 inches
depth 36 inches
Q=kia Q (in3/min) = 0.00628 I = 2 A = 464.72
k = 6.76E-06 in./min.
2.86E-07 cm/sec

MPEG MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com
A CALIFORNIA CORPORATION, 2020, ALL RIGHTS RESERVED
FILENAME: 1834.011 BL.dwg

PERCOLATION TEST RESULTS

Habitat for Humanity
8161 Redwood Blvd
Novato, California
Project No. 1834.011 Date: 10/15/2020

Drawn MMT
Checked

A-16
FIGURE

MILLER PACIFIC ENGINEERING GROUP

APPENDIX B
REFERENCE BORING LOGS

DRILL RIG: Continuous Flight Auger | SURFACE ELEVATION: 120 ± feet | LOGGED BY: S.K.

DEPTH TO GROUNDWATER: See Notes | BORING DIAMETER: 6 inches | DATE DRILLED: 6-30-94

DESCRIPTION AND REMARKS	COLOR	CONSISTENCY	SOIL TYPE	DEPTH (feet)	SAMPLER	BLOWS / FT	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
3" Asphalt Concrete 6" Baserock									
CLAY, sandy, with gravel and root fragments (fill)	Yellowish Red	Hard	CL	1 2	X	[42]	8	111	Fp > 9 ksf
				3 4 5	X				
				6	X	[76]	10		Fp > 9 ksf
(FILL)				7 8 9					
METASANDSTONE, silty, thinly laminated, crushed, weak, deeply weathered *(Franciscan Assemblage - Lower Member)*	Reddish Brown and Pink	Low Hardness	Bed-rock	10	X	[50] 5"	8	121	
				11 12 13 14 15					
- fine-grained	Yellow			16		74	9		
				17 18 19 20					

(continued on next sheet)

MP 04860

ALAN KROPP & ASSOCIATES
Geotechnical Consultants

EXPLORATORY BORING LOG

BUCK CENTER FOR RESEARCH IN AGING
Novato, California

PROJECT NO.	DATE	SHEET	BORING NO.
1520-1A	**March 1995**	**1 of 2**	63

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED

FILENAME: 1834.011 Appendix B.dwg

REFERENCE BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/9/2020

Drawn ZMS
Checked

B-1
FIGURE

DRILL RIG: Continuous Flight Auger	SURFACE ELEVATION: 120 ± feet	LOGGED BY: S.K.
DEPTH TO GROUNDWATER: See Notes	BORING DIAMETER: 6 inches	DATE DRILLED: 6-30-94

DESCRIPTION AND REMARKS	COLOR	CONSISTENCY	SOIL TYPE	DEPTH (feet)	SAMPLER	BLOWS / FT	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
METASANDSTONE, silty, fine-grained, thinly laminated, crushed, weak, deeply weathered (continued) *(Franciscan Assemblage - Lower Member)*	Yellow	Low Hardness	Bed-rock	21 22 23 24		50 6" 50 1"	9		

Bottom of Boring at 25.1 Feet

NOTES

1. No groundwater was encountered at the time of drilling, and the boring was backfilled immediately after drilling.
2. Stratification lines represent the approximate boundaries between material types, and the transitions may be gradual.
3. Penetration resistance values (blow counts) enclosed in brackets ([ ]) were recorded with a 3.0-inch O.D. Modified California sampler, and are not standard penetration resistance values.
4. Approximate unconfined compressive strength values were recorded in the field using a pocket penetrometer. These values are shown on the logs with the symbol "Fp".
5. Surface elevation approximated from topography shown on plans titled, "Site Plan, Buck Center Precise Development Plan," prepared by Pei, Cobb, Freed & Partners, dated March 25, 1994.

MP 04861

ALAN KROPP & ASSOCIATES
Geotechnical Consultants

EXPLORATORY BORING LOG
BUCK CENTER FOR RESEARCH IN AGING
Novato, California

PROJECT NO.	DATE	SHEET	BORING NO.
1520-1A	March 1995	2 of 2	63

MILLER PACIFIC ENGINEERING GROUP

504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED
FILENAME: 1834.011 Appendix B.dwg

REFERENCE BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California
Project No. 1834.011 Date: 10/9/2020

Drawn ZMS
Checked

B-2
FIGURE

DRILL RIG: Continuous Flight Auger	SURFACE ELEVATION: 85 ± feet	LOGGED BY: S.K.
DEPTH TO GROUNDWATER: See Notes	BORING DIAMETER: 6 inches	DATE DRILLED: 6-30 to 7-1-94

DESCRIPTION AND REMARKS	COLOR	CONSISTENCY	SOIL TYPE	DEPTH (feet)	SAMPLER	BLOWS / FT	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
7" Asphalt Concrete									
SAND, clayey, with gravel (fill)	Very Pale Brown	Hard	CL	1					Fp > 9 LL = 29% PI = 9% -200 = 29%
				2		[64]	9	127	
				3					
				4					
	Reddish Brown and Reddish Yellow and Gray	Very Stiff		5					Fp > 9
				6		[39]	15		
(FILL)				7					
				8					
				9					
CLAY, silty, sandy (colluvium)	Dark Yellowish Brown	Very Stiff	CH	10					Fp > 9 LL = 32% PI = 18% -200 = 60%
				11		[30]	16	108	
				12					
				13					
				14					
- mottled	Dark Yellowish Brown and Red	Hard		15					Fp > 9
				16		[80]	14		
				17					
				18					
				19					
(continued on next sheet)				20					MP 04862

ALAN KROPP & ASSOCIATES
Geotechnical Consultants

EXPLORATORY BORING LOG

BUCK CENTER FOR RESEARCH IN AGING
Novato, California

PROJECT NO.	DATE	SHEET	BORING NO.
1520-1A	March 1995	1 of 3	64

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED

FILENAME: 1834.011 Appendix B.dwg

REFERENCE BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/9/2020

Drawn ZMS
Checked

B-3
FIGURE

DRILL RIG: Continuous Flight Auger | SURFACE ELEVATION: 85 ± feet | LOGGED BY: S.K.

DEPTH TO GROUNDWATER: See Notes | BORING DIAMETER: 6 inches | DATE DRILLED: 6-30 to 7-1-94

DESCRIPTION AND REMARKS	COLOR	CONSISTENCY	SOIL TYPE	DEPTH (feet)	SAMPLER	BLOWS / FT	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
CLAY, sandy, mottled (continued) (colluvium)	Dark Yellowish Brown and Red	Hard	CH	21		[93] 10"	13		
				22					
				23					
				24					
METASANDSTONE, crushed, friable, moderately to deeply weathered, fine grained *(Franciscan Assemblage - Lower Member)*	Light Yellowish Brown and Dark Yellowish Brown	Low Hardness	Bed-rock	25		[50] 3"	2		
				26					
				27					
				28					
				29					
- no recovery				30		100 4"			
				31					
				32					
				33					
				34					
	Yellowish Brown			35		65 6"	7		

Bottom of Boring at 35.5 Feet.

(continued on next sheet)

MP 04863

ALAN KROPP & ASSOCIATES
Geotechnical Consultants

EXPLORATORY BORING LOG

BUCK CENTER FOR RESEARCH IN AGING
Novato, California

PROJECT NO.	DATE	SHEET	BORING NO.
1520-1A	**March 1995**	**2 of 3**	64

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED

FILENAME: 1834.011 Appendix B.dwg

REFERENCE BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/9/2020

Drawn ZMS
Checked

B-4
FIGURE

DRILL RIG: Continuous Flight Auger	SURFACE ELEVATION: 85 ± feet	LOGGED BY: S.K.
DEPTH TO GROUNDWATER: See Notes	BORING DIAMETER: 6 inches	DATE DRILLED: 6-30 to 7-1-94

NOTES

1. No groundwater was encountered at the time of drilling, and the boring was backfilled immediately after drilling.
2. Stratification lines represent the approximate boundaries between material types, and the transitions may be gradual.
3. Penetration resistance values (blow counts) enclosed in brackets ([ ]) were recorded with a 3.0-inch O.D. Modified California sampler, and are not standard penetration resistance values.
4. Approximate unconfined compressive strength values were recorded in the field using a pocket penetrometer. These values are shown on the logs with the symbol "Fp".
5. Surface elevation approximated from topography shown on plans titled, "Site Plan, Buck Center Precise Development Plan," prepared by Pei, Cobb, Freed & Partners, dated March 25, 1994.

MP 04864

ALAN KROPP & ASSOCIATES
Geotechnical Consultants

EXPLORATORY BORING LOG
BUCK CENTER FOR RESEARCH IN AGING
Novato, California

PROJECT NO.	DATE	SHEET	BORING NO.
1520-1A	**March 1995**	**3 of 3**	64

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED
FILENAME: 1834.011 Appendix B.dwg

REFERENCE BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California
Project No. 1834.011 Date: 10/9/2020

Drawn ZMS
Checked

B-5
FIGURE

DRILL RIG: Continuous Flight Auger	SURFACE ELEVATION: 75 ± feet	LOGGED BY: S.K.
DEPTH TO GROUNDWATER: See Notes	BORING DIAMETER: 6 inches	DATE DRILLED: 7-1-94

DESCRIPTION AND REMARKS	COLOR	CONSISTENCY	SOIL TYPE	DEPTH (feet)	SAMPLER	BLOWS / FT	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
CLAY, sandy, with gravel and root fragments (fill) (FILL)	Brown	Very Stiff	CL	1–2		[35]	7	111	Fp > 9 ksf
SANDSTONE, intensely fractured, friable, moderately to deeply weathered, fine grained *(Franciscan Assemblage-Lower Member)*	Dark Reddish Brown and Black	Low Hardness	Bed-rock	5		[75] 6"			
	Very Pale Brown			10		53 4.5"			
	Dark Reddish Brown and Strong Brown			15		100 5"			
(continued on next sheet)	Yellowish Brown			20					**MP 04865**

ALAN KROPP & ASSOCIATES
Geotechnical Consultants

EXPLORATORY BORING LOG

BUCK CENTER FOR RESEARCH IN AGING
Novato, California

PROJECT NO.	DATE	SHEET	BORING NO.
1520-1A	**March 1995**	**1 of 2**	65

MPEG MILLER PACIFIC ENGINEERING GROUP

504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED

FILENAME: 1834.011 Appendix B.dwg

REFERENCE BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California

Project No. 1834.011 Date: 10/9/2020

Drawn ZMS
Checked

B-6
FIGURE

DRILL RIG: Continuous Flight Auger		SURFACE ELEVATION: 75 ± feet							LOGGED BY: S.K.
DEPTH TO GROUNDWATER: See Notes		BORING DIAMETER: 6 inches							DATE DRILLED: 7-1-94
DESCRIPTION AND REMARKS	COLOR	CONSISTENCY	SOIL TYPE	DEPTH (feet)	SAMPLER	BLOWS / FT	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
SANDSTONE, intensely fractured, friable, moderately to deeply weathered, fine grained (continued) *(Franciscan Assemblage-Lower Member)*	Yellowish Brown	Low Hardness	Bed-rock	20		100/5.5"			

Bottom of Boring at 20.5 Feet.

NOTES

1. No groundwater was encountered at the time of drilling, and the boring was backfilled immediately after drilling.
2. Stratification lines represent the approximate boundaries between material types, and the transitions may be gradual.
3. Penetration resistance values (blow counts) enclosed in brackets ([ ]) were recorded with a 3.0-inch O.D. Modified California sampler, and are not standard penetration resistance values.
4. Approximate unconfined compressive strength values were recorded in the field using a pocket penetrometer. These values are shown on the logs with the symbol "Fp".
5. Surface elevation approximated from topography shown on plans titled, "Site Plan, Buck Center Precise Development Plan," prepared by Pei, Cobb, Freed & Partners, dated March 25, 1994.

MP 04866

ALAN KROPP & ASSOCIATES
Geotechnical Consultants

EXPLORATORY BORING LOG
BUCK CENTER FOR RESEARCH IN AGING
Novato, California

PROJECT NO.	DATE	SHEET	BORING NO.
1520-1A	March 1995	2 of 2	65

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED
FILENAME: 1834.011 Appendix B.dwg

REFERENCE BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California
Project No. 1834.011 Date: 10/9/2020

Drawn ZMS
Checked

B-7
FIGURE

DRILL RIG: Continuous Flight Auger	SURFACE ELEVATION: 32 ± feet	LOGGED BY: G.V.W.
DEPTH TO GROUNDWATER: See Notes	BORING DIAMETER: 6 inches	DATE DRILLED: 7-5-94

DESCRIPTION AND REMARKS	COLOR	CONSISTENCY	SOIL TYPE	DEPTH (feet)	SAMPLER	BLOWS / FT	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
GRAVEL, with sand (base rock) (fill)	Light Gray	Dense	GP						
CLAY, sandy, with common metasandstone and mudstone clasts to >2.5" diameter (fill)	Yellowish Brown to Dark Brown	Very Stiff	CL	1–4		[35]	15	116	Fp > 9 ksf LL = 42% PI = 21% -200 = 61%
CLAY, sandy, with uncommon subangular meta-sandstone gravel to 1" diameter (fill)	Dark Brown	Very Stiff	CL	5					Fp ≈ 6 ksf
CLAY, sandy, with gravel, with subangular sandstone and mudstone clasts to 1" diameter (fill) (FILL)	Yellowish Brown	Very Stiff	CL	6–8		[35]	15	114	Fp ≈ 9 ksf
SERPENTINITE, intensely sheared, crushed, friable, moderately weathered, with common quartz veins to 0.5" diameter *(Franciscan Assemblage - Lower Member)*	Olive	Low Hardness	Bed-rock	9–10		[84] 6"	5	122	Fp > 9 ksf
				15		50 3"	3		
(continued on next sheet)				20					**MP 04867**

ALAN KROPP & ASSOCIATES
Geotechnical Consultants

EXPLORATORY BORING LOG
BUCK CENTER FOR RESEARCH IN AGING
Novato, California

PROJECT NO.	DATE	SHEET	BORING NO.
1520-1A	**March 1995**	**1 of 2**	66

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED
FILENAME: 1834.011 Appendix B.dwg

REFERENCE BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California
Project No. 1834.011 Date: 10/9/2020

Drawn ZMS
Checked

B-8
FIGURE

DRILL RIG: Continuous Flight Auger	SURFACE ELEVATION: 32 ± feet	LOGGED BY: G.V.W.
DEPTH TO GROUNDWATER: See Notes	BORING DIAMETER: 6 inches	DATE DRILLED: 7-5-94

DESCRIPTION AND REMARKS	COLOR	CONSISTENCY	SOIL TYPE	DEPTH (feet)	SAMPLER	BLOWS / FT	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
SERPENTINITE, intensely sheared, crushed, friable, moderately weathered, with common quartz veins to 0.5" diameter (continued) *(Franciscan Assemblage - Lower Member)*	Olive	Low Hardness	Bed-rock	21 22		100/2"			
MUDSTONE, closely sheared, intensely fractured, moderately strong, moderately weathered, with common quartz veins, with common iron-oxide staining *(Franciscan Assemblage - Lower Member)*	Dark Gray	Moderate Hardness	Bed-rock	23 24 25 26 27 28 29 30		100/2" [100]/4"		5	ATOD

Bottom of Boring at 30.3 Feet

NOTES

1. Groundwater was encountered at 25 feet at the time of drilling, and the boring was backfilled immediately after drilling.
2. Stratification lines represent the approximate boundaries between material types, and the transitions may be gradual.
3. Penetration resistance values (blow counts) enclosed in brackets ([ ]) were recorded with a 3.0-inch O.D. Modified California sampler, and are not standard penetration resistance values.
4. Approximate unconfined compressive strength values were recorded in the field using a pocket penetrometer. These values are shown on the logs with the symbol "Fp".
5. Surface elevation approximated from topography shown on plans titled, "Site Plan, Buck Center Precise Development Plan," prepared by Pei, Cobb, Freed & Partners, dated March 25, 1994.

MP 04868

ALAN KROPP & ASSOCIATES
Geotechnical Consultants

EXPLORATORY BORING LOG
BUCK CENTER FOR RESEARCH IN AGING
Novato, California

PROJECT NO.	DATE	SHEET	BORING NO.
1520-1A	**March 1995**	**2 of 2**	66

MILLER PACIFIC ENGINEERING GROUP
A CALIFORNIA CORPORATION, © 2018, ALL RIGHTS RESERVED
FILENAME: 1834.011 Appendix B.dwg

504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

REFERENCE BORING LOG

Habitat for Humanity
8161 Redwood Blvd
Novato, California
Project No. 1834.011 Date: 10/9/2020

Drawn ZMS
Checked

B-9
FIGURE

Appendix F

Phase I Environmental Site Assessment

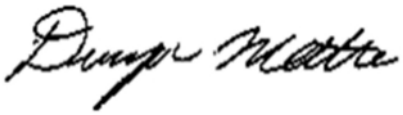
ARCADIS Design & Consultancy for natural and built assets

Habitat for Humanity Greater San Francisco, Inc.

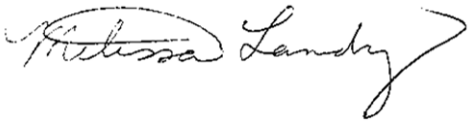
PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Habitat Redwood Boulevard
8161 Redwood Boulevard
Novato, California

June 16, 2021



Divya Mehta
Staff Scientist
Environmental Professional*



Melissa Landry
Project Geologist
Environmental Professional*

*The Environmental Professional's certification is provided in Section 7.1 of this report.

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Habitat Redwood Boulevard
8161 Redwood Boulevard
Novato, California

Prepared for:

Habitat for Humanity Greater San Francisco

500 Washington Street, Suite 250

San Francisco, CA 94111

Prepared by:

Arcadis U.S., Inc.

6296 San Ignacio Avenue

Suite C & D

San Jose

California 95119

Tel 408 797 2000

Our Ref.:

30060030

Date:

June 16, 2021

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential and exempt from disclosure under applicable law. Any dissemination, distribution or copying of this document is strictly prohibited.

CONTENTS

Executive Summary I

Site Layout Description I

Operations I

Site History I

Surrounding Area II

Findings II

Recognized Environmental Conditions II

Controlled Recognized Environmental Conditions III

Historical Recognized Environmental Conditions III

Other Environmental Conditions III

1 Introduction 1

1.1 Purpose 1

1.2 Scope of Work 1

2 Site Setting and Description 3

2.1 Site Location 3

2.2 Site Layout Description 3

2.2.1 Utilities 3

2.2.2 Heating and Cooling 3

2.3 Operations 3

2.4 Physical Setting 4

2.4.1 Topography 4

2.4.2 Geology 4

2.4.3 Hydrology 4

2.4.3.1 Surface Water 4

2.4.3.2 Wetlands 4

2.4.4 Hydrogeology 5

3 Site History 6

3.1 Historical Site Summary 6

3.2 Historical Information Sources 6

3.3 Prior Environmental Assessments, Investigations, and Events 7
4 Site Regulatory Database Information 10
5 Operational Environmental Matters 11
5.1 Material Handling and Storage 11
5.1.1 Aboveground Storage Tanks (ASTs) 11
5.1.2 Underground Storage Tanks (USTs) 11
5.1.3 Other Material Handling and Storage 11
5.2 Air Emissions 12
5.3 Waste 12
5.3.1 Hazardous Waste 12
5.3.2 Other Regulated Waste 12
5.3.3 Non-Hazardous Waste 12
5.3.4 On-site Solid Waste Disposal 13
5.4 Water, Wastewater, and Storm Water 13
5.4.1 Water Use and Supply 13
5.4.2 Wastewater 13
5.4.2.1 Drains and Sumps 13
5.4.2.2 Septic Systems 14
5.4.2.3 Discharges to Publicly Owned Treatment Works 14
5.4.2.4 Pits, Ponds, and Lagoons 14
5.4.3 Storm Water 14
5.5 Hazardous Building Materials and Conditions 14
5.5.1 Asbestos-Containing Materials (ACMs) 14
5.5.2 Lead-based Paint 14
5.6 Other Hazardous Substances 15
5.6.1 Polychlorinated Biphenyls (PCBs) 15
5.6.2 Per- and Polyfluoroalkyl Substances (PFAs) 15
5.7 Indicators of Environmental Impact 15
5.7.1 Odors 15
5.7.2 Stains and Corrosion 15
5.7.3 Stressed Vegetation 16

5.7.4 Environmental Liens and Activity and Use Limitations....16
6 Adjoining and Surrounding Properties....17
6.1 Current Uses of Adjoining and Surrounding Properties....17
6.2 Historical Uses of Adjoining and Surrounding Properties....17
6.3 Environmental Record Sources and Regulatory Agency File and Records Reviews....17
6.3.1 Adjoining Properties....18
6.3.2 Surrounding Properties....18
7 Conclusions....20
7.1 Findings and Opinion....20
7.1.1 Recognized Environmental Conditions....20
7.1.2 Controlled Recognized Environmental Conditions....20
7.1.3 Historical Recognized Environmental Conditions....21
7.1.4 De Minimis Conditions....21
7.1.5 Other Environmental Conditions....21
7.2 Environmental Professional Statement....21
8 Sources, References, Assumptions, and Limitations....22
8.1 User-provided Information....22
8.2 Records Review....22
8.2.1 Regulatory Agency File and Records Reviews....22
8.2.2 Physical Setting Sources....22
8.2.3 Standard and Other Historical Sources....22
8.3 Interviews with Past and Present Owners and Occupants....23
8.4 Interviews with State and/or Local Government Officials....23
8.5 Other References....23
8.6 Significant Assumptions....23
8.7 Limitations and Exceptions....24
8.8 Data Gaps....25
8.9 Deviations....25
8.10 Reliance....25

TABLES

Table 1. Historical Information Sources 6

Table 2. Environmental Database Listings 10

Table 3. List of Materials Handled and Stored On Site 11

Table 4. Regulatory Agency File and Records Requests 22

FIGURES

Figure 1. Site Location Map

Figure 2. Site Plan

Figure 3. Surrounding Property Map

APPENDICES

A Site Photographs

B EDR Radius Map™ Report with GeoCheck®

C Historical Records

D Environmental Reports

E Resumes

F User Questionnaire

EXECUTIVE SUMMARY

Arcadis U.S., Inc. (Arcadis) was retained by Habitat for Humanity to conduct a Phase I Environmental Site Assessment (ESA) for the Habitat Redwood Boulevard property located at 8161 Redwood Boulevard, Novato, Marin County, California (the Site). The Phase I ESA was performed in general accordance with the ASTM International (ASTM) Standard E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM E1527-13).

Site Layout Description

The Site comprises a 13.56-acre parcel that is currently vacant as of 2021. At the time of the assessment, the Site was used as a storage and hydrostatic pipeline testing area for PG&E in the northern portion of the parcel. This area was graded to facilitate hydrostatic testing work and equipment storage for PG&E operations both on- and off-site. Three semi-truck trailers were used at the Site to store tools, supplies and equipment. Two office trailers and portable toilets were also located in this PG&E area. A sub-grade natural gas pipeline is located along the central and western portions of the Site. The central and southern portions of the Site consist of undeveloped grassy rangeland.

Operations

The Site is owned by PG&E and was temporarily used in Sumer and Fall 2020 as a storage area for construction and pipeline testing equipment, construction and pipeline testing materials, temporary waste storage, and welding operations. These materials were used to support on- and off-site PG&E pipeline maintenance and replacement projects. Water generated by the hydrostatic testing process (groundwater) was stored in frac tanks prior to discharge to the sanitary sewer system. Several roll-off bins were used to store used testing materials and waste materials including used pigs and excavated soil. A welding area with piping and several compressed gas tanks (acetylene, oxygen) were also observed in the northern portion of the Site. PG&E demobilized from the Site by the end of 2021 and the Site is currently vacant, grassy land.

Site History

The Site appeared as undeveloped rangeland with a small structure in the northern portion of the Site and an unpaved road along the western portion of the Site from as early as 1942. By 1952, a second structure was visible in the central portion of the Site. No changes were evident until 1968, when the former residence in the northern portion of the Site was demolished and redeveloped with a service station. By 1982, a service road was visible along the eastern boundary of the Site, the structures in the central portion of the Site had been demolished, and the service station area in the northern portion of the Site had been expanded. No changes were observed until sometime prior to 2002, when the service station in the northern portion of the Site was demolished. In 2006, three small cylindrical structures were visible in the northern portion of the Site that were not visible in subsequent photographs. In 2016, the northern portion of the Site had been cleared and there were multiple unpaved paths or roads visible in the northern portion of the Site. These paths were not visible in subsequent photographs and in 2018, an

unpaved path and cleared area was visible extending from Redwood Boulevard and into the central portion of the Site. This path was no longer visible in subsequent photographs and no significant changes were evident at the Site through the present.

According to a 1994 Phase I ESA conducted for the Site, PG&E purchased the Site in 1973. The parcel and existing building were leased to Mike's Auto Repair and Body Shop through 1995. The building in the northern portion of the Site was historically occupied by Hertz Rental, Jacks 66 (service station/auto garage), and Mike's Auto Repair from 1973 until 1995, when the building was demolished. The Site remained vacant until June 2020 when PG&E began using the Site as a staging area for material storage, equipment storage, and hydrostatic testing for the natural gas pipeline. PG&E demobilized from the Site by the end of 2020 and the Site is currently vacant, grassy land.

Surrounding Area

The Site is adjoined to the north by vacant land, beyond which is Birkenstock LP, USA; to the east by Days Inn Hotel and Redwood Boulevard, beyond which is Highway 101; to the south by vacant land, beyond which is Buck Center Drive; and to the west by vacant land, beyond which is the Buck Institute for Research on Aging. Land use in the surrounding area consists of commercial properties and vacant rangeland.

Findings

Arcadis has performed a Phase I ESA of the Site in conformance with the scope and limitations of ASTM Practice E1527-13 for Phase I ESAs. This assessment has revealed the following recognized environmental conditions (RECs), controlled recognized environmental conditions (CRECs), historical recognized environmental conditions (HRECs), and other environmental conditions as defined in Section 1 of this Phase I ESA Report.

Recognized Environmental Conditions

One REC was identified in connection with the Site.

Hazardous Waste Storage and Housekeeping: The Site was used in Summer and Fall 2020 as a staging area for PG&E maintenance activities (including hydrostatic testing) for the natural gas pipeline located on and off-site, and other utility structures off-site. Several roll-off bins were observed at the Site containing soil that was generated from the Site and other properties. According to interviews with PG&E staff, this soil was sampled for Total Petroleum Hydrocarbon (TPH) constituents, volatile organic compounds (VOCs), and metals to determine if it needed to be characterized as hazardous waste prior to disposal. Arcadis observed areas of spilled soil from these bins. According to PG&E representatives, soil in this bin was characterized as non-hazardous waste; however, Arcadis was not able to review analytical data to confirm this characterization. In addition, PG&E representatives noted that one of the bins at the Site had been used to store soil that was characterized as hazardous waste. Given the absence of analytical data for soil stored at the Site, the poor housekeeping, and hazardous waste storage, storage associated with PG&E activities is a REC.

Controlled Recognized Environmental Conditions

The following CREC was identified in connection with the Site:

LUST Incident: The northern portion of the Site was historically developed with a gas station and garage building that were in operation between 1973 and 1995. Four fuel tanks, one waste oil underground storage tank, and hydraulic lifts were used at these buildings. PG&E conducted an investigation in 1996 to determine if the tanks were still present at the Site and to address any potential impacts associated with the tanks and lifts. The tanks and associated piping were found to have been removed in the 1970s. The former tank and lift areas were over excavated to a depth of 8 feet below ground surface and confirmatory samples were analyzed for TPH as gasoline (TPH-g), diesel (TPH-d), motor oil (TPH-mo), hydraulic oil (TPH-ho), and total recoverable petroleum hydrocarbons (TRPH). During excavation work, groundwater was found in the former fuel tank area and a grab sample was collected and analyzed for TPH-g and TPH-d. No TPH constituents were detected in confirmatory samples collected from the former fuel tank and hydraulic lift areas. Low concentrations of TPH-mo (71 parts per million [ppm]) and TRPH (11 to 90 ppm) were detected in the former waste oil tank area. Based on these results, PG&E requested closure for the tanks; however the San Francisco Bay Regional Water Quality Control Board (SF-RWQCB) required soil samples to be analyzed for benzene, toluene, ethylbenzene, and xylene (BTEX), oil and grease, chlorinated hydrocarbons, semi volatile organic compounds (SVOCs), and metals prior to closure. The only constituents that were detected were chromium, lead, zinc, and nickel; however, the concentrations were consistent with background. Based on these results, no further action was required and the investigation was closed.

Arcadis noted that the SF-RWQCB requires notification of a land use change prior to redevelopment. Based on the closure of the investigation and the SF-RWQCB notification requirement, this investigation is a CREC for the Site.

Historical Recognized Environmental Conditions

No HRECs were identified in connection with the Site.

Other Environmental Conditions

The following other environmental condition was identified in connection with the Site:

Staining: The Site was used in Summer and Fall 2020 as a staging area for PG&E maintenance activities (including hydrostatic testing) for the natural gas pipeline located on and off-site, and other utility structures off-site. Arcadis observed limited areas of staining at the Site near material storage areas. The minor staining associated with the PG&E operations at the Site are an other environmental condition.

1 INTRODUCTION

Arcadis U.S., Inc. (Arcadis) was retained by Habitat for Humanity Greater San Francisco, Inc. (Habitat) to conduct a Phase I Environmental Site Assessment (ESA) for the Habitat Redwood Boulevard property located at 8161 Redwood Boulevard, Novato, Marin County, California (the Site). This Phase I ESA Report has been prepared in accordance with the *Proposal for Phase I Environmental Site Assessment (ESA)*, dated August 25, 2020.

1.1 Purpose

Arcadis understands that the purpose for conducting this Phase I ESA is to assess and document the current status of environmental impact conditions at the Site.

1.2 Scope of Work

The Phase I ESA was performed in general accordance with the ASTM International (ASTM) Standard E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM E1527-13), including the limitations outlined in the standard. The goal of the Phase I ESA was to identify recognized environmental conditions (RECs), controlled recognized environmental conditions (CRECs), and historical recognized environmental conditions (HRECs) associated with the property.

Findings from this Phase I ESA are classified and defined as follows:

- A REC is defined in ASTM E1527-13 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 (3) under conditions that pose a material threat of a future release to the environment.”
- A CREC is defined in ASTM E1527-13 as “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… with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).”
- An HREC is defined in ASTM E1527-13 as “a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).”
- A de minimis condition is defined in ASTM E1527-13 as “a condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.”

- Other environmental conditions are considered environmental issues that do not clearly fall within the ASTM definition of a REC, CREC, HREC, or de minimis condition, fall outside the scope of the ASTM practice (e.g. asbestos), or are considered a business environmental risk.

As required by ASTM E1527-13, the scope of work for this Phase I ESA included the following, except as otherwise indicated as a data gap in Section 8.8 or as a deviation in Section 8.9 of this report:

- **Records review**: Arcadis contracted Environmental Data Resources, Inc. (EDR) to provide a report (EDR Report) summarizing the federal, state, tribal, and local environmental record source database listings for the Site and for the adjoining and surrounding properties within specified search radii, as well as physical setting information for the Site and surrounding area, as required by ASTM E1527-13. Arcadis also reviewed regulatory agency files and records, as deemed necessary and documented in Section 8.2 of this Report; alternate environmental information (e.g. on-site records, user-provided records); additional physical setting sources; and historical use information, as documented in Section 3.2 of this Report.
- **Site reconnaissance**: Mr. Bryan Fong of Arcadis visited the Site on September 18, 2020 and visually observed the parcel and appliable interior areas. Mr. Fong was accompanied by Mr. Jeff Wilson, Project Manager (three months at the Site) and Mr. Devin Bettencort, ARB Industrial Project Manager (two months at the Site), during the Site walk.
- **Interviews**: Arcadis interviewed present and past owners, operators, and occupants of the property, and local government officials, as documented in Section 8.
- **Report**: This Phase I ESA Report summarizes and documents the Phase I ESA.

The scope of work for the Phase I ESA also included the following:

- A cursory visual observation for apparent wetland areas in accessible exterior areas of the Site and review of readily available wetlands information to identify wetlands that have been previously delineated and/or reported to be present on the Site.

The scope of work for this Phase I ESA did not include the collection or analysis of soil, water, air, other environmental media, transformer/electrical fluids, ACMs, lead-based paint, other building materials, mold, or other samples.

The User of this Phase I ESA is Habitat for Humanity Greater San Francisco, Inc.

2 SITE SETTING AND DESCRIPTION

2.1 Site Location

The Site is located at 8161 Redwood Boulevard, Novato, Marin County, California **(Figure 1)**. The Site comprises one parcel identified by the Marin County Assessor's Office as Parcel Identification Number (PIN) 125-180-49. The Site is located along the western side of Redwood Boulevard. The Site is located in a commercial area.

The Site has also been identified at the address 8161 Old Redwood Highway.

2.2 Site Layout Description

The Site comprises a 13.56-acre parcel that is currently vacant as of 2021. At the time of the assessment, the Site was used as a storage and hydrostatic pipeline testing area for PG&E in the northern portion of the parcel. This area was graded to facilitate hydrostatic testing work and equipment storage for PG&E operations both on- and off-site. Three semi-truck trailers were used at the Site to store tools, supplies and equipment. Two office trailers and portable toilets were also located in this PG&E area. A sub-grade natural gas pipeline is located along the central and western portions of the Site. The central and southern portions of the Site consist of undeveloped grassy rangeland **(Figure 2)**.

Photographs of the Site and surrounding areas were taken to document current conditions and are included in **Appendix A**.

2.2.1 Utilities

The following utilities are supplied to the Site:

- Water is provided via a fire hydrant by the North Marin Water District.
- Sanitary sewer systems are maintained by the Novato Sanitary District.

Three emergency generators, fueled by diesel, are present within the laydown yard area and provide power for lights and window air conditioning units in the office trailers at the Site.

2.2.2 Heating and Cooling

Arcadis observed window air conditioning units for the portable office trailers. No other heating or cooling units were observed at the Site.

2.3 Operations

The Site is owned by Pacific Gas & Electric (PG&E) and was temporarily used in Sumer and Fall 2020 as a storage area for construction and pipeline testing equipment, construction and pipeline testing materials, temporary waste storage, and welding operations. These materials were used to support on- and off-site PG&E pipeline maintenance and replacement projects. Water generated by the hydrostatic testing process (groundwater) was stored in frac tanks prior to discharge to the sanitary sewer system.

Several roll-off bins were used to store used testing materials and waste materials including used pigs and excavated soil. A welding area with piping and several compressed gas tanks (acetylene, oxygen) were also observed in the northern portion of the Site. PG&E demobilized from the Site by the end of 2021 and the Site is currently vacant, grassy land.

2.4 Physical Setting

2.4.1 Topography

According to information obtained from the U.S. Geological Survey 7.5 Minute Series Topographic Map of the Petaluma River and Novato quadrangles dated 2012, the elevation of the Site ranges from approximately 70 feet above mean sea level (amsl) along the western boundary of the Site to 10 feet amsl at the eastern boundary of the Site along Redwood Boulevard. The topography of the surrounding area is hilly to the north and south of the western portion of the Site and sloping to the east. The general topographic gradient is to the east-northeast.

2.4.2 Geology

No site-specific information was available. Geologic information in the EDR Report **(Appendix B)** specifies that the sediments beneath the Site have been identified as part of the Lower Cretaceous Series of the Cretaceous System of the Mesozoic Era. According to the United States Department of Agriculture (USDA) Soil Conservation Service, the Site is underlain by the Yorkville soil component in the western portion of the Site which has a surface soil texture of clay loam and exhibits very slow infiltration rates; the Reyes soil component in the eastern portion of the Site which has a surface soil texture of clay and exhibits very slow infiltration rates; and the Gilroy soil component in the southern portion of the Site which has a surface soil texture of loam and exhibits slow infiltration rates.

2.4.3 Hydrology

2.4.3.1 Surface Water

No surface water bodies are located on the Site. The closest surface water feature is a portion of Basalt Creek, located 342 feet east of the Site.

2.4.3.2 Wetlands

According to information obtained from the U.S. Fish and Wildlife Service (FWS) National Wetland Inventory (NWI) included in the EDR Report, two wetland areas are located along the northern and central portions of the Site. According to the National Wetlands Inventory Mapping database, these wetland areas are classified as riverine areas that are intermittently filled with water. According to an October 2020 *Jurisdictional Delineation Report,* prepared by WRA Inc., wetlands and sensitive communities identified at the Site include a small area of seasonal wetlands (less than 0.01 acre) and an adjoining drainage ditch (0.07 acres) in the northeastern portion of the Site. An ephemeral stream (0.04 acres) was identified in the southwestern portion of the Site. Approximately 2 acres of proposed purple

needlegrass grassland areas were also identified in the western portion of the Site. According to Mr. Wilson and Mr. Bettencort, these areas of the Site are vacant.

2.4.4 Hydrogeology

Site-specific hydrogeology information was not available. A grab groundwater sample was collected during a leaking underground storage tank (LUST) investigation conducted in 1996 from an excavation pit that was approximately 8 feet below ground surface (bgs). No monitoring wells were advanced at the Site and no further information was available regarding depth to groundwater. Groundwater commonly reflects surficial topography; however, groundwater flow can be influenced locally and regionally by the presence of local wetland features, surface topography, recharge and discharge areas, horizontal and vertical inconsistencies in the types and locations of subsurface soils, and proximity to water pumping wells. Based on interpretation of the U.S. Geological Survey 7.5 Minute Series Topographic Map of the Petaluma River and Novato quadrangles dated 2012, groundwater flow appears to be to the east-southeast towards Basalt Creek and San Pablo Bay.

No wells are currently located at the Site. According to the well search information included in the EDR Report, the closest off-site well is an AquiFlow well located approximately 2,700 feet northeast of the Site. Depth to water at this well ranged from 4.5 to 6 feet bgs and flow was to the east during a sampling event on October 31, 1995.

3 SITE HISTORY

3.1 Historical Site Summary

The Site appeared as undeveloped rangeland with a small structure in the northern portion of the Site and an unpaved road along the western portion of the Site from as early as 1942. By 1952, a second structure was visible in the central portion of the Site. No changes were evident until 1968, when the former residence in the northern portion of the Site was demolished and redeveloped with a service station. By 1982, a service road was visible along the eastern boundary of the Site, the structures in the central portion of the Site had been demolished, and the service station area in the northern portion of the Site had been expanded. No changes were observed until sometime prior to 2002, when the service station in the northern portion of the Site was demolished. In 2006, three small cylindrical structures were visible in the northern portion of the Site that were not visible in subsequent photographs. In 2016, the northern portion of the Site had been cleared and there were multiple unpaved paths or roads visible in the northern portion of the Site. These paths were not visible in subsequent photographs and in 2018, an unpaved path and cleared area was visible extending from Redwood Boulevard and into the central portion of the Site. This path was no longer visible in subsequent photographs and no significant changes were evident at the Site through the present.

According to a 1994 Phase I ESA conducted for the Site, PG&E purchased the Site in 1973. The parcel and existing building were leased to Mike's Auto Repair and Body Shop through 1995. The building in the northern portion of the Site was historically occupied by Hertz Rental, Jacks 66 (service station/auto garage), and Mike's Auto Repair from 1973 until 1995, when the building was demolished. The Site remained vacant until June 2020 when PG&E began using the Site as a staging area for material storage, equipment storage, and hydrostatic testing for the natural gas pipeline. PG&E demobilized from the Site by the end of 2020 and the Site is currently vacant, grassy land.

3.2 Historical Information Sources

A list of the sources reviewed **(Appendix C)** is presented in the table below; information from these sources is summarized in Section 3.1.

Table 1. Historical Information Sources

Type of Record	Dates of Information	Source
Aerial photographs and satellite imagery	1942, 1952, 1963, 1968, 1970, 1973, 1982, 1993, 2006, 2009, 2012, 2016	The EDR Aerial Photo Decade Package
Aerial photographs and satellite imagery	1993, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2012, 2013, 2015, 2017, 2018, 2019	Google Earth Pro
Aerial photographs and satellite imagery	1952, 1968, 1982, 1983, 1987, 1993, 2002, 2005, 2009, 2014, 2016	Nationwide Environmental Title Research, LLC (NETR) Online

Type of Record	Dates of Information	Source
Fire insurance maps	No maps available	Certified Sanborn® Map Report
Property tax files	No records available	Property record card (Marin County GIS Map)
Recorded land title records	No records available	Deed (Marin County Assessor's Office)
USGS topographic maps	1914, 1942, 1954, 1968, 1973, 1980, 2012	EDR Historical Topo Map Report with Quadmatch™
Local street directories	1973, 1977, 1981, 1986, 1992, 1995, 2000, 2005, 2010, 2014, 2017	EDR-City Directory Image Report
Building department records	No records available	Novato Building Department
Zoning/land use records	2020	Novato Zoning Map (Novato Planning Division)
Other	September 18, 2020	Interview with Mr. Wilson
Other	April 3, 1994	1994 Phase I ESA

3.3 Prior Environmental Assessments, Investigations, and Events

Arcadis reviewed the following previous environmental reports for the Site that were provided by Mr. Peter Dunne at Habitat and available for review in the Regional Water Quality Control Board (RWQCB) Geotracker Database **(Appendix D)**:

- *Phase I ESA*, prepared by Environmental Science and Engineering, Inc. (ESE), dated April 3, 1994 (1994 Phase I ESA)
- *Request for UST Case Closure of PG&E Property (Mike's Auto Repair and Body Shop), 8161 Old Redwood Highway, Novato,* prepared by PG&E, dated January 30, 1996 (January 1996 Request for UST Case Closure Letter)
- *Denial of Closure Request for PG&E Property, 8161 Old Redwood Highway, Novato, Marin County,* prepared by the San Francisco Bay Region Regional Water Quality Control Board (SF-RWQCB), dated March 1, 1996 (1996 Closure Denial Letter)
- *PG&E Property at 8161 Old Redwood Highway, Novato – Underground Storage Tank Unauthorized Release/Report Form*, prepared by the SF-RWQCB, dated March 5, 1996 (1996 Unauthorized Release Form)
- *Request for UST Case Closure of PG&E Property, 8161 Old Redwood Highway, Novato,* prepared by PG&E, dated February 5, 1996 (1996 Request for Closure Letter)
- *Underground Storage Tank (UST) Case Closure for PG&E Property, 8161 Old Redwood Highway, Novato, Marin County, UST Case No. 21-0306,* prepared by SF-RWQCB, dated April 12, 1996 (1996 Closure Letter)

- *Phase I ESA,* prepared by Stantec Consulting Corporation (Stantec), dated July 28, 2009 (2009 Phase I ESA)
- *Phase I ESA,* prepared by ERAS Environmental, Inc. (ERAS), dated February 9, 2017 (2017 Phase I ESA)

Information from these reports is presented below by topic.

1996 LUST Investigation

The Site address is listed in the underground storage tank (UST), leaking underground storage tank (LUST), Historical Cortese, and Cortese databases for an investigation that was conducted in 1996. The Site was historically developed with a gas station that had been in operation between 1973 and 1995 and had since been abandoned. The status of the former USTs and hydraulic equipment associated with lifts at the gas station and garage was unknown. According to a January 1996 Request for UST Case Closure Letter, PG&E demolished the former service station in 1995. PG&E conducted a survey to identify historical USTs and found that the tanks had previously been removed and the area had been backfilled with miscellaneous building materials (i.e. concrete, sand, bricks). Approximately 300 cubic yards of backfill material and native soil were excavated from the former underground storage tank, hydraulic lift, and former waste oil tank areas. Soil samples were collected from these excavated areas and were analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline (TPH-g), diesel (TPH-d), motor oil (TPH-mo), hydraulic oil (TPH-ho), and total recoverable petroleum hydrocarbons (TRPH). During excavation work, groundwater was found in the former fuel tank area and a grab sample was collected and analyzed for TPH-g and TPH-d. No TPH constituents were detected in confirmatory samples collected from the former fuel tank and hydraulic lift areas. Low concentrations of TPH-mo (71 parts per million [ppm]) and TRPH (11 to 90 ppm) were detected in the former waste oil tank area. Based on these results, PG&E requested closure for the tanks; however the SF-RWQCB required soil samples to be analyzed for benzene, toluene, ethylbenzene, and xylene (BTEX), oil and grease, chlorinated hydrocarbons, semi volatile organic compounds (SVOCs), and metals prior to closure. According to an April 1996 Case Closure Letter, one soil sample was collected in the center of the former waste oil excavation at 8 feet bgs and analyzed for TPH constituents, BTEX, oil and grease, SVOCs, chlorinated hydrocarbons, and metals. The only constituents that were detected were chromium, lead, zinc, and nickel; however, the concentrations were consistent with background. Based on these results, no further action was required and the investigation was closed.

Arcadis noted that the SF-RWQCB requires notification of a land use change prior to redevelopment. Based on the closure of the investigation and the SF-RWQCB notification requirement, this investigation is a CREC for the Site.

Previous Phase I Environmental Site Assessment Reports

The first Phase I ESA provided by Habitat for the Site was conducted in April 1994. At the time of the assessment, the northern portion of the Site was developed with a vacant gas station and trailer. Following a Site visit, file review, and a review of database listings, ESE reported the following findings:

- ESE noted that the building in the northern portion of the Site was historically used as a service station. Two hydraulic lifts were observed within the garage building; however, no further information was available regarding the status or location of the corresponding hydraulic oil tanks.

ESE also observed piping and a underground fuel dispenser that were historically connected to USTs at the Site. The status of the USTs was unknown. The historical operations of the building as a service station and the potential impacts from material handling was identified as a REC.

- ESE noted that based on the age of the building, asbestos-containing building materials (ACBMs) could have been used in the building materials. Suspect ACMs identified at the building included floor tiles, stucco, porcelain tiles, and sheet rock. ESE did not sample these materials; however, they were observed to be in fair to good condition.
- ESE noted that the interior and exterior of the building were painted. Given the age of the building, the lead content of this paint was unknown.

A second Phase I ESA was conducted by Stantec in June 2009. At the time of the assessment, the former gas station had been demolished and the Site was vacant. Following a Site visit, file review, and a review of database listings, ESE reported the following findings:

- Stantec did not identify any RECs or CRECs for the Site. However, Stantec identified one HREC for the LUST investigation discussed above.
- Stantec noted that an underground gas pipeline was present along the western portion of the Site. No impacts were noted in connection with the pipeline.
- Stantec observed a partially exposed pipe that was approximately two to three inches in diameter in the northeastern portion of the Site. The pipe was located near the former gas station area; however, it was unknown if this pipe was miscellaneous debris or was associated with the former gas station.

The most recent Phase I ESA was conducted by Eras in February 2017. At the time of the assessment, the northwestern portion of the Site appeared to have been graded. The Site was vacant with no structures. As with the 2009 Phase I ESA, markers were observed for an underground natural gas pipeline in the western portion of the Site. Following a Site visit, file review, and a review of database listings, ESE reported the following findings:

- ERAS did not identify any RECs or HRECs for the Site; however ERAS identified the LUST investigation discussed above as a CREC as the closure letter noted that the SF-RWQCB needed to be notified prior to changes to land use.
- ERAS noted that the operation of the natural gas pipeline in the western portion of the Site was not considered to pose a risk to the subsurface.

Given that the former buildings at the Site have been demolished, the prior findings regarding the historical ACBMs and potential lead paint are not an environmental concern for the Site. PG&E operations related to the natural gas pipeline in the western portion of the Site are a REC. As discussed above, the former LUST investigation is a CREC for the Site.

4 SITE REGULATORY DATABASE INFORMATION

The EDR Report summarizes the federal, state, tribal, and local environmental record source regulatory database listings for the Site and for the adjoining and surrounding properties within specified search radii, as required by ASTM E1527-13. The Site address was listed on the databases indicated in the table below. Details of the database listings are discussed in the sections of this Report indicated below; however, database listings pertaining only to environmental compliance (Facility Index System [FINDS]) are not further discussed.

Table 2. Environmental Database Listings

Database Name	Database Description	Entity Name Listed	Report Section
Underground Storage Tank (UST)	The UST database identifies registered USTs in California.	PG&E	Section 3.3 and 5.1.2
Leaking Underground Storage Tank (LUST)	The LUST database identifies reported LUST incidents in California.	PG&E	Section 3.3 and 5.1.2
Recovered Government Archive Leaking Underground Storage Tank (RGA LUST)	The RGA LUST provides a list of LUST incidents derived from historical databases housed by the State Water Resources Control Board.	PG&E Property	Section 3.3 and 5.1.2
Cortese	The Cortese database provides information for sites that have been listed on the State Water Resource Control Board, Integrated Waste Board, and the Department of Toxic Substances Control (DTSC) databases.	PG&E	Section 3.3 and 5.1.2
Historical Cortese	The Historical Cortese database provides information for older sites that have been listed on the State Water Resource Control Board, Integrated Waste Board, and the DTSC databases.	PG&E	Section 3.3 and 5.1.2
HAZNET	The Haznet database provides information for hazardous waste transport from hazardous waste manifests.	PG&E	Section 5.3
Hazardous Waste Tracking System (HWTS)	The HWTS database provides information regarding hazardous waste generator information for sites in California.	PG&E	Section 5.3

Search results for the adjoining and surrounding properties are discussed in Section 6.

5 OPERATIONAL ENVIRONMENTAL MATTERS

5.1 Material Handling and Storage

5.1.1 Aboveground Storage Tanks (ASTs)

Arcadis observed nine 20,000-gallon groundwater frac tanks in the northern portion of the Site. These tanks are used to store groundwater generated during hydrostatic testing activities at the on- and off-site portions of the natural gas pipeline. The tanks appeared to be in good condition with no indications of leaks or spills and were stored within a plastic secondary containment tarp.

Arcadis also observed an empty polyethylene AST. This tank was not in use or filled with product.

Mr. Wilson was not aware of spills or releases associated with the ASTs. No other ASTs were observed at the Site, and no evidence of other historical ASTs was identified through the review of the sources listed in Section 8 or through physical evidence observed during the Site visit.

5.1.2 Underground Storage Tanks (USTs)

According to investigation reports for the 1996 LUST incident, there were five USTs historically used at the gas station that was in operation between 1973 and 1995. These tanks were reportedly removed in the 1970's; however, no information was available regarding the contents or size. Further information regarding the LUST incident in discussed in Section 3.3. Arcadis did not observe indications of other past or current USTs in use at the Site.

Mr. Wilson was not aware of spills or releases associated with the USTs. No evidence of other current or historical USTs was identified through the review of the sources listed in Section 8 or through physical evidence observed during the Site visit.

5.1.3 Other Material Handling and Storage

Based on Arcadis' on-site observations, the following materials are currently handled and stored at the Site:

Table 3. List of Materials Handled and Stored On Site

Material	Container Capacity	Container Type	Storage Location
Propane	5 gallon	Steel cylinder	Underneath semi-truck trailers
Oxygen	100 to 300 cubic feet	Steel cylinder	Welding Area
Acetylene	100 to 300 cubic feet	Steel cylinder	Welding Area
Pipe coating material	Unknown	Bags, drums	Conex Container

No stained areas or evidence of spills were observed in the storage areas for the above-listed materials.

Arcadis did not observe containers of hazardous substances or petroleum products, other than those described above and used in connection with identified uses at the Site.

Arcadis did not observe opened or damaged containers with unidentified contents suspected of being hazardous substances or petroleum products at the Site.

According to previous Phase I ESA reports, the northern portion of the Site was historically operated as a gas station and garage. No information was provided regarding materials handling at the facility; however, the buildings were demolished and the area surrounding the former USTs and hydraulic lifts were excavated during the 1996 LUST Investigation discussed further in Section 3.3.

5.2 Air Emissions

Arcadis did not observe air emissions that are likely to adversely affect other environmental media or to present a REC at the Site.

5.3 Waste

5.3.1 Hazardous Waste

No hazardous wastes were observed to be generated or disposed at the Site. Arcadis observed that there were several roll-off bins used to store soil generated during construction and hydrostatic testing work at the Site and off-site properties. According to conversations with Mr. Bill Frohlich, the Environmental Manager for PG&E, soil generated at the Site and off-site properties is sampled for TPH-g, TPH-d, TPH-oil, volatile organic compounds (VOCs), and metals prior to transport off site. Any soil that is identified to be hazardous is transported off-site to disposal facilities, as needed. According to Mr. Bill Frohlich, the majority of the soil generated and stored at the Site is non-hazardous and is temporarily stored prior to transport off site. No evidence of historical on-site hazardous waste generation or disposal was identified through the review of the sources listed in Section 8 or through physical evidence observed during the Site visit.

5.3.2 Other Regulated Waste

Based on Arcadis' on-site observations, no other regulated waste streams are currently or were formerly generated at the Site.

Mr. Wilson was not aware of spills or releases of other regulated waste at the Site. No other regulated wastes were observed at the Site, and no evidence of other historical regulated wastes was identified through the review of the sources listed in Section 8.

5.3.3 Non-Hazardous Waste

Based on interviews with Mr. Wilson and Mr. Frohlich and Arcadis' on-site observations, the following non-hazardous solid waste and recycling streams are currently generated or were formerly generated at the Site: non-hazardous soil, used pigs, hydrostatic testing water, groundwater, scrap metal, and general refuse.

Soil generated during natural gas pipeline maintenance is stored in 20 cubic yard and 5 cubic yard roll-off bins in the northeastern portion of the Site. Four of these bins were observed during the Site walk. Arcadis observed an area of spilled soil from one of the bins at the Site. A label on the bin characterized this soil as non-hazardous. The poor housekeeping and storage of hazardous and non-hazardous waste is a REC for the Site.

Arcadis also observed 15,000-gallon and 20,000-gallon frac tanks in the northeastern portion of the Site that hold water generated during hydrostatic testing operations. As with soil, the water is sampled prior to disposal to the sanitary sewer system.

Scrap metal and general refuse are stored in 30 cubic yard containers in the northeastern portion of the Site and are transported off Site for recycling or landfilling.

Mr. Wilson was not aware of spills or releases of non-hazardous waste at the Site. No other non-hazardous wastes were observed at the Site, and no evidence of other historical non-hazardous wastes was identified through the review of the sources listed in Section 8 or through physical evidence observed during the Site visit.

5.3.4 On-site Solid Waste Disposal

During the Site visit, Arcadis looked for areas that were apparently filled or graded by non-natural causes (or filled with material of unknown origin) that suggest the presence of trash construction debris, demolition debris, or other solid waste disposal, or mounds or depressions suggesting trash or other solid waste disposal. No such areas were observed. Arcadis did note that the northern portion of the Site has been graded to facilitate construction and hydrostatic testing operations for PG&E; however, no soil or fill material was imported during these activities.

No other evidence of on-site disposal of hazardous wastes or other solid wastes was identified.

5.4 Water, Wastewater, and Storm Water

5.4.1 Water Use and Supply

The Site is connected to a fire hydrant for hydrostatic testing operations at the Site. Potable water for construction staff is brought in as needed.

5.4.2 Wastewater

5.4.2.1 Drains and Sumps

The Site is not developed with permanent structures and no floor drains or sump structures were observed. PG&E has obtained a permit to discharge water generated during hydrostatic testing operations directly to the sanitary sewer system following treatment in carbon filters. No other sources of wastewater are generated at the Site.

5.4.2.2 Septic Systems

No evidence of current or former septic systems at the Site was identified through the review of the sources listed in Section 8 or through physical evidence observed during the Site visit.

5.4.2.3 Discharges to Publicly Owned Treatment Works

Wastewater generated from the hydrostatic testing at the natural gas pipeline on and off site is stored in 20,000-gallon frac tanks prior to treatment in carbon filters. Water is then discharged directly to the sanitary sewer in the northeastern portion of the Site.

5.4.2.4 Pits, Ponds, and Lagoons

No pits, ponds, or lagoons are located at the Site.

5.4.3 Storm Water

Stormwater runoff sheet flows to the ground or to the ditch along the eastern boundary of the Site.

5.5 Hazardous Building Materials and Conditions

5.5.1 Asbestos-Containing Materials (ACMs)

ACMs have historically been used in a variety of building materials and other products. Between 1973 and 1978, under the asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP), the USEPA banned spray-applied surfacing ACM. In 1989, the USEPA issued a final rule under Section 6 of the Toxic Substances Control Act (TSCA) banning most asbestos-containing products; however, in 1991, the rule was vacated and remanded by the Fifth Circuit Court of Appeals. Only the bans on corrugated paper, rollboard, commercial paper, specialty paper, and flooring felt and any new uses of asbestos remain banned under the 1989 rule. In addition, the Occupational Safety and Health Act defines presumed ACM (PACM) as thermal system insulation (TSI) and surfacing material found in buildings constructed no later than 1980.

The Site is not currently developed with permanent buildings and ACMs from historical buildings are not anticipated to be present at the Site.

5.5.2 Lead-based Paint

Lead-based paint was commonly used for a variety of purposes, until 1978 when federal regulations banned consumer uses of lead-containing paint, though exceptions applied for certain commercial and other paints. Federal regulations require certain disclosures regarding lead-based paint for housing constructed prior to 1978.

The Site is not currently developed with permanent buildings and lead-based paint from historical buildings are not anticipated to be present at the Site.

5.6 Other Hazardous Substances

5.6.1 Polychlorinated Biphenyls (PCBs)

PCBs are a group of organic chemicals that were used historically in a variety of industrial and chemical applications, including transformers, ballasts, other electrical equipment, and hydraulic oils, among many other products. PCBs were manufactured in the United States from 1929 until 1979, when PCB manufacturing was banned due to the toxicity of PCBs.

The Site is not currently developed with permanent structures and no PCB-containing materials or machinery were observed at the Site.

5.6.2 Per- and Polyfluoroalkyl Substances (PFAs)

Per- and polyfluoroalkyl substances (PFAS) are a group of man-made, emerging contaminants that includes Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), and several other chemicals. PFAS have been manufactured and used in various industries around the world and in the United States since the 1940s. Uses and potential sources of PFAS include firefighting foam, landfills, military installations, airports, electronics, metal plating, inks and paints, hydraulic fluids, and several consumer products including fast food packaging, carpet, and non-stick cookware. PFOA and PFOS are no longer manufactured in the United States but are still produced internationally and can be imported via consumer goods into the United States.

PFAS are characterized as persisting and accumulating in the environment and living organisms, and are considered highly mobile up to several miles from their source. Exposure to PFAS can lead to adverse human health effects at very low concentrations. PFAS are also frequently found in drinking water supplies around the world and have been determined to be present in the majority of people at various concentrations. Regulatory scrutiny associated with PFAS is increasing significantly, and several states have begun evaluating and promulgating regulatory cleanup standards for PFAS in advance of USEPA.

Based on Arcadis' review of the sources identified in Section 8.0, neither current nor historical Site operations appear to include the use of PFAS. Known or potential sources of PFAS associated with adjacent or surrounding properties, if identified, are discussed in Section 6.0.

5.7 Indicators of Environmental Impact

5.7.1 Odors

No odors that would indicate a REC were noted during the Site visit.

5.7.2 Stains and Corrosion

De minimis oil staining was observed near a few of the roll-off containers used to store used pigs and soil in the northeastern portion of the Site. These stained areas were small and the source was unknown. Given the small quantity of staining, the staining is an other environmental condition.

5.7.3 Stressed Vegetation

During the Site visit, Arcadis' representative looked for areas of stressed vegetation (from other than insufficient water). No areas of stressed vegetation were observed during this assessment.

5.7.4 Environmental Liens and Activity and Use Limitations

According to Mr. Wilson, there are no environmental liens or activity and use limitations (AULs) associated with the Site. As discussed in Section 3.3 and in the User Questionnaire provided by Mr. Doug Fowler at Habitat, the SF-RWQCB noted in the closure letter for the LUST investigation at the Site that notification to the SF-RWQCB was required prior to anticipated land use change. The LUST investigation and this condition for closure was identified as a CREC for the Site.

6 ADJOINING AND SURROUNDING PROPERTIES

6.1 Current Uses of Adjoining and Surrounding Properties

The following properties adjoin the Site **(Figure 3)**:

- **North:** Vacant land, beyond which is Birkenstock LP, USA.
- **East:** Days Inn Hotel and Redwood Boulevard, beyond which is Highway 101.
- **South:** Vacant land, beyond which is Buck Center Drive.
- **West:** Vacant land, beyond which is the Buck Institute for Research on Aging.

Land use in the surrounding area consists of commercial properties and vacant rangeland.

No physical evidence of impact to the Site from the adjoining properties (such as outdoor storage of drums, tanks, pooled liquids, or poor chemical or waste handling) was observed during a visual survey of the adjoining properties conducted at the time of the Site visit.

6.2 Historical Uses of Adjoining and Surrounding Properties

The Site area appeared as undeveloped property with a paved road and railroad tracks east of the Site from as early as 1914. The area east of the Site was comprised of wetland areas and several small structures and roads were constructed far south of the Site. By 1942, the area east of the Site across the railroad tracks had been filled and multiple structures had been constructed north and northeast of the Site. Marin County Airport was constructed northeast of the Site across the road and tracks by 1954 and several rock quarries had been developed west of the Site. By 1968, the quarry area west of the Site appeared to have been expanded, a large building was constructed north of the Site, and the road east of the Site had been expanded to a four-lane highway. No changes were observed until 1973, when the Days Inn was constructed east-adjacent to the Site. By 1982, the quarry area west of the Site no longer appeared to be in use. Two rectangular ponds or reservoirs and a public storage area were visible east and northeast of the Site by 1987. No significant changes were evident until sometime prior to 2002, when the Buck Institute on Aging was constructed west of the Site. By 2003, the adjoining and surrounding properties appeared to be in a configuration generally consistent with the current property uses described above.

6.3 Environmental Record Sources and Regulatory Agency File and Records Reviews

The EDR Report summarizes the federal, state, tribal, and local environmental regulatory database listings for the Site and for the adjoining and surrounding properties within specified search radii, as required by ASTM E1527-13. Adjoining and surrounding properties identified within the search radii were evaluated to determine if they are likely to have adversely impacted the Site. The criteria used to evaluate the potential for adverse impact to the Site include:

- Distance from the Site;

- Expected depth and direction of groundwater flow;
- Expected direction of surface water and stormwater runoff flow;
- Presence or absence of documented releases of hazardous substances and/or petroleum products at the identified facilities, the nature of such releases, and where applicable, status of associated investigations, remediation, and regulatory closure.

6.3.1 Adjoining Properties

One adjoining property was identified in the databases in the EDR Report. Novato Motel LLC at 8141 Redwood Boulevard, located east-adjacent to the Site (downgradient), was listed on the Resource Conservation and Recovery Act Non-Generator or No Longer Reporting (RCRA NonGen/NLR) database.

The hotel was listed in the database in October 2019 and no further information was provided regarding historical waste generation or generator status. Given that this database listing pertains to compliance and no violations were noted, no further review is warranted.

6.3.2 Surrounding Properties

Numerous surrounding properties were identified on the databases in the EDR Report. Based on the criteria listed in Section 6.3, the following surrounding area property was evaluated further to determine if it represents a concern of environmental impairment to the Site:

Buck Center for Research in Aging, at 8001 Redwood Highway

The Buck Center for Research in Aging (Buck Center) and several tenants within the complex (Fujifilm Cellular DY, Ultragenyx Pharmaceuticals Incorporated, Calico Life Sciences, Biomarin Pharmaceutical Inc.) are located approximately 1,400 feet west-northwest and upgradient to the Site. The Buck Center and tenants are listed in several databases summarized below.

The Buck Center is listed in the RCRA Small Quantity Generator (RCRA-SQG) database in April 2004 for the generation of ignitable waste (waste code D001), corrosive waste (waste code D002), reactive waste (waste code D003), cadmium (waste code D006), lead (waste code D008), mercury (waste code D009), silver (waste code D011), chloroform (waste code D022), spent nonhalogenated solvents (waste codes F003, F005), cyanides (waste code P030), osmium oxide (waste code P087), potassium cyanide (waste code P098), and phenol (waste codes U1888). No compliance violations have been reported and no further information was provided regarding historical hazardous waste generation or generator status. The facility is listed in the Haznet database, which provides information regarding hazardous waste generation and transport from hazardous waste manifests provided to the Department of Toxic Substances (DTSC). There are numerous listings in this database for transport of hazardous waste at the site including laboratory waste chemicals, other organic solids, corrosive liquids (liquids with pH <=2), waste oil/mixed soil, detergent and soap, photo processing waste, and pharmaceutical waste. No violations were noted. The Buck Center is also listed in the Hazardous Waste Tracking System (HWTS) database as for research and development operations at the facility. According to the listing, the facility has been registered as a RCRA hazardous waste generator since 2004. The facility is also listed in the California Environmental Reporting System (CERS) Hazardous Waste database. No further information was provided regarding compliance violations related to hazardous waste generation.

Several tenants at the center are also listed in hazardous waste-related databases. Fujifilm Cellular Dynamics International is listed in the RCRA Non Generator/NLR database in August 2017. No further information was provided regarding prior hazardous waste generation or generator status and no violations were listed. Ultragenyx Pharmaceuticals Inc. (Ultragenyx) is listed in the RCRA-SQG database in August 2017 for the generation of other organic solids (waste code 352), laboratory waste chemicals (waste code 551), ignitable waste (waste code D001), corrosive waste (waste code D002), chloroform (waste code D022), and spent nonhalogenated solvents (waste code F003). No violations were noted. Ultragenyx is also listed in the CERS Hazardous Waste and CERS databases for hazardous waste generation and chemical storage. No violations were noted in these databases. Calico Life Sciences (Calico) is listed in the RCRA NonGen/NLR database in July 2017. No further information was provided regarding prior hazardous waste generation or generator status and no violations were listed. Calico is also listed in the CERS Hazardous Waste database and no violations were noted. Biomarin Pharmaceutical Inc. (Biomarin) is listed in the RCRA NonGen/NLR database in September 2017. No further information was provided regarding prior hazardous waste generation or generator status and no violations were listed. Biomarin is also listed in the CERS Hazardous Waste and CERS databases and no violations were noted. Given that these listings pertain to compliance matters and no violations were noted, no further research is warranted.

The Buck Center is also listed in the UST and CERS Tanks databases for a diesel tank. No further information was available regarding the size of the tank. The facility has received several notices of violation for administrative issues (incomplete paperwork, forms), employee training requirements, and overfill testing requirements related to the fuel tank. All of the violations have since been resolved. Arcadis submitted a records request to the Marin County Department of Environmental Health (MCDEH) for more information on the tanks and compliance at the property. According to files provided by the MCDEH, the fuel oil tank was installed in 1997. Petroleum-impacted soil was found at the property that was excavated. No further information was available regarding the concentrations detected at the facility, the quantity of soil removed, or confirmatory sampling results following excavation work. Arcadis also noted that an application was submitted to construction two monitoring wells at the property in October 2002; however, no further information was provided to the MCDEH regarding the installation of the wells or sampling results. Arcadis reviewed the RWQCB Geotracker and DTSC Envirostor databases and no further information was available regarding investigations conducted at the facility. Given the distance from the Site, these listings are not a REC for the Site.

7 CONCLUSIONS

7.1 Findings and Opinion

Arcadis has performed a Phase I ESA of the Site in conformance with the scope and limitations of ASTM Practice E1527-13 for Phase I ESAs. This assessment has revealed the following RECs, CRECs, HRECs, and other environmental conditions as defined in Section 1.2 of this Phase I ESA Report.

7.1.1 Recognized Environmental Conditions

One REC was identified in connection with the Site.

Hazardous Waste Storage and Housekeeping: The Site was used in Summer and Fall 2020 as a staging area for PG&E maintenance activities (including hydrostatic testing) for the natural gas pipeline located on and off-site, and other utility structures off-site. Several roll-off bins were observed at the Site containing soil that was generated from the Site and other properties. According to interviews with PG&E staff, this soil was sampled for Total Petroleum Hydrocarbon (TPH) constituents, volatile organic compounds (VOCs), and metals to determine if it needed to be characterized as hazardous waste prior to disposal. Arcadis observed areas of spilled soil from these bins. According to PG&E representatives, soil in this bin was characterized as non-hazardous waste; however, Arcadis was not able to review analytical data to confirm this characterization. In addition, PG&E representatives noted that one of the bins at the Site had been used to store soil that was characterized as hazardous waste. Given the absence of analytical data for soil stored at the Site, the poor housekeeping, and hazardous waste storage, storage associated with PG&E activities is a REC.

7.1.2 Controlled Recognized Environmental Conditions

The following CREC was identified in connection with the Site:

LUST Incident: The northern portion of the Site was historically developed with a gas station and garage building that were in operation between 1973 and 1995. Four fuel tanks, one waste oil underground storage tank, and hydraulic lifts were used at these buildings. PG&E conducted an investigation in 1996 to determine if the tanks were still present at the Site and to address any potential impacts associated with the tanks and lifts. The tanks and associated piping were found to have been removed in the 1970s. The former tank and lift areas were over excavated to a depth of 8 feet below ground surface and confirmatory samples were analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline (TPH-g),diesel (TPH-d), motor oil (TPH-mo), hydraulic oil (TPH-ho), and total recoverable petroleum hydrocarbons (TRPH). During excavation work, groundwater was found in the former fuel tank area and a grab sample was collected and analyzed for TPH-g and TPH-d. No TPH constituents were detected in confirmatory samples collected from the former fuel tank and hydraulic lift areas. Low concentrations of TPH-mo (71 parts per million [ppm]) and TRPH (11 to 90 ppm) were detected in the former waste oil tank area. Based on these results, PG&E requested closure for the tanks; however the SF-RWQCB required soil samples to be analyzed for benzene, toluene, ethylbenzene, and xylene (BTEX), oil and grease, chlorinated hydrocarbons, semi volatile organic compounds (SVOCs), and metals prior to closure. The only constituents that were detected were chromium, lead, zinc, and nickel; however, the concentrations were

consistent with background. Based on these results, no further action was required and the investigation was closed.

Arcadis noted that the RWQCB requires notification of a land use change prior to redevelopment. Based on the closure of the investigation and the RWQCB notification requirement, this investigation is a CREC for the Site.

7.1.3 Historical Recognized Environmental Conditions

No HRECs were identified in connection with the Site.

7.1.4 De Minimis Conditions

No de minimis conditions were identified in connection with the Site.

7.1.5 Other Environmental Conditions

The following other environmental condition was identified in connection with the Site:

PG&E Operations: The Site was used in Summer and Fall 2020 as a staging area for PG&E maintenance activities (including hydrostatic testing) for the natural gas pipeline located on and off-site, and other utility structures off-site. Arcadis observed limited areas of staining at the Site near material storage areas. The minor staining associated with the PG&E operations at the Site are an other environmental condition.

7.2 Environmental Professional Statement

I declare that, to the best of our professional knowledge and belief, we meet the definition of environmental professional as defined in Title 40 of the Code of Federal Regulations (CFR) § 312.10, and 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 all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR § 312.*

The designated Environmental Professional for this project is Ms. Melissa Landry.

Resumes for Ms. Mehta and Ms. Landry are attached in **Appendix E**.

*A professional geologist's or registered environmental assessor's certification of conditions comprises a declaration of his or her professional judgment. It does not constitute a warranty or guarantee, expressed or implied, nor does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations, and ordinances.

8 SOURCES, REFERENCES, ASSUMPTIONS, AND LIMITATIONS

8.1 User-provided Information

Mr. Peter Dunne of Habitat provided prior reports for the Site and Mr. Doug Fowler of Habitat provided information regarding the Site via a User Questionnaire (Appendix F), to satisfy the User's responsibilities described in ASTM E1527-13 Sections 6.2 to 6.7. Information provided by Mr. Dunne and Mr. Fowler is summarized in relevant sections throughout this Phase I ESA Report.

8.2 Records Review

8.2.1 Regulatory Agency File and Records Reviews

Regulatory agency files and records requested and/or reviewed for the Site are summarized in the following table:

Table 4. Regulatory Agency File and Records Requests

Agency	Method of Request	Date of Request	Response
USEPA	Online request; Online database review (Envirofacts, ECHO)	September 13, 2020	No records available
California Regional Water Quality Control Board	Online database review	September 5, 2020	Records received (See Section 3.3.)
California Department of Toxic Substances Control	Online database review	September 5, 2020	No records available
Marin County Department of Environmental Health	Online records request	September 10, 2020	Response received (See Section 6.3.2)
City of Novato Fire Department	Online records request	September 10, 2020	Records received, but no pertinent files were provided for the Site

8.2.2 Physical Setting Sources

The physical setting sources are described in Section 2.4 of this Report.

8.2.3 Standard and Other Historical Sources

The standard and other historical sources are listed in Section 3.2 of this Report.

8.3 Interviews with Past and Present Owners and Occupants

Arcadis interviewed the following owners and occupants of the Site:

- Mr. Wilson, Project Manager (present owner/occupant representative)
- Mr. Bettencort, ARB Industrial Project Manager (present owner/occupant representative)
- Mr. Frohlich, PG&E Environmental Manager (present owner/occupant representative)

Contact information for past owners and occupants of the Site was not provided to Arcadis. The Site is not abandoned; therefore, owners and occupants of neighboring or nearby properties were not interviewed.

8.4 Interviews with State and/or Local Government Officials

State and/or local government officials contacted during this Phase I ESA are summarized in Section 8.2.1.

8.5 Other References

ASTM. 2013. Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation E 1527-13.

EDR. 2020. EDR Radius Map™ Report with GeoCheck®. Inquiry Number 6183353. September 8, 2020

EDR. 2020. The EDR Aerial Photo Decade Package. Inquiry Number 6183353. September 8, 2020

EDR. 2020. The EDR-City Directory Image Report. Inquiry Number 6183353. September 8, 2020

EDR. 2020. EDR Historical Topo Map Report with Quadmatch™. Inquiry Number 6183353. September 8, 2020

EDR. 2020. Certified Sanborn® Map Report. Inquiry Number Inquiry Number 6183353. September 8, 2020

National Wetlands Inventory Mapper. 2020. Available at: https://www.fws.gov/wetlands/data/mapper.html

WRA Environmental Consultants, Inc. 2020 Jurisdictional Delineation Report for 8161 Redwood Boulevard, Novato, Marin County, California. October.

Other documents reviewed are referenced throughout this Phase I ESA.

8.6 Significant Assumptions

Arcadis has assumed that the information sources used for this Phase I ESA provided accurate information.

Evaluations presented in this Phase I ESA Report are based exclusively on the sources listed herein; no invasive field activities were conducted and no laboratory analyses were performed.

The boundaries of the Site were described in documents provided by Habitat and by interviews with Site personnel. Arcadis has assumed that this information was accurate.

8.7 Limitations and Exceptions

The services performed and any opinions expressed by Arcadis in this Phase I ESA Report are based upon the limits of the Phase I ESA described herein. Arcadis has relied upon the accuracy of documents, information, data, and other materials provided or made available by the User and others. Arcadis has not independently verified such information and assumes no liability for the accuracy or completeness of such information. Conclusions provided with regard to subsurface soil and groundwater impacts are limited to those that can be formed based on a non-intrusive investigation. The absence of environmental hazards in the subsurface cannot be guaranteed based on conditions observed on the surface. The scope of this project did not include sampling of environmental media. Arcadis makes no guarantee that Site conditions do not exist, or will not exist in the future, that were undetected or that could lead to liability in connection with the Site. Similarly, past and present activities on the Site indicating the potential for the existence of environmental concerns may not have been discovered by Arcadis. Such activities may include those that would indicate the potential for regulated hazardous substances at the Site. Likewise, Site conditions or Site activities that were outside the scope of the services described above, or changes to Site conditions or regulatory requirements may lead to liabilities in connection with the Site that are not identified in this Phase I ESA Report. Arcadis has reviewed the information obtained in connection with the performance of the services described above, in keeping with existing applicable environmental consulting standards and enforcement practices, but cannot predict what actions any given agency may take or what standards and practices may apply in the future.

Unless otherwise described in the body of this Phase I ESA Report, if any one or more of the standard sources under ASTM was not reviewed, this was due to information from the source not being readily available or a determination by the Environmental Professional that the standard source was not likely to be useful. Similarly, unless otherwise noted in this Phase I ESA Report, an incompleteness in connection with the review was determined not to affect the Environmental Professional's ability to form conclusions regarding the Site.

Arcadis evaluates the potential for the presence or likely presence of vapor in the subsurface of the Site using the Environmental Professional's professional judgment and evaluation of the available information and may use portions of ASTM E2600-10 as a guide. This evaluation is not a full Vapor Encroachment Screen (VES) pursuant to ASTM E2600-10. The vapor evaluation is not exhaustive and cannot wholly eliminate uncertainty regarding the presence or potential presence of vapors in the subsurface of the Site.

Where access to portions of the Site or to structures on the Site was unavailable or limited, Arcadis renders no opinion and accepts no responsibility for assessment of the condition of these portions of the Site, including specifically, but not limited to, the presence of hazardous substances or petroleum products at these locations. In addition, Arcadis renders no opinion concerning the presence or absence of hazardous substances or petroleum products where direct observation of any part of the Site, or structure on the Site, is limited by physical obstructions. Unless otherwise noted herein, Arcadis did not access the roof(s) of on-site building(s).

The conclusions and observations are based upon limited data and professional opinions, and the Site visit was performed on a particular date. Site conditions and activities may change after that date. Therefore, the risk of undiscovered environmental impairment of the Site cannot be ruled out. Arcadis does not make any representations or warranties regarding the condition or value of the Site, regardless of the results of the assessment presented in this Phase I ESA Report.

Arcadis makes no guarantees, certifications, warranties, or representations of any kind whatsoever, whether expressed or implied, regarding this Phase I ESA, the condition of the Site, or the liabilities associated with the Site.

8.8 Data Gaps

ASTM E1527-13 defines a data gap as “a lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information.” The following data gap was identified during this Phase I ESA:

Past Uses of the Site: Arcadis was unable to identify the past uses of the Site back to first developed use or 1940, whichever is earlier, pursuant to ASTM E1527-13 Section 8.3.2. Based on information obtained from other sources (as listed in Section 3.2 of this report), the Site appeared as undeveloped range land prior to 1963, when the northern portion of the Site appeared to be developed with one structure. This data gap is unlikely to affect Arcadis’ ability to identify RECs at the Site; therefore, this data gap is considered to be non-significant.

8.9 Deviations

No deviations from ASTM E1527-13 occurred during this Phase I ESA:

8.10 Reliance

This Phase I ESA Report has been prepared for the sole use of Habitat and the contents thereof may not be used or relied upon by any other person without the express written consent and authorization of Arcadis. Use of this Phase I ESA Report by any other party shall be at such party’s sole risk and liability.

FIGURES

Created By: L.DRUM Last Saved By: pbi00964 C:\E Drive\Pradeep\Projects\Phase1ESA\Novato\MXD\Figure_1_Site_Location.mxd 09/25/2020



LEGEND

SITE BOUNDARY



PHASE I ESA
8161 REDWOOD BOULEVARD,
NOVATO, CALIFORNIA

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1

Created By: L.DRUM Last Saved By: pbi00964 C:\E Drive\Pradeep\Projects\Phase1ESA\Novato\MXD\Figure_2_Site_Map.mxd 01/12/2021



LEGEND

- DRAINAGE DITCH
- PG&E YARD AREA
- NATURAL GAS PIPLINE (Approximate Location)
- SITE BOUNDARY

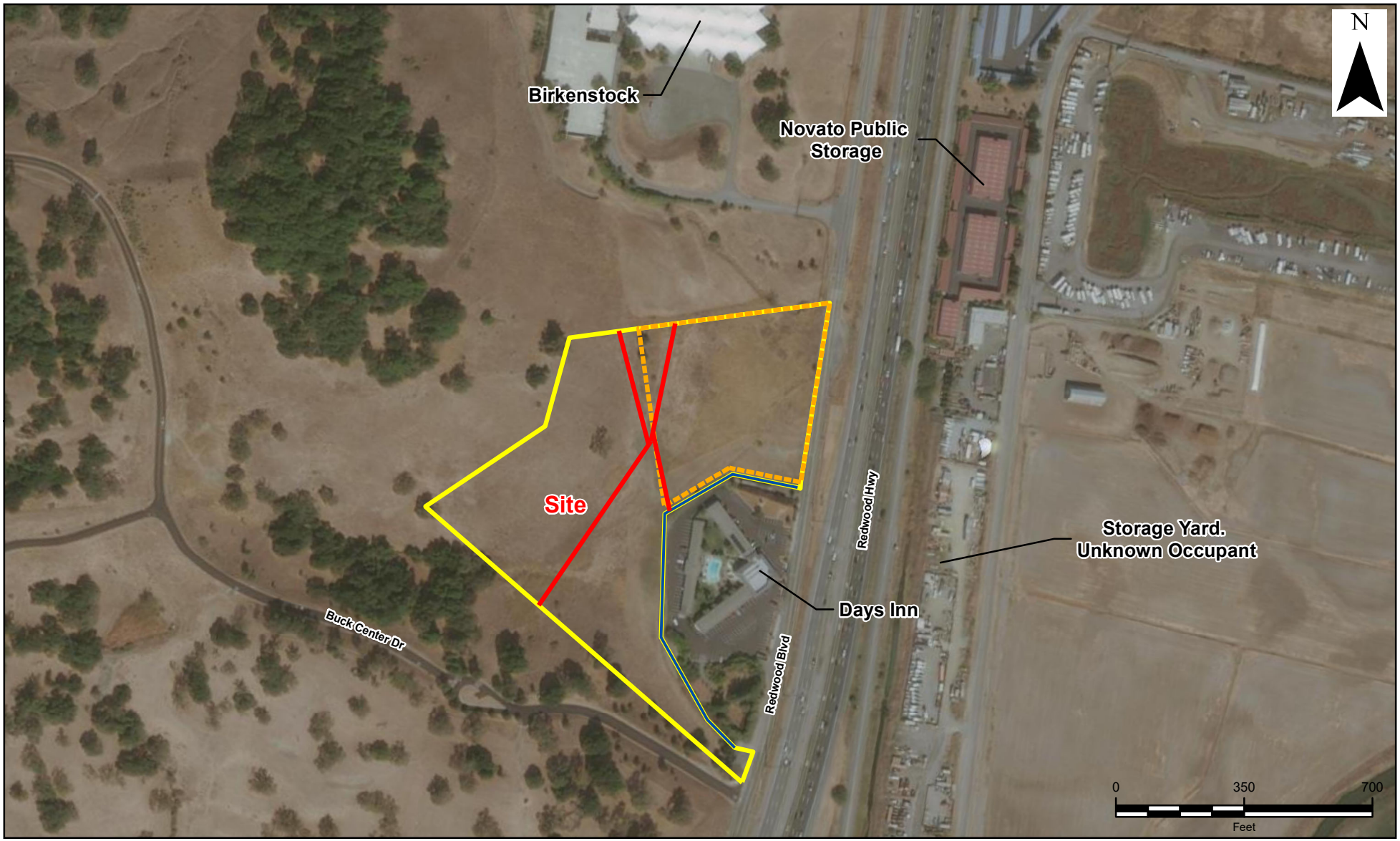
PHASE I ESA
8161 REDWOOD BOULEVARD,
NOVATO, CALIFORNIA

SITE MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2

Created By: L.DRUM Last Saved By: pbi00964 C:\E Drive\Pradeep\Projects\Phase1ESA\Novato\MXD\Figure_3_Surrounding_Property_Map_Final.mxd 01/12/2021



LEGEND

- PG&E YARD AREA
- DRAINAGE DITCH
- NATURAL GAS PIPLINE (Approximate Location)
- SITE BOUNDARY

PHASE I ESA
8161 REDWOOD BOULEVARD,
NOVATO, CALIFORNIA

SURROUNDING PROPERTY MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

APPENDIX A

Site Photographs

PHOTOGRAPH LOG

Habitat Redwood Boulevard
8161 Redwood Boulevard
Novato, California



Photograph: 1

Description:
Entrance to the Site.

Location:
Northeastern boundary along Redwood Boulevard.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 2

Description:
Equipment used for hydrotesting and carbon vessels.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020

Habitat Redwood Boulevard
8161 Redwood Boulevard
Novato, California



Photograph: 3

Description:
View of rental frac tanks for groundwater.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 4

Description:
Example of five yard soil storage bins.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 5

Description:
Roll-off bins with soil and spilled soil area.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 6

Description:
Roll-off bin storage for used pigs.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020

Habitat Redwood Boulevard
8161 Redwood Boulevard
Novato, California



Photograph: 7

Description:
Example of waste characterization labels.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 8

Description:
Example of staining near roll-off bins.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020

Habitat Redwood Boulevard
8161 Redwood Boulevard
Novato, California



Photograph: 9

Description:
View of new pig storage area.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 10

Description:
View of scrap metal bin storage.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 11

Description:
Interior of the scrap metal bin.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 12

Description:
View of tools, equipment, and semi-trailer storage areas.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 13

Description:
View of stockpile of sand and aggregate.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 14

Description:
Welding area.

Location:
Northern portion of the Site

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 15

Description:
Acetylene tank storage, propane tanks, and portable toilets.

Location:
Northern portion of the Site

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 16

Description:
Oxygen tank storage area

Location:
Northern portion of the Site

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 17

Description:
Material storage area

Location:
Northern portion of the Site

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 18

Description:
Supersacks of unknown contents.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 19

Description:
Pressure washing machinery, beyond which are general refuse dumpsters.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 20

Description:
Pump station area.

Location:
Northwestern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 21

Description:
POTW discharge point.

Location:
Northeastern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 22

Description:
Diesel fuel cans.

Location:
Northern portion of the Site

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 23

Description:
Example of diesel-fueled generators.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 24

Description:
Diesel-fueled lighting towers and empty poly aboveground storage tank.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 25

Description:
Drainage ditch for wastewater disposal

Location:
Eastern boundary of the Site

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 26

Description:
Natural gas pipeline markers.

Location:
Northern portion of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 27

Description:
Western portion of the Site facing north.

Location:
Western portion of the Site

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 28

Description:
Southern portion of the Site.

Location:
Southern portion of the Site looking northwest

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 29

Description:
View of vacant land and Birkenstock facility.

Location:
North of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020



Photograph: 30

Description:
Days Inn Hotel along Redwood Boulevard.

Location:
East of the Site.

Photograph taken by:
Bryan Fong

Date: 9/18/2020

Habitat Redwood Boulevard
8161 Redwood Boulevard
Novato, California



Photograph: 31

Description:
Novato Self-Storage beyond Highway 101.

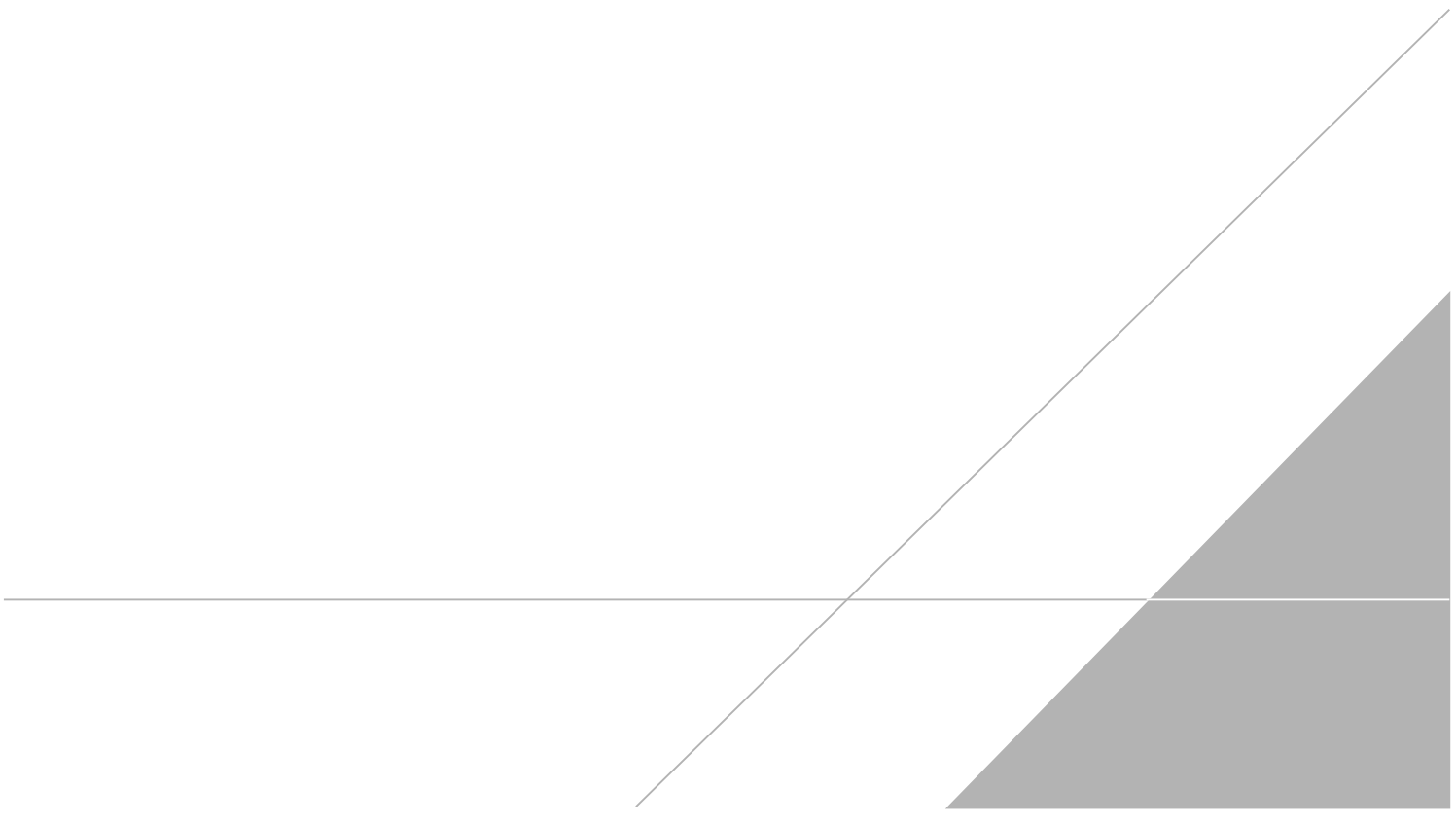
Location:
East of the Site

Photograph taken by:
Bryan Fong

Date: 9/18/2020

APPENDIX B

EDR Radius Map™ Report with GeoCheck®



Habitat For Humanity Novato
8161 Redwood Boulevard
Novato, CA 94945

Inquiry Number: 6183353.2s
September 08, 2020

The EDR Radius Map™ Report with GeoCheck®

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	134
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-10
Physical Setting Source Map Findings	A-12
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

8161 REDWOOD BOULEVARD
NOVATO, CA 94945

COORDINATES

Latitude (North):	38.1337680 - 38° 8' 1.56''
Longitude (West):	122.5658150 - 122° 33' 56.93''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	538052.0
UTM Y (Meters):	4220540.0
Elevation:	20 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5602160 PETALUMA RIVER, CA
Version Date:	2012
South Map:	5602156 NOVATO, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140608
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
8161 REDWOOD BOULEVARD
NOVATO, CA 94945

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	PG & E	8161 OLD REDWOOD HWY	FINDS		TP
A2	PACIFIC GAS & ELECTR	8161 OLD REDWOOD HWY	HAZNET, HWTS		TP
A3	PG & E	8161 OLD REDWOOD HWY	LUST, HIST CORTESE, CERS		TP
A4	PG&E	8161 REDWOOD HWY (AK	UST		TP
A5	PG & E	8161 OLD REDWOOD HWY	RGA LUST		TP
A6	PG & E PROPERTY	8161 OLD REDWOOD HWY	RGA LUST		TP
A7	PG & E	8161 OLD REDWOOD HWY	LUST, Cortese		TP
B8	BUCK CENTER FOR RESE	8001 REDWOOD HWY.	UST	Higher	33, 0.006, SSE
B9	FUJIFILM CELLULAR DY	8001 REDWOOD BOULEVA	RCRA NonGen / NLR	Higher	33, 0.006, SSE
B10	ULTRAGENYX PHARMACEU	8001 REDWOOD BLVD	RCRA-SQG	Higher	33, 0.006, SSE
B11	ULTRAGENYX	8001 REDWOOD BLVD	CERS HAZ WASTE, CERS	Higher	33, 0.006, SSE
B12	BUCK INSTITUTE FOR R	8001 REDWOOD BOULEVA	CERS HAZ WASTE, CERS TANKS, CERS	Higher	33, 0.006, SSE
B13	CALICO LIFE SCIENCES	8001 REDWOOD BLVD	RCRA NonGen / NLR	Higher	33, 0.006, SSE
B14	BUCK INSTITUTE FOR A	8001 REDWOOD BLVD	RCRA-SQG, HAZNET, HWTS	Higher	33, 0.006, SSE
B15	BIOMARIN PHARMACEUTI	8001 REDWOOD BLVD	CERS HAZ WASTE, CERS	Higher	33, 0.006, SSE
B16	BIOMARIN PHARMACEUTI	8001 REDWOOD BLVD	RCRA NonGen / NLR	Higher	33, 0.006, SSE
B17	CALICO LIFE SCIENCES	8001 REDWOOD BLVD	CERS HAZ WASTE	Higher	33, 0.006, SSE
18	NOVATO MOTEL LLC	8141 REDWOOD BLVD	RCRA NonGen / NLR	Lower	175, 0.033, SE
19	RUSH CREEK ESTATES	ATHERTON AVE @ BINFO	CPS-SLIC, NON-CASE INFO	Lower	851, 0.161, ENE
C20	KCBS TRANSMITTER BUI	8198 BINFORD RD.	AST	Lower	888, 0.168, NE
C21	KCBS / FEMA	8198 BINFORD ROAD	AST	Lower	888, 0.168, NE
C22	KCBS / FEMA	8198 BINFORD ROAD	CERS TANKS, CERS	Lower	888, 0.168, NE
C23	BLACK JOHN SLOUGH RA	8190 BINFORD RD	CPS-SLIC, CERS, NON-CASE INFO	Lower	898, 0.170, NE
24	NOVATO STORAGE PARK	UNKNOWN AIRPORT RD &	CPS-SLIC	Lower	1105, 0.209, NNE
D25	NOVATO STORAGE PARK	AIRPORT AND BINFORD	ENVIROSTOR, VCP, HIST CORTESE	Lower	2105, 0.399, NNE
D26	BINFORD ROAD FILL SI	BINFORD AND AIRPORT	ENVIROSTOR	Lower	2121, 0.402, NNE
E27	MARIN AIR SERVICES	451 AIRPORT RD	LUST, SWEEPS UST, CA FID UST, Cortese, CERS, HWTS	Lower	2396, 0.454, NNE
E28	MARIN COUNTY AIRPORT	451 AIRPORT RD	LUST, HIST CORTESE, NPDES, WDS, CIWQS, CERS	Lower	2396, 0.454, NNE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 9 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
PG & E 8161 OLD REDWOOD HWY NOVATO, CA 94947	FINDS Registry ID:: 110065084580	N/A
PACIFIC GAS & ELECTR 8161 OLD REDWOOD HWY NOVATO, CA 94945	HAZNET GEPAID: CAC001139324 HWTS	N/A
PG & E 8161 OLD REDWOOD HWY NOVATO, CA 94947	LUST Database: LUST, Date of Government Version: 06/08/2020 Status: Completed - Case Closed Global Id: T0604100288 HIST CORTESE Reg Id: 21-0306 CERS	N/A
PG&E 8161 REDWOOD HWY (AK NOVATO, CA 94947	UST Database: MARIN CO. UST, Date of Government Version: 09/26/2018	N/A
PG & E 8161 OLD REDWOOD HWY NOVATO, CA	RGA LUST	N/A
PG & E PROPERTY 8161 OLD REDWOOD HWY NOVATO, CA	RGA LUST	N/A
PG & E 8161 OLD REDWOOD HWY NOVATO, CA 94947	LUST Database: LUST REG 2, Date of Government Version: 09/30/2004 Facility Id: 21-0306 Facility Status: Case Closed date9: 4/12/1996 Cortese Cleanup Status: COMPLETED - CASE CLOSED	N/A

EXECUTIVE SUMMARY

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROLS ---------- Institutional Controls Sites List

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---- Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST ---- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST ---- Underground Storage Tank Listing
INDIAN UST ---- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ---- Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS ---- Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ---- Waste Management Unit Database
SWRCY ---- Recycler Database
HAULERS ---- Registered Waste Tire Haulers Listing
INDIAN ODI ---- Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ---- Torres Martinez Reservation Illegal Dump Site Locations
ODI ---- Open Dump Inventory
IHS OPEN DUMPS ---- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---- Delisted National Clandestine Laboratory Register
HIST Cal-Sites ---- Historical Calsites Database
SCH ---- School Property Evaluation Program
CDL ---- Clandestine Drug Labs
Toxic Pits ---- Toxic Pits Cleanup Act Sites
US CDL ---- National Clandestine Laboratory Register
PFAS ---- PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST ---- SWEEPS UST Listing
HIST UST ---- Hazardous Substance Storage Container Database
CA FID UST ---- Facility Inventory Database

Local Land Records

LIENS ---- Environmental Liens Listing

LIENS 2 ---- CERCLA Lien Information
DEED ---- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System
CHMIRS ---- California Hazardous Material Incident Report System
LDS ---- Land Disposal Sites Listing
MCS ---- Military Cleanup Sites Listing
SPILLS 90 ---- SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS ---- Formerly Used Defense Sites
DOD ---- Department of Defense Sites
SCRD DRYCLEANERS ---- State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ---- Financial Assurance Information
EPA WATCH LIST ---- EPA WATCH LIST
2020 COR ACTION ---- 2020 Corrective Action Program List
TSCA ---- Toxic Substances Control Act
TRIS ---- Toxic Chemical Release Inventory System
SSTS ---- Section 7 Tracking Systems
ROD ---- Records Of Decision
RMP ---- Risk Management Plans
RAATS ---- RCRA Administrative Action Tracking System
PRP ---- Potentially Responsible Parties
PADS ---- PCB Activity Database System
ICIS ---- Integrated Compliance Information System
FTTS ---- FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ---- Material Licensing Tracking System
COAL ASH DOE ---- Steam-Electric Plant Operation Data
COAL ASH EPA ---- Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ---- PCB Transformer Registration Database
RADINFO ---- Radiation Information Database
HIST FTTS ---- FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ---- Incident and Accident Data
CONSENT ---- Superfund (CERCLA) Consent Decrees
INDIAN RESERV ---- Indian Reservations
FUSRAP ---- Formerly Utilized Sites Remedial Action Program
UMTRA ---- Uranium Mill Tailings Sites
LEAD SMELTERS ---- Lead Smelter Sites
US AIRS ---- Aerometric Information Retrieval System Facility Subsystem
US MINES ---- Mines Master Index File
ABANDONED MINES ---- Abandoned Mines
DOCKET HWC ---- Hazardous Waste Compliance Docket Listing
ECHO ---- Enforcement & Compliance History Information
UXO ---- Unexploded Ordnance Sites
FUELS PROGRAM ---- EPA Fuels Program Registered Listing
CA BOND EXP. PLAN ---- Bond Expenditure Plan
CUPA Listings ---- CUPA Resources List
DRYCLEANERS ---- Cleaner Facilities
EMI ---- Emissions Inventory Data
ENF ---- Enforcement Action Listing
Financial Assurance ---- Financial Assurance Information Listing

ICE	ICE
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CIWQS	California Integrated Water Quality System
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)
MINES MRDS	Mineral Resources Data System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historical Auto Stations
EDR Hist Cleaner	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA generators list

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 03/23/2020 has revealed that there are 2 RCRA-SQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ULTRAGENYX PHARMACEU EPA ID:: CAR000274845	8001 REDWOOD BLVD	SSE 0 - 1/8 (0.006 mi.)	B10	21
BUCK INSTITUTE FOR A EPA ID:: CAR000152504	***8001 REDWOOD BLVD***	***SSE 0 - 1/8 (0.006 mi.)***	***B14***	***32***

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 04/27/2020 has revealed that there are 2 ENVIROSTOR sites within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
NOVATO STORAGE PARK Facility Id: 21420001 Status: No Further Action	***AIRPORT AND BINFORD***	***NNE 1/4 - 1/2 (0.399 mi.)***	***D25***	***112***
BINFORD ROAD FILL SI Facility Id: 21490003 Status: Refer: Other Agency	BINFORD AND AIRPORT	NNE 1/4 - 1/2 (0.402 mi.)	D26	115

EXECUTIVE SUMMARY

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 2 LUST sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MARIN AIR SERVICES	***451 AIRPORT RD***	***NNE 1/4 - 1/2 (0.454 mi.)***	***E27***	***116***
Database: LUST REG 2, Date of Government Version: 09/30/2004 Facility Id: 21-0298 Facility Status: Leak being confirmed				
MARIN COUNTY AIRPORT	***451 AIRPORT RD***	***NNE 1/4 - 1/2 (0.454 mi.)***	***E28***	***120***
Database: LUST, Date of Government Version: 06/08/2020 Status: Completed - Case Closed Global Id: T0604100280				

CPS-SLIC: Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the CPS-SLIC list, as provided by EDR, has revealed that there are 3 CPS-SLIC sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
RUSH CREEK ESTATES	***ATHERTON AVE @ BINFO***	***ENE 1/8 - 1/4 (0.161 mi.)***	***19***	***106***
Database: SLIC REG 2, Date of Government Version: 09/30/2004 Facility Id: SL18303723				
BLACK JOHN SLOUGH RA	***8190 BINFORD RD***	***NE 1/8 - 1/4 (0.170 mi.)***	***C23***	***110***
Database: SLIC REG 2, Date of Government Version: 09/30/2004 Facility Id: 21S0026				
NOVATO STORAGE PARK	UNKNOWN AIRPORT RD &	NNE 1/8 - 1/4 (0.209 mi.)	24	111
Database: SLIC REG 2, Date of Government Version: 09/30/2004 Facility Id: 21S0007				

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BUCK CENTER FOR RESE	8001 REDWOOD HWY.	SSE 0 - 1/8 (0.006 mi.)	B8	19
Database: MARIN CO. UST, Date of Government Version: 09/26/2018 Database: UST, Date of Government Version: 06/08/2020				

Facility Id: 60-0279
Facility Id: 21-000-600279
Facility Id: 600279
Tank Status: Change of Information

AST: A listing of aboveground storage tank petroleum storage tank locations.

A review of the AST list, as provided by EDR, has revealed that there are 2 AST sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
KCBS TRANSMITTER BUI Database: AST, Date of Government Version: 07/06/2016	8198 BINFORD RD.	NE 1/8 - 1/4 (0.168 mi.)	C20	106
KCBS / FEMA Database: AST, Date of Government Version: 07/06/2016	8198 BINFORD ROAD	NE 1/8 - 1/4 (0.168 mi.)	C21	107

State and tribal voluntary cleanup sites

VCP: Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

A review of the VCP list, as provided by EDR, and dated 04/27/2020 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
NOVATO STORAGE PARK Status: No Further Action Facility Id: 21420001	***AIRPORT AND BINFORD***	***NNE 1/4 - 1/2 (0.399 mi.)***	***D25***	***112***

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

CERS HAZ WASTE: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

A review of the CERS HAZ WASTE list, as provided by EDR, and dated 04/20/2020 has revealed that there are 4 CERS HAZ WASTE sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ULTRAGENYX	***8001 REDWOOD BLVD***	***SSE 0 - 1/8 (0.006 mi.)***	***B11***	***23***
BUCK INSTITUTE FOR R	***8001 REDWOOD BOULEVA***	***SSE 0 - 1/8 (0.006 mi.)***	***B12***	***25***
BIOMARIN PHARMACEUTI	***8001 REDWOOD BLVD***	***SSE 0 - 1/8 (0.006 mi.)***	***B15***	***99***
CALICO LIFE SCIENCES	8001 REDWOOD BLVD	SSE 0 - 1/8 (0.006 mi.)	B17	102

EXECUTIVE SUMMARY

Local Lists of Registered Storage Tanks

CERS TANKS: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

A review of the CERS TANKS list, as provided by EDR, and dated 04/20/2020 has revealed that there are 2 CERS TANKS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BUCK INSTITUTE FOR R	***8001 REDWOOD BOULEVA***	***SSE 0 - 1/8 (0.006 mi.)***	***B12***	***25***
Lower Elevation	**Address**	**Direction / Distance**	**Map ID**	**Page**
KCBS / FEMA	***8198 BINFORD ROAD***	***NE 1/8 - 1/4 (0.168 mi.)***	***C22***	***108***

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 03/23/2020 has revealed that there are 4 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FUJIFILM CELLULAR DY EPA ID:: CAL000429849	8001 REDWOOD BOULEVA	SSE 0 - 1/8 (0.006 mi.)	B9	20
CALICO LIFE SCIENCES EPA ID:: CAL000428939	8001 REDWOOD BLVD	SSE 0 - 1/8 (0.006 mi.)	B13	31
BIOMARIN PHARMACEUTI EPA ID:: CAL000430504	8001 REDWOOD BLVD	SSE 0 - 1/8 (0.006 mi.)	B16	101
Lower Elevation	**Address**	**Direction / Distance**	**Map ID**	**Page**
NOVATO MOTEL LLC EPA ID:: CAC003041277	8141 REDWOOD BLVD	SE 0 - 1/8 (0.033 mi.)	18	104

Cortese: The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

A review of the Cortese list, as provided by EDR, and dated 06/22/2020 has revealed that there is 1 Cortese site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MARIN AIR SERVICES	***451 AIRPORT RD***	***NNE 1/4 - 1/2 (0.454 mi.)***	***E27***	***116***
Cleanup Status: COMPLETED - CASE CLOSED				

EXECUTIVE SUMMARY

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 2 HIST CORTESE sites within approximately 0.5 miles of the target property.

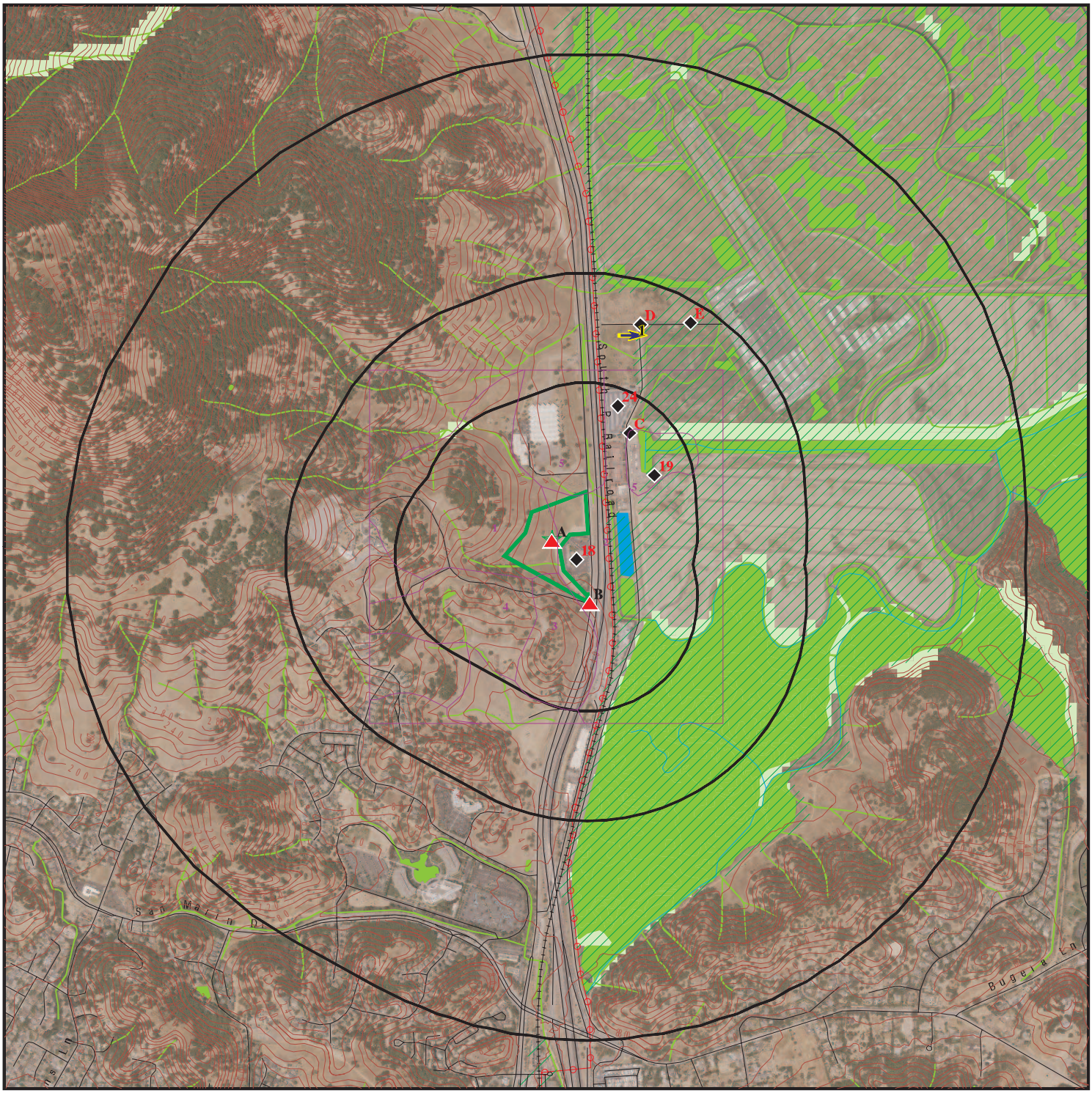
Lower Elevation	Address	Direction / Distance	Map ID	Page
NOVATO STORAGE PARK Reg Id: 21420001	***AIRPORT AND BINFORD***	***NNE 1/4 - 1/2 (0.399 mi.)***	***D25***	***112***
MARIN COUNTY AIRPORT Reg Id: 21-0298	***451 AIRPORT RD***	***NNE 1/4 - 1/2 (0.454 mi.)***	***E28***	***120***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
	CDL

OVERVIEW MAP - 6183353.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/4 1/2 1 Miles

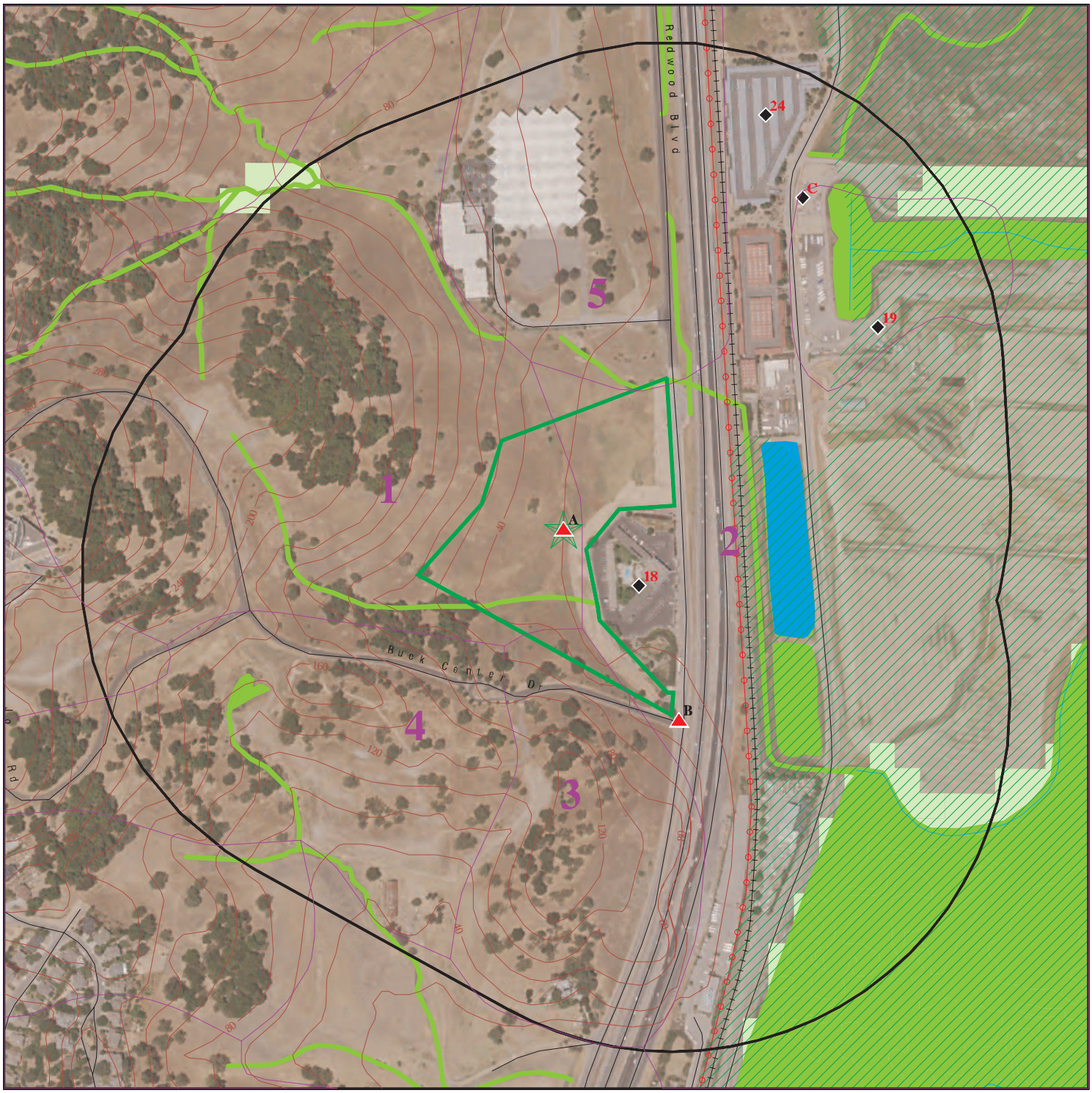
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

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:	Habitat For Humanity Novato	CLIENT:	ARCADIS U.S., Inc.
ADDRESS:	8161 Redwood Boulevard Novato CA 94945	CONTACT:	Divya Mehta
		INQUIRY #:	6183353.2s
LAT/LONG:	38.133768 / 122.565815	DATE:	September 08, 2020 3:41 pm

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

DETAIL MAP - 6183353.2S



- 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

0 1/16 1/8 1/4 Miles

- 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: Habitat For Humanity Novato	CLIENT: ARCADIS U.S., Inc.
ADDRESS: 8161 Redwood Boulevard Novato CA 94945	CONTACT: Divya Mehta INQUIRY #: 6183353.2s
LAT/LONG: 38.133768 / 122.565815	DATE: September 08, 2020 3:45 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	1.000		0	0	0	0	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		2	0	NR	NR	NR	2
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	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	0	2	0	NR	2
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	2	0	0	2	NR	NR	4

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	3	0	NR	NR	3
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250	1	1	0	NR	NR	NR	2
AST	0.250		0	2	NR	NR	NR	2
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	1	NR	NR	1
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	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	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		4	0	NR	NR	NR	4
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		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		1	1	NR	NR	NR	2
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		4	0	NR	NR	NR	4
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP	1	NR	NR	NR	NR	NR	1
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
ECHO	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	1	0	0	1	NR	NR	2
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	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP	1	NR	NR	NR	NR	NR	1
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500	1	0	0	2	NR	NR	3
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	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
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	1	NR	NR	NR	NR	NR	1
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
HWTS	TP	1	NR	NR	NR	NR	NR	1
MINES MRDS	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP	2	NR	NR	NR	NR	NR	2
- Totals --		11	12	6	8	0	0	37

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 **PG & E** **FINDS** **1023222041**
Target **8161 OLD REDWOOD HWY** **N/A**
Property **NOVATO, CA 94947**

Site 1 of 7 in cluster A

Actual: **20 ft.**

FINDS:
Registry ID: 110065084580

Click Here:

Environmental Interest/Information System:
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

A2 **PACIFIC GAS & ELECTRIC** **HAZNET** **S112868679**
Target **8161 OLD REDWOOD HWY** **HWTS** **N/A**
Property **NOVATO, CA 94945**

Site 2 of 7 in cluster A

Actual: **20 ft.**

HAZNET:

Name:	PACIFIC GAS & ELECTRIC
Address:	8161 OLD REDWOOD HWY
Address 2:	Not reported
City,State,Zip:	NOVATO, CA 949450000
Contact:	DEBRA FUDGE
Telephone:	7075777234
Mailing Name:	Not reported
Mailing Address:	111 STONY CIRCLE
Year:	1996
Gepaid:	CAC001139324
TSD EPA ID:	CAT000646117
CA Waste Code:	223 - Unspecified oil-containing waste
Disposal Method:	D80 - Disposal, Land Fill
Tons:	202.272

Additional Info:

Year:	1996
Gen EPA ID:	CAC001139324
Shipment Date:	19960717
Creation Date:	5/30/1997 0:00:00
Receipt Date:	19960717
Manifest ID:	95203580
Trans EPA ID:	CAD063547996
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	15.1704

PACIFIC GAS & ELECTRIC (Continued) **S112868679**

Waste Quantity:	18
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	19960717
Creation Date:	5/30/1997 0:00:00
Receipt Date:	19960717
Manifest ID:	95203581
Trans EPA ID:	CAD063547996
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	15.1704
Waste Quantity:	18
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	19960703
Creation Date:	5/30/1997 0:00:00
Receipt Date:	19960703
Manifest ID:	95203589
Trans EPA ID:	CAD063547996
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	15.1704
Waste Quantity:	18
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	19960703

PACIFIC GAS & ELECTRIC (Continued) **S112868679**

Creation Date:	5/30/1997 0:00:00
Receipt Date:	19960703
Manifest ID:	95203583
Trans EPA ID:	CAD063546996
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	15.1704
Waste Quantity:	18
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	19960703
Creation Date:	5/30/1997 0:00:00
Receipt Date:	19960703
Manifest ID:	95203590
Trans EPA ID:	CAD063547996
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	15.1704
Waste Quantity:	18
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	19960703
Creation Date:	5/30/1997 0:00:00
Receipt Date:	19960703
Manifest ID:	95203584
Trans EPA ID:	CAD063547996
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported

PACIFIC GAS & ELECTRIC (Continued) **S112868679**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	15.1704
Waste Quantity:	18
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	19960702
Creation Date:	5/30/1997 0:00:00
Receipt Date:	19960702
Manifest ID:	95203588
Trans EPA ID:	CAD063547996
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	16.856
Waste Quantity:	20
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	19960702
Creation Date:	5/30/1997 0:00:00
Receipt Date:	19960702
Manifest ID:	95203586
Trans EPA ID:	CAD063547996
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	16.856
Waste Quantity:	20
Quantity Unit:	Y
Additional Code 1:	Not reported

PACIFIC GAS & ELECTRIC (Continued) **S112868679**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	19960702
Creation Date:	5/30/1997 0:00:00
Receipt Date:	19960702
Manifest ID:	95203585
Trans EPA ID:	CAD063547996
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	15.1704
Waste Quantity:	18
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	19960702
Creation Date:	5/30/1997 0:00:00
Receipt Date:	19960702
Manifest ID:	95203587
Trans EPA ID:	CAD063547996
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	D80 - Disposal, Land Fill
Quantity Tons:	15.1704
Waste Quantity:	18
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

HWTS:

Name:	PACIFIC GAS & ELECTRIC
Address:	8161 OLD REDWOOD HWY
Address 2:	Not reported

PACIFIC GAS & ELECTRIC (Continued) **S112868679**

City,State,Zip:	NOVATO, CA 949450000
EPA ID:	CAC001139324
Inactive Date:	06/30/1998
Create Date:	06/28/1996
Last Act Date:	08/18/1999
Mailing Name:	Not reported
Mailing Address:	111 STONY CIRCLE
Mailing Address 2:	Not reported
Mailing City,State,Zip:	SANTA ROSA, CA 954010000
Owner Name:	PG & E
Owner Address:	77 BEALE ST
Owner Address 2:	Not reported
Owner City,State,Zip:	SAN FRANCISCO, CA 941200000
Contact Name:	DEBRA FUDGE
Contact Address:	INACTIVE PER 98VQ - NK
Contact Address 2:	Not reported
City,State,Zip:	SANTA ROSA, CA 954010000

A3 **PG & E** **LUST** **S110060779**
Target **8161 OLD REDWOOD HWY** **HIST CORTESE** **N/A**
Property **NOVATO, CA 94947** **CERS**

Site 3 of 7 in cluster A

Actual:
20 ft.

LUST:

Name:	PG & E
Address:	8161 OLD REDWOOD HWY
City,State,Zip:	NOVATO, CA 94947
Lead Agency:	SAN FRANCISCO BAY RWQCB (REGION 2)
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0604100288
Global Id:	T0604100288
Latitude:	38.107159
Longitude:	-122.567741
Status:	Completed - Case Closed
Status Date:	04/12/1996
Case Worker:	JMJ
RB Case Number:	21-0306
Local Agency:	MARIN COUNTY
File Location:	Not reported
Local Case Number:	21-0306
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Waste Oil / Motor / Hydraulic / Lubricating
Site History:	Not reported

LUST:

Global Id:	T0604100288
Contact Type:	Regional Board Caseworker
Contact Name:	JOHN JANG
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY STREET, SUITE 1400
City:	OAKLAND
Email:	jjang@waterboards.ca.gov
Phone Number:	Not reported

Global Id:	T0604100288
Contact Type:	Local Agency Caseworker
Contact Name:	UNK

PG & E (Continued) **S110060779**

Organization Name: MARIN COUNTY
Address: Not reported
City: r2 UNKNOWN
Email: Not reported
Phone Number: Not reported

LUST:
Global Id: T0604100288
Action Type: Other
Date: 01/09/1996
Action: Leak Discovery

Global Id: T0604100288
Action Type: ENFORCEMENT
Date: 04/12/1996
Action: Closure/No Further Action Letter

Global Id: T0604100288
Action Type: ENFORCEMENT
Date: 03/01/1996
Action: Staff Letter

Global Id: T0604100288
Action Type: Other
Date: 01/09/1996
Action: Leak Stopped

Global Id: T0604100288
Action Type: Other
Date: 01/10/1996
Action: Leak Reported

LUST:
Global Id: T0604100288
Status: Open - Case Begin Date
Status Date: 01/09/1996

Global Id: T0604100288
Status: Open - Site Assessment
Status Date: 03/01/1996

Global Id: T0604100288
Status: Completed - Case Closed
Status Date: 04/12/1996

HIST CORTESE:
edr_fname: PG & E
edr_fadd1: 8161 OLD REDWOOD
City,State,Zip: NOVATO, CA
Region: CORTESE
Facility County Code: 21
Reg By: LTNKA
Reg Id: 21-0306

PG & E (Continued) **S110060779**

CERS:
- Name: PG & E
- Address: 8161 OLD REDWOOD HWY
- City,State,Zip: NOVATO, CA 94947
- Site ID: 222948
- CERS ID: T0604100288
- CERS Description: Leaking Underground Storage Tank Cleanup Site

Affiliation:
- Affiliation Type Desc: Local Agency Caseworker
- Entity Name: UNK - MARIN COUNTY
- Entity Title: Not reported
- Affiliation Address: Not reported
- Affiliation City: r2 UNKNOWN
- Affiliation State: CA
- Affiliation Country: Not reported
- Affiliation Zip: Not reported
- Affiliation Phone: Not reported

- Affiliation Type Desc: Regional Board Caseworker
- Entity Name: JOHN JANG - SAN FRANCISCO BAY RWQCB (REGION 2)
- Entity Title: Not reported
- Affiliation Address: 1515 CLAY STREET, SUITE 1400
- Affiliation City: OAKLAND
- Affiliation State: CA
- Affiliation Country: Not reported
- Affiliation Zip: Not reported
- Affiliation Phone: Not reported

A4 **PG&E** **UST** **U003981305**
Target **8161 REDWOOD HWY (AKA OLD REDWOOD)** **N/A**
Property **NOVATO, CA 94947**

Site 4 of 7 in cluster A

Actual: 20 ft.

MARIN CO. UST:
- Name: PG&E
- Address: 8161 REDWOOD HWY (AKA OLD REDWOOD)
- City: NOVATO
- Zip: 94947
- Facility Id: Not reported

- Tank Number: Not reported
- Tank Status: Not reported
- Tank Contents: Not reported
- Tank Use: Not reported
- Certficate Number: Not reported
- Last Inspected: Not reported
- Program: UST
- Location: Not reported
- Pulled Date: Not reported
- Reason: Not reported

A5 **PG & E** **RGA LUST** **S114669048**
Target Property **8161 OLD REDWOOD HWY NOVATO, CA** **N/A**

Site 5 of 7 in cluster A

Actual: 20 ft.

RGA LUST:
Name: PG & E
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
2012 PG & E 8161 OLD REDWOOD HWY
Name: PG & E
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
2011 PG & E 8161 OLD REDWOOD HWY
Name: PG & E
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
2010 PG & E 8161 OLD REDWOOD HWY
Name: PG & E
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
2009 PG & E 8161 OLD REDWOOD HWY
Name: PG & E
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
2008 PG & E 8161 OLD REDWOOD HWY
Name: PG & E
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
2007 PG & E 8161 OLD REDWOOD HWY
Name: PG & E
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
2006 PG & E 8161 OLD REDWOOD HWY
Name: PG & E
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
2005 PG & E 8161 OLD REDWOOD HWY
Name: PG & E
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
2003 PG & E 8161 OLD REDWOOD HWY
Name: PG & E
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
2002 PG & E 8161 OLD REDWOOD HWY
Name: PG & E
Address: 8161 OLD REDWOOD HWY

PG & E (Continued) **S114669048**

City: NOVATO
State: NOVATO
2001 PG & E 8161 OLD REDWOOD HWY
Name: PG & E
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
2000 PG & E 8161 OLD REDWOOD HWY
Name: PG & E
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
1998 PG & E 8161 OLD REDWOOD HWY
Name: PG & E
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
1997 PG & E 8161 OLD REDWOOD HWY

A6 **PG & E PROPERTY** **RGA LUST** **S114668999**
Target Property **8161 OLD REDWOOD HWY** **N/A**
NOVATO, CA

Site 6 of 7 in cluster A

Actual: 20 ft.

RGA LUST:
Name: PG & E PROPERTY
Address: 8161 OLD REDWOOD HWY
City: NOVATO
State: NOVATO
1996 PG & E PROPERTY 8161 OLD REDWOOD HWY

A7 **PG & E** **LUST** **S106610926**
Target Property **8161 OLD REDWOOD HWY** **Cortese** **N/A**
NOVATO, CA 94947

Site 7 of 7 in cluster A

Actual: 20 ft.

LUST REG 2:
Region: 2
Facility Id: 21-0306
Facility Status: Case Closed
Case Number: 21-0306
How Discovered: Tank Closure
Leak Cause: UNK
Leak Source: UNK
Date Leak Confirmed: 3/1/1996
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

PG & E (Continued) **S106610926**

CORTESE:

Name:	PG & E
Address:	8161 OLD REDWOOD HWY
City,State,Zip:	NOVATO, CA 94947
Region:	CORTESE
Envirostor Id:	Not reported
Global ID:	T0604100288
Site/Facility Type:	LUST CLEANUP SITE
Cleanup Status:	COMPLETED - CASE CLOSED
Status Date:	Not reported
Site Code:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Owner:	Not reported
Enf Type:	Not reported
Swat R:	Not reported
Flag:	active
Order No:	Not reported
Waste Discharge System No:	Not reported
Effective Date:	Not reported
Region 2:	Not reported
WID Id:	Not reported
Solid Waste Id No:	Not reported
Waste Management Uit Name:	Not reported
File Name:	Active Open

B8 **BUCK CENTER FOR RESEARCH IN AGING** **UST** **U003761883**
SSE **8001 REDWOOD HWY.** **N/A**
< 1/8 **NOVATO, CA 94945**
0.006 mi.
33 ft. **Site 1 of 10 in cluster B**

Relative: Higher
Actual: 33 ft.

UST:

Name:	BUCK INSTITUTE FOR RESEARCH ON AGING
Address:	8001 REDWOOD BOULEVARD
City,State,Zip:	NOVATO, CA 94945
Facility ID:	21-000-600279
Permitting Agency:	Marin County Dept of Public Works, Waste Management Division
Latitude:	38.122957
Longitude:	-122.566604

Name:	BUCK CENTER FOR RESEARCH IN AGING
Address:	8001 REDWOOD HWY.
City,State,Zip:	NOVATO, CA 94945
Facility ID:	600279
Permitting Agency:	MARIN COUNTY
Latitude:	38.13396
Longitude:	-122.56421

MARIN CO. UST:

Name:	BUCK INSTITUTE FOR RESEARCH ON AGING
Address:	8001 REDWOOD BOULEVARD
City:	NOVATO
Zip:	Not reported
Facility Id:	60-0279

Tank Number:	000001

BUCK CENTER FOR RESEARCH IN AGING (Continued) **U003761883**

Tank Status: Change of Information
Tank Contents: Diesel
Tank Use: Motor vehicle fueling
Certficate Number: 15854
Last Inspected: 02/10/2009
Program: Not reported
Location: Not reported
Pulled Date: Not reported
Reason: Not reported

Tank Number: 000001
Tank Status: Change of Information
Tank Contents: Diesel
Tank Use: Motor vehicle fueling
Certficate Number: 15854
Last Inspected: 02/10/2009
Program: Not reported
Location: Not reported
Pulled Date: Not reported
Reason: Not reported

B9 **FUJIFILM CELLULAR DYNAMICS INTERNATIONAL** **RCRA NonGen / NLR** **1024861375**
SSE **8001 REDWOOD BOULEVARD** **CAL000429849**
< 1/8 **NOVATO, CA 94945**
0.006 mi.
33 ft. **Site 2 of 10 in cluster B**

Relative:
Higher

Actual:
33 ft.

RCRA NonGen / NLR:
Date form received by agency: 2017-08-07 00:00:00.0
Facility name: FUJIFILM CELLULAR DYNAMICS INTERNATIONAL
Facility address: 8001 REDWOOD BOULEVARD
NOVATO, CA 94945
EPA ID: CAL000429849
Contact: LAURA ENCARNACION
Contact address: 8001 REDWOOD BOULEVARD
NOVATO, CA 94945
Contact country: Not reported
Contact telephone: 415-985-5118
Contact email: LENCARNACION@CELLULARDYNAMICS.COM
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: LAURA ENCARNACION
Owner/operator address: 8001 REDWOOD BOULEVARD
NOVATO, CA 94945
Owner/operator country: Not reported
Owner/operator telephone: 415-985-5118
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

FUJIFILM CELLULAR DYNAMICS INTERNATIONAL (Continued) **1024861375**

Owner/operator name:	FUJIFILM CELLULAR DYNAMICS INTERNAT
Owner/operator address:	525 SCIENCE DRIVE MADISON, WI 53711
Owner/operator country:	Not reported
Owner/operator telephone:	768-310-5100
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

B10 **ULTRAGENYX PHARMACEUTICALS INCORPORATED** **RCRA-SQG** **1023966806**
SSE **8001 REDWOOD BLVD** **CAR000274845**
< 1/8 **NOVATO, CA 94945**
0.006 mi.
33 ft. **Site 3 of 10 in cluster B**

Relative:
Higher

Actual:
33 ft.

RCRA-SQG:

Date form received by agency:	2017-08-09 00:00:00.0
Facility name:	ULTRAGENYX PHARMACEUTICALS INCORPORATED
Facility address:	8001 REDWOOD BLVD NOVATO, CA 94945
EPA ID:	CAR000274845
Mailing address:	LEVERONI CT NOVATO, CA 94949
Contact:	CHAD SCHWIETERT
Contact address:	REDWOOD BLVD NOVATO, CA 94945
Contact country:	US
Contact telephone:	415-475-6505
Contact email:	CSCHWIETERT@ULTRAGENYX.COM
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of

ULTRAGENYX PHARMACEUTICALS INCORPORATED (Continued) **1023966806**

hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	THE BUCK INSTITUTE FOR RESEARCH AND AGING
Owner/operator address:	Not reported
	Not reported
Owner/operator country:	Not reported
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	1996-11-01 00:00:00.
Owner/Op end date:	Not reported

Owner/operator name:	THE BUCK INSTITUTE FOR RESEARCH AND AGING
Owner/operator address:	REDWOOD BLVD
	NOVATO, CA 94945
Owner/operator country:	US
Owner/operator telephone:	415-899-1810
Owner/operator email:	INFO@BUCKINSTITUTE.ORG
Owner/operator fax:	415-899-1810
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	1996-11-01 00:00:00.
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Hazardous Waste Summary:

. Waste code:	352
. Waste name:	Other organic solids

. Waste code:	551
. Waste name:	Laboratory waste chemicals

. Waste code:	D001
. Waste name:	IGNITABLE WASTE

ULTRAGENYX PHARMACEUTICALS INCORPORATED (Continued) **1023966806**

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Violation Status: No violations found

B11 **ULTRAGENYX** **CERS HAZ WASTE** **S121782114**
SSE **8001 REDWOOD BLVD** **CERS** **N/A**
< 1/8 **NOVATO, CA 94945**
0.006 mi.
33 ft. **Site 4 of 10 in cluster B**

Relative:
Higher

Actual:
33 ft.

CERS HAZ WASTE:
Name: ULTRAGENYX
Address: 8001 REDWOOD BLVD
City,State,Zip: NOVATO, CA 94945
Site ID: 425311
CERS ID: 10741876
CERS Description: Hazardous Waste Generator

CERS:
Name: ULTRAGENYX
Address: 8001 REDWOOD BLVD
City,State,Zip: NOVATO, CA 94945
Site ID: 425311
CERS ID: 10741876
CERS Description: Chemical Storage Facilities

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-23-2017
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-23-2017
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: HW

ULTRAGENYX (Continued) **S121782114**

Eval Source: CERS

Coordinates:
Site ID: 425311
Facility Name: Ultragenyx
Env Int Type Code: HMBP
Program ID: 10741876
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 38.122850
Longitude: -122.566490

Affiliation:
Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 60 Leveroni Court
Affiliation City: Novato
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94949
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: Melani Menendez
Entity Title: EHS Manager
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Operator
Entity Name: Ultragenyx Pharmaceutical Inc
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (415) 475-6505

Affiliation Type Desc: Parent Corporation
Entity Name: Ultragenyx
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Legal Owner
Entity Name: Ultragenyx Pharmaceutical Inc
Entity Title: Not reported

ULTRAGENYX (Continued) **S121782114**

Affiliation Address:	60 Leveroni Court
Affiliation City:	Novato
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94949
Affiliation Phone:	(415) 483-8800
Affiliation Type Desc:	CUPA District
Entity Name:	Marin County CUPA
Entity Title:	Not reported
Affiliation Address:	1600 Los GamosSuite 210
Affiliation City:	San Rafael
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94903
Affiliation Phone:	(415) 473-6647
Affiliation Type Desc:	Document Preparer
Entity Name:	Melani Menendez
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	Melani Menendez
Entity Title:	Not reported
Affiliation Address:	60 Leveroni Court
Affiliation City:	Novato
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94949
Affiliation Phone:	Not reported

B12 **BUCK INSTITUTE FOR RESEARCH ON AGING** **CERS HAZ WASTE** **S121736913**
SSE **8001 REDWOOD BOULEVARD** **CERS TANKS** **N/A**
< 1/8 **NOVATO, CA 94945** **CERS**
0.006 mi.
33 ft. **Site 5 of 10 in cluster B**

Relative:
Higher

Actual:
33 ft.

CERS HAZ WASTE:

Name:	BUCK INSTITUTE FOR RESEARCH ON AGING
Address:	8001 REDWOOD BOULEVARD
City,State,Zip:	NOVATO, CA 94945
Site ID:	100390
CERS ID:	10032616
CERS Description:	Hazardous Waste Generator

CERS TANKS:

Name:	BUCK INSTITUTE FOR RESEARCH ON AGING
Address:	8001 REDWOOD BOULEVARD
City,State,Zip:	NOVATO, CA 94945
Site ID:	100390

BUCK INSTITUTE FOR RESEARCH ON AGING (Continued) **S121736913**

CERS ID: 10032616
CERS Description: Underground Storage Tank

CERS:
Name: BUCK INSTITUTE FOR RESEARCH ON AGING
Address: 8001 REDWOOD BOULEVARD
City,State,Zip: NOVATO, CA 94945
Site ID: 100390
CERS ID: 10032616
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 100390
Site Name: Buck Institute For Research On Aging
Violation Date: 08-03-2016
Citation: 23 CCR 16 2715(a) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2715(a)
Violation Description: Failure to notify the CUPA of the designated operator (DO) identification and/or change of the DO within 30 days.
Violation Notes: Returned to compliance on 08/03/2016. In addition to financial responsibility form, please submit updated "Owner Statements of Designated Underground Storage Tank (UST) Operator" form to Marin County CUPA or via CERS within 30 days.
Violation Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Violation Program: UST
Violation Source: CERS

Site ID: 100390
Site Name: Buck Institute For Research On Aging
Violation Date: 08-03-2016
Citation: HSC 6.75 25299.30-25299.34 - California Health and Safety Code, Chapter 6.75, Section(s) 25299.30-25299.34
Violation Description: Failure to submit and maintain complete and current Certification of Financial Responsibility or other mechanism of financial assurance.
Violation Notes: Returned to compliance on 08/03/2016. Facility does not have current financial responsibility form onsite. Within 30 days, please submit current financial responsibility form to Marin County CUPA or via CERS.
Violation Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Violation Program: UST
Violation Source: CERS

Site ID: 100390
Site Name: Buck Institute For Research On Aging
Violation Date: 08-03-2016
Citation: 23 CCR 16 2715(f) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2715(f)
Violation Description: Failure to have at least one employee present during operating hours that has been trained in the proper operation and maintenance of the UST system by a designated operator (DO).
Violation Notes: Returned to compliance on 09/07/2016. At time of inspection, all employees have been yearly trained, except for Nicole Nannery (EHS). Nicole must be trained within 30 days of hire date. Please provide updated roster within 30 days indicating Nicole has been trained to Marin County CUPA.
Violation Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Violation Program: UST

BUCK INSTITUTE FOR RESEARCH ON AGING (Continued) **S121736913**

Violation Source: CERS

Site ID: 100390
Site Name: Buck Institute For Research On Aging
Violation Date: 08-05-2019
Citation: 23 CCR 16 2665(b) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2665(b)
Violation Description: "Failure to submit a copy of the overfill prevention equipment inspection results on the G Overfill Prevention Equipment Inspection Report FormG to the UPA within 30 days after the inspection. "
Violation Notes: Returned to compliance on 08/05/2019. The overfill inspection was overdue, but corrected by the tester completing inspection during Annual Monitoring Certification Corrected Onsite the Overfill Inspection-No Violation
Violation Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Violation Program: UST
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-02-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Inspection emailed to Nicole Nannery
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-03-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-08-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-23-2017
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-23-2017

BUCK INSTITUTE FOR RESEARCH ON AGING (Continued) **S121736913**

Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-08-2017
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-08-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-08-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-05-2019
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Overfill Equipment Inspection conducted and passed
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-07-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-09-2013
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported

BUCK INSTITUTE FOR RESEARCH ON AGING (Continued) **S121736913**

Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: UST
Eval Source: CERS

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Marin County CUPA
Entity Title: Not reported
Affiliation Address: 1600 Los GamosSuite 210
Affiliation City: San Rafael
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94903
Affiliation Phone: (415) 473-6647

Affiliation Type Desc: Identification Signer
Entity Name: Nicole Nannery
Entity Title: EH&S Specialist
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 8001 Redwood Boulevard
Affiliation City: Novato
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94945
Affiliation Phone: Not reported

Affiliation Type Desc: Legal Owner
Entity Name: Buck Institute for Research on Aging
Entity Title: Not reported
Affiliation Address: 8001 Redwood Boulevard
Affiliation City: Novato
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 94945
Affiliation Phone: (415) 209-2000

Affiliation Type Desc: Operator
Entity Name: Michael Madias
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (415) 209-2073

Affiliation Type Desc: UST Property Owner Name
Entity Name: Buck Institute for Research on Aging

BUCK INSTITUTE FOR RESEARCH ON AGING (Continued) **S121736913**

Entity Title:	Not reported
Affiliation Address:	8001 Redwood Blvd
Affiliation City:	Novato
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94945
Affiliation Phone:	(415) 209-2000
Affiliation Type Desc:	UST Tank Operator
Entity Name:	Buck Institute for Research on Aging
Entity Title:	Not reported
Affiliation Address:	8001 Redwood Blvd
Affiliation City:	Novato
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94945
Affiliation Phone:	(415) 209-2000
Affiliation Type Desc:	Environmental Contact
Entity Name:	Nicole Nannery
Entity Title:	Not reported
Affiliation Address:	8001 Redwood Boulevard
Affiliation City:	Novato
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94945
Affiliation Phone:	Not reported
Affiliation Type Desc:	Parent Corporation
Entity Name:	Buck Institute for Age Research
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	Buck Institute for Research on Aging
Entity Title:	Not reported
Affiliation Address:	8001 Redwood Boulevard
Affiliation City:	Novato
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94945
Affiliation Phone:	(415) 209-2000
Affiliation Type Desc:	UST Permit Applicant
Entity Name:	Nicole Nannery
Entity Title:	EH&S Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(415) 209-2281

BUCK INSTITUTE FOR RESEARCH ON AGING (Continued) **S121736913**

Affiliation Type Desc:	Document Preparer
Entity Name:	Nicole Nannery
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	UST Tank Owner
Entity Name:	Buck Institute for Research on Aging
Entity Title:	Not reported
Affiliation Address:	8001 Redwood Blvd
Affiliation City:	Novato
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94945
Affiliation Phone:	(415) 209-2000

B13 **CALICO LIFE SCIENCES** **RCRA NonGen / NLR** **1024860496**
SSE **8001 REDWOOD BLVD** **CAL000428939**
< 1/8 **NOVATO, CA 94945**
0.006 mi.
33 ft. **Site 6 of 10 in cluster B**

Relative:
Higher

Actual:
33 ft.

RCRA NonGen / NLR:

Date form received by agency:	2017-07-06 00:00:00.0
Facility name:	CALICO LIFE SCIENCES
Facility address:	8001 REDWOOD BLVD NOVATO, CA 94945
EPA ID:	CAL000428939
Mailing address:	1170 VETERANS BLVD SOUTH SAN FRANCISCO, CA 94080
Contact:	MARA BRYAN
Contact address:	1170 VETERANS BLVD SOUTH SAN FRANCISCO, CA 94080
Contact country:	Not reported
Contact telephone:	650-267-7817
Contact email:	MBRYAN@CALICOLABS.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	CALICO LIFE SCIENCES
Owner/operator address:	1170 VETERANS BLVD SOUTH SAN FRANCISCO, CA 94080
Owner/operator country:	Not reported
Owner/operator telephone:	616-581-7138
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported

CALICO LIFE SCIENCES (Continued) **1024860496**

Owner/Op end date: Not reported

Owner/operator name: MARA BRYAN
Owner/operator address: 1170 VETERANS BLVD
SOUTH SAN FRANCISCO, CA 94080
Owner/operator country: Not reported
Owner/operator telephone: 650-267-7817
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

B14 **BUCK INSTITUTE FOR AGE RESEARCH** **RCRA-SQG** **1007370093**
SSE **8001 REDWOOD BLVD** **HAZNET** **CAR000152504**
< 1/8 **NOVATO, CA 94945** **HWTS**
0.006 mi.
33 ft. **Site 7 of 10 in cluster B**

Relative:
Higher

Actual:
33 ft.

RCRA-SQG:
Date form received by agency: 2004-04-06 00:00:00.0
Facility name: BUCK INSTITUTE FOR AGE RESEARCH
Facility address: 8001 REDWOOD BLVD
NOVATO, CA 94945
EPA ID: CAR000152504
Contact: COLLEEN A STUBBS
Contact address: 8001 REDWOOD BLVD
NOVATO, CA 94945
Contact country: US
Contact telephone: 415-209-2055
Contact email: CSTUBBS@BUCKINSTITUTE.ORG
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	BUCK INSTITUTE FOR AGE RESEARCH
Owner/operator address:	8001 REDWOOD BLVD
	NOVATO, CA 94945
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	1999-05-01 00:00:00.
Owner/Op end date:	Not reported

Owner/operator name:	BUCK INSTITUTE FOR AGE RESEARCH
Owner/operator address:	Not reported
	Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	1999-08-09 00:00:00.
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Hazardous Waste Summary:

. Waste code:	D001
. Waste name:	IGNITABLE WASTE

. Waste code:	D002
. Waste name:	CORROSIVE WASTE

. Waste code:	D003
. Waste name:	REACTIVE WASTE

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D011
. Waste name: SILVER

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: P030
. Waste name: CYANIDES (SOLUBLE CYANIDE SALTS), NOT OTHERWISE SPECIFIED

. Waste code: P087
. Waste name: OSMIUM OXIDE OSO4, (T-4)- (OR) OSMIUM TETROXIDE

. Waste code: P098
. Waste name: POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

. Waste code: U188
. Waste name: PHENOL

Violation Status: No violations found

HAZNET:
Name: BUCK INSTITUTE FOR RESEARCH ON AGING
Address: 8001 REDWOOD BLVD
Address 2: Not reported
City,State,Zip: NOVATO, CA 949451400
Contact: NICOLE NANNERY
Telephone: 4152092281
Mailing Name: Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Mailing Address: 8001 REDWOOD BLVD

Year: 2019
Gepaid: CAR000152504
TSD EPA ID: NED981723513
CA Waste Code: 352 - Other organic solids
Disposal Method: H040 - Incineration--Thermal Destruction Other Than Use As A Fuel
Tons: 0.23900

Year: 2019
Gepaid: CAR000152504
TSD EPA ID: NED981723513
CA Waste Code: 791 - Liquids with pH <= 2
Disposal Method: H040 - Incineration--Thermal Destruction Other Than Use As A Fuel
Tons: 0.10350

Year: 2019
Gepaid: CAR000152504
TSD EPA ID: NED981723513
CA Waste Code: 551 - Laboratory waste chemicals
Disposal Method: H040 - Incineration--Thermal Destruction Other Than Use As A Fuel
Tons: 0.21700

Year: 2019
Gepaid: CAR000152504
TSD EPA ID: NED981723513
CA Waste Code: 551 - Laboratory waste chemicals
Disposal Method: H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.00200

Year: 2018
Gepaid: CAR000152504
TSD EPA ID: CAD059494310
CA Waste Code: 352 - Other organic solids
Disposal Method: H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.14500

Year: 2018
Gepaid: CAR000152504
TSD EPA ID: CAD044429835
CA Waste Code: 221 - Waste oil and mixed oil
Disposal Method: H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.00000

Year: 2018
Gepaid: CAR000152504
TSD EPA ID: CAD059494310
CA Waste Code: 791 - Liquids with pH <= 2
Disposal Method: H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.10425

Year: 2018
Gepaid: CAR000152504

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

TSD EPA ID: UTD981552177
CA Waste Code: 791 - Liquids with pH <= 2
Disposal Method: H040 - Incineration--Thermal Destruction Other Than Use As A Fuel
Tons: 0.25020

Year: 2018
Gepaid: CAR000152504
TSD EPA ID: NED981723513
CA Waste Code: 352 - Other organic solids
Disposal Method: H040 - Incineration--Thermal Destruction Other Than Use As A Fuel
Tons: 0.38000

Year: 2018
Gepaid: CAR000152504
TSD EPA ID: CAD059494310
CA Waste Code: 551 - Laboratory waste chemicals
Disposal Method: H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.37113

Click this hyperlink while viewing on your computer to access
99 additional CA HAZNET: record(s) in the EDR Site Report.

Additional Info:
Year: 2017
Gen EPA ID: CAR000152504

Shipment Date: 20170821
Creation Date: 7/6/2018 18:30:51
Receipt Date: 20170913
Manifest ID: 000670816WAS
Trans EPA ID: IND058484114
Trans Name: HERITAGE TRANSPORT LLC- TS HAYWARD
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: OHD980613541
Trans Name: HERITAGE THERMAL SERVICES INC
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code Description: 311 - Pharmaceutical waste
RCRA Code: Not reported
Meth Code: H040 - Incineration--Thermal Destruction Other Than Use As A Fuel
Quantity Tons: 0.0025
Waste Quantity: 5
Quantity Unit: P
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Shipment Date: 20170714
Creation Date: 10/11/2018 18:31:48
Receipt Date: 20170721
Manifest ID: 000158773DAT
Trans EPA ID: MNS000110924

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION
TSDF EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D010
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.091
Waste Quantity:	182
Quantity Unit:	P
Additional Code 1:	D008
Additional Code 2:	D007
Additional Code 3:	D006
Additional Code 4:	D004
Additional Code 5:	Not reported

Shipment Date:	20170714
Creation Date:	10/11/2018 18:31:48
Receipt Date:	20170721
Manifest ID:	000158773DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION
TSDF EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H121 - Neutralization Only
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20170714
Creation Date:	10/11/2018 18:31:48
Receipt Date:	20170721
Manifest ID:	000158773DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION
TSDF EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

RCRA Code:	Not reported
Meth Code:	H121 - Neutralization Only
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20170714
Creation Date:	10/11/2018 18:31:48
Receipt Date:	20170721
Manifest ID:	000158773DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION
TSDF EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	U133
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0035
Waste Quantity:	7
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20170714
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000158773DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION
TSDF EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.003
Waste Quantity:	6
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20170714
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000158773DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION
TSDF EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D002
Meth Code:	H121 - Neutralization Only
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20170714
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000158773DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION
TSDF EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D002
Meth Code:	H121 - Neutralization Only
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20170714
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000158773DAT
Trans EPA ID:	MNS000110924

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION
TSDF EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D002
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20170714
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000158773DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION
TSDF EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D002
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.006
Waste Quantity:	12
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2011
Gen EPA ID:	CAR000152504
Shipment Date:	20111202
Creation Date:	3/13/2012 20:30:32
Receipt Date:	20111209
Manifest ID:	008100957JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	Not reported
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20111201
Creation Date:	3/13/2012 20:30:32
Receipt Date:	20111206
Manifest ID:	008100945JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.06255
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20111108
Creation Date:	1/12/2012 18:30:51
Receipt Date:	20111110
Manifest ID:	008100927JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20111025
Creation Date:	12/15/2011 18:30:12
Receipt Date:	20111028
Manifest ID:	008100827JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20111011
Creation Date:	12/9/2011 18:30:58
Receipt Date:	20111014
Manifest ID:	008100809JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20111005
Creation Date:	7/25/2012 18:30:17

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Receipt Date:	20111024
Manifest ID:	000033235DAT
Trans EPA ID:	CAR000210617
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF CALIFORNIA LP
Trans 2 EPA ID:	CAD982523433
Trans 2 Name:	DILLARD ENV SERVICE
TSDF EPA ID:	CAD980884183
Trans Name:	GENERAL ENVIRONMENTAL MGT LLC DBA PSC ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D002
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0125
Waste Quantity:	25
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20111005
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000033235DAT
Trans EPA ID:	CAR000210617
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF CALIFORNIA LP
Trans 2 EPA ID:	CAD982523433
Trans 2 Name:	DILLARD ENV SERVICE
TSDF EPA ID:	CAD980884183
Trans Name:	GENERAL ENVIRONMENTAL MGT LLC DBA PSC ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0325
Waste Quantity:	65
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20111005
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000033235DAT
Trans EPA ID:	CAR000210617
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF CALIFORNIA LP
Trans 2 EPA ID:	CAD982523433
Trans 2 Name:	DILLARD ENV SERVICE
TSDF EPA ID:	CAD980884183

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans Name:	GENERAL ENVIRONMENTAL MGT LLC DBA PSC ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D022
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.045
Waste Quantity:	90
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20111005
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000033235DAT
Trans EPA ID:	CAR000210617
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF CALIFORNIA LP
Trans 2 EPA ID:	CAD982523433
Trans 2 Name:	DILLARD ENV SERVICE
TSDF EPA ID:	CAD980884183
Trans Name:	GENERAL ENVIRONMENTAL MGT LLC DBA PSC ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.055
Waste Quantity:	110
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20111005
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000033235DAT
Trans EPA ID:	CAR000210617
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF CALIFORNIA LP
Trans 2 EPA ID:	CAD982523433
Trans 2 Name:	DILLARD ENV SERVICE
TSDF EPA ID:	CAD980884183
Trans Name:	GENERAL ENVIRONMENTAL MGT LLC DBA PSC ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	D022
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Quantity Tons:	0.105
Waste Quantity:	210
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2013
Gen EPA ID:	CAR000152504
Shipment Date:	20131121
Creation Date:	1/12/2014 22:15:07
Receipt Date:	20131121
Manifest ID:	011481775JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20131107
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	006721316FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.1251
Waste Quantity:	30
Quantity Unit:	G
Additional Code 1:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20131107
Creation Date:	1/29/2014 22:15:06
Receipt Date:	20131125
Manifest ID:	006721316FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	122 - Alkaline solution without metals (pH > 12.5
RCRA Code:	D002
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.02085
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20131107
Creation Date:	1/29/2014 22:15:06
Receipt Date:	20131125
Manifest ID:	006721316FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	D022
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.08
Waste Quantity:	160
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20131107
Creation Date:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Receipt Date:	Not reported
Manifest ID:	006721316FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	D022
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0305
Waste Quantity:	61
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20131107
Creation Date:	1/29/2014 22:15:06
Receipt Date:	20131125
Manifest ID:	006721316FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	791 - Liquids with pH < 2 792 Liquids with pH < 2 with metals
RCRA Code:	D002
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.00834
Waste Quantity:	2
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20131107
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	006721316FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0365
Waste Quantity:	73
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20131016
Creation Date:	11/30/2013 22:15:05
Receipt Date:	20131016
Manifest ID:	011481774JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20130913
Creation Date:	11/4/2013 22:15:04
Receipt Date:	20130913
Manifest ID:	011481969JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Quantity Unit: G
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Shipment Date: 20130814
Creation Date: 10/18/2013 22:15:07
Receipt Date: 20130814
Manifest ID: 011481773JJK
Trans EPA ID: CAD982049306
Trans Name: MERRY X-RAY
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAL000100189
Trans Name: MERRY X-RAY
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code Description: 541 - Photochemicals / photo processing waste
RCRA Code: D011
Meth Code: H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons: 0.0417
Waste Quantity: 10
Quantity Unit: G
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Additional Info:
Year: 2014
Gen EPA ID: CAR000152504

Shipment Date: 20141219
Creation Date: 3/3/2015 22:15:07
Receipt Date: 20141219
Manifest ID: 011481621JJK
Trans EPA ID: CAD982049306
Trans Name: MERRY X-RAY
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAL000100189
Trans Name: MERRY X-RAY
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code Description: 541 - Photochemicals / photo processing waste
RCRA Code: D011
Meth Code: H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons: 0.06255
Waste Quantity: 15
Quantity Unit: G
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Additional Code 5:	Not reported
Shipment Date:	20141120
Creation Date:	3/19/2015 22:14:50
Receipt Date:	20141203
Manifest ID:	007905933FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.04
Waste Quantity:	80
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20141120
Creation Date:	3/19/2015 22:14:50
Receipt Date:	20141203
Manifest ID:	007905933FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	F003
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.1251
Waste Quantity:	30
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20141120
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	007905933FLE
Trans EPA ID:	MNS000110924

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0335
Waste Quantity:	67
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20141120
Creation Date:	3/19/2015 22:14:50
Receipt Date:	20141203
Manifest ID:	007905933FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D002
Meth Code:	H135 - Discharge To Sewer/Potw Or Npdes(With Prior Storage--With Or Without Treatment)
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20141120
Creation Date:	3/19/2015 22:14:50
Receipt Date:	20141203
Manifest ID:	007905933FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Waste Code Description:	352 - Other organic solids
RCRA Code:	D022
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0875
Waste Quantity:	175
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20141114
Creation Date:	1/26/2015 22:15:24
Receipt Date:	20141114
Manifest ID:	011481541JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0834
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20141016
Creation Date:	12/31/2014 22:14:53
Receipt Date:	20141016
Manifest ID:	011481540JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.02085
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20140917
Creation Date:	11/14/2014 22:15:04
Receipt Date:	20140917
Manifest ID:	011481539JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.06255
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20140821
Creation Date:	11/7/2014 22:15:04
Receipt Date:	20140822
Manifest ID:	011481542JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.02085
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2002
Gen EPA ID:	CAR000152504
Shipment Date:	20020425

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Creation Date:	6/12/2012 20:30:16
Receipt Date:	20120427
Manifest ID:	009617140JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2006
Gen EPA ID:	CAR000152504
Shipment Date:	20061215
Creation Date:	4/26/2010 11:15:28
Receipt Date:	20061215
Manifest ID:	001845471JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0834
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20061201
Creation Date:	4/26/2010 11:36:04
Receipt Date:	20061201
Manifest ID:	001845040JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.02085
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20061117
Creation Date:	4/26/2010 15:08:55
Receipt Date:	20061117
Manifest ID:	001845039JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20061103
Creation Date:	7/29/2009 11:55:09
Receipt Date:	20061103
Manifest ID:	001845038JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Quantity Tons:	0.0834
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20061102
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	001367709JJK
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	221 - Waste oil and mixed oil
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.025
Waste Quantity:	50
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20061102
Creation Date:	7/13/2007 18:30:33
Receipt Date:	20061109
Manifest ID:	001367709JJK
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	D022
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.125
Waste Quantity:	250
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Additional Code 5:	Not reported
Shipment Date:	20061102
Creation Date:	7/13/2007 18:30:33
Receipt Date:	20061109
Manifest ID:	001367709JJK
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.025
Waste Quantity:	50
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20061102
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	001367709JJK
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	291 - Latex waste
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.025
Waste Quantity:	50
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20061102
Creation Date:	7/13/2007 18:30:33
Receipt Date:	20061109
Manifest ID:	001367709JJK
Trans EPA ID:	CAD983649880

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	F005
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.11
Waste Quantity:	220
Quantity Unit:	P
Additional Code 1:	F003
Additional Code 2:	D002
Additional Code 3:	D001
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20061102
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	001367709JJK
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0175
Waste Quantity:	35
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2012
Gen EPA ID:	CAR000152504
Shipment Date:	20121219
Creation Date:	2/15/2013 22:15:11
Receipt Date:	20121220
Manifest ID:	009617402JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20121205
Creation Date:	2/15/2013 22:15:11
Receipt Date:	20121211
Manifest ID:	009617403JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.06255
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20121121
Creation Date:	1/21/2013 22:15:09
Receipt Date:	20121128
Manifest ID:	009617407JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20121107
Creation Date:	1/21/2013 22:15:09
Receipt Date:	20121114
Manifest ID:	009617405JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.03753
Waste Quantity:	9
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20121029
Creation Date:	1/13/2013 22:15:06
Receipt Date:	20121106
Manifest ID:	005167761FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D001
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.003
Waste Quantity:	6
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20121029

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Creation Date:	1/13/2013 22:15:06
Receipt Date:	20121106
Manifest ID:	005167761FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D011
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.006
Waste Quantity:	12
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20121029
Creation Date:	1/13/2013 22:15:06
Receipt Date:	20121106
Manifest ID:	005167761FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D001
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0335
Waste Quantity:	67
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20121029
Creation Date:	4/9/2013 22:15:07
Receipt Date:	20121129
Manifest ID:	005167754FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	CAR000210617
Trans 2 Name:	21ST CENTURY ENVIRONMENTAL MGMT OF CALIFORNIA LP

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

TSDF EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA LL
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	725 - Liquids with mercury > 20 mg/l
RCRA Code:	D009
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0015
Waste Quantity:	3
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20121029
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	005167761FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0485
Waste Quantity:	97
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20121029
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	005167761FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	D022
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons: 0.075
Waste Quantity: 150
Quantity Unit: P
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Additional Info:
Year: 2008
Gen EPA ID: CAR000152504

Shipment Date: 20081212
Creation Date: 4/14/2010 15:58:29
Receipt Date: 20081212
Manifest ID: 004484165JJK
Trans EPA ID: CAD982049306
Trans Name: MERRY X-RAY CORPORATION
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAL000051065
Trans Name: MERRY X-RAY CORPORATION
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code Description: 541 - Photochemicals / photo processing waste
RCRA Code: D011
Meth Code: H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons: 0.1251
Waste Quantity: 30
Quantity Unit: G
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Shipment Date: 20081114
Creation Date: 4/14/2010 16:10:30
Receipt Date: 20081114
Manifest ID: 004484164JJK
Trans EPA ID: CAD982049306
Trans Name: MERRY X-RAY CORPORATION
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAL000051065
Trans Name: MERRY X-RAY CORPORATION
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code Description: 541 - Photochemicals / photo processing waste
RCRA Code: D011
Meth Code: H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons: 0.02085
Waste Quantity: 5
Quantity Unit: G
Additional Code 1: Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20081113
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000832682GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	P048
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.125
Waste Quantity:	250
Quantity Unit:	P
Additional Code 1:	D022
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20081113
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000832682GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	U123
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20081113
Creation Date:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Receipt Date:	Not reported
Manifest ID:	000832682GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D022
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.11
Waste Quantity:	220
Quantity Unit:	P
Additional Code 1:	D007
Additional Code 2:	D006
Additional Code 3:	D004
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20081113
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000832682GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D009
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.015
Waste Quantity:	30
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20081113
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000832682GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	513 - Empty containers less than 30 gallons
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	Not reported
Waste Quantity:	160
Quantity Unit:	Not reported
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20081113
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000832682GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	221 - Waste oil and mixed oil
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0175
Waste Quantity:	35
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20081113
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000832682GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Quantity Tons:	0.07
Waste Quantity:	140
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20081113
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000832682GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D011
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	D001
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2009
Gen EPA ID:	CAR000152504
Shipment Date:	20091218
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000973588GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20091218
Creation Date:	3/5/2010 18:31:15
Receipt Date:	20100112
Manifest ID:	000973589GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D007
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0015
Waste Quantity:	3
Quantity Unit:	P
Additional Code 1:	D006
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20091218
Creation Date:	3/5/2010 18:31:15
Receipt Date:	20100112
Manifest ID:	000973589GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D022
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.02
Waste Quantity:	40
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20091218

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Creation Date:	3/5/2010 18:31:15
Receipt Date:	20100112
Manifest ID:	000973589GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	F003
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.01
Waste Quantity:	20
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	D001
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20091218
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000973589GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D011
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0015
Waste Quantity:	3
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20091218
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000973589GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D002
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0015
Waste Quantity:	3
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20091218
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000973589GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D003
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.001
Waste Quantity:	2
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20091218
Creation Date:	3/5/2010 18:31:15
Receipt Date:	20100112
Manifest ID:	000973588GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	D022
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

	Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0175
Waste Quantity:	35
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20091218
Creation Date:	3/5/2010 18:31:15
Receipt Date:	20100112
Manifest ID:	000973588GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.04
Waste Quantity:	80
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20091218
Creation Date:	3/5/2010 18:31:15
Receipt Date:	20100112
Manifest ID:	000973588GBF
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	181 - Other inorganic solid waste Organics
RCRA Code:	D007
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.03
Waste Quantity:	60
Quantity Unit:	P
Additional Code 1:	D006
Additional Code 2:	Not reported
Additional Code 3:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Additional Code 4: Not reported
Additional Code 5: Not reported

Additional Info:
Year: 2004
Gen EPA ID: CAR000152504

Shipment Date: 20041103
Creation Date: 2/16/2005 18:31:25
Receipt Date: Not reported
Manifest ID: 24275442
Trans EPA ID: CAD983649880
Trans Name: GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAD980884183
Trans Name: GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code Description: 551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code: D011
Meth Code: - Not reported
Quantity Tons: 0.1
Waste Quantity: 200
Quantity Unit: P
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Shipment Date: 20041103
Creation Date: 2/16/2005 18:31:25
Receipt Date: Not reported
Manifest ID: 24275442
Trans EPA ID: CAD983649880
Trans Name: GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAD980884183
Trans Name: GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code Description: 352 - Other organic solids
RCRA Code: D022
Meth Code: - Not reported
Quantity Tons: 0.225
Waste Quantity: 450
Quantity Unit: P
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Shipment Date: 20041103
Creation Date: Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Receipt Date:	Not reported
Manifest ID:	24275442
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	181 - Other inorganic solid waste Organics
RCRA Code:	Not reported
Meth Code:	- Not reported
Quantity Tons:	0.025
Waste Quantity:	50
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20041103
Creation Date:	2/16/2005 18:31:25
Receipt Date:	Not reported
Manifest ID:	24275442
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D001
Meth Code:	- Not reported
Quantity Tons:	Not reported
Waste Quantity:	Not reported
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20041103
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	24275442
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	NONE
Meth Code:	- Not reported
Quantity Tons:	0.0425
Waste Quantity:	85
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20041103
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	24275442
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D002
Meth Code:	- Not reported
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20041103
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	24275442
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	291 - Latex waste
RCRA Code:	NONE
Meth Code:	- Not reported
Quantity Tons:	0.25
Waste Quantity:	500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20040610
Creation Date:	1/10/2005 18:31:35
Receipt Date:	20040721
Manifest ID:	22534970
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	CAR000088732
Trans 2 Name:	POLLUTION CONTROL INDUSTR
TSDF EPA ID:	Not reported
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D001
Meth Code:	T03 - Treatment, Incineration
Quantity Tons:	0.15
Waste Quantity:	300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20040610
Creation Date:	1/10/2005 18:31:35
Receipt Date:	20040721
Manifest ID:	22534970
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	CAR000088732
Trans 2 Name:	POLLUTION CONTROL INDUSTR
TSDF EPA ID:	Not reported
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D001
Meth Code:	R01 - Recycler
Quantity Tons:	0.15
Waste Quantity:	300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20040610
Creation Date:	1/10/2005 18:31:35
Receipt Date:	20040721
Manifest ID:	22534970
Trans EPA ID:	CAD983649880

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	CAR000088732
Trans 2 Name:	POLLUTION CONTROL INDUSTR
TSDF EPA ID:	Not reported
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D001
Meth Code:	T03 - Treatment, Incineration
Quantity Tons:	0.15
Waste Quantity:	300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2016
Gen EPA ID:	CAR000152504
Shipment Date:	20151215
Creation Date:	3/2/2016 22:15:29
Receipt Date:	20151217
Manifest ID:	011481690JJK
Trans EPA ID:	CAD982049306
Trans Name:	NERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	NERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.02085
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20151113
Creation Date:	3/22/2016 22:15:44
Receipt Date:	20151202
Manifest ID:	000129910DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	F003
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.1251
Waste Quantity:	30
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20151113
Creation Date:	3/22/2016 22:15:44
Receipt Date:	20151202
Manifest ID:	000129910DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	D022
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.05
Waste Quantity:	100
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20151113
Creation Date:	3/22/2016 22:15:44
Receipt Date:	20151202
Manifest ID:	000129910DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.1251

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Waste Quantity:	30
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20151113
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000129910DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.09
Waste Quantity:	180
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20151113
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000129910DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D002
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0015
Waste Quantity:	3
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Shipment Date:	20151109
Creation Date:	1/21/2016 22:16:05
Receipt Date:	20151112
Manifest ID:	011481700JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.02085
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20151020
Creation Date:	12/22/2015 22:15:31
Receipt Date:	20151022
Manifest ID:	011481691JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.06255
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20150909
Creation Date:	11/6/2015 22:15:31
Receipt Date:	20150909
Manifest ID:	011481689JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.02085
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20150826
Creation Date:	11/4/2015 22:15:42
Receipt Date:	20150918
Manifest ID:	006965095FLE
Trans EPA ID:	MAD039322250
Trans Name:	CLEAN HARBORS ENV SVC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD044429835
Trans Name:	CLEAN HARBORS WILMINGTON LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.00417
Waste Quantity:	1
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2005
Gen EPA ID:	CAR000152504
Shipment Date:	20051025
Creation Date:	1/2/2007 18:30:32
Receipt Date:	20051103
Manifest ID:	24415876
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

RCRA Code:	Not reported
Meth Code:	- Not reported
Quantity Tons:	0.05
Waste Quantity:	100
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20051025
Creation Date:	1/2/2007 18:30:32
Receipt Date:	20051103
Manifest ID:	24415876
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	725 - Liquids with mercury > 20 mg/l
RCRA Code:	D009
Meth Code:	- Not reported
Quantity Tons:	0.002
Waste Quantity:	4
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20051025
Creation Date:	1/2/2007 18:30:32
Receipt Date:	20051103
Manifest ID:	24415876
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	F003
Meth Code:	- Not reported
Quantity Tons:	0.25
Waste Quantity:	500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Additional Code 5:	Not reported
Shipment Date:	20051025
Creation Date:	1/2/2007 18:30:32
Receipt Date:	20051103
Manifest ID:	24415876
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	D022
Meth Code:	- Not reported
Quantity Tons:	0.15
Waste Quantity:	300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20050627
Creation Date:	7/12/2006 18:30:09
Receipt Date:	20050701
Manifest ID:	24415369
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	725 - Liquids with mercury > 20 mg/l
RCRA Code:	D009
Meth Code:	H01 - Transfer Station
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20050627
Creation Date:	7/12/2006 18:30:09
Receipt Date:	20050701
Manifest ID:	24415369
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H01 - Transfer Station
Quantity Tons:	0.125
Waste Quantity:	250
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20050627
Creation Date:	7/12/2006 18:30:09
Receipt Date:	20050701
Manifest ID:	24415369
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	D022
Meth Code:	H01 - Transfer Station
Quantity Tons:	0.125
Waste Quantity:	250
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20050627
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	24415369
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D008
Meth Code:	H01 - Transfer Station
Quantity Tons:	0.005

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20050627
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	24415369
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D022
Meth Code:	H01 - Transfer Station
Quantity Tons:	0.06
Waste Quantity:	120
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20050627
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	24415369
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MGMT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D001
Meth Code:	H01 - Transfer Station
Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Additional Info:

Year:	2007
Gen EPA ID:	CAR000152504
Shipment Date:	20071214
Creation Date:	4/19/2010 10:37:30
Receipt Date:	20071214
Manifest ID:	003562172JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20071130
Creation Date:	4/19/2010 10:46:31
Receipt Date:	20071130
Manifest ID:	003562171JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20071116
Creation Date:	4/19/2010 10:53:58
Receipt Date:	20071116
Manifest ID:	003562170JJK
Trans EPA ID:	CAD982049306

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20071102
Creation Date:	4/19/2010 11:01:22
Receipt Date:	20071102
Manifest ID:	002453443JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.06255
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20071022
Creation Date:	2/29/2008 18:30:31
Receipt Date:	20071029
Manifest ID:	001377640JJK
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	D022

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.07
Waste Quantity:	140
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20071022
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	001377640JJK
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.015
Waste Quantity:	30
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20071022
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	001377640JJK
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	512 - Other empty containers 30 gallons or more
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.01
Waste Quantity:	20
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20071022
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	001377640JJK
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	221 - Waste oil and mixed oil
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0175
Waste Quantity:	35
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20071022
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	001377640JJK
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.002
Waste Quantity:	4
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20071022
Creation Date:	Not reported
Receipt Date:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Manifest ID:	001377640JJK
Trans EPA ID:	CAD983649880
Trans Name:	GENERAL ENVIRONMENTAL MANAGEMENT INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GEM RANCHO CORDOVA LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.006
Waste Quantity:	12
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2015
Gen EPA ID:	CAR000152504
Shipment Date:	20151215
Creation Date:	3/2/2016 22:15:29
Receipt Date:	20151217
Manifest ID:	011481690JJK
Trans EPA ID:	CAD982049306
Trans Name:	NERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	NERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.02085
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20151113
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000129910DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.09
Waste Quantity:	180
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20151113
Creation Date:	3/22/2016 22:15:44
Receipt Date:	20151202
Manifest ID:	000129910DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	F003
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.1251
Waste Quantity:	30
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20151113
Creation Date:	3/22/2016 22:15:44
Receipt Date:	20151202
Manifest ID:	000129910DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	352 - Other organic solids
RCRA Code:	D022

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.05
Waste Quantity:	100
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20151113
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000129910DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D002
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0015
Waste Quantity:	3
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20151113
Creation Date:	3/22/2016 22:15:44
Receipt Date:	20151202
Manifest ID:	000129910DAT
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	MAD039322250
Trans 2 Name:	CLEAN HARBORS ENVIRONMENTAL SERVICES INC
TSDF EPA ID:	CAD059494310
Trans Name:	CLEAN HARBORS SAN JOSE LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.1251
Waste Quantity:	30
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20151109
Creation Date:	1/21/2016 22:16:05
Receipt Date:	20151112
Manifest ID:	011481700JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.02085
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20151020
Creation Date:	12/22/2015 22:15:31
Receipt Date:	20151022
Manifest ID:	011481691JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.06255
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20150909
Creation Date:	11/6/2015 22:15:31
Receipt Date:	20150909
Manifest ID:	011481689JJK
Trans EPA ID:	CAD982049306

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans Name:	MERRY X-RAY
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000100189
Trans Name:	MERRY X-RAY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.02085
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20150826
Creation Date:	11/4/2015 22:15:42
Receipt Date:	20150918
Manifest ID:	006965095FLE
Trans EPA ID:	MAD039322250
Trans Name:	CLEAN HARBORS ENV SVC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD044429835
Trans Name:	CLEAN HARBORS WILMINGTON LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	223 - Unspecified oil-containing waste
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.00417
Waste Quantity:	1
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2010
Gen EPA ID:	CAR000152504

Shipment Date:	20101223
Creation Date:	2/19/2011 18:30:18
Receipt Date:	20101228
Manifest ID:	005720419JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.0417
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20101210
Creation Date:	2/8/2011 18:30:24
Receipt Date:	20101215
Manifest ID:	005720403JJK
Trans EPA ID:	CAD982049306
Trans Name:	MERRY X-RAY CORPORATION
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000051065
Trans Name:	MERRY X-RAY CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H010 - Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Quantity Tons:	0.06255
Waste Quantity:	15
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20101206
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000011878DAT
Trans EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA LLC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GENERAL ENVIRONMENTAL MGT LLC DBA PSC ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	Not reported
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.045
Waste Quantity:	90

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20101206
Creation Date:	2/8/2011 18:30:44
Receipt Date:	20101210
Manifest ID:	000011878DAT
Trans EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA LLC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GENERAL ENVIRONMENTAL MGT LLC DBA PSC ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D002
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.001
Waste Quantity:	2
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20101206
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000011878DAT
Trans EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA LLC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GENERAL ENVIRONMENTAL MGT LLC DBA PSC ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D001
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0005
Waste Quantity:	1
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Shipment Date:	20101206
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000011878DAT
Trans EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA LLC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GENERAL ENVIRONMENTAL MGT LLC DBA PSC ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D001
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0005
Waste Quantity:	1
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20101206
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000011878DAT
Trans EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA LLC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GENERAL ENVIRONMENTAL MGT LLC DBA PSC ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	181 - Other inorganic solid waste Organics
RCRA Code:	D007
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	D006
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20101206
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	000011878DAT
Trans EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA LLC
Trans 2 EPA ID:	Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GENERAL ENVIRONMENTAL MGT LLC DBA PSC ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	181 - Other inorganic solid waste Organics
RCRA Code:	D007
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.04
Waste Quantity:	80
Quantity Unit:	P
Additional Code 1:	D006
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20101206
Creation Date:	2/8/2011 18:30:44
Receipt Date:	20101210
Manifest ID:	000011878DAT
Trans EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA LLC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GENERAL ENVIRONMENTAL MGT LLC DBA PSC ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	F003
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.05
Waste Quantity:	100
Quantity Unit:	P
Additional Code 1:	D022
Additional Code 2:	D001
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20101206
Creation Date:	2/8/2011 18:30:44
Receipt Date:	20101210
Manifest ID:	000011878DAT
Trans EPA ID:	NVD980895338
Trans Name:	21ST CENTURY ENVIRONMENTAL MANAGEMENT OF NEVADA LLC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980884183
Trans Name:	GENERAL ENVIRONMENTAL MGT LLC DBA PSC ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	551 - Laboratory waste chemicals 561 Detergent and soap
RCRA Code:	D002

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.001
Waste Quantity:	2
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

HWTS:

Name:	BUCK INSTITUTE FOR RESEARCH ON AGING
Address:	8001 REDWOOD BLVD
Address 2:	Not reported
City,State,Zip:	NOVATO, CA 949451400
EPA ID:	CAR000152504
Inactive Date:	Not reported
Create Date:	07/14/2004
Last Act Date:	08/13/2019
Mailing Name:	NICOLE NANNERY
Mailing Address:	8001 REDWOOD BLVD
Mailing Address 2:	Not reported
Mailing City,State,Zip:	NOVATO, CA 949451400
Owner Name:	BUCK INST FOR RSRCH ON AGING
Owner Address:	8001 REDWOOD BLVD
Owner Address 2:	Not reported
Owner City,State,Zip:	NOVATO, CA 949450000
Contact Name:	NICOLE NANNERY
Contact Address:	8001 REDWOOD BLVD
Contact Address 2:	Not reported
City,State,Zip:	NOVATO, CA 94945

NAICS:

EPA ID:	CAR000152504
Create Date:	2004-07-14 16:33:03
NAICS Code:	54171
NAICS Description:	Research and Development in the Physical, Engineering, and Life Sciences
Issued EPA ID Date:	2004-07-14 16:33:03
Inactive Date:	Not reported
Facility Name:	BUCK INSTITUTE FOR RESEARCH ON AGING
Facility Address:	8001 REDWOOD BLVD
Facility Address 2:	Not reported
Facility City:	NOVATO
Facility County:	21
Facility State:	CA
Facility Zip:	949451400

EPA ID:	CAR000152504
Create Date:	2011-10-26 15:19:37
NAICS Code:	54172
NAICS Description:	Research and Development in the Social Sciences and Humanities
Issued EPA ID Date:	2004-07-14 16:33:03
Inactive Date:	Not reported
Facility Name:	BUCK INSTITUTE FOR RESEARCH ON AGING
Facility Address:	8001 REDWOOD BLVD

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Facility Address 2:	Not reported
Facility City:	NOVATO
Facility County:	21
Facility State:	CA
Facility Zip:	949451400

B15 **BIOMARIN PHARMACEUTICAL INC., THE BUCK INSTITUTE F** **CERS HAZ WASTE** **S121781915**
SSE **8001 REDWOOD BLVD** **CERS** **N/A**
< 1/8 **NOVATO, CA 94945**
0.006 mi.
33 ft. **Site 8 of 10 in cluster B**

Relative: Higher

Actual: 33 ft.

CERS HAZ WASTE:

Name:	BIOMARIN PHARMACEUTICAL INC., THE BUCK INSTITUTE FOR RESEARCH ON AGING
Address:	8001 REDWOOD BLVD
City,State,Zip:	NOVATO, CA 94945
Site ID:	424650
CERS ID:	10740766
CERS Description:	Hazardous Waste Generator

CERS:

Name:	BIOMARIN PHARMACEUTICAL INC., THE BUCK INSTITUTE FOR RESEARCH ON AGING
Address:	8001 REDWOOD BLVD
City,State,Zip:	NOVATO, CA 94945
Site ID:	424650
CERS ID:	10740766
CERS Description:	Chemical Storage Facilities

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	06-23-2017
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program:	HW
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	06-23-2017
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program:	HMRRP
Eval Source:	CERS

Coordinates:

Site ID:	424650
Facility Name:	BioMarin Pharmaceutical Inc., The Buck Institute for Research on Aging
Env Int Type Code:	HMBP
Program ID:	10740766
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	38.122850
Longitude:	-122.566490

BIOMARIN PHARMACEUTICAL INC., THE BUCK INSTITUTE FOR RESEARC (Continued) **S121781915**

Affiliation:

Affiliation Type Desc:	Environmental Contact
Entity Name:	Jon Kawamoto
Entity Title:	Not reported
Affiliation Address:	105 Digital Drive
Affiliation City:	Novato
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94949
Affiliation Phone:	Not reported

Affiliation Type Desc:	Operator
Entity Name:	BioMarin Pharmaceutical Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(415) 506-6700

Affiliation Type Desc:	CUPA District
Entity Name:	Marin County CUPA
Entity Title:	Not reported
Affiliation Address:	1600 Los GamosSuite 210
Affiliation City:	San Rafael
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94903
Affiliation Phone:	(415) 473-6647

Affiliation Type Desc:	Legal Owner
Entity Name:	BioMarin Pharmaceutical
Entity Title:	Not reported
Affiliation Address:	105 Digital Drive
Affiliation City:	Novato
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94949
Affiliation Phone:	(415) 506-6700

Affiliation Type Desc:	Parent Corporation
Entity Name:	BioMarin Pharmaceutical, Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	105 Digital Drive
Affiliation City:	Novato
Affiliation State:	CA

BIOMARIN PHARMACEUTICAL INC., THE BUCK INSTITUTE FOR RESEARC (Continued) **S121781915**

Affiliation Country:	Not reported
Affiliation Zip:	94949
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	The Buck Institute for Research on Aging
Entity Title:	Not reported
Affiliation Address:	8001 Redwood Blvd
Affiliation City:	Novato
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94945
Affiliation Phone:	(415) 209-2000

B16 **BIOMARIN PHARMACEUTICAL INC** **RCRA NonGen / NLR** **1024861997**
SSE **8001 REDWOOD BLVD** **CAL000430504**
< 1/8 **NOVATO, CA 94945**
0.006 mi.
33 ft. **Site 9 of 10 in cluster B**

Relative:
Higher

Actual:
33 ft.

RCRA NonGen / NLR:

Date form received by agency:	2017-09-06 00:00:00.0
Facility name:	BIOMARIN PHARMACEUTICAL INC
Facility address:	8001 REDWOOD BLVD NOVATO, CA 94945
EPA ID:	CAL000430504
Mailing address:	105 DIGITAL DR NOVATO, CA 94949
Contact:	CHRISTY CONFAR
Contact address:	105 DIGITAL DR NOVATO, CA 94949
Contact country:	Not reported
Contact telephone:	415-382-5244
Contact email:	CCONFAR@BMRN.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	CHRISTY CONFAR
Owner/operator address:	105 DIGITAL DR NOVATO, CA 94949
Owner/operator country:	Not reported
Owner/operator telephone:	415-382-5244
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	BIOMARIN PHARMACEUTICAL INC
Owner/operator address:	105 DIGITAL DR NOVATO, CA 94949
Owner/operator country:	Not reported

BIOMARIN PHARMACEUTICAL INC (Continued) **1024861997**

Owner/operator telephone: 415-506-6700
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

B17 **CALICO LIFE SCIENCES, LLC** **CERS HAZ WASTE** **S121782026**
SSE **8001 REDWOOD BLVD** **N/A**
< 1/8 **NOVATO, CA 94945**
0.006 mi.
33 ft. **Site 10 of 10 in cluster B**

Relative: Higher
Actual: 33 ft.

CERS HAZ WASTE:
Name: CALICO LIFE SCIENCES, LLC
Address: 8001 REDWOOD BLVD
City,State,Zip: NOVATO, CA 94945
Site ID: 425026
CERS ID: 10741519
CERS Description: Hazardous Waste Generator

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-23-2017
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: HW
Eval Source: CERS

Coordinates:
Site ID: 425026
Facility Name: Calico Life Sciences, LLC
Env Int Type Code: HWG
Program ID: 10741519
Coord Name: Not reported

CALICO LIFE SCIENCES, LLC (Continued) **S121782026**

Ref Point Type Desc: Center of a facility or station.
Latitude: 38.122850
Longitude: -122.566490

Affiliation:
Affiliation Type Desc: Operator
Entity Name: Calico Life Sciences, LLC
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (408) 204-0032

Affiliation Type Desc: Document Preparer
Entity Name: Heather Pearl
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Environmental Contact
Entity Name: Heather Pearl
Entity Title: Not reported
Affiliation Address: 1170 Veterans Blvd
Affiliation City: South San Francisco
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94080
Affiliation Phone: Not reported

Affiliation Type Desc: Parent Corporation
Entity Name: Calico Life Sciences, LLC
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: CUPA District
Entity Name: Marin County CUPA
Entity Title: Not reported
Affiliation Address: 1600 Los GamosSuite 210
Affiliation City: San Rafael
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94903
Affiliation Phone: (415) 473-6647

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address

CALICO LIFE SCIENCES, LLC (Continued) **S121782026**

Entity Title:	Not reported
Affiliation Address:	1170 Veterans Blvd
Affiliation City:	South San Francisco
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94080
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Heather Pearl
Entity Title:	EHS Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Calico Life Sciences
Entity Title:	Not reported
Affiliation Address:	1170 Veterans Blvd
Affiliation City:	South San Francisco
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94080
Affiliation Phone:	(408) 204-0032
Affiliation Type Desc:	Property Owner
Entity Name:	Calico Life Sciences, LLC
Entity Title:	Not reported
Affiliation Address:	1170 Veterans Blvd
Affiliation City:	South San Francisco
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94080
Affiliation Phone:	(408) 204-0032

---

18 **NOVATO MOTEL LLC** **RCRA NonGen / NLR** **1025860615**
SE **8141 REDWOOD BLVD** **CAC003041277**
< 1/8 **NOVATO, CA 94945**
0.033 mi.
175 ft.

Relative: **Lower**

Actual: **10 ft.**

RCRA NonGen / NLR:

Date form received by agency:	2019-10-31 00:00:00.0
Facility name:	NOVATO MOTEL LLC
Facility address:	8141 REDWOOD BLVD NOVATO, CA 94945-1403
EPA ID:	CAC003041277
Contact:	PETER CHIANG
Contact address:	8141 REDWOOD BLVD. NOVATO, CA 94945
Contact country:	Not reported
Contact telephone:	415-897-7111
Contact email:	KPEREZ@BWSERV.COM
EPA Region:	09

NOVATO MOTEL LLC (Continued) **1025860615**

Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: PETER CHIANG
Owner/operator address: 8141 REDWOOD BLVD.
NOVATO, CA 94945
Owner/operator country: Not reported
Owner/operator telephone: 415-897-7111
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: PETER CHIANG
Owner/operator address: 8141 REDWOOD BLVD
NOVATO, CA 94945
Owner/operator country: Not reported
Owner/operator telephone: 415-897-7111
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): Not reported
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

19
ENE
1/8-1/4
0.161 mi.
851 ft.

RUSH CREEK ESTATES
ATHERTON AVE @ BINFORD RD
NOVATO, CA 94945

CPS-SLIC
NON-CASE INFO

S106235160
N/A

Relative:
Lower

Actual:
3 ft.

SLIC REG 2:

Region:	2
Facility ID:	SL18303723
Facility Status:	Not reported
Date Closed:	Not reported
Local Case #:	Not reported
How Discovered:	Not reported
Leak Cause:	Not reported
Leak Source:	Not reported
Date Confirmed:	Not reported
Date Prelim Site Assmnt Workplan Submitted:	Not reported
Date Preliminary Site Assessment Began:	Not reported
Date Pollution Characterization Began:	Not reported
Date Remediation Plan Submitted:	Not reported
Date Remedial Action Underway:	Not reported
Date Post Remedial Action Monitoring Began:	Not reported

NON-CASE INFO:

Name:	RUSH CREEK ESTATES
Address:	ATHERTON AVE @ BINFORD RD
City,State,Zip:	NOVATO, CA 94945
Global ID:	SL18303723
Case Type:	Non-Case Information
Status:	Informational Item
Status Date:	12/01/1995
Lead Agency:	SAN FRANCISCO BAY RWQCB (REGION 2)
Case Worker:	UUU
Local Agency:	Not reported
RB Case Number:	SL18303723
Loc Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported
Begin Date:	1995-12-01 00:00:00
How Discovered:	Not reported
How Discovered Description:	Not reported
Stop Method:	Not reported
Stop Description:	Not reported
Latitude:	38.13594
Longitude:	-122.56153
Geotracker:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=SL18303723

C20
NE
1/8-1/4
0.168 mi.
888 ft.

KCBS TRANSMITTER BUILDING PEP
8198 BINFORD RD.
NOVATO, CA

Site 1 of 4 in cluster C

AST

A100176290
N/A

Relative:
Lower

Actual:
5 ft.

AST:

Name:	KCBS TRANSMITTER BUILDING PEP
Address:	8198 BINFORD RD.
City/Zip:	NOVATO,

KCBS TRANSMITTER BUILDING PEP (Continued) **A100176290**

Certified Unified Program Agencies:	Marin
Owner:	FEMA
Total Gallons:	10,000
CERSID:	Not reported
Facility ID:	Not reported
Business Name:	Not reported
Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported
Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

C21 **KCBS / FEMA** **AST** **A100421392**
NE **8198 BINFORD ROAD** **N/A**
1/8-1/4 **NOVATO, CA 94947**
0.168 mi.
888 ft. **Site 2 of 4 in cluster C**

Relative: AST:
Lower

Actual:
5 ft.

Name:	KCBS / FEMA
Address:	8198 BINFORD ROAD
City/Zip:	NOVATO,94947
Certified Unified Program Agencies:	Not reported
Owner:	KCBS Radio
Total Gallons:	Not reported
CERSID:	10032871
Facility ID:	21-000-600389
Business Name:	KCBS / FEMA
Phone:	(415) 892-5547
Fax:	Not reported
Mailing Address:	865 Battery Street
Mailing Address City:	San Francisco
Mailing Address State:	CA
Mailing Address Zip Code:	94111
Operator Name:	Michael P. Smith
Operator Phone:	(415) 892-5547
Owner Phone:	(415) 765-4000
Owner Mail Address:	865 Battery Street
Owner State:	CA
Owner Zip Code:	94111
Owner Country:	United States
Property Owner Name:	Rancho del Pantano

KCBS / FEMA (Continued) **A100421392**

Property Owner Phone:	(415) 897-2144
Property Owner Mailing Address:	100 Black John Road
Property Owner City:	Novato
Property Owner Stat :	CA
Property Owner Zip Code:	94947
Property Owner Country:	United States
EPAID:	Not reported

C22 **KCBS / FEMA** **CERS TANKS** **S121778571**
NE **8198 BINFORD ROAD** **CERS** **N/A**
1/8-1/4 **NOVATO, CA 94947**
0.168 mi.
888 ft. **Site 3 of 4 in cluster C**

Relative:
Lower

Actual:
5 ft.

CERS TANKS:

Name:	KCBS / FEMA
Address:	8198 BINFORD ROAD
City,State,Zip:	NOVATO, CA 94947
Site ID:	41199
CERS ID:	10032871
CERS Description:	Aboveground Petroleum Storage

CERS:

Name:	KCBS / FEMA
Address:	8198 BINFORD ROAD
City,State,Zip:	NOVATO, CA 94947
Site ID:	41199
CERS ID:	10032871
CERS Description:	Chemical Storage Facilities

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	06-17-2015
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	07-31-2018
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Emailed inspection to Michael Smith
Eval Division:	Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	06-17-2015
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program:	APSA
Eval Source:	CERS

KCBS / FEMA (Continued) **S121778571**

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-31-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: SPCC conducted same time as HMBP and noted on HMBP report 7/31/2018. This is an amendment to show compliance with SPCC
Eval Division: Marin County Dept of Public Works, Waste Mgmt, CUP
Eval Program: APSA
Eval Source: CERS

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Marin County CUPA
Entity Title: Not reported
Affiliation Address: 1600 Los GamosSuite 210
Affiliation City: San Rafael
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94903
Affiliation Phone: (415) 473-6647

Affiliation Type Desc: Legal Owner
Entity Name: KCBS Radio
Entity Title: Not reported
Affiliation Address: 865 Battery Street
Affiliation City: San Francisco
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 94111
Affiliation Phone: (415) 765-4000

Affiliation Type Desc: Operator
Entity Name: Michael P. Smith
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (415) 892-5547

Affiliation Type Desc: Property Owner
Entity Name: Rancho del Pantano
Entity Title: Not reported
Affiliation Address: 100 Black John Road
Affiliation City: Novato
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 94947
Affiliation Phone: (415) 897-2144

Affiliation Type Desc: Environmental Contact
Entity Name: Michael Smith
Entity Title: Not reported
Affiliation Address: 865 Battery Street
Affiliation City: San Francisco
Affiliation State: CA

KCBS / FEMA (Continued) **S121778571**

Affiliation Country:	Not reported
Affiliation Zip:	94111
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	865 Battery Street
Affiliation City:	San Francisco
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94111
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Michael Smith
Entity Title:	Director of Engineering
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Parent Corporation
Entity Name:	KCBS / FEMA
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Document Preparer
Entity Name:	Michael Smith
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

C23 **BLACK JOHN SLOUGH RANCHO DEL PANTANO** **CPS-SLIC** **S102859647**
NE **8190 BINFORD RD** **CERS** **N/A**
1/8-1/4 **NOVATO, CA 94945** **NON-CASE INFO**
0.170 mi.
898 ft. **Site 4 of 4 in cluster C**

Relative:
Lower

Actual:
4 ft.

SLIC REG 2:

Region:	2
Facility ID:	21S0026
Facility Status:	Leak being confirmed
Date Closed:	Not reported
Local Case #:	Not reported
How Discovered:	Not reported

BLACK JOHN SLOUGH RANCHO DEL PANTANO (Continued) **S102859647**

Leak Cause: Not reported
Leak Source: Not reported
Date Confirmed: Not reported
Date Prelim Site Assmnt Workplan Submitted: Not reported
Date Preliminary Site Assessment Began: Not reported
Date Pollution Characterization Began: Not reported
Date Remediation Plan Submitted: Not reported
Date Remedial Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

CERS:
Name: BINFORD LAND ILLEGAL DISPOSAL SITE
Address: 8190 BINFORD RD
City,State,Zip: NOVATO, CA 94945
Site ID: 454677
CERS ID: 110014002355
CERS Description: US EPA Air Emission Inventory System (EIS)

NON-CASE INFO:
Name: BLACK JOHN SLOUGH RANCHO DEL PANTANO
Address: 8190 BINFORD RD
City,State,Zip: NOVATO, CA 94945
Global ID: SLT2O125131
Case Type: Non-Case Information
Status: Informational Item
Status Date: 04/17/2009
Lead Agency: SAN FRANCISCO BAY RWQCB (REGION 2)
Case Worker: UUU
Local Agency: Not reported
RB Case Number: 21S0026
Loc Case Number: Not reported
File Location: Not reported
Potential Contaminants of Concern: Not reported
Potential Media Affected: Not reported
Site History: Not reported
Begin Date: 2001-03-08 00:00:00
How Discovered: Not reported
How Discovered Description: Not reported
Stop Method: Not reported
Stop Description: Not reported
Latitude: 38.1360250549788
Longitude: -122.556316405506
Geotracker: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=SLT2O125131

---

24 **NOVATO STORAGE PARK RANCHO DEL PANTANO** **CPS-SLIC** **S106234950**
NNE **UNKNOWN AIRPORT RD & BINFORD RD** **N/A**
1/8-1/4 **NOVATO, CA 94945**
0.209 mi.
1105 ft.

Relative:
Lower

Actual:
6 ft.

SLIC REG 2:
Region: 2
Facility ID: 21S0007
Facility Status: Leak being confirmed
Date Closed: Not reported
Local Case #: Not reported
How Discovered: Not reported

NOVATO STORAGE PARK RANCHO DEL PANTANO (Continued) **S106234950**

Leak Cause: Not reported
Leak Source: Not reported
Date Confirmed: Not reported
Date Prelim Site Assmnt Workplan Submitted: Not reported
Date Preliminary Site Assessment Began: Not reported
Date Pollution Characterization Began: Not reported
Date Remediation Plan Submitted: Not reported
Date Remedial Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

D25 **NOVATO STORAGE PARK** **ENVIROSTOR** **S100181583**
NNE **AIRPORT AND BINFORD ROADS** **VCP** **N/A**
1/4-1/2 **NOVATO, CA 94945** **HIST CORTESE**
0.399 mi.
2105 ft. **Site 1 of 2 in cluster D**

Relative:
Lower

Actual:
5 ft.

ENVIROSTOR:
Name: NOVATO STORAGE PARK
Address: AIRPORT AND BINFORD ROADS
City,State,Zip: NOVATO, CA 94945
Facility ID: 21420001
Status: No Further Action
Status Date: 05/16/1996
Site Code: Not reported
Site Type: Voluntary Cleanup
Site Type Detailed: Voluntary Cleanup
Acres: Not reported
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Not reported
Supervisor: Karen Toth
Division Branch: Cleanup Berkeley
Assembly: 10
Senate: 02
Special Program: Voluntary Cleanup Program
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 38.1406
Longitude: -122.5618
APN: NONE SPECIFIED
Past Use: NONE
Potential COC: NONE SPECIFIED No Contaminants found
Confirmed COC: No Contaminants found
Potential Description: NMA
Alias Name: 110033612277
Alias Type: EPA (FRS #)
Alias Name: SLT2O124130
Alias Type: GeoTracker Global ID
Alias Name: 21420001
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 02/06/1990

NOVATO STORAGE PARK (Continued) **S100181583**

Comments:	Completed Site Screening. Approximately fourteen 55-gallon drums were found in fill. A soil investigation is needed to characterize both the vertical and lateral extent of the soil contamination and see if there is potentail leachate into bay mud underlying the fill. Recommended PEA.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	*Voluntary Cleanup Agreement Completion
Completed Date:	05/16/1996
Comments:	Completed VCA. No further action required at the site based on the submission of a 1987 report showing the result of a detailed investigation of the drums, their contents, and the soil beneath them. Soil and drum were disposed at a Class III landfill.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	* Discovery
Completed Date:	01/25/1987
Comments:	Site Discovery. Facility identified by workplan received by DTSC.
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

VCP:

Name:	NOVATO STORAGE PARK
Address:	AIRPORT AND BINFORD ROADS
City,State,Zip:	NOVATO, CA 94945
Facility ID:	21420001
Site Type:	Voluntary Cleanup
Site Type Detail:	Voluntary Cleanup
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	Not reported
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Karen Toth
Division Branch:	Cleanup Berkeley
Site Code:	Not reported
Assembly:	10
Senate:	02
Special Programs Code:	Voluntary Cleanup Program
Status:	No Further Action
Status Date:	05/16/1996
Restricted Use:	NO
Funding:	Not reported
Lat/Long:	38.1406 / -122.5618
APN:	NONE SPECIFIED

NOVATO STORAGE PARK (Continued) **S100181583**

Past Use:	NONE
Potential COC:	NONE SPECIFIED,31000
Confirmed COC:	31000
Potential Description:	NMA
Alias Name:	110033612277
Alias Type:	EPA (FRS #)
Alias Name:	SLT2O124130
Alias Type:	GeoTracker Global ID
Alias Name:	21420001
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	02/06/1990
Comments:	Completed Site Screening. Approximately fourteen 55-gallon drums were found in fill. A soil investigation is needed to characterize both the vertical and lateral extent of the soil contamination and see if there is potentail leachate into bay mud underlying the fill. Recommended PEA.

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	*Voluntary Cleanup Agreement Completion
Completed Date:	05/16/1996
Comments:	Completed VCA. No further action required at the site based on the submission of a 1987 report showing the result of a detailed investigation of the drums, their contents, and the soil beneath them. Soil and drum were disposed at a Class III landfill.

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	* Discovery
Completed Date:	01/25/1987
Comments:	Site Discovery. Facility identified by workplan received by DTSC.

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

HIST CORTESE:

edr_fname:	NOVATO STORAGE PARK
edr_fadd1:	AIRPORT AND BINFORD ROADS
City,State,Zip:	NOVATO, CA 94945
Region:	CORTESE
Facility County Code:	21
Reg By:	CALSI
Reg Id:	21420001

D26 NNE 1/4-1/2 0.402 mi. 2121 ft. **BINFORD ROAD FILL SITE**
BINFORD AND AIRPORT ROADS, NORTH & WEST
NOVATO, CA 94947
Site 2 of 2 in cluster D

ENVIROSTOR **S100184022**
N/A

Relative: Lower
Actual: 4 ft.

ENVIROSTOR:

Name:	BINFORD ROAD FILL SITE
Address:	BINFORD AND AIRPORT ROADS, NORTH & WEST
City,State,Zip:	NOVATO, CA 94947
Facility ID:	21490003
Status:	Refer: Other Agency
Status Date:	07/27/1994
Site Code:	Not reported
Site Type:	Historical
Site Type Detailed:	* Historical
Acres:	Not reported
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	Referred - Not Assigned
Division Branch:	Cleanup Berkeley
Assembly:	Not reported
Senate:	Not reported
Special Program:	* Rural County Survey Program
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	38.14092
Longitude:	-122.5621
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	* HYDROCARBON SOLVENTS * OXYGENATED SOLVENTS * CONTAMINATED SOIL * ALKALINE SOLUTION WITHOUT METALS * UNSPECIFIED AQUEOUS SOLUTION * OTHER PESTICIDE CONTAINERS, 30 GALLONS OR MORE * UNSPECIFIED ORGANIC LIQUID MIXTURE
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	NOVATO STORAGE PARK DEVELOPMENT
Alias Type:	Alternate Name
Alias Name:	RANCHO DEL PANTANO DEVELOPMENT
Alias Type:	Alternate Name
Alias Name:	21490003
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	01/02/1990
Comments:	SITE SCREENING DONE FIFTEEN 55-GALLON METAL BARRELS WERE DUMPED ILLEGALLY. PRELIMINARY INVEST- IGATION INDICATED LOW LEVELS OF PETROL- EUM HYDROCARBONS IN SITE SOILS. RECOM- MENDATION IS PEA (LOW PRIORITY).
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Assessment Report
Completed Date:	12/30/1987

BINFORD ROAD FILL SITE (Continued) **S100184022**

Comments: PRELIM ASSESS DONE RECOMMENDATION IS FOR A MEDIUM PRIORITY SI BASED UPON THE EARTH METRICS INC DATA INDICATING POTENTIAL SOIL CONTAMINATION IN THE AREA OF THE DRUM PIT. RESIDUAL OIL CONTAMINATION NEEDS TO BE ASSESSED IN THE AREA NEAR THE ABANDONED SOLVENT SPILL AS WELL AS SOIL FROM THE CEMENT WASTEWATER IMPOUNDMENTS. THIS RECOMMENDATION IS DEFERRED TO A PENDING STATUS IN ORDER TO ALLOW THE RP TO ASSESS THE POTENTIAL EXTENT OF CONTAMINATION. THE FINAL REPORT FILED ON BEHALF OF THE RP WILL REQUIRE REVIEW TO DETERMINE COMPLETENESS.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Screening
Completed Date: 04/17/1987
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 04/17/1987
Comments: FACILITY IDENTIFIED NOVATO FIRE PROTECTION DISTRICT FACILITY DRIVE-BY OPERATION IS AN ACTIVE FILL SITE THAT APPEARS TO BE AN UNPERMITTED CLASS III DUMPSITE. SITE HAS CEMENT WASTEWATER IMPOUNDMENTS, A PIT OF 55-GAL ABANDONED STEEL DRUMS, MISC. DEBRIS. 2 DRUMS OF WASTE SOLVENT ABANDONED AT SW CORNER OF SITE RESULTING IN SOIL CONTAMINATION. DRUMS AND SOME SOIL REMOVED BY IT CORP. BUT A PROMINENT SOLVENT ODOR REMAINS. MARIN CO. ENV HLTH: INCIDENT FILE SITE SCREENING DONE RATIONALE FOR PA: BASED ON THE OBSERVED PRESENCE OF ABANDONED DRUMS ONSITE, FURTHER EVALUATION OF THIS SITE IS REQUIRED.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

E27 **MARIN AIR SERVICES** **LUST** **S101588497**
NNE **451 AIRPORT RD** **SWEEPS UST** **N/A**
1/4-1/2 **NOVATO, CA 94945** **CA FID UST**
0.454 mi. **Cortese**
2396 ft. **Site 1 of 2 in cluster E** **CERS**
HWTS

Relative:
Lower

Actual:
5 ft.

LUST REG 2:
Region: 2
Facility Id: 21-0298
Facility Status: Leak being confirmed
Case Number: 21-0298
How Discovered: Tank Closure
Leak Cause: UNK
Leak Source: UNK
Date Leak Confirmed: 7/6/1995
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported

MARIN AIR SERVICES (Continued) **S101588497**

Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SWEEPS UST:
Name: MARIN AIR SERVICES
Address: 451 AIRPORT RD
City: NOVATO
Status: Active
Comp Number: 35761
Number: 9
Board Of Equalization: 44-013874
Referral Date: 01-09-90
Action Date: 01-09-90
Created Date: 12-31-88
Owner Tank Id: 3
SWRCB Tank Id: 21-000-035761-000001
Tank Status: A
Capacity: 10000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: JET FUEL
Number Of Tanks: 3

Name: MARIN AIR SERVICES
Address: 451 AIRPORT RD
City: NOVATO
Status: Active
Comp Number: 35761
Number: 9
Board Of Equalization: 44-013874
Referral Date: 01-09-90
Action Date: 01-09-90
Created Date: 12-31-88
Owner Tank Id: 1
SWRCB Tank Id: 21-000-035761-000002
Tank Status: A
Capacity: 10000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: AVIA. GAS
Number Of Tanks: Not reported

Name: MARIN AIR SERVICES
Address: 451 AIRPORT RD
City: NOVATO
Status: Active
Comp Number: 35761
Number: 9
Board Of Equalization: 44-013874
Referral Date: 01-09-90
Action Date: 01-09-90
Created Date: 12-31-88

MARIN AIR SERVICES (Continued) **S101588497**

Owner Tank Id: 2
SWRCB Tank Id: 21-000-035761-000003
Tank Status: A
Capacity: 10000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: AVIA. GAS
Number Of Tanks: Not reported

CA FID UST:
Facility ID: 21001081
Regulated By: UTNKA
Regulated ID: 00035761
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 4158977101
Mail To: Not reported
Mailing Address: P O BOX
Mailing Address 2: Not reported
Mailing City,St,Zip: NOVATO 94947
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

CORTESE:
Name: MARIN COUNTY AIRPORT GNOSS FIELD
Address: 451 AIRPORT RD
City,State,Zip: NOVATO, CA 94948
Region: CORTESE
Envirostor Id: Not reported
Global ID: T0604100280
Site/Facility Type: LUST CLEANUP SITE
Cleanup Status: COMPLETED - CASE CLOSED
Status Date: Not reported
Site Code: Not reported
Latitude: Not reported
Longitude: Not reported
Owner: Not reported
Enf Type: Not reported
Swat R: Not reported
Flag: active
Order No: Not reported
Waste Discharge System No: Not reported
Effective Date: Not reported
Region 2: Not reported
WID Id: Not reported
Solid Waste Id No: Not reported
Waste Management Uit Name: Not reported
File Name: Active Open

MARIN AIR SERVICES (Continued) **S101588497**

CERS:
Name: MARIN COUNTY AIRPORT GNOSS FIELD
Address: 451 AIRPORT RD
City,State,Zip: NOVATO, CA 94948
Site ID: 223637
CERS ID: T0604100280
CERS Description: Leaking Underground Storage Tank Cleanup Site

Affiliation:
Affiliation Type Desc: Regional Board Caseworker
Entity Name: JOHN JANG - SAN FRANCISCO BAY RWQCB (REGION 2)
Entity Title: Not reported
Affiliation Address: 1515 CLAY STREET, SUITE 1400
Affiliation City: OAKLAND
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Local Agency Caseworker
Entity Name: UNK - MARIN COUNTY
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: r2 UNKNOWN
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

HWTS:
Name: MARIN AIR SERVICES
Address: 451 AIRPORT RD
Address 2: Not reported
City,State,Zip: NOVATO, CA 949450000
EPA ID: CAL000010891
Inactive Date: 01/01/1995
Create Date: 11/14/1989
Last Act Date: 07/10/2001
Mailing Name: Not reported
Mailing Address: PO BOX 1828
Mailing Address 2: Not reported
Mailing City,State,Zip: NOVATO, CA 949480000
Owner Name: EULLER GORDON
Owner Address: --
Owner Address 2: Not reported
Owner City,State,Zip: --, 99 --
Contact Name: NONDELIVERABLE 11/94 SURVEY-PH
Contact Address: --
Contact Address 2: Not reported
City,State,Zip: --, 99 --

E28 **MARIN COUNTY AIRPORT GNOSS FIELD** **LUST** **S102432987**
NNE **451 AIRPORT RD** **HIST CORTESE** **N/A**
1/4-1/2 **NOVATO, CA 94948** **NPDES**
0.454 mi. **WDS**
2396 ft. **Site 2 of 2 in cluster E** **CIWQS**
CERS

Relative:
Lower

Actual:
5 ft.

LUST:

Name:	MARIN COUNTY AIRPORT GNOSS FIELD
Address:	451 AIRPORT RD
City,State,Zip:	NOVATO, CA 94948
Lead Agency:	SAN FRANCISCO BAY RWQCB (REGION 2)
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0604100280
Global Id:	T0604100280
Latitude:	38.139877899
Longitude:	-122.55703485
Status:	Completed - Case Closed
Status Date:	12/13/2013
Case Worker:	JMJ
RB Case Number:	21-0298
Local Agency:	MARIN COUNTY
File Location:	Regional Board
Local Case Number:	21-0298
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Diesel
Site History:	Gnoss Field is a small airport in Novato constructed on filled wetlands and is surrounded by open fields and marshlands. One jet fuel and two aviation gasoline USTs were removed in 1991. The USTs and product lines were pitted and had holes in them. Two grab groundwater (GW) samples from the UST pit contained up to 7,900 ppb of TPH-g, 5,900 ppb of TPH-d, and 130 ppb of benzene. Four borings were installed on May 31, 1995, and nine additional borings were installed on July 5, 1995. Grab GW samples from the borings contained up to 1,100 ppb of TPH-d, 810 ppb of TPH-g, 4,000 ppb of total petroleum hydrocarbons as bunker C fuel (TPH-b), 30,000 ppb of jet fuel (TPH-jf), and 51 ppb of benzene. Soil samples contained up to 1,300 mg/kg of motor oil (TPH-mo) with low concentrations of TPH-g, TPH-d, TPH-b, and benzene. In 1999 during excavation work to replace a section of the storm drain sewer line, GW with a sheen and solvent-like and petroleum odors were encountered. Sixty three tons of soil and 9,600 gallons of GW were subsequently removed from the excavation and transported off-site to proper disposal facilities. Soil samples of the excavated soil contained up to 570 mg/kg of TPH-g, 750 mg/kg of TPH-d, 750 mg/kg of TPH-kerosene, 1,100 mg/kg of TPH-mo, 1,300 mg/kg of TPH-b, and non-detectable concentrations of benzene. Soil confirmation samples from the final limits of the excavation contained much lower concentrations of the aforementioned compounds. A grab GW sample from the excavation contained 960 ppb of TPH-g, 890 ppb of TPH-d, 820 ppb of TPH-k, 1,100 ppb of TPH-b, 1.4 ppb of benzene, and non-detectable concentrations of TPH-mo and MTBE. A 2009 sensitive receptor survey (SRS) indicates that the site is surrounded by wetland/saltwater marsh surface water bodies with the nearest surface water body being an unnamed drainage ditch located 550 feet west-southwest of the former USTs and a strip of marsh that is 1,050 feet south of the former USTs. The SRS indicated that there were no water wells within 1,000 feet of the former USTs. An additional subsurface investigation conducted January 28, 2010, included the collection and analysis of soil and GW samples from ten

MARIN COUNTY AIRPORT GNOSS FIELD (Continued) **S102432987**

soil borings (B-14 through B-23, Plate 2) advanced around the former USTs and beyond the locations of borings drilled in 1995. Following completion of the investigation, the following conclusions were presented: " Although constituents of concern were detected in select soil samples, all concentrations were below the ESLs for shallow soil as established by the San Francisco Water Board, where GW is not a current or potential drinking water resource. Further, TPH detected in soil during the 1995 investigation were below ESL s. " Soil impacted with petroleum hydrocarbons likely remains in the area immediately surrounding the former USTs. Concentrations present in soil samples collected in 2010 are generally lower than those collected closer to the former USTs in 1995. " The lateral and vertical distribution of contamination in GW has been defined to the east, south and west of the former UST excavation area. A GW sample collected from a boring (B-21) located to the north of the former UST s contained concentrations of TPH above SF Bay ESL s; however, the concentration is significantly lower than a sample collected closer to the tank excavation in 1995 indicating the 2010 boring (B-21) is located close to the northerly extent of GW contamination. " With the exception of B21-W and two other samples containing toluene below SF Bay ESLs, all GW samples were non-detect for constituents of concern. " Though 18 years have passed since the 1995 investigation, contaminants in GW were not detected, or in one case have decreased significantly, in the step out borings. " The distribution and spread of soil and GW impacts does not appear to be influenced by nearby subsurface utilities. " According to the SRS, no municipal or private wells are located within 1000 feet of the site. Based on the following, case closure for this site is considered to be appropriate: (1) The site has been adequately investigated; (2) The primary source (the three USTs that formerly occupied this site) was removed in 1991; (3) The secondary source (the impacted soil surrounding the former USTs) material has been removed to the degree practicable and disposed of offsite; (4) The lateral extent of FHC-impacted soil and groundwater has been adequately characterized and the GW plume is stable or decreasing and is localized and not migrating off-site; (5) Sensitive receptors and migration pathways that could be impacted by the release have been identified and are not impacted or threatened by the residual pollution; (6) The absence of benzene and very low concentrations of toluene, ethylbenzene, and xylenes in soil and groundwater, and the location of the residual FHC impacts beneath paving and outside of building footprints, precludes a potential vapor intrusion problem; and (7) There is little likelihood that the shallow groundwater will be used as a drinking water supply in the near future. The use of the subject site as an airport is not likely to change in the future There is a small but easily manageable risk to human health if excavation/construction activities are conducted in the vicinity of the former USTs excavation. The potential risk would be mitigated by preparing a Soil and Groundwater Management Plan (SGMP). The SGMP would describe procedures to notify the appropriate regulatory agencies, protect worker s health, and manage impacted soil and/or groundwater if it is encountered; and (8) The residual concentrations in the soil and groundwater apparently do not represent a current or future public health, ecological, and water resources threat.at the Site.

LUST:
Global Id: T0604100280
Contact Type: Regional Board Caseworker

MARIN COUNTY AIRPORT GNOSS FIELD (Continued) **S102432987**

Contact Name: JOHN JANG
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY STREET, SUITE 1400
City: OAKLAND
Email: jjang@waterboards.ca.gov
Phone Number: Not reported

Global Id: T0604100280
Contact Type: Local Agency Caseworker
Contact Name: UNK
Organization Name: MARIN COUNTY
Address: Not reported
City: r2 UNKNOWN
Email: Not reported
Phone Number: Not reported

LUST:

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 02/19/2004
Action: Staff Letter

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 09/05/1995
Action: 13267 Requirement

Global Id: T0604100280
Action Type: Other
Date: 06/26/1995
Action: Leak Discovery

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 02/26/2007
Action: Verbal Communication

Global Id: T0604100280
Action Type: RESPONSE
Date: 05/20/2004
Action: Monitoring Report - Quarterly

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 02/07/2007
Action: Verbal Communication

Global Id: T0604100280
Action Type: Other
Date: 06/26/1995
Action: Leak Stopped

Global Id: T0604100280
Action Type: RESPONSE
Date: 04/01/2004
Action: Monitoring Report - Quarterly

MARIN COUNTY AIRPORT GNOSS FIELD (Continued) **S102432987**

Global Id: T0604100280
Action Type: RESPONSE
Date: 06/01/2004
Action: Monitoring Report - Quarterly

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 07/10/2013
Action: Notification - Public Notice of Case Closure

Global Id: T0604100280
Action Type: Other
Date: 06/26/1995
Action: Leak Reported

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 01/30/2009
Action: 13267 Requirement

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 10/15/2013
Action: Technical Correspondence / Assistance / Other

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 09/20/2013
Action: 13267 Requirement

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 06/26/2009
Action: 13267 Requirement

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 07/22/2009
Action: File review

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 10/14/2009
Action: File review

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 12/13/2013
Action: Closure/No Further Action Letter

Global Id: T0604100280
Action Type: RESPONSE
Date: 11/30/2013
Action: Site Assessment Report

Global Id: T0604100280
Action Type: ENFORCEMENT

MARIN COUNTY AIRPORT GNOSS FIELD (Continued) **S102432987**

Date: 11/19/2009
Action: 13267 Requirement

Global Id: T0604100280
Action Type: RESPONSE
Date: 10/01/2009
Action: Soil and Water Investigation Workplan

Global Id: T0604100280
Action Type: RESPONSE
Date: 02/20/2010
Action: Soil and Water Investigation Report

Global Id: T0604100280
Action Type: RESPONSE
Date: 03/20/2004
Action: Monitoring Report - Quarterly

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 03/12/2004
Action: * Verbal Communication

Global Id: T0604100280
Action Type: ENFORCEMENT
Date: 03/01/2013
Action: File Review - Closure

Global Id: T0604100280
Action Type: RESPONSE
Date: 04/15/2009
Action: Electronic Reporting Submittal Due

LUST:
Global Id: T0604100280
Status: Open - Case Begin Date
Status Date: 06/26/1995

Global Id: T0604100280
Status: Open - Site Assessment
Status Date: 07/06/1995

Global Id: T0604100280
Status: Open - Eligible for Closure
Status Date: 03/01/2013

Global Id: T0604100280
Status: Completed - Case Closed
Status Date: 12/13/2013

HIST CORTESE:
edr_fname: MARIN CO AIRPORT GNOSS FI
edr_fadd1: 451 AIRPORT
City,State,Zip: NOVATO, CA
Region: CORTESE

MARIN COUNTY AIRPORT GNOSS FIELD (Continued) **S102432987**

Facility County Code: 21
Reg By: LTNKA
Reg Id: 21-0298

NPDES:

Name:	MARIN CNTY AIRPORT
Address:	451 AIRPORT RD STE A
City,State,Zip:	NOVATO, CA 94945
Facility Status:	Active
NPDES Number:	CAS000001
Region:	2
Agency Number:	0
Regulatory Measure ID:	182126
Place ID:	Not reported
Order Number:	97-03-DWQ
WDID:	2 21I000647
Regulatory Measure Type:	Enrollee
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/17/1992
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	415A Airport Rd
Discharge Name:	Marin Cnty
Discharge City:	Novato
Discharge State:	California
Discharge Zip:	94945
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	2
Regulatory Measure ID:	182126
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	2 21I000647
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	03/17/1992

MARIN COUNTY AIRPORT GNOSS FIELD (Continued) **S102432987**

Status:	Active
Status Date:	03/17/1992
Place Size:	92
Place Size Unit:	Acres
Contact:	Daniel Jensen
Contact Title:	Airport Manager
Contact Phone:	415-897-1754
Contact Phone Ext:	Not reported
Contact Email:	djensen@marincounty.org
Operator Name:	Marin Cnty
Operator Address:	415A Airport Rd
Operator City:	Novato
Operator State:	California
Operator Zip:	94945
Operator Contact:	Daniel Jensen
Operator Contact Title:	Airport Manager
Operator Contact Phone:	415-897-1754
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	djensen@marincounty.org
Operator Type:	Other
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	415-897-1754
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Petaluma River
Certifier:	Daniel Jensen
Certifier Title:	Airport Manager
Certification Date:	25-JUN-15
Primary Sic:	4513-Air Courier Services
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active

MARIN COUNTY AIRPORT GNOSS FIELD (Continued) **S102432987**

Agency Number:	0
Region:	2
Regulatory Measure ID:	182126
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	2 21I000647
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/17/1992
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Marin Cnty
Discharge Address:	415A Airport Rd
Discharge City:	Novato
Discharge State:	California
Discharge Zip:	94945
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported

MARIN COUNTY AIRPORT GNOSS FIELD (Continued) **S102432987**

Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Name:	MARIN CNTY AIRPORT
Address:	451 AIRPORT RD STE A
City,State,Zip:	NOVATO, CA 94945
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	2 21I000647
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	03/17/1992
Operator Name:	Marin Cnty
Operator Address:	415A Airport Rd
Operator City:	Novato
Operator State:	California
Operator Zip:	94945

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	2
Regulatory Measure ID:	182126
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	2 21I000647

MARIN COUNTY AIRPORT GNOSS FIELD (Continued) **S102432987**

Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	03/17/1992
Status:	Active
Status Date:	03/17/1992
Place Size:	92
Place Size Unit:	Acres
Contact:	Daniel Jensen
Contact Title:	Airport Manager
Contact Phone:	415-897-1754
Contact Phone Ext:	Not reported
Contact Email:	djensen@marincounty.org
Operator Name:	Marin Cnty
Operator Address:	415A Airport Rd
Operator City:	Novato
Operator State:	California
Operator Zip:	94945
Operator Contact:	Daniel Jensen
Operator Contact Title:	Airport Manager
Operator Contact Phone:	415-897-1754
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	djensen@marincounty.org
Operator Type:	Other
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	415-897-1754
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported

MARIN COUNTY AIRPORT GNOSS FIELD (Continued) **S102432987**

Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Petaluma River
Certifier:	Daniel Jensen
Certifier Title:	Airport Manager
Certification Date:	25-JUN-15
Primary Sic:	4513-Air Courier Services
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	2
Regulatory Measure ID:	182126
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	2 21I000647
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/17/1992
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Marin Cnty
Discharge Address:	415A Airport Rd
Discharge City:	Novato
Discharge State:	California
Discharge Zip:	94945
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported

MARIN COUNTY AIRPORT GNOSS FIELD (Continued) **S102432987**

Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

WDS:

Name:	MARIN CO AIRPORT
Address:	451 Airport Rd Ste A
City:	NOVATO
Facility ID:	San Francisco Bay 21I000647
Facility Type:	Industrial - Facility that treats and/or disposes of liquid or semisolid wastes from any servicing, producing, manufacturing or processing operation of whatever nature, including mining, gravel washing, geothermal operations, air conditioning, ship building and repairing, oil production, storage and disposal operations, water pumping.
Facility Status:	Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number:	CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion:	2
Facility Telephone:	4158971754
Facility Contact:	KEN ROBBINS
Agency Name:	MARIN CO
Agency Address:	PO Box 4186
Agency City,St,Zip:	San Rafael 949134186
Agency Contact:	KEN ROBBINS
Agency Telephone:	4158971754
Agency Type:	County
SIC Code:	0
SIC Code 2:	Not reported
Primary Waste Type:	Not reported

MARIN COUNTY AIRPORT GNOSS FIELD (Continued) **S102432987**

Primary Waste: Not reported
Waste Type2: Not reported
Waste2: Not reported
Primary Waste Type: Not reported
Secondary Waste: Not reported
Secondary Waste Type: Not reported
Design Flow: 0
Baseline Flow: 0
Reclamation: Not reported
POTW: Not reported
Treat To Water: Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity: Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

CIWQS:
Name: MARIN CNTY AIRPORT
Address: 451 AIRPORT RD STE A
City,State,Zip: NOVATO, CA 94945
Agency: Marin Cnty
Agency Address: 415A Airport Rd, Novato, CA 94945
Place/Project Type: Industrial - Air Courier Services
SIC/NAICS: 4513
Region: 2
Program: INDSTW
Regulatory Measure Status: Active
Regulatory Measure Type: Storm water industrial
Order Number: 2014-0057-DWQ
WDID: 2 21I000647
NPDES Number: CAS000001
Adoption Date: Not reported
Effective Date: 03/17/1992
Termination Date: Not reported
Expiration/Review Date: Not reported
Design Flow: Not reported
Major/Minor: Not reported
Complexity: Not reported
TTWQ: Not reported
Enforcement Actions within 5 years: 0
Violations within 5 years: 0
Latitude: 38.14092
Longitude: -122.56001

CERS:
Name: MARIN CNTY AIRPORT
Address: 451 AIRPORT RD STE A
City,State,Zip: NOVATO, CA 94945
Site ID: 536358

MARIN COUNTY AIRPORT GNOSS FIELD (Continued) **S102432987**

CERS ID: 239491
CERS Description: Industrial Facility Storm Water

Violations:
Site ID: 536358
Site Name: Marin Cnty Airport
Violation Date: 08-05-2005
Citation: 2014-0057-DWQ - Industrial General Permit
Violation Description: SW - Late Report
Violation Notes: Failure to submit 2004/2005 annual report by July 1, 2005
Violation Division: Water Boards
Violation Program: INDSTW
Violation Source: SMARTS

Enforcement Action:
Site ID: 536358
Site Name: Marin Cnty Airport
Site Address: 451 AIRPORT RD STE A
Site City: NOVATO
Site Zip: 94945
Enf Action Date: 08-05-2005
Enf Action Type: Notice of Non-Compliance for Non-Filers
Enf Action Description: Notice of Non-Compliance for Non-Filers
Enf Action Notes: N/A
Enf Action Division: Water Boards
Enf Action Program: INDSTW
Enf Action Source: SMARTS

Affiliation:
Affiliation Type Desc: Owner/Operator
Entity Name: Marin Cnty
Entity Title: Operator
Affiliation Address: 415A Airport Rd
Affiliation City: Novato
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94945
Affiliation Phone: Not reported

Count: 1 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
NOVATO	S107535151		5901 REDWOOD HIGHWAY		CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 09/03/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 09/03/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 09/03/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/02/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/03/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/03/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/15/2020
Date Data Arrived at EDR: 05/19/2020
Date Made Active in Reports: 06/18/2020
Number of Days to Update: 30

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/04/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/13/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 05/15/2020
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/24/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/13/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 05/15/2020
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/24/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 03/22/2020
Date Data Arrived at EDR: 03/24/2020
Date Made Active in Reports: 06/18/2020
Number of Days to Update: 86

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 04/28/2020
Date Made Active in Reports: 07/13/2020
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/27/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 04/28/2020
Date Made Active in Reports: 07/13/2020
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/27/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/11/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/10/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Quarterly

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/15/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 02/01/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/06/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Semi-Annually

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 05/26/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 06/10/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/03/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/23/2020
Next Scheduled EDR Contact: 11/01/2020
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 85

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 04/28/2020
Date Made Active in Reports: 07/13/2020
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/27/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Quarterly

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/17/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 74

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/02/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 07/21/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 05/29/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 75

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 08/04/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 07/21/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/14/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 07/31/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 04/28/2020
Date Made Active in Reports: 07/13/2020
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/27/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2019
Date Data Arrived at EDR: 05/28/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 07/09/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 04/20/2020
Date Data Arrived at EDR: 04/21/2020
Date Made Active in Reports: 07/13/2020
Number of Days to Update: 83

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 07/21/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Quarterly

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 05/20/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/06/2020
Number of Days to Update: 78

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 08/17/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 05/04/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 07/17/2020
Number of Days to Update: 72

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 04/20/2020
Date Data Arrived at EDR: 04/21/2020
Date Made Active in Reports: 07/09/2020
Number of Days to Update: 79

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 07/21/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Quarterly

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 05/29/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 75

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 09/03/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 02/27/2020
Date Data Arrived at EDR: 03/24/2020
Date Made Active in Reports: 06/18/2020
Number of Days to Update: 86

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 06/23/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 03/31/2020
Date Data Arrived at EDR: 04/21/2020
Date Made Active in Reports: 07/09/2020
Number of Days to Update: 79

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/21/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 05/13/2020
Date Data Arrived at EDR: 05/18/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 86

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/13/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/09/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/06/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 08/05/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/24/2020
Date Made Active in Reports: 06/18/2020
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 07/31/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/06/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/17/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 79

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/14/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 03/01/2020
Date Data Arrived at EDR: 04/21/2020
Date Made Active in Reports: 07/15/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/21/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/03/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 01/31/2020
Date Data Arrived at EDR: 05/13/2020
Date Made Active in Reports: 08/03/2020
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/15/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 34

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 09/03/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/09/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 70

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/13/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 06/30/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 10/25/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 82

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 07/20/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 42
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 09/04/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/06/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 06/24/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 07/27/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/15/2020
Date Made Active in Reports: 07/21/2020
Number of Days to Update: 6

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 07/06/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/07/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/21/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 09/03/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 05/28/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 77

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 08/26/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 05/01/2020
Date Data Arrived at EDR: 05/21/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 84

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/28/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/28/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/05/2020
Date Data Arrived at EDR: 03/06/2020
Date Made Active in Reports: 05/29/2020
Number of Days to Update: 84

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/01/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/03/2020
Date Data Arrived at EDR: 03/03/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 86

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 08/26/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 04/04/2020
Date Data Arrived at EDR: 04/07/2020
Date Made Active in Reports: 06/26/2020
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 07/02/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 74

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 07/09/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 05/18/2020
Date Data Arrived at EDR: 05/19/2020
Date Made Active in Reports: 08/03/2020
Number of Days to Update: 76

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/17/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 74

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 05/04/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 07/17/2020
Number of Days to Update: 72

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 08/14/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 05/29/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 75

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 08/19/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 14

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 08/17/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 06/04/2020
Date Data Arrived at EDR: 06/05/2020
Date Made Active in Reports: 08/17/2020
Number of Days to Update: 73

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 08/24/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Annually

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 06/16/2020
Date Made Active in Reports: 08/28/2020
Number of Days to Update: 73

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/16/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 04/03/2020
Date Data Arrived at EDR: 04/07/2020
Date Made Active in Reports: 04/15/2020
Number of Days to Update: 8

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 07/21/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 04/09/2020
Date Data Arrived at EDR: 04/10/2020
Date Made Active in Reports: 07/01/2020
Number of Days to Update: 82

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 07/14/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 05/14/2020
Date Data Arrived at EDR: 05/15/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 73

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/04/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/06/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 05/18/2020
Date Data Arrived at EDR: 05/19/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 73

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 08/17/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 05/18/2020
Date Data Arrived at EDR: 05/18/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 74

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/17/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/08/2020
Date Made Active in Reports: 06/26/2020
Number of Days to Update: 79

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/07/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 05/12/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/28/2020
Number of Days to Update: 77
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/10/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 08/21/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 08/27/2020
Number of Days to Update: 6
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 08/20/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 06/06/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 11/19/2019
Date Data Arrived at EDR: 01/07/2020
Date Made Active in Reports: 03/09/2020
Number of Days to Update: 62
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/09/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13
Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/17/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 04/20/2020
Date Data Arrived at EDR: 04/21/2020
Date Made Active in Reports: 07/13/2020
Number of Days to Update: 83

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 07/21/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 08/28/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 07/01/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Varies

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 06/08/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Semi-Annually

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 07/09/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Semi-Annually

HWTS: Hazardous Waste Tracking System

DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 04/09/2020
Date Made Active in Reports: 07/01/2020
Number of Days to Update: 83

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 08/02/2020
Next Scheduled EDR Contact: 10/18/2020
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/30/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/01/2020
Date Made Active in Reports: 07/17/2020
Number of Days to Update: 16

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/30/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 05/18/2020
Date Data Arrived at EDR: 05/19/2020
Date Made Active in Reports: 06/01/2020
Number of Days to Update: 13

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 06/30/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 06/17/2020
Date Data Arrived at EDR: 06/18/2020
Date Made Active in Reports: 09/02/2020
Number of Days to Update: 76

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/17/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 04/01/2020
Date Data Arrived at EDR: 04/20/2020
Date Made Active in Reports: 07/06/2020
Number of Days to Update: 77

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 07/21/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 04/16/2020
Date Data Arrived at EDR: 04/20/2020
Date Made Active in Reports: 07/08/2020
Number of Days to Update: 79

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 08/13/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/07/2020
Date Data Arrived at EDR: 05/07/2020
Date Made Active in Reports: 07/23/2020
Number of Days to Update: 77

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 08/13/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 01/10/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/15/2020
Number of Days to Update: 76

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 06/30/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 07/14/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/19/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 06/15/2020
Number of Days to Update: 26

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/09/2020
Date Data Arrived at EDR: 04/10/2020
Date Made Active in Reports: 07/01/2020
Number of Days to Update: 82

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 07/14/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/05/2020
Date Made Active in Reports: 08/26/2020
Number of Days to Update: 113

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/05/2020
Date Made Active in Reports: 07/17/2020
Number of Days to Update: 73

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 05/11/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/21/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/20/2020
Date Data Arrived at EDR: 04/28/2020
Date Made Active in Reports: 07/14/2020
Number of Days to Update: 77

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 07/08/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 01/31/2020
Date Made Active in Reports: 04/09/2020
Number of Days to Update: 69

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 06/10/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 03/26/2020
Date Data Arrived at EDR: 03/26/2020
Date Made Active in Reports: 06/15/2020
Number of Days to Update: 81

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 06/30/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/13/2020
Date Data Arrived at EDR: 04/14/2020
Date Made Active in Reports: 07/01/2020
Number of Days to Update: 78

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/13/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/08/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 06/25/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/30/2012
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 42

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 06/25/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 06/25/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 03/25/2020
Date Data Arrived at EDR: 04/14/2020
Date Made Active in Reports: 07/01/2020
Number of Days to Update: 78

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/17/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 07/08/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/14/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 06/27/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 10/02/2019
Number of Days to Update: 64

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 07/14/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 02/24/2020
Date Data Arrived at EDR: 02/25/2020
Date Made Active in Reports: 05/07/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/04/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 06/24/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 1

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 05/15/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 07/13/2020
Date Data Arrived at EDR: 07/15/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 16

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 07/08/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/07/2020
Date Made Active in Reports: 07/24/2020
Number of Days to Update: 78

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 07/21/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 05/01/2020
Date Data Arrived at EDR: 05/08/2020
Date Made Active in Reports: 07/24/2020
Number of Days to Update: 77

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 07/31/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 05/01/2020
Date Data Arrived at EDR: 05/08/2020
Date Made Active in Reports: 07/24/2020
Number of Days to Update: 77

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 07/31/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 05/01/2020
Date Data Arrived at EDR: 05/05/2020
Date Made Active in Reports: 07/17/2020
Number of Days to Update: 73

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/03/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/10/2020
Date Made Active in Reports: 08/24/2020
Number of Days to Update: 75

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 07/14/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 03/10/2020
Date Data Arrived at EDR: 03/11/2020
Date Made Active in Reports: 05/20/2020
Number of Days to Update: 70

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/10/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 03/10/2020
Date Data Arrived at EDR: 03/11/2020
Date Made Active in Reports: 05/20/2020
Number of Days to Update: 70

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/10/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/18/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/15/2020
Number of Days to Update: 76

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/02/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/24/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/17/2020
Number of Days to Update: 78

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/02/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 04/24/2020
Date Data Arrived at EDR: 04/28/2020
Date Made Active in Reports: 07/13/2020
Number of Days to Update: 76

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 02/25/2020
Date Data Arrived at EDR: 02/26/2020
Date Made Active in Reports: 05/07/2020
Number of Days to Update: 71

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/14/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 04/09/2020
Date Data Arrived at EDR: 04/10/2020
Date Made Active in Reports: 06/26/2020
Number of Days to Update: 77

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 07/14/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

LUST SAN FRANCISCO: Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 05/04/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 07/17/2020
Number of Days to Update: 72

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/10/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 05/08/2020
Date Data Arrived at EDR: 05/08/2020
Date Made Active in Reports: 08/03/2020
Number of Days to Update: 87

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/12/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/01/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 05/08/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 04/22/2020
Date Data Arrived at EDR: 04/24/2020
Date Made Active in Reports: 05/07/2020
Number of Days to Update: 13

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/02/2020
Date Data Arrived at EDR: 03/04/2020
Date Made Active in Reports: 05/14/2020
Number of Days to Update: 71

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 02/25/2020
Date Data Arrived at EDR: 02/26/2020
Date Made Active in Reports: 03/11/2020
Number of Days to Update: 14

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/30/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/03/2020
Date Data Arrived at EDR: 04/08/2020
Date Made Active in Reports: 06/26/2020
Number of Days to Update: 79

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/17/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/04/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 04/15/2020
Number of Days to Update: 70

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 07/06/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 05/26/2020
Date Data Arrived at EDR: 05/28/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 77

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 05/18/2020
Date Data Arrived at EDR: 05/19/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 73

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 04/09/2020
Date Data Arrived at EDR: 04/10/2020
Date Made Active in Reports: 07/01/2020
Number of Days to Update: 82

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 07/14/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 05/14/2020
Date Data Arrived at EDR: 05/15/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 73

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 08/06/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 07/14/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 03/26/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/09/2020
Number of Days to Update: 77

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/20/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/24/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/04/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 03/26/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/09/2020
Number of Days to Update: 77
Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/20/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 05/26/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/09/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 04/01/2020
Date Made Active in Reports: 06/17/2020
Number of Days to Update: 77
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/24/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 04/29/2020
Date Made Active in Reports: 07/17/2020
Number of Days to Update: 79
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 08/04/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/12/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/10/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/09/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 04/29/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 72

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 07/31/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/09/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 10/02/2019
Date Made Active in Reports: 12/10/2019
Number of Days to Update: 69

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/02/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

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

HABITAT FOR HUMANITY NOVATO
8161 REDWOOD BOULEVARD
NOVATO, CA 94945

TARGET PROPERTY COORDINATES

Latitude (North):	38.133768 - 38° 8' 1.56''
Longitude (West):	122.565815 - 122° 33' 56.93''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	538052.0
UTM Y (Meters):	4220540.0
Elevation:	20 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5602160 PETALUMA RIVER, CA
Version Date:	2012
South Map:	5602156 NOVATO, 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).

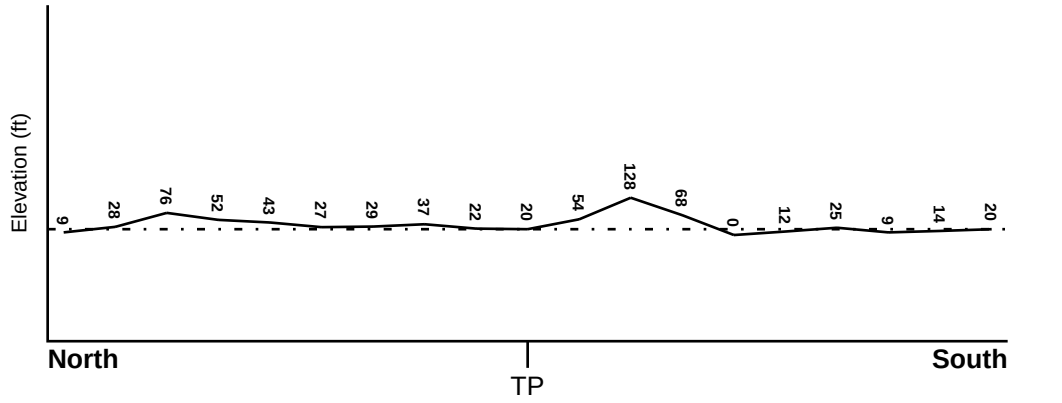
TOPOGRAPHIC INFORMATION

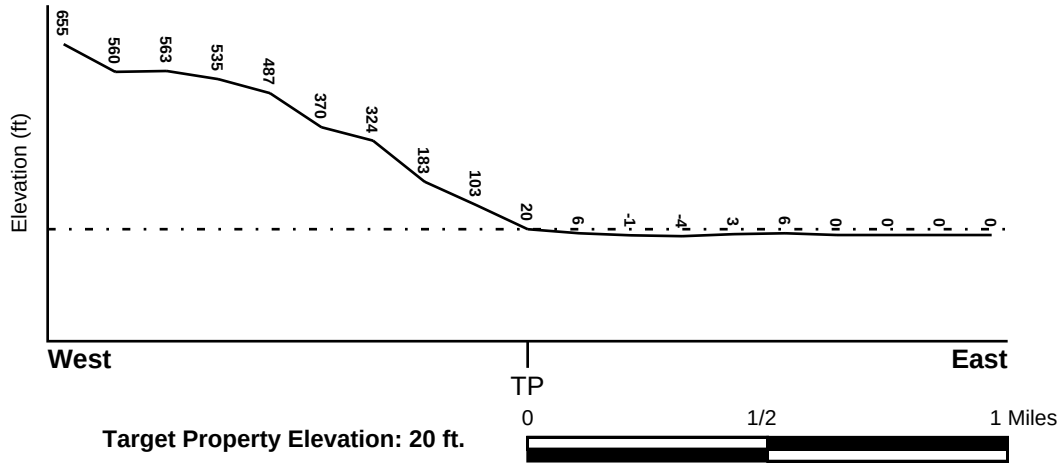
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ENE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





0 1/2 1 Miles

Target Property Elevation: 20 ft.

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
06041C0175D	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06041C0281D	FEMA FIRM Flood data
06041C0277D	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
PETALUMA RIVER	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
1	1/2 - 1 Mile NNE	E
1G	1/2 - 1 Mile NNE	E

For additional site information, refer to Physical Setting Source Map Findings.

* ©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

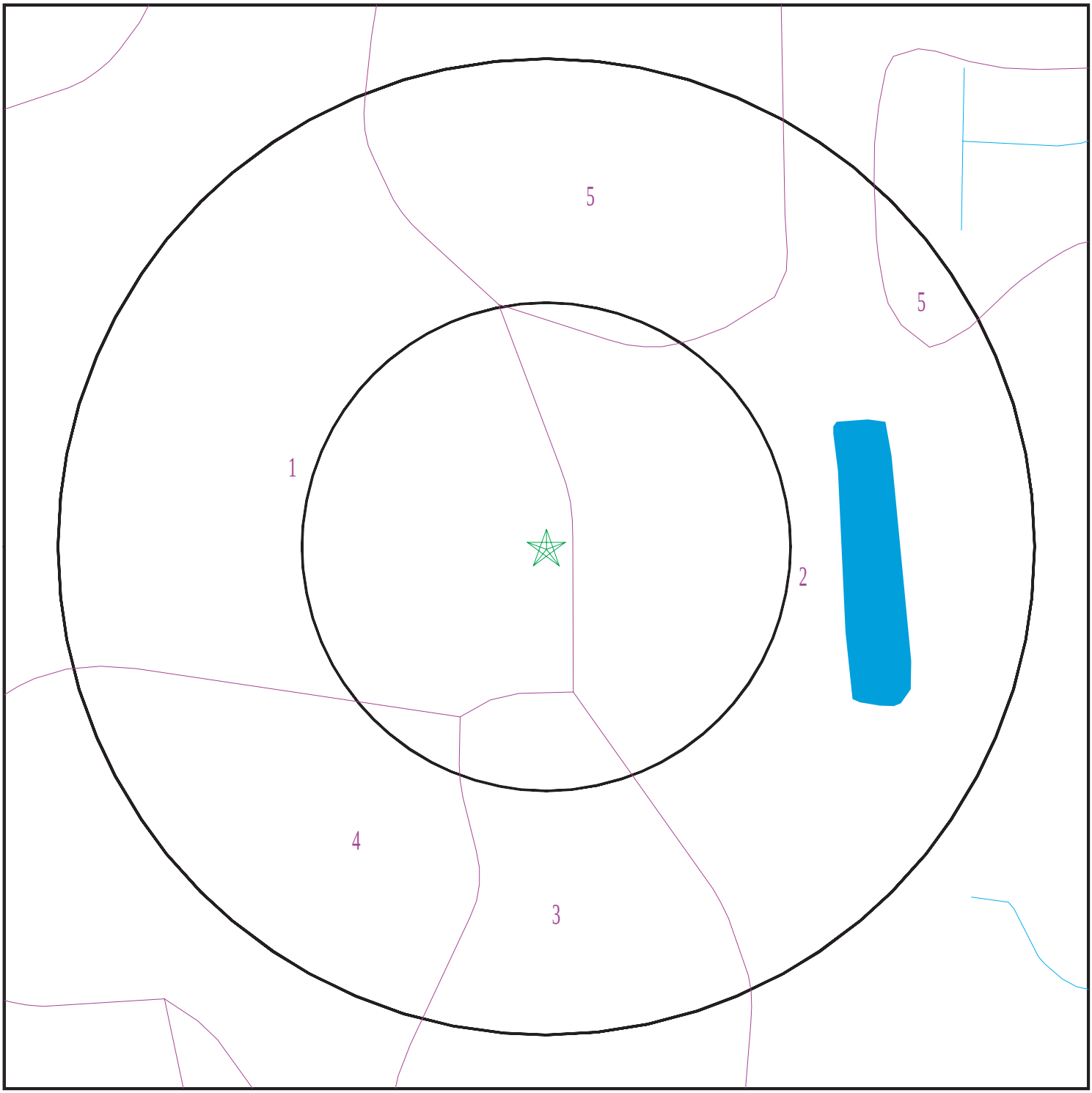
Era:	Mesozoic
System:	Cretaceous
Series:	Lower Cretaceous
Code:	lK *(decoded above as Era, System & Series)*

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).

SSURGO SOIL MAP - 6183353.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Habitat For Humanity Novato	CLIENT:	ARCADIS U.S., Inc.
ADDRESS:	8161 Redwood Boulevard Novato CA 94945	CONTACT:	Divya Mehta
		INQUIRY #:	6183353.2s
LAT/LONG:	38.133768 / 122.565815	DATE:	September 08, 2020 3:46 pm

Copyright © 2020 EDR, Inc. © 2015 TomTom Rel. 2015.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: YORKVILLE

Soil Surface Texture: clay loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: Min:	Max: Min:
2	14 inches	51 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: Min:	Max: Min:
3	51 inches	55 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: Min:	Max: Min:

Soil Map ID: 2

Soil Component Name: REYES

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Elastic silt.	Max: 1.4 Min: 0.42	Max: 6 Min: 3.6
2	14 inches	62 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Elastic silt.	Max: 1.4 Min: 0.42	Max: 6 Min: 3.6

Soil Map ID: 3

Soil Component Name: GILROY

Soil Surface Texture: loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 46 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:
2	11 inches	20 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:
3	20 inches	29 inches	gravelly clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:
4	29 inches	33 inches	unweathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:

Soil Map ID: 4

Soil Component Name: LOS OSOS

Soil Surface Texture: loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:
2	18 inches	38 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:
3	38 inches	42 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:

Soil Map ID: 5

Soil Component Name: XERORTHENTS

Soil Surface Texture: loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class:
Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

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
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

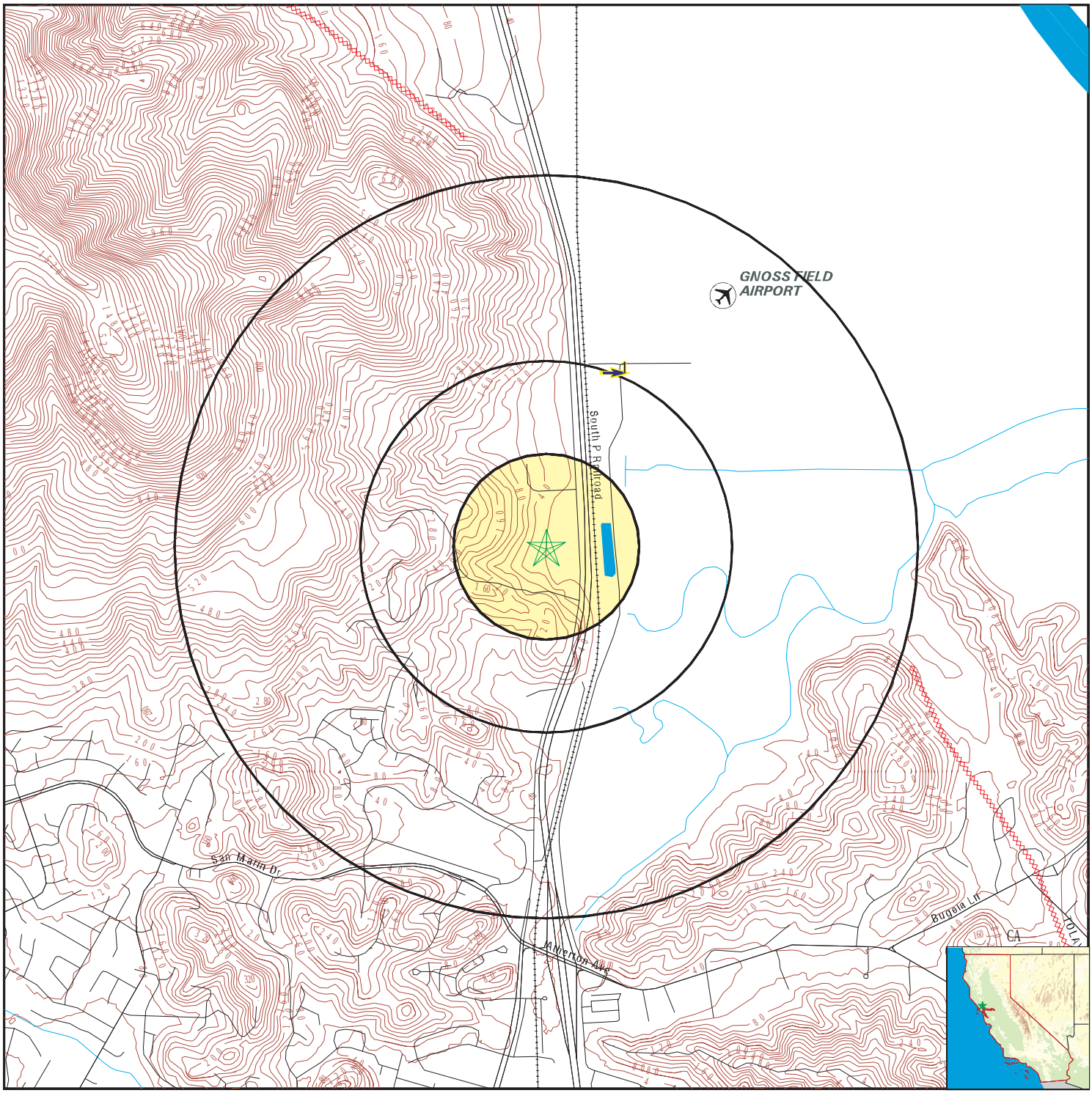
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

PHYSICAL SETTING SOURCE MAP - 6183353.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Habitat For Humanity Novato	CLIENT:	ARCADIS U.S., Inc.
ADDRESS:	8161 Redwood Boulevard Novato CA 94945	CONTACT:	Divya Mehta
		INQUIRY #:	6183353.2s
LAT/LONG:	38.133768 / 122.565815	DATE:	September 08, 2020 3:46 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 **NNE** **1/2 - 1 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	21-0298 E 4.5 6 Not Reported 10/31/1995	**AQUIFLOW**	**39238**
1G **NNE** **1/2 - 1 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	21-0298 E 4.5 6 Not Reported 10/31/1995	**AQUIFLOW**	**39238**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
94945	29	0

Federal EPA Radon Zone for MARIN County: 3

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 Zip Code: 94945

Number of sites tested: 6

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	-0.083 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

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.

Current USGS 7.5 Minute Topographic Map
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: Dept of Conservation, Geologic Energy Management Division
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

Historical Records

Habitat For Humanity Novato

8161 Redwood Boulevard

Novato, CA 94945

Inquiry Number: 6183353.8

September 08, 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

09/08/20

Site Name:

Habitat For Humanity Novato
8161 Redwood Boulevard
Novato, CA 94945
EDR Inquiry # 6183353.8

Client Name:

ARCADIS U.S., Inc.
200 South Michigan Avenue Suite 2000
Chicago, IL 60604
Contact: Divya Mehta

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
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1993	1"=500'	Acquisition Date: July 10, 1993	USGS/DOQQ
1982	1"=500'	Flight Date: July 08, 1982	USDA
1973	1"=500'	Flight Date: September 25, 1973	USGS
1970	1"=500'	Flight Date: May 14, 1970	USGS
1968	1"=500'	Flight Date: April 16, 1968	USGS
1963	1"=500'	Flight Date: June 24, 1963	EDR Proprietary Aerial Viewpoint
1952	1"=500'	Flight Date: June 03, 1952	USGS
1942	1"=500'	Flight Date: July 23, 1942	USDA

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 #: 6183353.8
YEAR: 2016
= 500'
N
EDR


INQUIRY #: 6183353.8
YEAR: 2012
= 500'
N
EDR

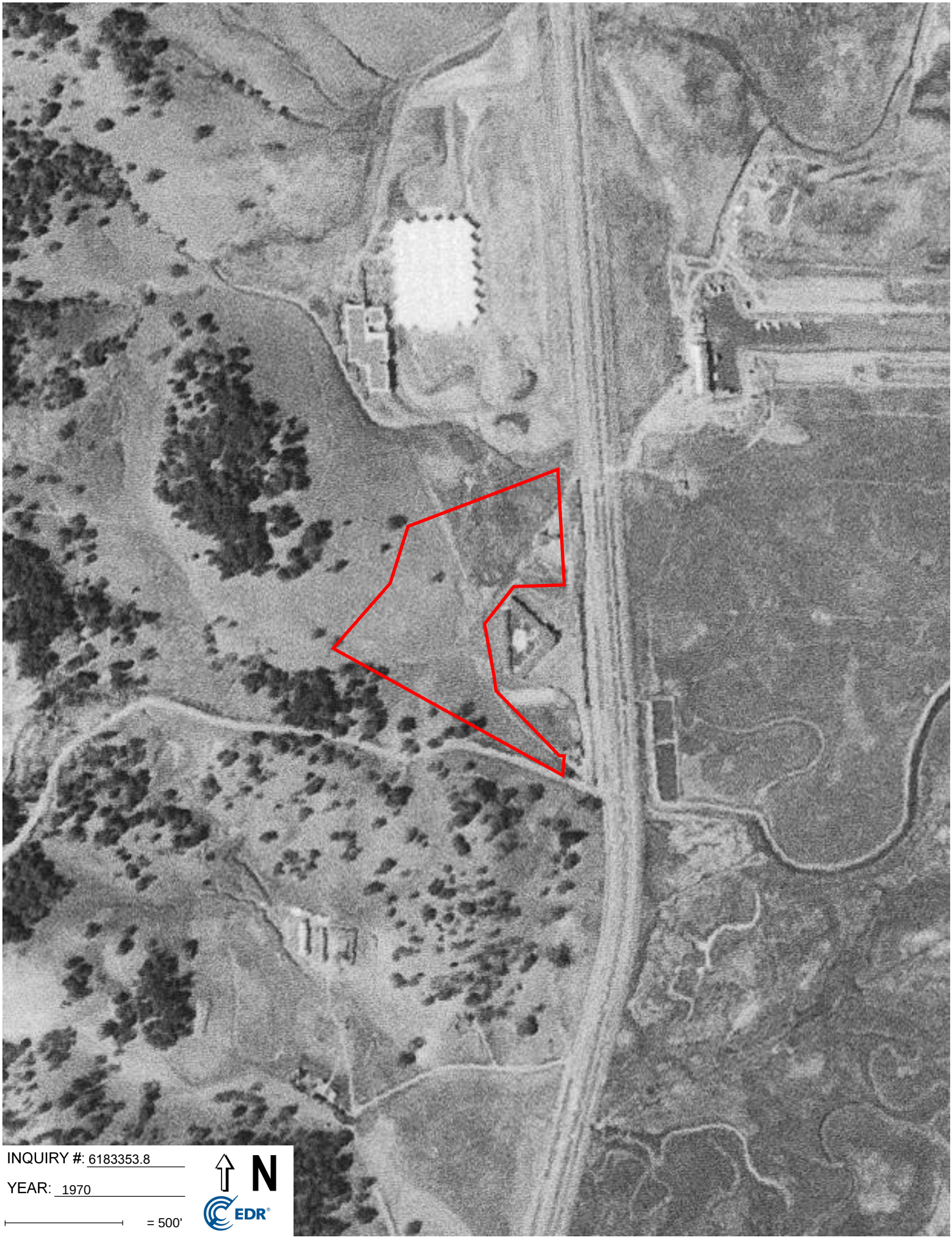

INQUIRY #: 6183353.8
YEAR: 2009
= 500'
N
EDR

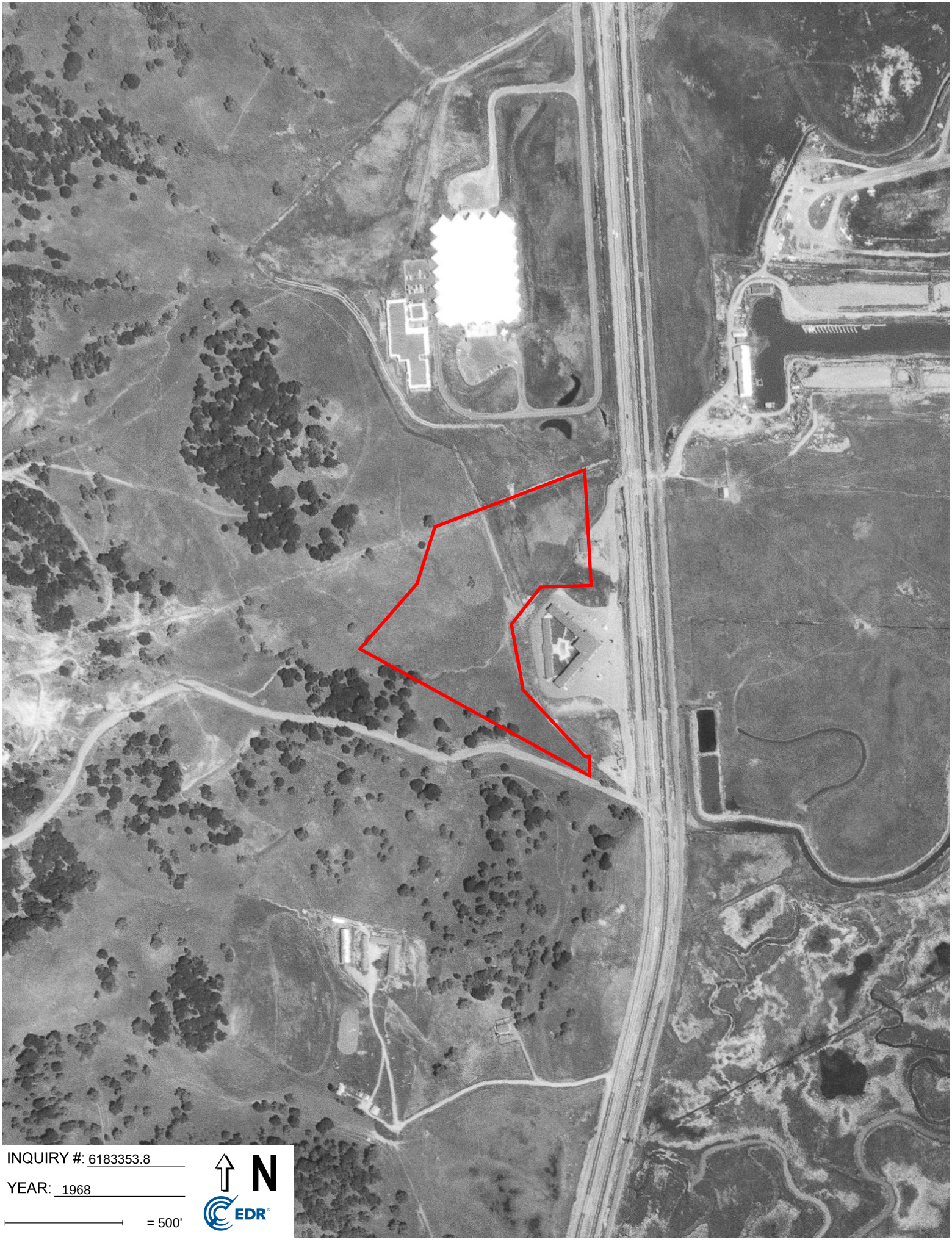

INQUIRY #: 6183353.8
YEAR: 2006
= 500'
N
EDR


INQUIRY #: 6183353.8
YEAR: 1993
= 500'
N
EDR


INQUIRY #: 6183353.8
YEAR: 1982
= 500'
N
EDR


INQUIRY #: 6183353.8
YEAR: 1973
= 500'
N
EDR


INQUIRY #: 6183353.8
YEAR: 1970
= 500'
N
EDR



INQUIRY #: 6183353.8

YEAR: 1968

= 500'

N

EDR



INQUIRY #: 6183353.8

YEAR: 1963

= 500'

N

EDR


INQUIRY #: 6183353.8
YEAR: 1952
= 500'
N
EDR



INQUIRY #: 6183353.8

YEAR: 1942

= 500'

N

EDR

Habitat For Humanity Novato
8161 Redwood Boulevard
Novato, CA 94945

Inquiry Number: 6183353.4
September 08, 2020

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

09/08/20

Site Name:

Habitat For Humanity Novato
8161 Redwood Boulevard
Novato, CA 94945
EDR Inquiry # 6183353.4

Client Name:

ARCADIS U.S., Inc.
200 South Michigan Avenue Suite 2000
Chicago, IL 60604
Contact: Divya Mehta

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by ARCADIS U.S., Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# Habitat for Humanity Novato
Project: 30060030

Coordinates:

Latitude:	38.133768 38° 8' 2" North
Longitude:	-122.565815 -122° 33' 57" West
UTM Zone:	Zone 10 North
UTM X Meters:	538051.02
UTM Y Meters:	4220746.06
Elevation:	20.80' above sea level

Maps Provided:

2012
1980
1973
1968
1954
1942
1914

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.

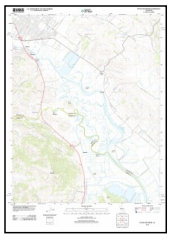
Copyright 2020 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

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.

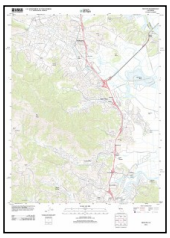
Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets



Petaluma River
2012
7.5-minute, 24000



Novato
2012
7.5-minute, 24000

1980 Source Sheets

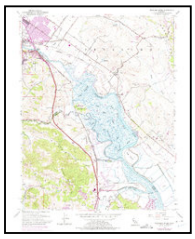


Petaluma River
1980
7.5-minute, 24000
Aerial Photo Revised 1978



Novato
1980
7.5-minute, 24000
Aerial Photo Revised 1979

1973 Source Sheets



Petaluma River
1973
7.5-minute, 24000
Aerial Photo Revised 1973

1968 Source Sheets



Novato
1968
7.5-minute, 24000
Aerial Photo Revised 1968

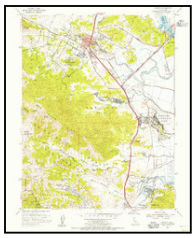


Petaluma River
1968
7.5-minute, 24000
Aerial Photo Revised 1968

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1954 Source Sheets



Novato
1954
7.5-minute, 24000
Aerial Photo Revised 1952



Petaluma River
1954
7.5-minute, 24000
Aerial Photo Revised 1952



Petaluma Creek
1954
7.5-minute, 24000
Aerial Photo Revised 1952

1942 Source Sheets



Petaluma
1942
15-minute, 62500
Aerial Photo Revised 1937

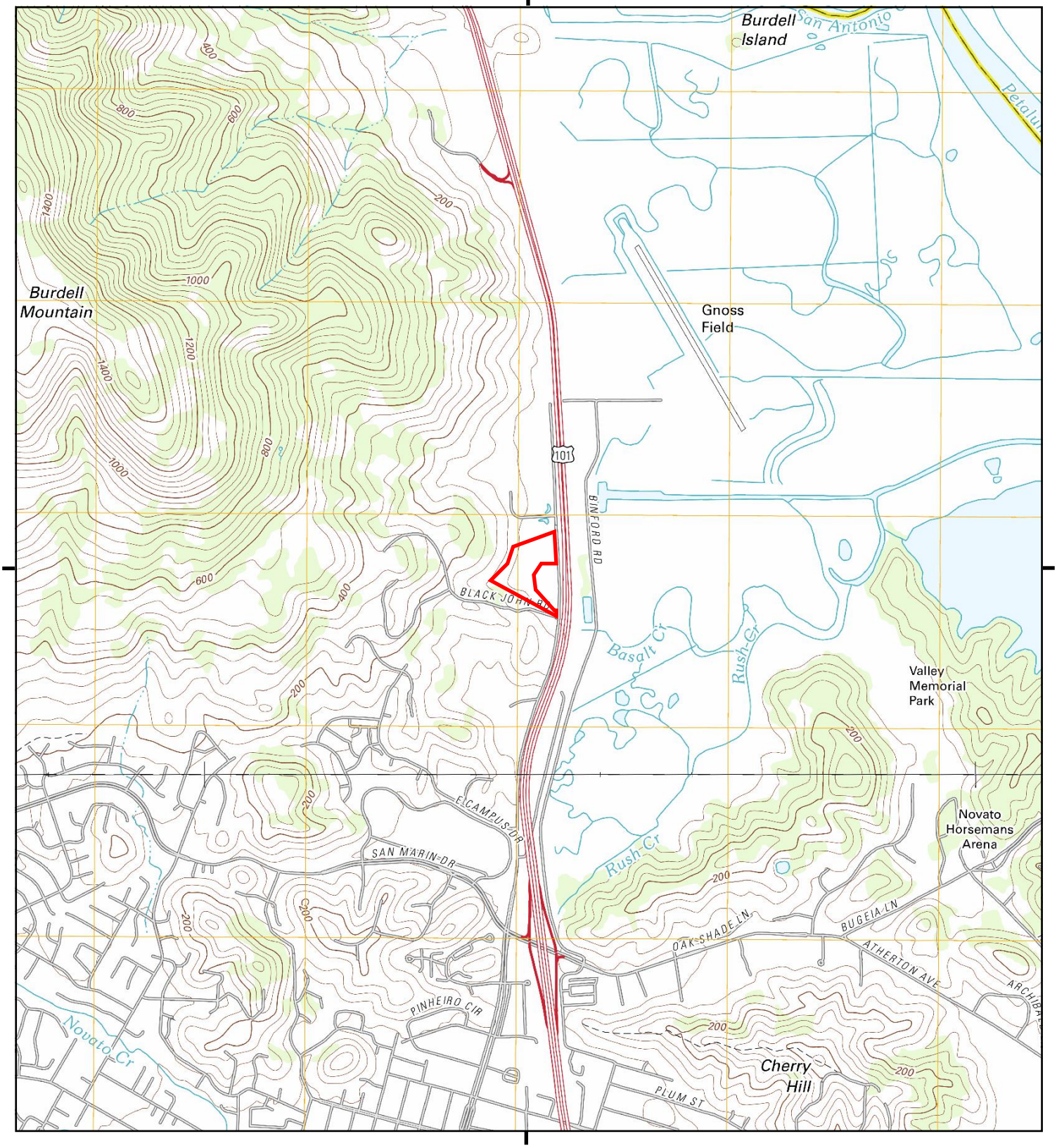
1914 Source Sheets



Petaluma
1914
15-minute, 62500

Historical Topo Map

2012



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

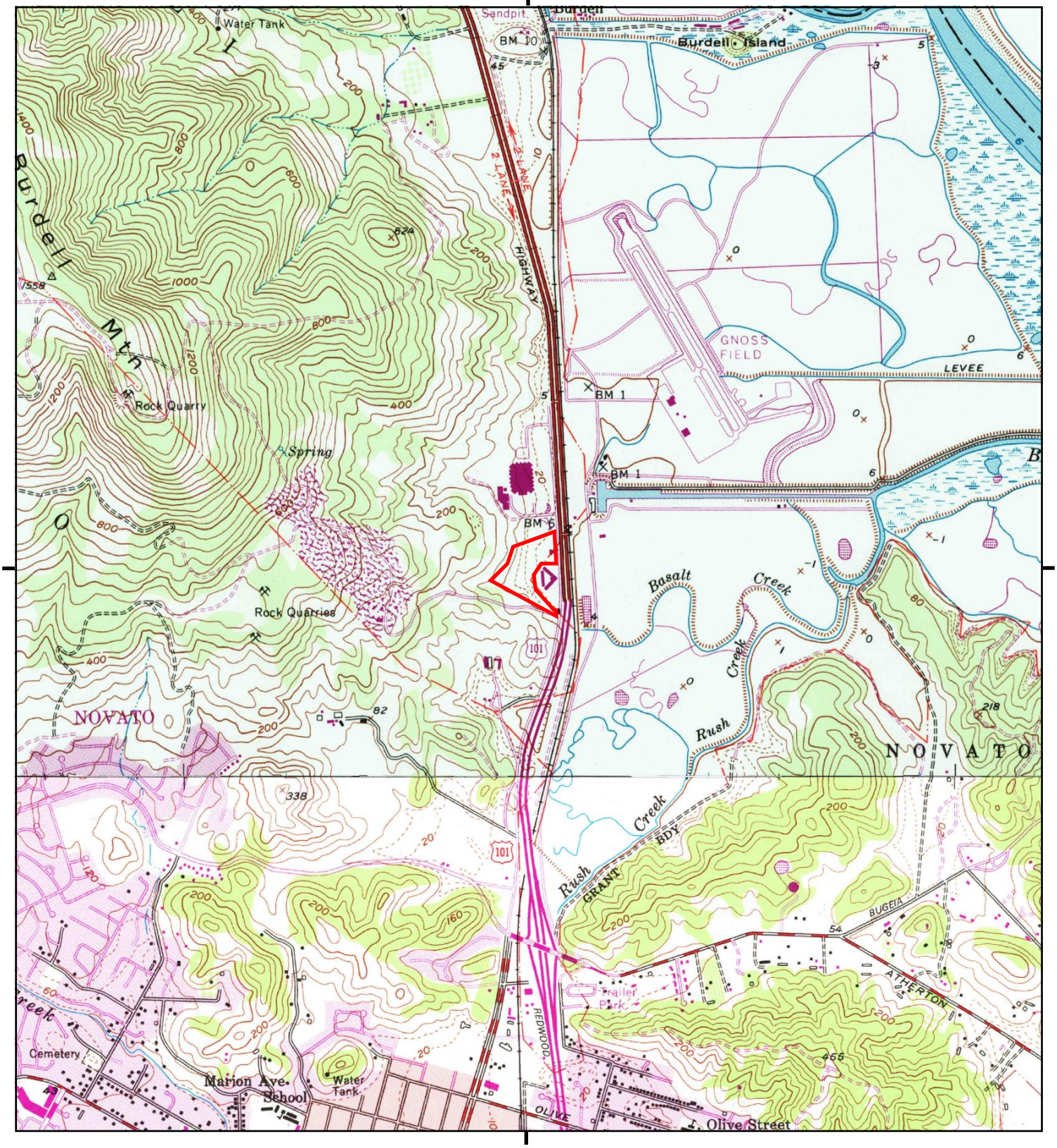
TP, Petaluma River, 2012, 7.5-minute
S, Novato, 2012, 7.5-minute

SITE NAME: Habitat For Humanity Novato
ADDRESS: 8161 Redwood Boulevard
Novato, CA 94945
CLIENT: ARCADIS U.S., Inc.

N

Historical Topo Map

1980



This report includes information from the following map sheet(s).

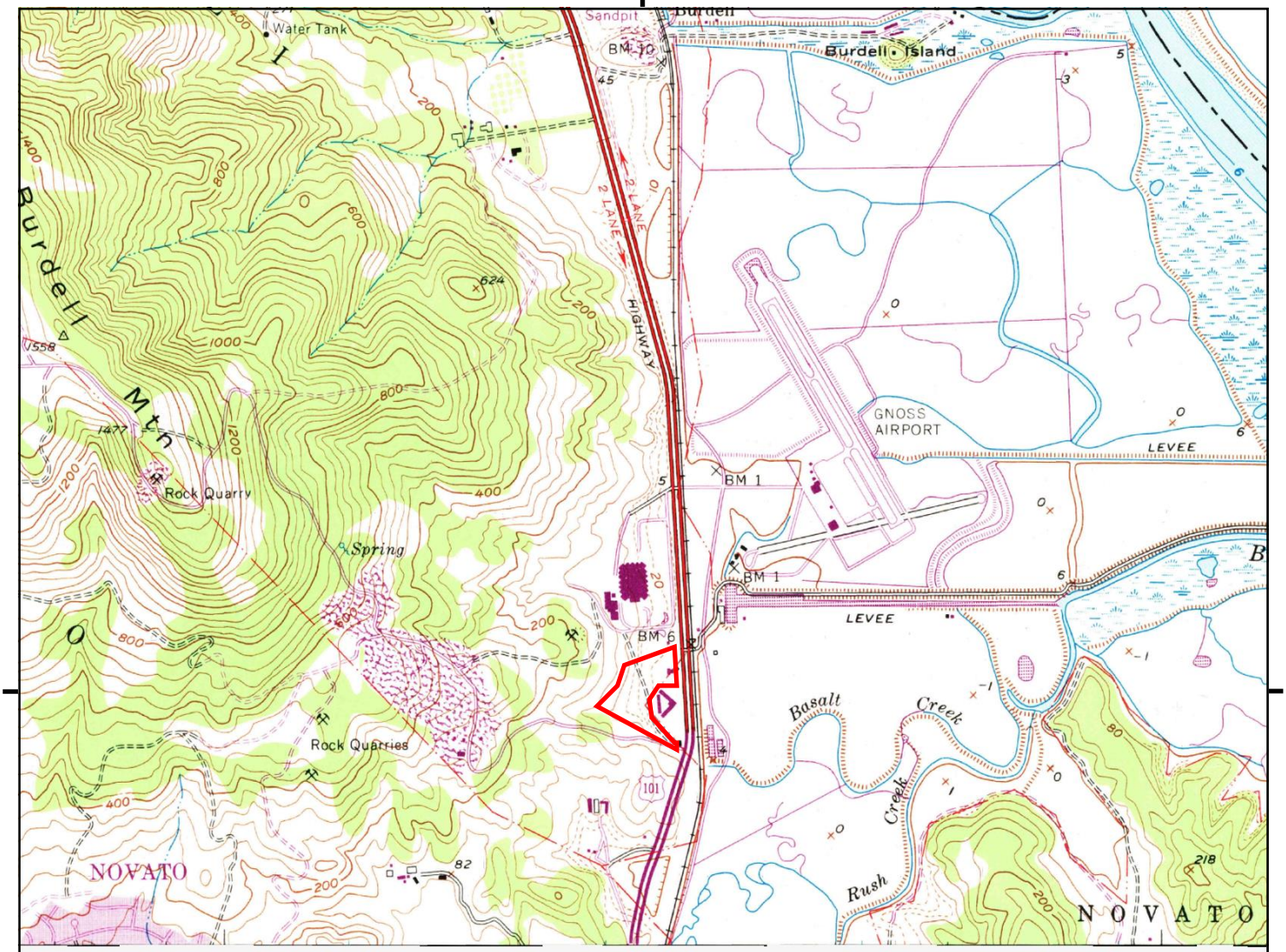
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Petaluma River, 1980, 7.5-minute
S, Novato, 1980, 7.5-minute

SITE NAME: Habitat For Humanity Novato
ADDRESS: 8161 Redwood Boulevard
Novato, CA 94945
CLIENT: ARCADIS U.S., Inc.

N



UNMAPPED UNMAPPED UNMAPPED UNMAPPED UNMAPPED UNMAPPED
UNMAPPED UNMAPPED UNMAPPED UNMAPPED UNMAPPED UNMAPPED
UNMAPPED UNMAPPED UNMAPPED UNMAPPED UNMAPPED UNMAPPED
UNMAPPED UNMAPPED UNMAPPED UNMAPPED UNMAPPED UNMAPPED

This report includes information from the following map sheet(s).

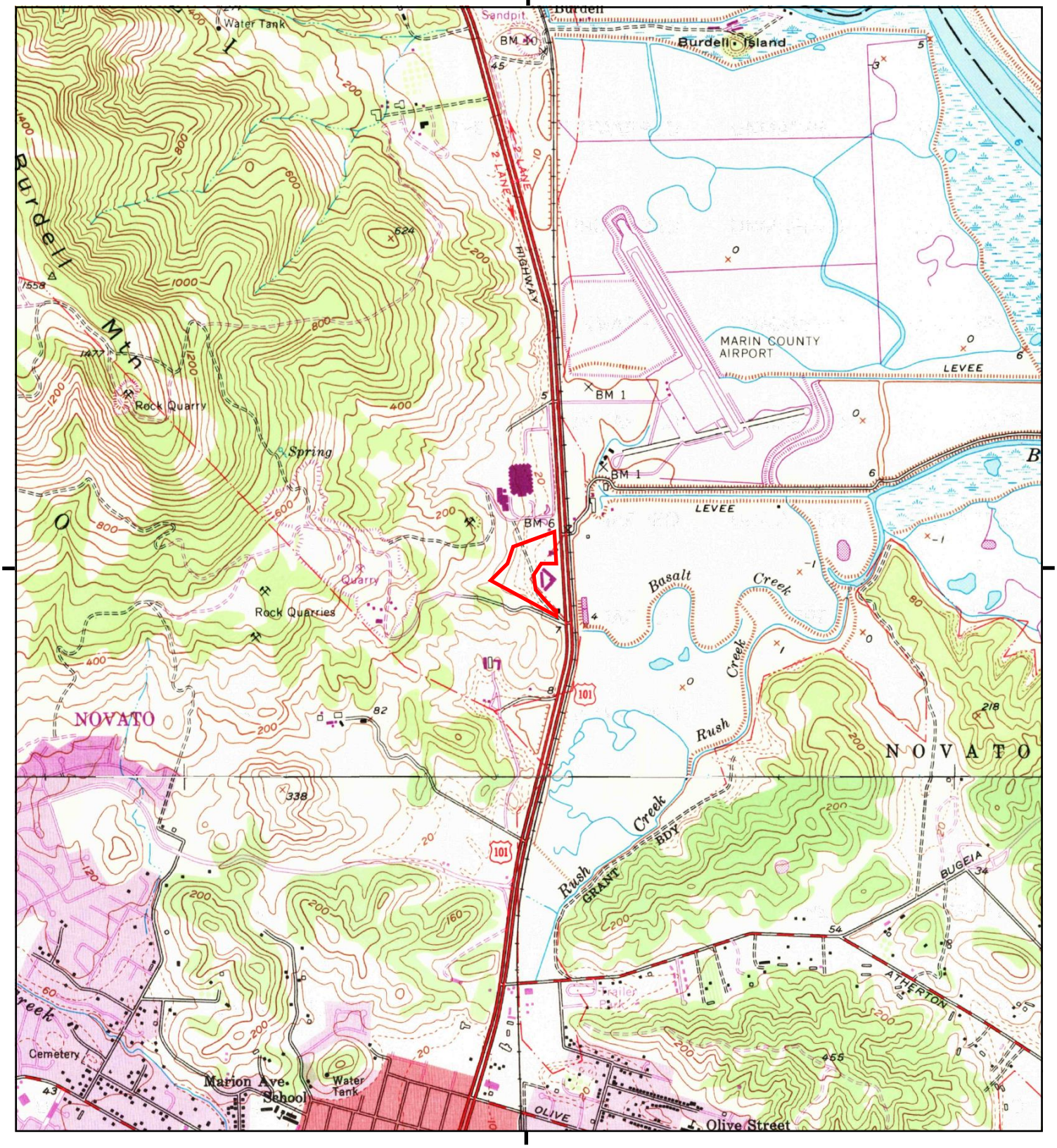
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Petaluma River, 1973, 7.5-minute

SITE NAME: Habitat For Humanity Novato
ADDRESS: 8161 Redwood Boulevard
Novato, CA 94945
CLIENT: ARCADIS U.S., Inc.

N



This report includes information from the following map sheet(s).

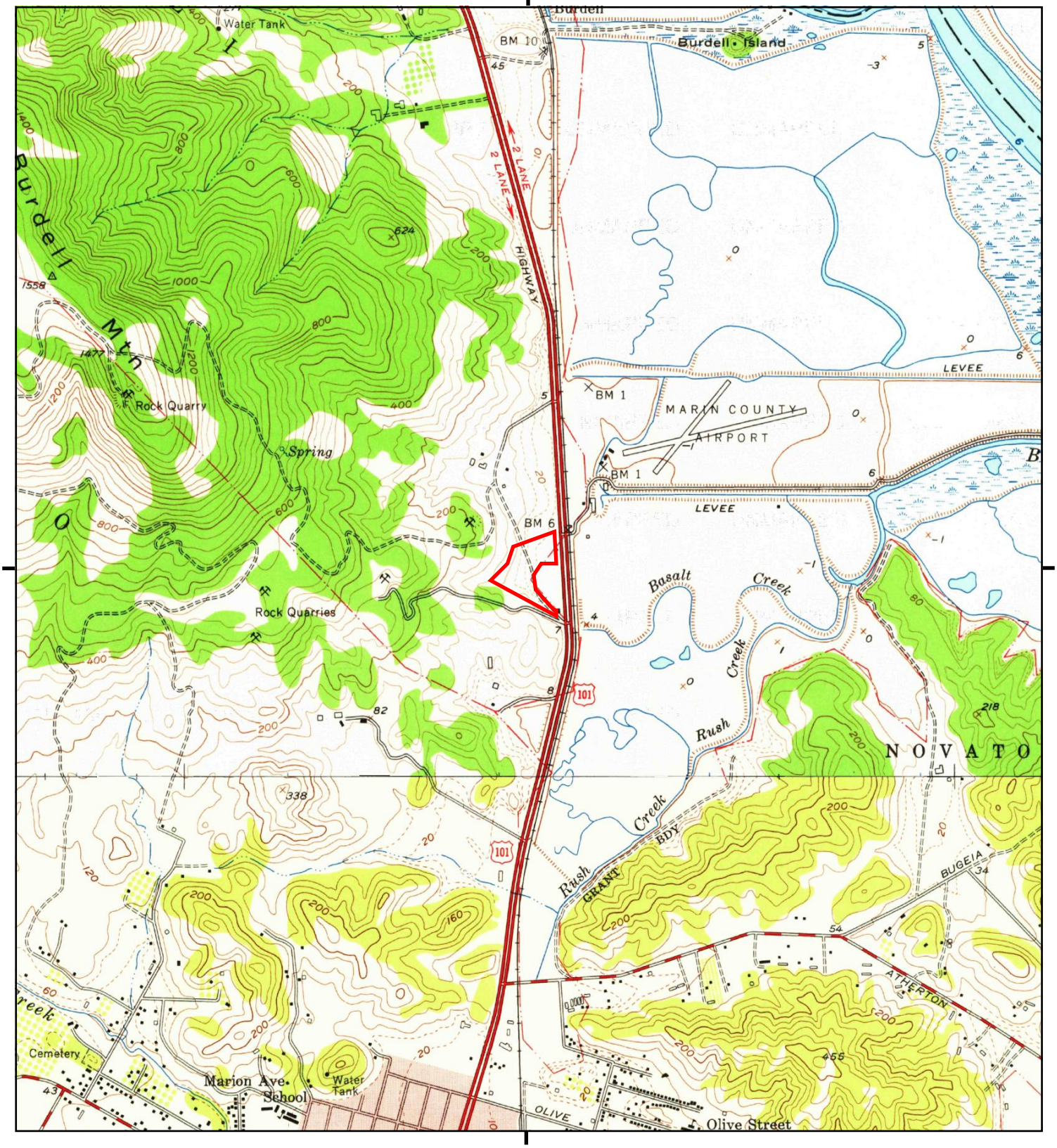
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Petaluma River, 1968, 7.5-minute
S, Novato, 1968, 7.5-minute

SITE NAME: Habitat For Humanity Novato
ADDRESS: 8161 Redwood Boulevard
Novato, CA 94945
CLIENT: ARCADIS U.S., Inc.

N



This report includes information from the following map sheet(s).

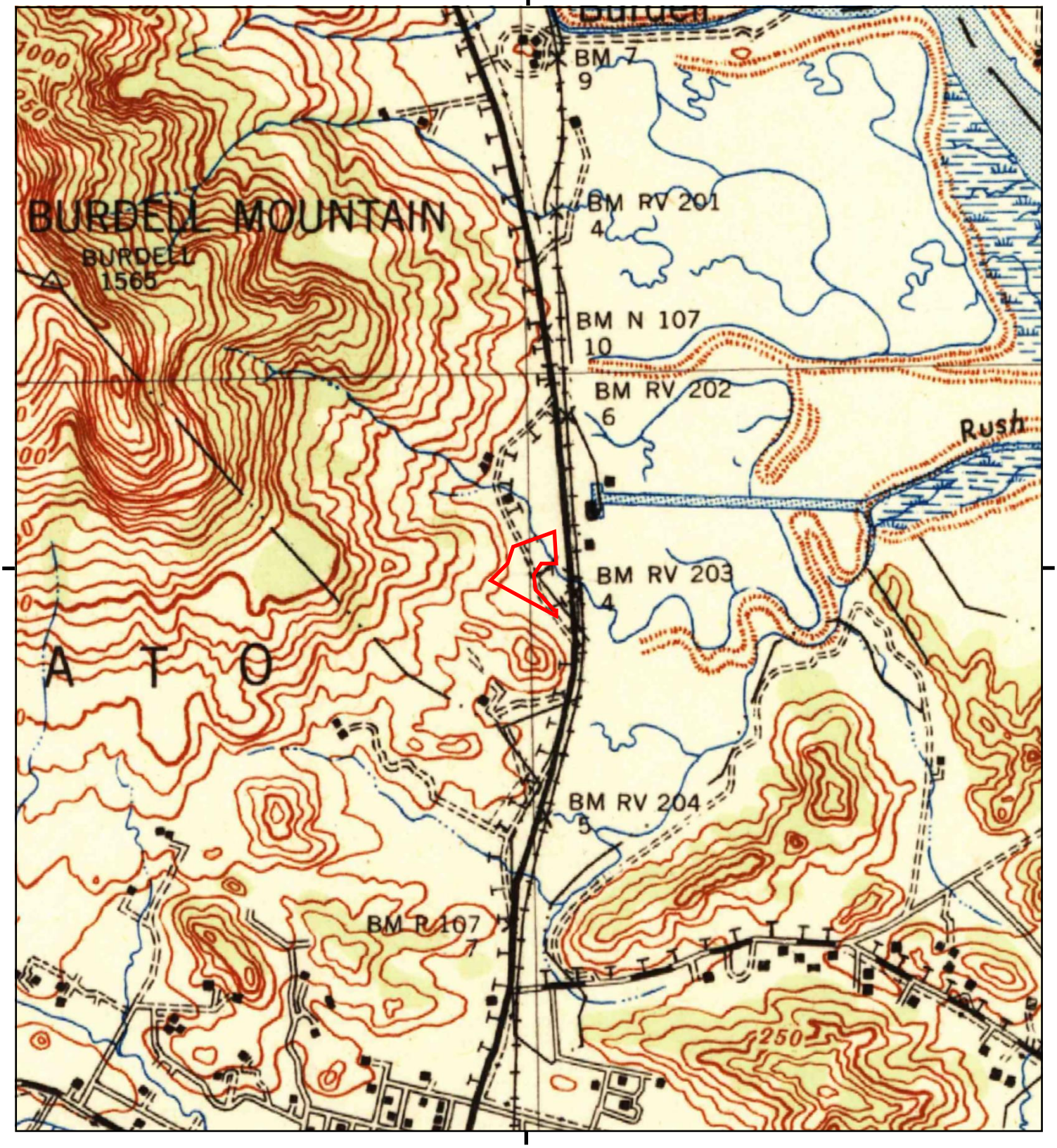
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Petaluma River, 1954, 7.5-minute
S, Novato, 1954, 7.5-minute
TP, Petaluma Creek, 1954, 7.5-minute

SITE NAME: Habitat For Humanity Novato
ADDRESS: 8161 Redwood Boulevard
Novato, CA 94945
CLIENT: ARCADIS U.S., Inc.

N



This report includes information from the following map sheet(s).

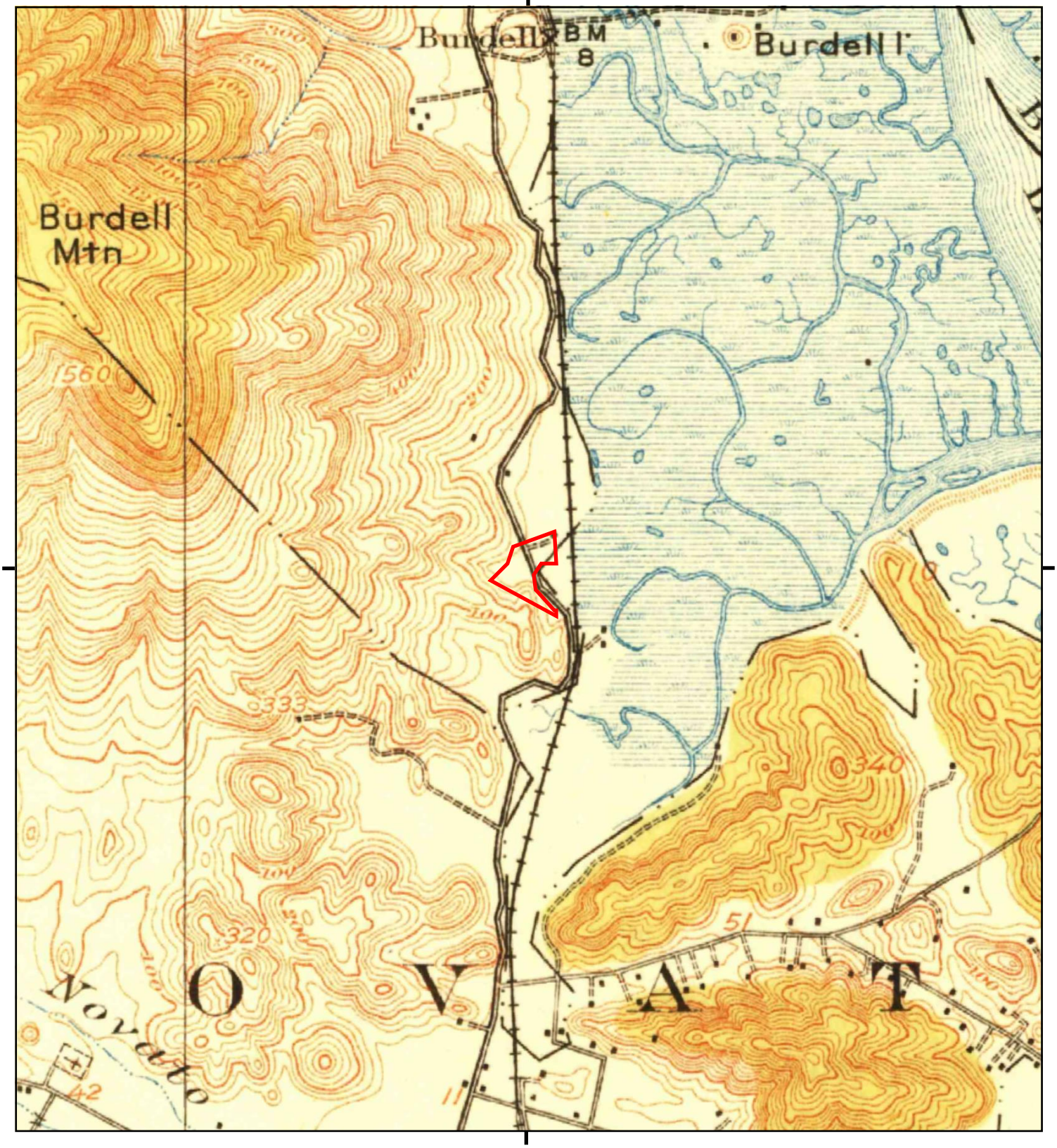
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Petaluma, 1942, 15-minute

SITE NAME: Habitat For Humanity Novato
ADDRESS: 8161 Redwood Boulevard
Novato, CA 94945
CLIENT: ARCADIS U.S., Inc.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Petaluma, 1914, 15-minute

SITE NAME: Habitat For Humanity Novato
ADDRESS: 8161 Redwood Boulevard
Novato, CA 94945
CLIENT: ARCADIS U.S., Inc.

N

Habitat For Humanity Novato
8161 Redwood Boulevard
Novato, CA 94945

Inquiry Number: 6183353.3
September 08, 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

09/08/20

Site Name:

Habitat For Humanity Novato
8161 Redwood Boulevard
Novato, CA 94945
EDR Inquiry # 6183353.3

Client Name:

ARCADIS U.S., Inc.
200 South Michigan Avenue Suite 2000
Chicago, IL 60604
Contact: Divya Mehta

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by ARCADIS U.S., Inc. 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 # 8586-41E0-983A

PO # Habitat for Humanity Novato

Project 30060030

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 #: 8586-41E0-983A

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

ARCADIS U.S., Inc. (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.

Habitat For Humanity Novato
8161 Redwood Boulevard
Novato, CA 94945

Inquiry Number: 6183353.5
September 10, 2020

The EDR-City Directory Image Report

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 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

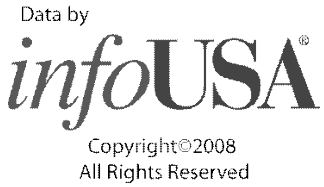
DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report 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 Report includes a search of available city directory data at 5 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. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2017	☑	☐	EDR Digital Archive
2014	☑	☐	EDR Digital Archive
2010	☑	☐	EDR Digital Archive
2005	☑	☐	EDR Digital Archive
2000	☑	☐	EDR Digital Archive
1995	☑	☐	EDR Digital Archive
1992	☑	☐	EDR Digital Archive
1986	☑	☐	Haines Criss-Cross Directory
1981	☑	☐	Haines Criss-Cross Directory
1977	☑	☐	Haines Criss-Cross Directory
1973	☑	☐	Haines Criss-Cross Directory

FINDINGS

TARGET PROPERTY STREET

8161 Redwood Boulevard
Novato, CA 94945

Year	*CD Image*	*Source*
REDWOOD BLVD		
2017	pg A1	EDR Digital Archive
2014	pg A2	EDR Digital Archive
2010	pg A3	EDR Digital Archive
2005	pg A4	EDR Digital Archive
2000	pg A5	EDR Digital Archive
1995	pg A6	EDR Digital Archive
1992	pg A7	EDR Digital Archive
1986	pg A8	Haines Criss-Cross Directory
1981	pg A10	Haines Criss-Cross Directory
1981	pg A9	Haines Criss-Cross Directory
1977	pg A11	Haines Criss-Cross Directory
1973	pg A12	Haines Criss-Cross Directory
1973	pg A13	Haines Criss-Cross Directory

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

REDWOOD BLVD 2017

8001 BUCK INSTITUTE
8141 DAYS INN
DAYS INN NOVATO SAN FRANCISCO
EMERGENCY HEATING & AIR CONDITIONING
8171 BIRKENSTOCK USA

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

REDWOOD BLVD 2014

8001 BUCK INSTITUTE
8141 DAYS INN
MANDARIN RESTAURANT
NOVATO DAYS INN
NOVATO MOTEL
8161 OCCUPANT UNKNOWN,
8171 BIRKENSTOCK USA

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

REDWOOD BLVD 2010

8001 BUCK INSTITUTEAGE RESEARCH
8141 DAYS INNNOVATO
GARDEN COURT RESTAURANT
8161 OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

REDWOOD BLVD 2005

8141 GARDEN COURT RESTAURANT
NOVATO MOTEL
8161 OCCUPANT UNKNOWN,
8171 BIRKENSTOCK FOOTPRINT SANDALS INC
SPHERION

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

REDWOOD BLVD 2000

8001	BUCK CENTER FOR RESEARCH IN AGING
	WALSH CONSTRUCTION COMPANY
8141	DAYS INN NOVATO
	GARDEN COURT RESTAURANT
	NOVATO DAYS INN GARDEN COURT RESTAURANT
	NOVATO MOTEL
	SPORTSMANS LODGE
8171	BIRKENSTOCK FOOTPRINT SANDALS INCORPORATED

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

REDWOOD BLVD 1995

8141 BALIHAI RESTAURANT
CHANG, JUCIN
DEKO, PACIFIC
FARMERS INSURANCE GROUP
GAYLEN CHANG
NOVATO MOTEL
OVERIN, WENDY
U HAUL CO
WONG, FRANK H
8161 MIKES AUTO REPAIR & BODY SHOP
8171 BIRKENSTOCK FOOTPRINT SANDALS

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

REDWOOD BLVD 1992

8141 BALIHAI RESTAURANT
CHANG JU CHIN
CHANG, JU C
8161 MIKES AUTO REPAIR

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

REDWOOD BLVD 1986

7505	NOVATO TOYOTA INC	892-1801	7
	TOYOTA OF NOV SALES	897-3191	9
	TOYOTA OF NOV SERV	893-1501	9
7514	XXXX	00	
7515	DONUT WORKS	897-7144	+6
	NOVATO MUFFLER INC	897-2181	1
	TWO WAY MOTORS	802-5904	0
7517	XXXX	00	
7530	XXXX	00	
7546	DAIRYMENS MILLING	892-4745	1
	DAIRTMENS MILLNG CO	892-1030	2
7552	SHAMROCK MATERIALS	892-1571	
7565	XXXX	00	
7576	CERVANTES S H JR	697-3866	
A	HANS FORGN CAR RPR	892-8018	+6
7596	COLORED GRAVEL	897-1337	
	MARIN LANDSCP MTRLS	897-1337	
7655	HARDING LAWSON ASOC	892-0821	1
7665	DUCKWORTH JAMES A	892-1616	1
	EVENSEH LEIF W CPA	892-3553	1
	GRDNDSTROM ED V	892-1616	
	INTER ACTN FNCL TM	892-0628	3
	JONES DAVID PRICE	892-1616	2
	KETRON RDSSELL	892-0996	+6
	MELDE CLAIRE E	892-0928	3
	NEVINS SHEILA S	892-1618	5
	PALMER BRUCE M	892-1818	
	PALMER CLARK M	892-1616	
	PALMER GRDNDSTROM	692-1616	
	SIMS DWIGHT J PHD	892-0928	1
	TEAM FOR FINANCIAL	892-0929	1
8141	BALIHAI RESTAURANT	692-8700	4
	CHANG JU CHIN	892-8277	3
	NOVATO MOTEL	897-7111	7
	NOVATO MOTEL BALHAI	892-6700	4
	PAPE CHET	892-8243	3
	SPORTSMANS LODGE	697-7111	8
8161	MIKES AUTO REPAIR	692-0601	1
8171	MCGRAW NILL BOOK CO	697-5201	
8180	XXXX	00	
8932	FLEISCHMAN L B	892-9617	2
8934	BRUNNER ENTP INC	892-3346	5
8950	TRIPP STEVE	892-3901	4
9102	NOVATO TRAP CLUB	892-9933	8
	TRAP CLUB OF NOVATO	897-9712	6
NO #	NOVATO BLDG MATRLS	697-1166	
NO #	NOVATO FENCE CO	697-1166	
NO #	NOVATO LUMBER CO	897-1166	
NO #	TURRINIS AUTO SLVGE	897-2090	
★	109 BUS 87 RES	40 NEW	

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

REDWOOD BLVD 1981

7505	MIZEL STEVEN M	897-3191	9
	NOVATO TOYOTA INC	892-1501	7
	TOYOTA OF NOV SALES	897-3191	9
	TOYOTA OF NOV SERV	892-1501	9
7515	COFFEE BREAK	892-0893	+1
	DISCOUNT AUTO PARTS	897-2182	7
	NOVATO MUFFLER INC	897-2181	+1
	RONS AUTOMOTIVE	892-1471	+1
	TWO WAY MOTORS	892-6904	0
7517	XXXX	00	
7530	RICHERT STEVEN	897-8388	0
7546	DAIRYMENS MILLING	892-4748	+1
7552	SHAMROCK MATERIALS	892-1571	6
7565	WILLIAMS DESMOND	897-9036	+1
7576	CERVANTES S H JR	897-3866	
7595½	FOCHT JAS	892-7044	+1
7596	COLORED GRAVEL	897-1337	5
	MARIN LANDSCP MTRLS	897-1337	
7655	HARDING LAWSON ASOC	892-0821	+1
	NORTH MARIN EXCTV S	892-0802	+1
7665	DUCKWORTH JAMES A	892-1616	+1
	EVENSEN LEIF W CPA	892-3553	+1
	GRUNDSTROM ED V	892-1616	+1
	HEITMAN LISA K	892-1616	+1
	INTER ACTN FNCL TM	892-0828	+1
	INTERNTL DIAMOND CO	499-1188	+1
	KETRON R W	892-0928	+1

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

REDWOOD BLVD 1981

..REDWOOD BLVD		94947 CONT..
	KETRON ROBT G	892-0928 +1
	PALMER BRUCE M	892-1616+1
	PALMER CLARK M	892-1616+1
	PALMER GRUNDSTROM&	892-1616+1
	SIMS DWIGHT J	892-0928 +1
	TEAM FOR FINANCIAL	892-0929+1
8141	NATIONAL TRUCK SCH	892-6959 0
	NOVATO MOTEL	897-7111 7
	SPORTSMANS LODGE	897-7111 8
8161	MIKES AUTO REPAIR	892-0601+1
8171	FIREMANS FUND	897-9644 9
	MCGRAW HILL BOOK CO	897-5201
8180	XXXX	00
8932	ERNST CHAS	892-3153 +1
	WINEMAN ROBT M	892-3153 +1
9102	NOVATO TRAP CLUB	892-9933 8
	TRAP CLUB OF NOVATO	897-9712 8
NO #	NOVATO BLDG MATRLS	897-1166
NO #	NOVATO FENCE CO	897-1166+1
NO #	NOVATO LUMBER CO	897-1166
NO #	NUNES A T	892-3715
NO #	NUNES JOE A	892-3618
NO #	TURRINIS AUTO SLVGE	897-2090 5
★	93 BUS 90 RES	75 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

REDWOOD BLVD 1977

7299	GODFREY RICHARD T	892-3214+7
	WALZ K	892-1129+7
7349	*101 MOTEL	892-3300
7369	*PERACHIOTTI REALTY	897-9605+7
7370	LANDMAN STEVE M	892-3297+7
	POND L M	897-0186+7
7374	*LAMMER RON	897-1070+7
7455	*BILL LYONS UNION 76	897-7600 5
7473	*SKIS SHELL SERVICE	897-3739+7
7505	*NOVATO TOYOTA INC	892-1501+7
	*TOYOTA OF NOVATO	892-1501+7
7515	*DISCOUNT AUTO PARTS	897-2182+7
	*REDWD AUTO SALES	892-1255+7
7517	*NOVATO BILLS COIN	897-2070+7
7530	BUTLER LEE	897-7867+7
7586	*A ALLEN TERMITE	897-1168+7
8141	BRUDENELL CLYDE W	897-7826+7
	*NOVATO MOTEL	897-7111+7
NO #	*ACTIVE TREE SER	892-2646+7
NO #	*CONDIOTTI ENTRPRSES	897-4558+7
NO #	*WESTERN OAKS THE	892-1262+7
	* 23 BUS 73 RES 73 NEW	

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

REDWOOD BLVD 1973

7505	*CHAMPION MOTOR HMS	897-5101+2
	*MARIN RENT A CAR	897-5101
	*NOVATO TOYOTA INC	897-3191
	*THRIFTY RENT A CAR	897-5101
	*TOYOTA OF NOVATO	B97-3191+2
7514	*YOUNG BROS OF NCV	892-5610
7515	*DISCOUNT AUTO PARTS	897-2182+2
7517	*WALKERS UPHOL&INTRS	897-8252+2
	*WINTERS GLASS	897-3185+2
7530	LIND PETER	897-2077
	LONG JOHN W	897-8598+2
	PARKS GEO A	897-9225+2
	PAYNE NONDAY C	897-3765+2
	SCHWARM BOB	897-7828+2
	SCHWARM EDNA	897-5862+2
	*YOUNG BROS MBL HMS	897-4151
7533	PINHEIRO FRANK	892-2096
7546	*DAIRYMENS MILLING	892-2843
7552	*POZZI E COMPANY INC	892-3136
	*SHAMROCK MATERIALS	892-3136
7576	CERVANTES S H JR	897-3866
7595	*SIMONTACCHI JOE	897-9708+2
7596	*MARIN LANDSCP MATLS	897-1337+2
8141	*LODGE THE	897-2151

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

REDWOOD BLVD 1973

	SHIPWRECK PETES	897-2410
	*SPORTSMAN LODGE NOV	897-2151
	*THE LODGE	897-2151
8161	*HERTZ RENTAL	897-6667+2
	*INTERSTATE RNT A CR	897-5949
	*JACKS 66	897-6969
8171	*MCGRAW HILL BOOK CO	897-5201
8180	*AQUARIAN GLSS DMNSN	897-4958
	*BRITISH&FOREIGN CAR	897-3383
	*REDWOOD MOTORCYCLE	897-3058
	SIMMONDS DOUGLAS	897-4958
8901	*C BAR N RNCHS&STBLE	897-7272+2
	*GOLDSMITH W SADDLRY	892-9982
	*SADDLERY GOLDSMITH	892-9982
8930	WILLIAMS LAWRENCE	897-3308+2
9201	*WILLIAMS RED WORMS	892-2978+2
NO #	*CNTRY CLB SHELL SV	883-5500
NO #	*COUNTRY CLUB SHELL	883-5500+2
NO #	ERNST CHAS	892-3153
NO #	*GULF SERVICE OF NOV	897-5766

APPENDIX D

Environmental Reports

PHASE I ENVIRONMENTAL SITE ASSESSMENT

PACIFIC GAS & ELECTRIC COMPANY
NOVATO FACILITY
8161 OLD REDWOOD HIGHWAY,
NOVATO, CALIFORNIA

Prepared for:

Pacific Gas and Electric Company
Technical and Ecological Services
3400 Crow Canyon Road
San Ramon, California

Prepared By:

Environmental Science and Engineering, Inc.
4090 Nelson Avenue, Suite J
Concord, California 94520

ESE Project No. 6945334

April 3, 1994

0742b-03 Jeff Tremolada

ESE
A CILCORP Company

EXECUTIVE SUMMARY

This report presents the results of a Phase I Environmental Site Assessment (ESA) performed for the Pacific Gas and Electric Company (PG&E). It pertains to property located at 8161 Old Redwood Highway, Novato, California (Property).

Environmental Science & Engineering, Inc. (ESE) completed the following tasks for this ESA:

- Conducted a site and vicinity reconnaissance of the Property including surrounding sites;
- Researched the historical land use and ownership of the Property through aerial photograph research and title search;
- Researched the regional geology, hydrogeology, surface water drainage, and topography by reviewing readily available published information and topographic maps;
- Reviewed a commercially available database information on vicinity sites with potential environmental risk;
- Conducted a regulatory file review of selected sites identified from the database search;
- Conducted an on-site search for underground tanks and buried piping using a metal pipe locator; and,
- Completed this report documenting the findings of this investigation.

Based on our research, the following potential environmental concerns were identified:

- A portion of the Property was formerly used as a vehicle service station. Much of the service station, including a garage and two fuel dispensers, still remains. Environmental impacts to the Property from the release of fuel, waste oil, or other service station-related hazardous materials are unknown.

- Two hydraulic lifts were encountered in the garage, but the hydraulic system was not visible for inspection. It is unknown whether hydraulic oil tanks remain the garage and, if they do, their present condition.

- With the aid of a metal pipe locator, one underground storage tank was located inside the garage. A fill port to the tank was found, but a check valve in the fill line prevented further investigation as to the present contents of the tank. This tank may have been used to store waste oil.

- Underground metal piping traced from the fuel dispensers to three vent lines encountered behind the garage suggest the presence or former presence of one or more additional USTs. However, no additional USTs were definitely detected using the metal pipe locator.

- Underground fuel dispenser and vent piping remain in place, and do not appear to have been properly abandoned.

- The building on the Property (the garage) contains seven suspect asbestos-containing building materials (ACBMs), including floor tiles, stucco, porcelain tiles, and sheet rock. As none of these materials were sampled, ESE could not verify the presence or absence of asbestos in them. These materials were observed to be in fair to good condition and non-friable in their present state.
- The interior and exterior walls of the Property building were observed to be painted. ESE can not verify whether these painted surfaces may contain lead-based paint. In general, these painted surfaces were observed to be in fair to good condition and were intact.

Table of Contents

Executive Summary i

1.0 Introduction 1

1.1 Scope of Work 1
1.2 Limitations and Exceptions 5

2.0 Site Setting 5

2.1 Site Features 5
2.2 Property Ownership and Use 5
2.3 Vicinity Land Use 5
2.4 Regional Geology and Hydrogeology 6

3.0 Findings 7

3.1 Database and File Review 7
3.2 Sanborn Map Review 7
3.3 Site Walk-Through 7
3.4 Site Environmental History 9
3.5 Aerial Photograph Review 9

4.0 Summary and Conclusions 10

4.1 Signatures 11

5.0 References 12

6.0 Qualifications 13

Table of Contents
(continued)

Figures

Figure 1.	Location Map
Figure 2.	Site Map

Appendices

Appendix A.	Title Report
Appendix B.	Site Reconnaissance Photographs
Appendix C.	Database Search Results
Appendix D.	Sanborn Certification

1.0 Introduction

This report presents the results of a Phase I Environmental Site Assessment (ESA) for the Pacific Gas and Electric Company (PG&E) located at 8161 Old Redwood Highway, Novato California (Property). The Property is located in the southwest quarter of Section 6, Township 3 North, Range 6 West, Diablo Meridian (Figure 1) and has APN numbers of 125-180-36 and 125-180-39 in the County of Marin. Environmental Science & Engineering, Inc. (ESE) of Concord, California to perform this ESA.

The objective of this ESA was to identify and assess issues of environmental concern at the Property and its immediate vicinity.

1.1 Scope of Work

The following tasks were completed for this ESA:

- Database Procurement. ESE requested commercially available database information for the Property and vicinity from Vista Environmental Information, Inc. (VISTA), a database vendor. The State and Federal lists included in this database search were those standard to Phase I ESAs and in accordance with ASTM standards. VISTA produced the following database:

  Properties located within a 1-mile radius of the Property:

NPL	Sites designated for Superfund cleanup by the U.S. Environmental Protection Agency (EPA), updated May 1994.
RCRA-TSD	The EPA identifies facilities that generate, treat, store, transport and/or dispose of hazardous waste, updated June 1994.
CORRACTS	The EPA maintains a database of RCRA facilities which are undergoing corrective action, updated January 1994.
SPL	California Environmental Protection Agency, Department of Toxic Substances Control maintains an inventory of facilities subject to investigations concerning likely or threatened releases of hazardous substances, updated May 1994.

  Properties located within a 1/2-mile radius of the Property:

SCL	California's Department of Toxic Substances Control maintains an inventory of facilities subject to investigations concerning likely or threatened releases of hazardous substances of those facilities, updated May 1994.
CERCLIS	Federal and state EPA have compiled a list of sites which they investigated or are currently investigating for a release, or threatened release, of hazardous substances pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Superfund). The federal and state release dates were August 1994 and June 1994, respectively.

LUST	California EPA, California Regional Water Quality Control Board (Regional Board), maintains inventories of leaking underground storage tanks, updated April 1994.
SWLF	California Integrated Waste Management Board maintains inventories of solid waste facilities in the state, updated March 1993.
BORDER ZONE	California's Department of Health Services-Land Use and Air Assessment Division maintains an inventory of voluntary deed restriction agreements with owners of property who propose building residences, schools, hospitals, or day care centers on property that is "on or within 2,000 feet of a significant disposal of hazardous waste", updated April 1994.
North Bay	Regional Board, Region #2 maintains an inventory of hazardous materials incidents, updated April 1994.
South Bay	California's San Francisco Regional Board maintains an inventory of hazardous materials incidents, updated April 1994.
CORTESE	California's Office of Environmental Protection, Office of Hazardous Materials maintains an inventory of facilities subject to investigation, updated November 1992.
Toxic Pits	California's Water Quality Control Board, Division of Loans and Grants maintains an inventory of sites with toxic pits in the state, updated January 1994.

Properties located within a 1/4-mile radius of the Property.

TRIS	Section 313 of the Emergency Planning and Community Right-to-Know Act (SARA Title III) of 1986 requires the EPA to establish an inventory of Toxic Chemicals emissions from certain facilities (Toxic Release Inventory System), updated August 1993.
ASTs	California's State Water Resources Control Board maintains an inventory of aboveground storage tanks, updated June 1994.
USTs	California's State Water Resources Control Board, Office of Underground Storage Tanks maintains an inventory of registered underground storage tanks, updated January 1994.
RCRA-Viols	The Resource Conservation and Recovery Act (RCRA) identifies facilities that generate, treat, store, transport and or dispose of hazardous waste, updated June, 1994.

Properties located within a 1/8-mile radius of the Property.

ERNS	Emergency Response Notification System listing of reported releases of oil and hazardous substances, updated June 1994.
RCRA-LgGen	Resource Conservation and Recovery Act (RCRA) list of facilities that generate, transport, store, treat or dispose of large amounts of hazardous waste (greater than 1,000 kg/month of non-acutely hazardous waste or 1 kg/month of acutely hazardous waste), updated June 1994.

RCRA-SmGen	Resource Conservation and Recovery Act (RCRA) list of facilities that generate, transport, store, treat or dispose of small amounts of hazardous waste (less than 1,000 kg/month of non-acutely hazardous waste), updated June 1994.

Databases searched by zip code.

DOCKETS	The federal EPA database of civil actions filed by the Department of Justice.
RAATS	The federal EPA maintains a RCRA Administration Actions Tracking System.

- Chain of Title search. ESE obtained a copy of the grant deed from PG&E for the Property.

- Aerial Photograph Review. Site history was researched in part through a historical aerial photograph review and interpretation of the present and past uses of the Property and immediate vicinity. Pacific Aerial Survey (Oakland, CA) provided aerial photographs dating from 1949 to 1994 at four to ten year intervals.

- Site and Vicinity Reconnaissance. ESE visited the site to identify Property boundaries, perform a site walk-through and obtain a photographic record of the Property. Special emphasis was made during the reconnaissance to identify surface staining, improper hazardous material storage/disposal, evidence of aboveground and/or underground storage tanks (UST), possible polychlorinated biphenyl (PCB)-containing transformers, asbestos-containing building materials, and any other possible sources of environmental concern. On a second site visit, ESE used metal pipe-locating equipment to search for potential underground tanks that may be present in the subsurface on the Property.

  Vicinity reconnaissance was performed by observing neighboring properties from public vantage points.

- Interviews. Personal interviews with the following PG&E employees: Mr. Gary Nulty, Registered Geologist, Ms. Debra Fudge, Senior Environmental Coordinator.

- Regional Geology, Hydrogeology, Surface Water Drainage, and Topography. ESE prepared a brief discussion of the regional geology, hydrogeology, surface water drainage, and topography based on readily available published information and topographic maps, as well as information from investigations performed in the vicinity.

- Agency File Review. Based on a review of the VISTA report, further investigation of selected sites through regulatory site files was performed. ESE contacted the County of Marin and the Regional Water Quality Control Board. No files were available for the Property or vicinity sites.

- Historical Review. A limited historical review was provided by PG&E and is summarized in this report. The historical review consisted of an interview conducted by ESE with PG&E employees knowledgeable about the site.

- Reporting. ESE prepared this Phase I ESA report documenting the findings of the investigation and discussing the specific subject areas listed above.

1.2 Limitations and Exceptions

The findings and conclusions documented in this report have been prepared for specific application to this project and have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science and engineering profession currently practicing under similar conditions in this area. All conclusions, expectations, and recommendations are ESE's professional opinions; based on ESE's interpretation of information currently available to ESE, and made within the operative constraints of the scope, budget and schedule for this project. No warranty, expressed or implied, is made.

This report is for the exclusive use of PG&E and their representatives or assignees. Use and interpretations of this report by others for purposes other than the express purpose of this report is not recommended.

ESE has not conducted any subsurface exploration or testing on this site other than the use of a remote metal pipe detector. No chain of title search was conducted for this site as the request of PG&E.

2.0 Site Setting

2.1 Site Features

The Property is approximately 13.6 gross acres in size, and is irregular in shape, as shown on Figure 1. The developed portion of the Property is approximately 100 feet by 100 feet in size, and is adjacent to Old Redwood Highway, the western frontage road to Highway 101 (Figure 2 - Site Map). An abandoned vehicle service station is present on the Property. One building with canopy, a cement pad, two former fuel dispenser islands, and underground tanks (unknown number) remain as part of the former service station. In addition, an abandoned residential trailer and numerous automobiles are present in the vicinity of the abandoned service station. The remainder of the Property is undeveloped and vegetated with grass, trees and small brush.

The site is located in a rural to partially developed area of Marin County, just north of the Novato city limits. The Property is surrounded by undeveloped land. The Marin County airport is located approximately one mile east of the Property, on the eastern side of Highway 101.

The eastern flat-lying portion of the Property, adjacent to the frontage road, is at an elevation of approximately 20 feet above mean sea level (amsl) (USGS, 1980). The western portion of the Property is rolling hillside, and is vegetated with grasses, small shrubs and occasional oak trees. The local slope of the land is to the west toward a slough of the Petaluma River (Figure 1) .

Surface drainage at the Property is controlled by local topography and undeveloped ditches. Between the developed and paved portion of the Property and the undeveloped eastern portion of the Property, an unlined drainage ditch is present that presumably drains under Highway 101 and into Basalt Creek. Basalt Creek trends westward into Black John Slough and the Petaluma River. The Petaluma River is the major surface water body in the area, and is surrounded by marsh land. During ESE's site reconnaissance, no standing water was observed on the flat-lying, asphalted portion of the Property.

2.2 Property Ownership and Use

Deeds for the Property were provided by PG&E (presented in Appendix A). These documents state that PG&E acquired the Property in July 1973 from private parties. The deeds detail the prior ownership and physical boundaries of the Property.

The Property was purchased by PG&E for potential use as a service center. However, PG&E never developed the Property as such, and has leased the Property to Mike's Auto Repair and Body Shop since its purchase (Fudge, PG&E, personal communication, 1994). Mike's Auto Repair performed vehicle repairs at the site. At one time, the lessee lived at the site in a residential trailer, which is still located on the Property. The trailer has since been abandoned. The service station underground tanks and fuel dispensers were reportedly abandoned prior to PG&E's purchase. However, no documentation is available concerning tank closure.

2.3 Vicinity Land Use and Characteristics

On November 15, 1994, an ESE representative conducted a reconnaissance of the Property vicinity. The surrounding land use is rural to commercial. To the immediate west, the Property abuts open land (see

Photographs Appendix B). The Property is bounded to the north by the Birkenstock offices, a cluster of office buildings set back from the Highway and surrounded by undeveloped grassland and trees. The area immediately to the south of the Property is a small motel, the Days Inn. Light commercial and residential uses are present further south and within Novato's City limits.

The area to the east of the Property includes Highway 101, a rail line, and undeveloped marshy land. Approximately 1/4-mile to the northeast is the Marin County airport, a relatively small facility.

The vicinity reconnaissance did not reveal the presence of any hazardous materials or petroleum hydrocarbons that could potentially impact the Property.

2.4 Regional Geology and Hydrology

The flat-lying portion of the Property is underlain by intertidal and alluvial deposits of Quaternary age (Helley et al, 1979, and Wagner and Bortugno, 1982). These unconsolidated deposits are medium- to fine-grained sand and silts, grading to coarser sand and gravel near the bedrock hills. The hilly portion of the Property is likely underlain by unnamed Pliocene-aged continental deposits. These more consolidated units are composed of poorly-sorted sandstone and conglomerate. Beneath these surficial units and outcroppings on Burdell Mountain to the northeast, are the Burdell Mountain volcanics. These volcanics are andesitic mudflows and breccias of Miocene age.

Quarries in the immediate area mined sandstone and conglomerates, as well as the volcanics. The Burdell Mountain fault trends northwest-southeast along the ridge of Burdell Mountain and passes within one-quarter mile of the Property. This Quaternary-aged fault is not known to have displacement in the last 2 million years (Wagner and Bortugno, 1982).

No immediate information is available concerning ground water occurrence in this area. However, due to the property location near the edge of the Petaluma River and associated creeks and sloughs, ground water beneath the Property is likely shallow and follows the local topography and surface water flow westward toward the Petaluma River.

3.0 Findings

3.1 Database and Records Review

A review of government agency databases listing sites that have or potentially present environmental concerns was provided by VISTA (Appendix C). VISTA included an environmental risk distribution summary as the first page of their report, and plotted all pertinent sites on vicinity maps. This report lists one site within a 1-mile radius of the Property. This site was the Novato Storage Park and is located within the Airport complex about a half-mile northeast of the property.

Eight sites were listed by VISTA as "unmappable". Of these unmappable sites, two sites are located within the Marin County Airport, two are at Hamilton Air Force Base seven miles south of the Property, and two are at the Redwood Sanitary Landfill one mile north of the Marin County Airport.

ESE contacted the County of Marin Department of Environmental Health (CMDEH) concerning the Property and surrounding sites. The CMDEH stated that they did not have a file on the Property nor on the immediately adjacent sites. One file was available for a site located at the airport; however, ESE did not review this file because the site is located greater than a quarter-mile in the assumed hydraulically downgradient direction of the Property.

In summary, no sites of environmental concern were noted near the facility with the exception of the Airport sites, located one-quarter to one-half miles in the assumed hydraulically down and cross-gradient direction of the Property. These sites, due to their assumed downgradient location, are not likely have an environmental impact on the Property.

3.2 Sanborn Map Review

VISTA Environmental, Inc. conducted a search for Sanborn maps of the Property. Sanborn certified that no Sanborn maps are available for this Property and vicinity. A letter from VISTA certifying the absence of Sanborn maps is provided in Appendix D.

3.3 Site Walk-through

On November 15, 1994, an ESE representative conducted a walk through of the Property accompanied by PG&E Senior Environmental Coordinator, Debra Fudge. Our findings are summarized below:

The building is approximately 50 feet long by 30 feet wide and is a single story stucco and wood structure (Figure 2). Two large garage doors are present on the south side of the building. A canopy extends eastward from the building and is approximately 25 feet wide by 50 feet long. A concrete pad and two former fuel dispenser islands are present beneath the canopy. Some asphalt is present adjacent to the building. The asphalt appeared to be in good condition. One large asphalt patch is present south of the canopy (Photographs - Appendix B).

Water, sewer and electricity are supplied to the building. No transformers were observed on the Property. A dilapidated residential trailer was found on the western side of the building. Numerous cars and trash were found behind the building (see photo Appendix B). Two drums were found outside the building. The drums were in good condition, sealed, but unlabeled. Additional items may be located in an inaccessible area between the building and the trailer.

On December 1, 1994, ESE returned to the Property to view the inside of the building (not available for viewing on November 15), and to use a metal pipe-locator to search for buried metal objects. Lighting was poor within the building, and the area was generally unkempt. An assortment of vehicle electrical components are sorted in boxes scattered throughout the building. Two hydraulic lifts are present in the large garage area, but no hydraulic fluid tanks were observed. Three smaller rooms are present in the center of the building. The western-most room contains an air compressor and several containers labeled as containing miscellaneous solvents, paints, and petroleum products. Most of the products are in one gallon containers or small aerosol cans. Some of the containers were unmarked or empty. The middle room contains lockers. The eastern-most room is an office. Restrooms are located on the northern side of the building.

Seven suspect ACBMs were identified within the Property building by ESE's accredited asbestos inspector. Photographs of suspect ACBMs are provided in Appendix B. Based on ESE's observations, the following materials were identified as suspect ACBMs:

- White resilient floor tile inside the office space located inside the garage;
- Stucco walls and ceiling in the garage area;
- Stucco walls and ceiling in the office space located inside the garage;
- Porcelain flooring in the bathrooms;
- Porcelain tile wall and backing in the bathrooms;
- Sheet rock walls in the bathrooms; and,
- Exterior stucco trim.

These materials were not sampled or analyzed for asbestos content. Based on these facts and observations, ESE can not confirm the presence or absence of asbestos. These materials were observed to be in fair to good condition and are considered to be non-friable in their present state.

The interior and exterior walls of the Property building were observed to be painted. ESE can not verify whether these painted surfaces may contain lead-based paint. In general, these painted surfaces were observed to be in fair to good condition and were intact.

ESE staff used a metal pipe locator in and outside the building to search for underground tanks at the Property. The pipe locator induces a measurable frequency in piping or other metal objects. For this investigation, ESE induced a frequency on the dispenser piping, fill port, and the four vent pipes encountered at the Property. This technique ("Cat n' Genny") generally does not locate buried objects deeper than five feet, or in areas where interference from other buried metal objects or piping is present.

ESE found and outlined one underground storage tank inside the building. It appears that a portion of this tank extends under the building wall. A fill port was encountered and uncapped. However, the tank was inaccessible due to a check valve in the pipe. One vent pipe (the northern most) is connected to this tank. It is likely that the tank was installed for waste oil storage.

Outside of the building, no tank ports were observed. Dispenser piping appeared to be connected to piping leading to three vent lines located behind the building. The three vent lines may indicate the presence or former presence of one or more additional underground storage tanks(s). However, no definite observations were made during this investigation to indicate their presence.

3.4 Site Environmental History

Environmental history of the Property was ascertained by interviewing Ms. Debra Fudge of PG&E. No documents concerning the past environmental history of the Property were available. Ms. Fudge stated that the lessee was questioned about waste handling at the site, and told PG&E that all wastes were place in drums and hauled from the site. Fuel dispensing has not been performed at the Property since the late 1970s. The year the service station was built and tanks initially installed is unknown. No permits were required for underground tanks during the period that the station operated. PG&E has not upgraded the Property since its purchase.

3.5 Aerial Photograph Review

Aerial photographs dating from November 1956 to April 1992, at intervals of four to ten years, were reviewed by ESE at Pacific Aerial Photography (Oakland, California). The aerial photographs did not reveal any particular information concerning the Property. The building and canopy on the Property were present in 1956. West of the Property, the hillside was quarried for rock. The mining in the quarries was most apparent in 1980. The airport northeast of the Property first appeared in 1970. A drainage pond at the head of Basalt Creek (just east of Highway 101) is present in all of the photos researched.

4.0 Summary and Conclusions

ESE has performed this Phase I ESA in conformance with the scope and limitations of ASTM Practice E 1527, of the PG&E Novato Property located at 8161 Old Redwood Highway, Novato California. Any exceptions to, or deletions from, this practice are described in Section (1.3) of this report. This assessment has revealed the following recognized environmental conditions or risks in connection with the Property:

- A portion of the Property was formerly used as a vehicle service station. Much of the service station, including a garage and two fuel dispensers, still remains. Environmental impacts to the Property from the release of fuel, waste oil, or other service station-related hazardous materials are unknown.

- Two hydraulic lifts were encountered in the garage, but the hydraulic system was nor visible for inspection. It is unknown whether hydraulic oil tanks remain the garage and, if they do, their present condition.

- With the aid of a metal pipe locator, one underground storage tank was located inside the garage. A fill port to the tank was found, but a check valve in the fill line prevented further investigation as to the present contents of the tank. This tank may have been used to store waste oil.

- Underground metal piping traced from the fuel dispensers to three vent lines encountered behind the garage suggest the presence or former presence of one or more additional USTs. However, no additional USTs were definitely detected using the metal pipe locator.

- Underground fuel dispenser and vent piping remain in place, and do not appear to have been properly abandoned.

- The building on the Property (the garage) contains seven suspect asbestos-containing building materials (ACBMs), including floor tiles, stucco, porcelain tiles, and sheet rock. As none of these materials were sampled, ESE could not verify the presence or absence of asbestos in them. These materials were observed to be in fair to good condition and non-friable in their present state.

- The interior and exterior walls of the Property building were observed to be painted. ESE can not verify whether these painted surfaces may contain lead-based paint. In general, these painted surfaces were observed to be in fair to good condition and were intact.

4.1 Signatures

The environmental professionals responsible for this Phase I ESA are:

Jason Garrison CHV — April 3, 1995

Jason B. Garrison
Staff Industrial Hygienist — Date

Susan Wickham — April 3, 1995

Susan S. Wickham, R.G. #3851
Senior Geologist — Date

SUSAN S. WICKHAM #3851 STATE OF CALIFORNIA

5.0 References

Fudge, Debra, 1994, PG&E Senior Environmental Coordinator, personal communication with S. Wickham of ESE.

Helley, et al, 1979, Flatland deposits of the San Francisco Bay Region, California - their geology and engineering properties, and their importance to comprehensive planning; U.S. Geological Survey Professional Paper 943.

U.S. Geological Survey, 1980, Petaluma River 7.5 minute Topographic Map, 1954, Photorevised 1980.

Wagner, D.L. and Bortugno, E.L., 1982, Geologic Map of the Santa Rosa Quadrangle, California Department of Conservation Division of Mines and Geology; Map No. 2A -Regional Geologic Map Series.

6.0 Qualifications

Environmental Science & Engineering, Inc. (ESE) is experienced in developing and applying techniques necessary to provide an effective environmental site assessment (ESA). ESE has performed numerous assessments for banks, lawyers, insurers, developers, investors, and industry involved in real estate or business transactions. The objective of these assessments has been to identify the potential liabilities to the client arising from site contamination and/or regulatory non-compliance. Through preliminary site assessments, ESE has helped its clients protect their investments by making sure they are aware of the status of their property.

Jason B. Garrison

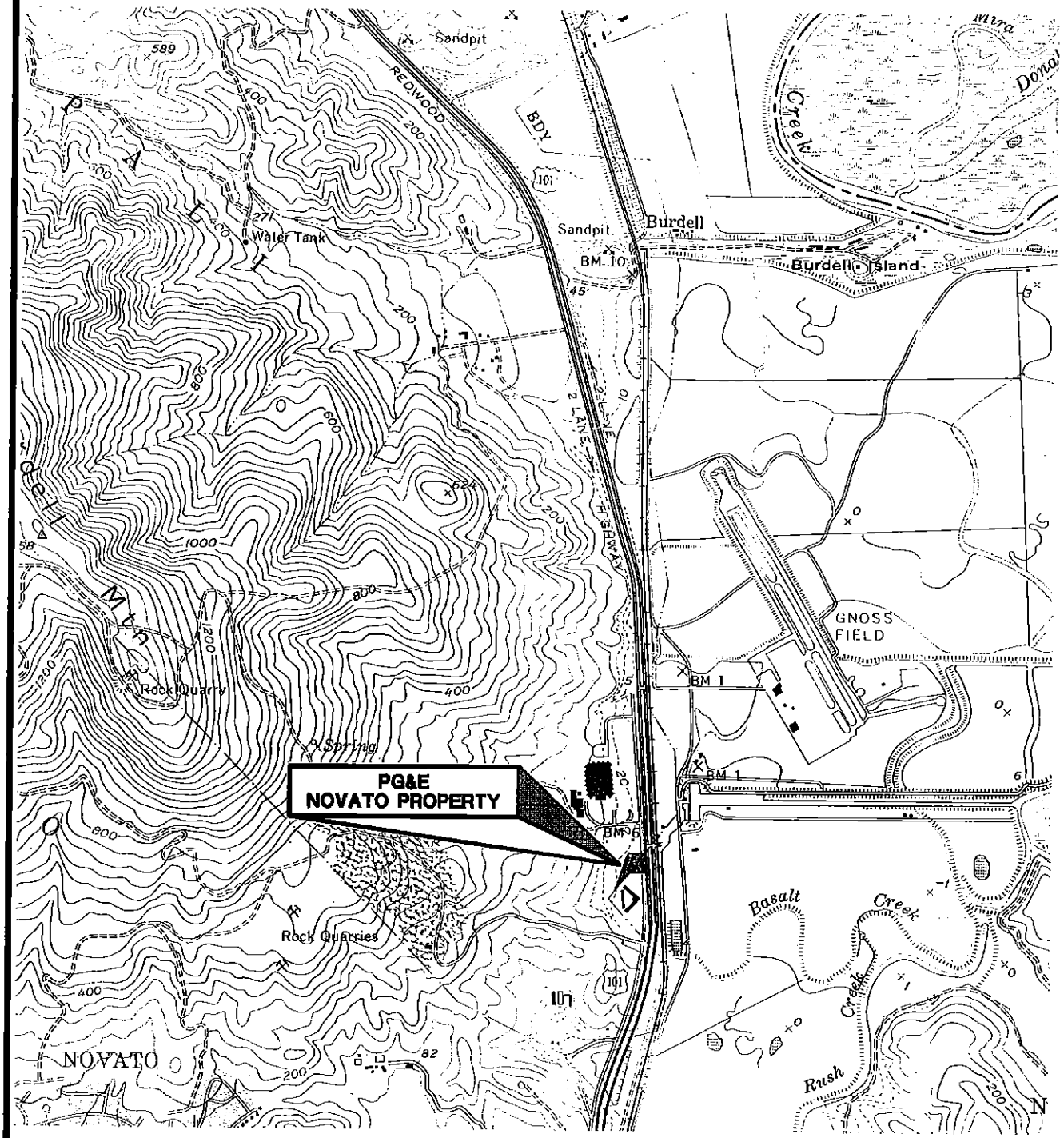
Mr. Garrison is a staff industrial hygienist and an accredited asbestos site surveillance technician with three years experience in the environmental industry. He has a BS in Environmental Science and provides Phase I ESA, asbestos and lead-based paint surveys, air monitoring studies, abatement compliance and observation and monitoring, and field assistance for environmental investigations. He has conducted dozens of Phase I and II ESAs in California for industrial and commercial clients. These ESAs have included site history review, site reconnaissance, aerial photograph review, personal interviews, regulatory agency file review, as well as sampling for suspect hazardous materials.

Susan S. Wickham, R.G.

Ms. Wickham is a California registered geologist with 18 years of experience in the environmental industry. She has a BS and MS in Geology and provides technical services for ESE in the areas of hydrogeology, engineering geology, structural geology and hazardous waste management. These services include ground water basin analysis, Phase I and II environmental site assessments, remedial investigation/feasibility studies (RI/FS), remedial action plans, hazardous waste management, geologic reconnaissance, geohazard identification, and landfill investigations. Specific projects under her direction have included petroleum hydrocarbon, chlorinated solvent, and heavy metal assessment in soil and ground water, numerous Phase I ESAs, remedial action plans for hydrocarbon, metals and chlorinated solvent sites, and management of several large multi-site projects.

FIGURES

R6W



T3N

SCALE 1:24,000

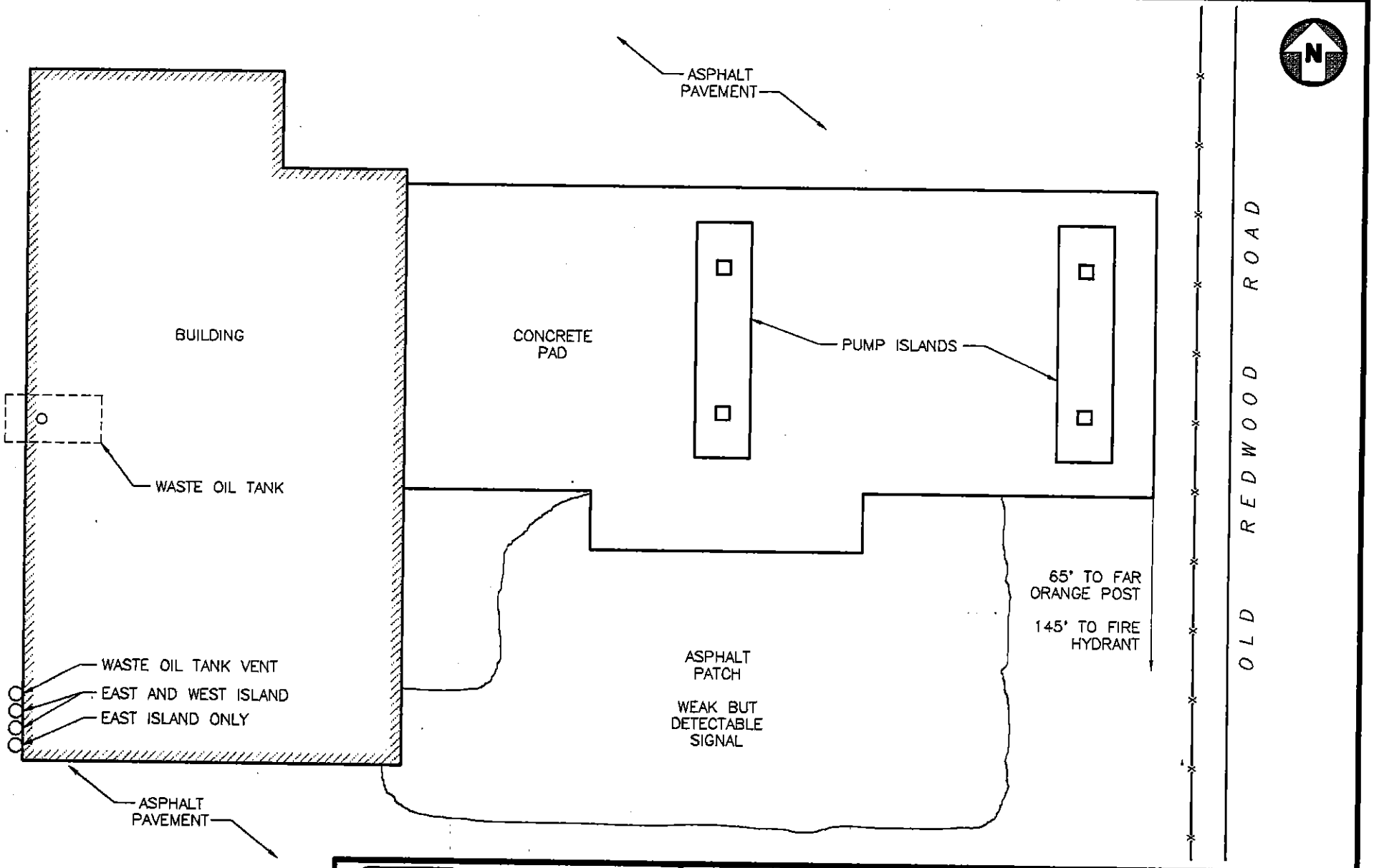
1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

ADAPTED FROM U.S.G.S. PETALUMA RIVER, CALIFORNIA, 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAP, 1954, PHOTOREVISED 1980.

Environmental Science & Engineering, Inc. A DELCORP Company	DATE 11/23/94	LOCATION MAP	FIGURE NO. 1
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	REVISED	PG&E – NOVATO PROPERTY 8161 OLD REDWOOD HIGHWAY NOVATO, CALIFORNIA	PROJ. NO. 6-94-5334
	CAD FILE 53340001		



ESE A GLEDHILL Company — Environmental Science & Engineering, Inc. 4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	DATE 12/8/94 REVISED CAD FILE 53340002	SITE MAP PG&E – NOVATO PROPERTY 8161 OLD REDWOOD ROAD NOVATO, CALIFORNIA	FIGURE NO. 2 PROJ. NO. 6-94-5334

APPENDIX A

DEED

When Recorded mail to:

P..G. & E. Co.
77 Beale Street
San Fra ncisco, Ca. 94106

2403-06-0657

RECORDED AT REQUEST OF
TITLE INSURANCE
AND TRUST COMPANY
AT 40 MIN. PAST 11 A M.
FEB 13 1974
Official Records of Marin County, Calif.
N. J. Giacomini
FEE $ 5.00 RECORDER

4637

BOOK 2764 PAGE 165

SPACE ABOVE THIS LINE FOR RECORDER'S USE

Consideration # 28,000.00
Novato Service Center
DOCUMENTARY TAX $30.80
GM-178402

DIRECTOR'S DEED

DISTRICT	COUNTY	ROUTE	POST MILE	NUMBER
04	Mrn	101	23.4	DD-037872-01-01

SEP 1973 29

The STATE OF CALIFORNIA, acting by and through its Director of Transportation, does hereby grant to

PACIFIC GAS AND ELECTRIC COMPANY, a California Corporation

all that real property in the

County of Marin, State of California, described as:

A portion of "PARCEL ONE" and of "PARCEL TWO", as said parcels are described in State Deed No. 37872 to the State of California, recorded January 23, 1973, in Volume 2650, at Page 621, Official Records of Marin County, said portion being described as a whole as follows:

COMMENCING at the northerly terminus of that certain course described as "N. 2°06'56" W., 285.66 feet" in State Deed No. 28422 to the State of California, recorded October 21, 1969, in Volume 2334, at Page 297, Official Records of Marin County; thence along the northerly prolongation of said course N. 2°06'56" W., 310.34 feet to the northwesterly line of said PARCEL ONE; thence along last said line, the westerly line of last said parcel and the general northwesterly line and the southerly line of said PARCEL TWO, S. 40°22'46" W., 189.30 feet, S. 2°07'14" E., 74.01 feet, S. 40°22'46" W., 131.25 feet and N. 87°52'46" E., 216.54 feet to the point of commencement.

CONTAINING 35,052 square feet, more or less.

MAIL TAX
STATEMENTS TO:
P.G.& E Co.
77 Beale St.
San Francisco, CA
94106

Form HR/W-353 (REV. 7-73)

DOCUMENTARY TRANSFER TAX $ 30.80
☒ COMPUTED ON FULL VALUE OF PROPERTY CONVEYED, OR
☐ COMPUTED ON FULL VALUE LESS LIENS & ENCUMBRANCES REMAINING THEREON AT TIME OF SALE.
James N. Hammond
Signature of declarant or agent determining tax - firm name
CITY OF ☒ Unincorporated

BOOK 2764 PAGE 165

There shall be no abutter's rights of access appurtenant to the above-described real property in and to the adjacent State freeway.

The bearings and distances used in the above description are on the California Coordinate System, Zone 3. Multiply the above distances by 1.0000546 to obtain ground level distances.

Correct as to Description FAP

JAN-2 1974

Subject to special assessments if any, restrictions, reservations, and easements of record.

This conveyance is executed pursuant to the authority vested in the Director of Transportation by law and, in particular, by the Streets and Highways Code.

WITNESS my hand and the seal of the Department of Transportation of the State of California, this 26th day of September, 1973.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

APPROVED AS TO FORM AND PROCEDURE
Irving B Regan
ATTORNEY
DEPARTMENT OF TRANSPORTATION

JAMES A. MOE
DIRECTOR OF TRANSPORTATION

By R W Boles
Attorney in Fact

STATE OF CALIFORNIA }
COUNTY OF SACRAMENTO } ss.

On this 26th day of September, in the year 1973, before me, DOROTHY A. BROWN, a Notary Public in and for the State of California, residing therein, duly commissioned and sworn, personally appeared R. W. BOLES known to me to be the person whose name is subscribed to the within instrument as the Attorney in Fact of JAMES A. MOE, Director of Transportation of the State of California, and known to me to be the person who executed the within instrument on behalf of the State of California, and he acknowledged to me that he subscribed the name of JAMES A. MOE as Director of Transportation, and his own name as Attorney in Fact, and that the State of California executed the same.

WITNESS my hand and official seal.

DOROTHY A. BROWN
NOTARY PUBLIC
COUNTY OF SACRAMENTO
My Commission Expires July 18, 1976

Dorothy A. Brown
Notary Public

THIS IS TO CERTIFY That the California Highway Commission has authorized the Director of Transportation to execute the foregoing deed at its meeting regularly called and held on the 20th day of September, 1973, in the City of Eureka

Dated this 24th day of September 1973

Harold A. Richard
HAROLD A. RICHARD
Assistant Secretary of the
California Highway Commission

BOOK 2764 PAGE 167

26782

2403-06-0648

Consideration $22,706.25

3006-3433 Novato Service Center
5 73 1
AFTER RECORDING, RETURN TO:

FOR RECORDER'S USE ONLY

26782

RECORDED AT REQUEST OF
TITLE INSURANCE
AND TRUST COMPANY
AT 30 MIN. PAST 2 P M.
JUL 12 1973
Official Records of Marin County, Calif.
N. J. Giaconini
FEE $ 5.00 RECORDER

Transfer Tax Marin R. E. C.

DOCUMENTARY TRANSFER TAX $ 100.10
COMPUTED ON FULL VALUE OF PROPERTY CONVEYED,
OR
COMPUTED ON FULL VALUE LESS LIENS AND
ENCUMBRANCES REMAINING AT TIME OF SALE.
Carl Gray Title Insurance Agent
SIGNATURE OF DECLARANT OR AGENT DETERMINING TAX
FIRM NAME

BOOK 2704 PAGE 599

GRANT DEED

FRANCIS EDWARD ALLISON, SR., as executor of the will of Evelyn Maria Allison, aka Evelyn M. Allison, aka Evelyn Allison, deceased, as owner of an undivided 1/4 interest, hereby grants to PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, that certain real property, situate in the County of Marin, State of California, described as follows:

(APN 125-180-36 and 125-180-39)

Beginning at the most northerly corner of the parcel of land described and designated PARCEL ONE in the deed from Robert D. Carrow and wife to State of California dated November 30, 1972 and recorded in Book 2650 of Official Records at page 621, Marin County Records, said most northerly corner being a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in the deed from Julia C. Bodkin to State of

MAIL TAX STATEMENTS TO:

Pacific Gas and Electric Company
Land Department
Land Acquisition Section
77 Beale Street
San Francisco, California 94106

BOOK 2704 PAGE 599

California dated July 21, 1952 and recorded in Book 772 of Official Records at page 275, Marin County Records; thence running along the general northwesterly boundary line of said parcel of land designated PARCEL ONE

(1) south 86° 34' 00" west 30.00 feet,
(2) south 52° 53' 00" west 36.06 feet,
(3) south 0° 09' 00" west 87.63 feet and
(4) south 39° 04' 00" west 213.07 feet

to the most westerly corner of said parcel of land designated PARCEL ONE; thence leaving said general northwesterly boundary line and running along the westerly boundary line of said parcel of land designated PARCEL ONE and along the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated November 30, 1972

(5) south 3° 26' 00" east 74.01 feet;

thence leaving said last mentioned westerly boundary line and running along the northwesterly boundary line of said last mentioned parcel of land designated PARCEL TWO and along the northwesterly boundary line of the parcel of land described in the trustee's deed from Sonoma Title Guaranty Company to Oliver Kullberg recorded April 23, 1968 in Book 2206 of Official Records at page 188, Marin County Records,

(6) south 39° 04' 00" west 337.79 feet

to the most westerly corner of the parcel of land described in said trustee's deed recorded April 23, 1968, said most westerly corner being the most northerly corner of the parcel of land described and designated PARCEL FIVE in the Decree Settling Ninth and Final Account of Testamentary Trustee and of Final Distribution dated July 12, 1963 and recorded in Book 1706 of Official Records at page 164, Marin County Records; thence leaving said last mentioned northwesterly boundary line and running along the westerly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968

(7) south 11° 33' 00" east 229.52 feet and
(8) south 7° 28' 40" east 55.00 feet

to the most northerly corner of the parcel of land described and designated PARCEL SIX in said final decree dated July 12, 1963; thence leaving said last mentioned westerly boundary line and running along the southwesterly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968, said southwesterly boundary line being the northeasterly boundary line of said parcel of land designated PARCEL SIX

(9) south 43° 18' 20" east 392.07 feet

to the most westerly corner of the parcel of land described in the deed from State of California to Alyce Pashburg and others dated December 21, 1970 and recorded in Book 2427 of Official Records at page 495, Marin County Records; thence leaving said southwesterly boundary line and running along the northerly boundary line of the parcel of land described in said deed dated December 21, 1970

(10) north 86° 34' 00" east 21.20 feet

to the most easterly corner of the parcel of land described in said deed dated December 21, 1970; thence leaving said northerly boundary

line and running along the easterly boundary line of the parcel of land described in said deed dated December 21, 1970 and along the westerly boundary line of the parcel of land described in the deed from Alyce Pashburg and others to State of California recorded August 6, 1970 in Book 2193 of Official Records at page 92, Marin County Records

(11) south 2° 35' 16" west 85.15 feet;

thence leaving said last mentioned westerly boundary line

(12) north 61° 04' 38" west 1133.63 feet

to a set standard Pacific Gas and Electric Company bronze monument; thence

(13) north 42° 04' 30" east 370.99 feet

to a set 5/8 inch reinforcing rod with aluminum cap marked L.S. 3322; thence

(14) north 17° 20' 30" east 259.43 feet

to a point in the general southerly boundary line of the parcel of land described in the deed from Alyce Pashburg and others to McGraw-Hill, Inc., dated May 8, 1964 and recorded in Book 1813 of Official Records at page 17, Marin County Records; thence running along said general southerly boundary line

(15) north 69° 06' 00" east 727.12 feet and

(16) north 39° 04' 00" east 66.71 feet

to a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated July 21, 1952; thence leaving said general southerly boundary line and running along said last mentioned westerly boundary line

(17) south 3° 26' 00" east 121.40 feet, more or less,

to the point of beginning; containing 12.975 acres, more or less, and being a portion of Rancho Olompali.

This grant is made pursuant to an order of the Superior Court of the State of California in and for the County of Marin in the proceedings entitled "In the Matter of the Estate of EVELYN MARIE ALLISON, aka EVELYN M. ALLISON, aka EVELYN ALLISON, Deceased." being No. 20230 in the files of said court, in consideration of the payment by grantee to grantor of the sum of _____ $22706.25 dollars, receipt whereof is hereby acknowledged.

Dated June 26, 1973.

Francis Edward Allison, Sr.

Francis Edward Allison, Sr., executor as aforesaid

STATE OF CALIFORNIA)
COUNTY OF MARIN) ss.

On June 26, 1973, before me, the undersigned, a Notary Public in and for said County of Marin, State of California, personally appeared Francis Edward Allison, Sr., as Executor of the Will of Evelyn Marie Allison, Deceased, known to me to be the person whose name is subscribed to the within instrument, and acknowledged to me that he executed the same as such Executor.

Notary Public

26783

3006-3431 Novato Service Center
5 73 1
AFTER RECORDING, RETURN TO:

FOR RECORDER'S USE ONLY

RECORDED AT REQUEST OF
TITLE INSURANCE
AND TRUST COMPANY
AT 30 MIN. PAST 8 M.
JUL 12 1973
Official Records of Marin County, Calif.
N. J. Siscomini
FEE $ 6.00 RECORDER

26783

BOOK 2704 PAGE 602

DOCUMENTARY TRANSFER TAX is the Consideration
_____ Computed on the consideration or value of property conveyed,
_____ OR Computed on the consideration or value less liens and
encumbrances remaining at time of sale.
Janet Gray Hayes Supervisor
SIGNATURE OF DECLARANT OR AGENT DETERMINING TAX
FIRM NAME

GRANT DEED

ALICE PASHBURG

PATRICIA YOUNGS, who acquired title as Patricia Martineau

FRANK TANFORAN

ROGER TANFORAN

HAROLD TANFORAN

and CAROL BRIDGEMAN, who acquired title as Carol Warwick

as owners of an undivided 1/2 interest, hereby grant to PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, that certain real property, situate in the County of Marin, State of California, described as follows:

MAIL TAX STATEMENTS TO:

Pacific Gas and Electric Company
Land Department
Land Acquisition Section
77 Beale Street
San Francisco, California 94106

BOOK 2704 PAGE 602

(APN 125-180-36 and 125-180-39)

Beginning at the most northerly corner of the parcel of land described and designated PARCEL ONE in the deed from Robert D. Carrow and wife to State of California dated November 30, 1972 and recorded in Book 2650 of Official Records at page 621, Marin County Records, said most northerly corner being a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in the deed from Julia C. Bodkin to State of California dated July 21, 1952 and recorded in Book 772 of Official Records at page 275, Marin County Records; thence running along the general northwesterly boundary line of said parcel of land designated PARCEL ONE

(1) south 86° 34' 00" west 30.00 feet,
(2) south 52° 53' 00" west 36.06 feet,
(3) south 0° 09' 00" west 87.63 feet and
(4) south 39° 04' 00" west 213.07 feet

to the most westerly corner of said parcel of land designated PARCEL ONE; thence leaving said general northwesterly boundary line and running along the westerly boundary line of said parcel of land designated PARCEL ONE and along the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated November 30, 1972

(5) south 3° 26' 00" east 74.01 feet;

thence leaving said last mentioned westerly boundary line and running along the northwesterly boundary line of said last mentioned parcel of land designated PARCEL TWO and along the northwesterly boundary line of the parcel of land described in the trustee's deed from Sonoma Title Guaranty Company to Oliver Kullberg recorded April 23, 1968 in Book 2206 of Official Records at page 188, Marin County Records,

(6) south 39° 04' 00" west 337.79 feet

to the most westerly corner of the parcel of land described in said trustee's deed recorded April 23, 1968, said most westerly corner being the most northerly corner of the parcel of land described and designated PARCEL FIVE in the Decree Settling Ninth and Final Account of Testamentary Trustee and of Final Distribution dated July 12, 1963 and recorded in Book 1706 of Official Records at page 164, Marin County Records; thence leaving said last mentioned northwesterly boundary line and running along the westerly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968

(7) south 11° 33' 00" east 229.52 feet and
(8) south 7° 28' 40" east 55.00 feet

to the most northerly corner of the parcel of land described and designated PARCEL SIX in said final decree dated July 12, 1963; thence leaving said last mentioned westerly boundary line and running along the southwesterly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968, said southwesterly boundary line being the northeasterly boundary line of said parcel of land designated PARCEL SIX

(9) south 43° 18' 20" east 392.07 feet

BOOK 2704 PAGE 607

to the most westerly corner of the parcel of land described in the deed from State of California to Alyce Pashburg and others dated December 21, 1970 and recorded in Book 2427 of Official Records at page 495, Marin County Records; thence leaving said southwesterly boundary line and running along the northerly boundary line of the parcel of land described in said deed dated December 21, 1970

(10) north 86° 34' 00" east 21.20 feet

to the most easterly corner of the parcel of land described in said deed dated December 21, 1970; thence leaving said northerly boundary line and running along the easterly boundary line of the parcel of land described in said deed dated December 21, 1970 and along the westerly boundary line of the parcel of land described in the deed from Alyce Pashburg and others to State of California recorded August 6, 1970 in Book 2393 of Official Records at page 92, Marin County Records

(11) south 2° 35' 16" west 85.15 feet;

thence leaving said last mentioned westerly boundary line

(12) north 61° 04' 38" west 1133.63 feet

to a set standard Pacific Gas and Electric Company bronze monument; thence

(13) north 42° 04' 30" east 370.99 feet

to a set 5/8 inch reinforcing rod with aluminum cap marked L.S. 3322; thence

(14) north 17° 20' 50" east 259.43 feet

to a point in the general southerly boundary line of the parcel of land described in the deed from Alyce Pashburg and others to McGraw-Hill, Inc., dated May 8, 1964 and recorded in Book 1813 of Official Records at page 17, Marin County Records; thence running along said general southerly boundary line

(15) north 69° 06' 00" east 727.12 feet and

(16) north 39° 04' 00" east 66.71 feet

to a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated July 21, 1952; thence leaving said general southerly boundary line and running along said last mentioned westerly boundary line

(17) south 3° 26' 00" east 121.40 feet, more or less,

to the point of beginning; containing 12.975 acres, more or less, and being a portion of Rancho Olompali.

Dated 6-26, 1973.

Alyce Pashburg

Patricia Younger

Patricia Younger

Frank Tanforan

Roger Tanforan

Harold Tanforan

Carol Bridgeman

26789 Consideration $ 27,706.25

3006-3432 Novato Service Center
5 73 1
AFTER RECORDING, RETURN TO:

FOR RECORDER'S USE ONLY

26789

RECORDED AT REQUEST OF
TITLE INSURANCE
AND TRUST COMPANY
AT 30 MIN. PAST 12 M.
JUL 12 1973
Official Records of Marin County, Calif.
N. J. Giacomini
FEE $ 6.00 RECORDER

DOCUMENTARY TRANSFER TAX $ none shown
COMPUTED ON FULL VALUE OF PROPERTY CONVEYED.
COMPUTED ON FULL VALUE LESS LIENS AND
ENCUMBRANCES REMAINING AT TIME OF SALE.
Bank of America Trust
SIGNATURE OF DECLARANT OR AGENT DETERMINING TAX
FIRM NAME

BOOK 2704 PAGE 626

GRANT DEED

BANK OF AMERICA NATIONAL TRUST AND SAVINGS ASSOCIATION, a national banking association, as trustee under the will of Lee Ross Tanforan, deceased, as set forth in the Order for Preliminary Distribution dated April 1, 1968 and recorded in Book 2202 of Official Records at page 327, Records of Marin County, State of California, as owner of an undivided 1/4 interest, hereby grants to PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, that certain real property, situate in said Marin County, described as follows:

MAIL TAX STATEMENTS TO:

Pacific Gas and Electric Company
Land Department
Land Acquisition Section
77 Beale Street
San Francisco, California 94106

BOOK 2704 PAGE 626

(APN 125-180-36 and 125-180-39)

Beginning at the most northerly corner of the parcel of land described and designated PARCEL ONE in the deed from Robert D. Carrow and wife to State of California dated November 30, 1972 and recorded in Book 2650 of Official Records at page 621, Marin County Records, said most northerly corner being a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in the deed from Julia C. Bodkin to State of California dated July 21, 1952 and recorded in Book 772 of Official Records at page 275, Marin County Records; thence running along the general northwesterly boundary line of said parcel of land designated PARCEL ONE

(1) south 86° 34' 00" west 30.00 feet,
(2) south 52° 53' 00" west 36.06 feet,
(3) south 0° 09' 00" west 87.63 feet and
(4) south 39° 04' 00" west 213.07 feet

to the most westerly corner of said parcel of land designated PARCEL ONE; thence leaving said general northwesterly boundary line and running along the westerly boundary line of said parcel of land designated PARCEL ONE and along the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated November 30, 1972

(5) south 3° 26' 00" east 74.01 feet;

thence leaving said last mentioned westerly boundary line and running along the northwesterly boundary line of said last mentioned parcel of land designated PARCEL TWO and along the northwesterly boundary line of the parcel of land described in the trustee's deed from Sonoma Title Guaranty Company to Oliver Kullberg recorded April 23, 1968 in Book 2206 of Official Records at page 188, Marin County Records,

(6) south 39° 04' 00" west 337.79 feet

to the most westerly corner of the parcel of land described in said trustee's deed recorded April 23, 1968, said most westerly corner being the most northerly corner of the parcel of land described and designated PARCEL FIVE in the Decree Settling Ninth and Final Account of Testamentary Trustee and of Final Distribution dated July 12, 1963 and recorded in Book 1706 of Official Records at page 164, Marin County Records; thence leaving said last mentioned northwesterly boundary line and running along the westerly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968

(7) south 11° 33' 00" east 229.52 feet and
(8) south 7° 28' 40" east 55.00 feet

to the most northerly corner of the parcel of land described and designated PARCEL SIX in said final decree dated July 12, 1963; thence leaving said last mentioned westerly boundary line and running along the southwesterly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968, said southwesterly boundary line being the northeasterly boundary line of said parcel of land designated PARCEL SIX

(9) south 43° 18' 20" east 392.07 feet

to the most westerly corner of the parcel of land described in the deed from State of California to Alyce Pashburg and others dated December 21, 1970 and recorded in Book 2427 of Official Records at page 495, Marin County Records; thence leaving said southwesterly boundary line and running along the northerly boundary line of the parcel of land described in said deed dated December 21, 1970

(10) north 86° 34' 00" east 21.20 feet

to the most easterly corner of the parcel of land described in said deed dated December 21, 1970; thence leaving said northerly boundary line and running along the easterly boundary line of the parcel of land described in said deed dated December 21, 1970 and along the westerly boundary line of the parcel of land described in the deed from Alyce Pashburg and others to State of California recorded August 6, 1970 in Book 2393 of Official Records at page 92, Marin County Records

(11) south 2° 35' 16" west 85.15 feet;

thence leaving said last mentioned westerly boundary line

(12) north 61° 04' 38" west 1133.63 feet

to a set standard Pacific Gas and Electric Company bronze monument; thence

(13) north 42° 04' 30" east 370.99 feet

to a set 5/8 inch reinforcing rod with aluminum cap marked L.S. 3322; thence

(14) north 17° 20' 50" east 259.43 feet

to a point in the general southerly boundary line of the parcel of land described in the deed from Alyce Pashburg and others to McGraw-Hill, Inc., dated May 8, 1964 and recorded in Book 1813 of Official Records at page 17, Marin County Records; thence running along said general southerly boundary line

(15) north 69° 06' 00" east 727.12 feet and

(16) north 39° 04' 00" east 66.71 feet

to a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated July 21, 1952; thence leaving said general southerly boundary line and running along said last mentioned westerly boundary line

(17) south 3° 26' 00" east 121.40 feet, more or less,

to the point of beginning; containing 12.975 acres, more or less, and being a portion of Rancho Olompali.

Dated _____, 1973.

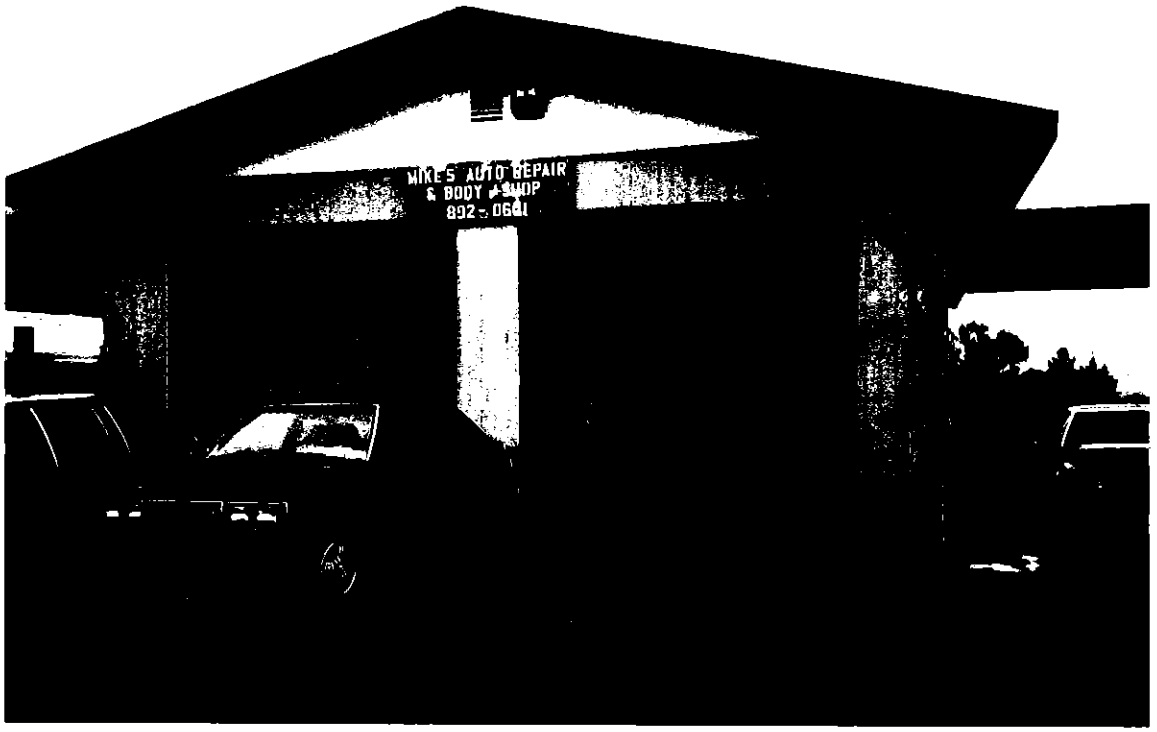
BANK OF AMERICA NATIONAL TRUST AND SAVINGS ASSOCIATION, Trustee as aforesaid

By _____

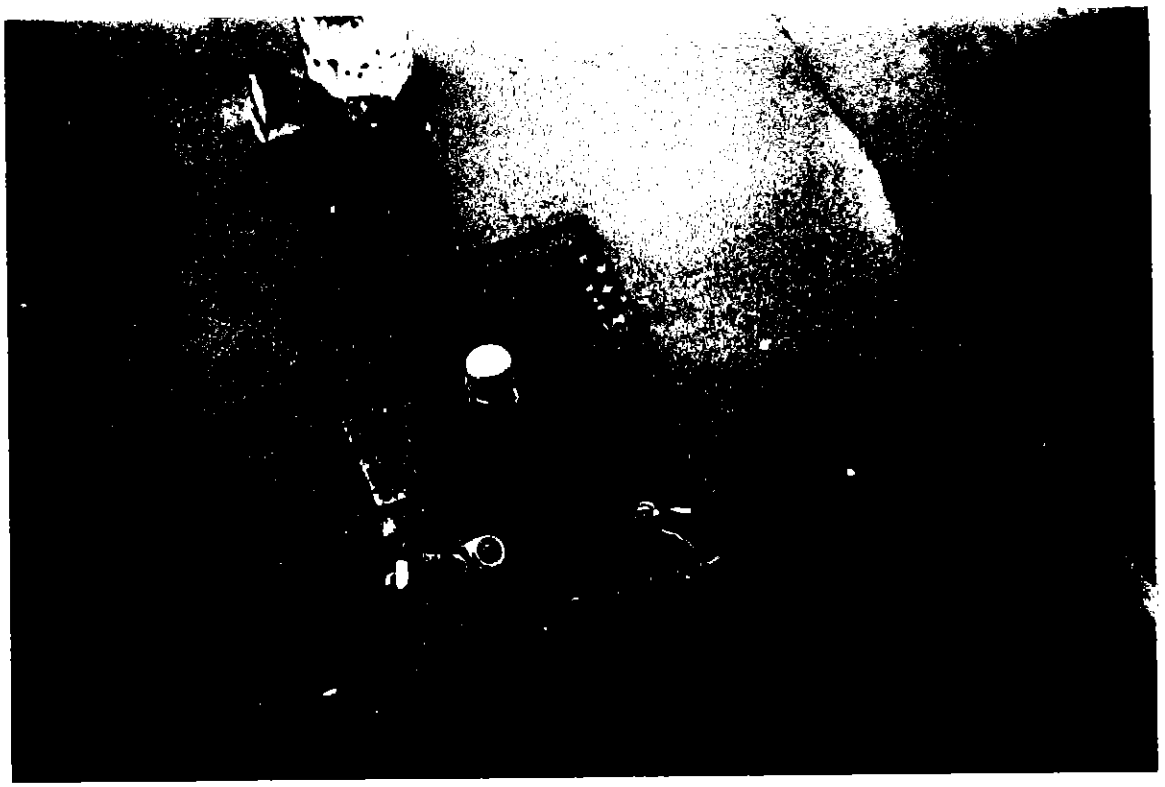
By _____

APPENDIX B

SITE RECONNAISSANCE PHOTOGRAPHS



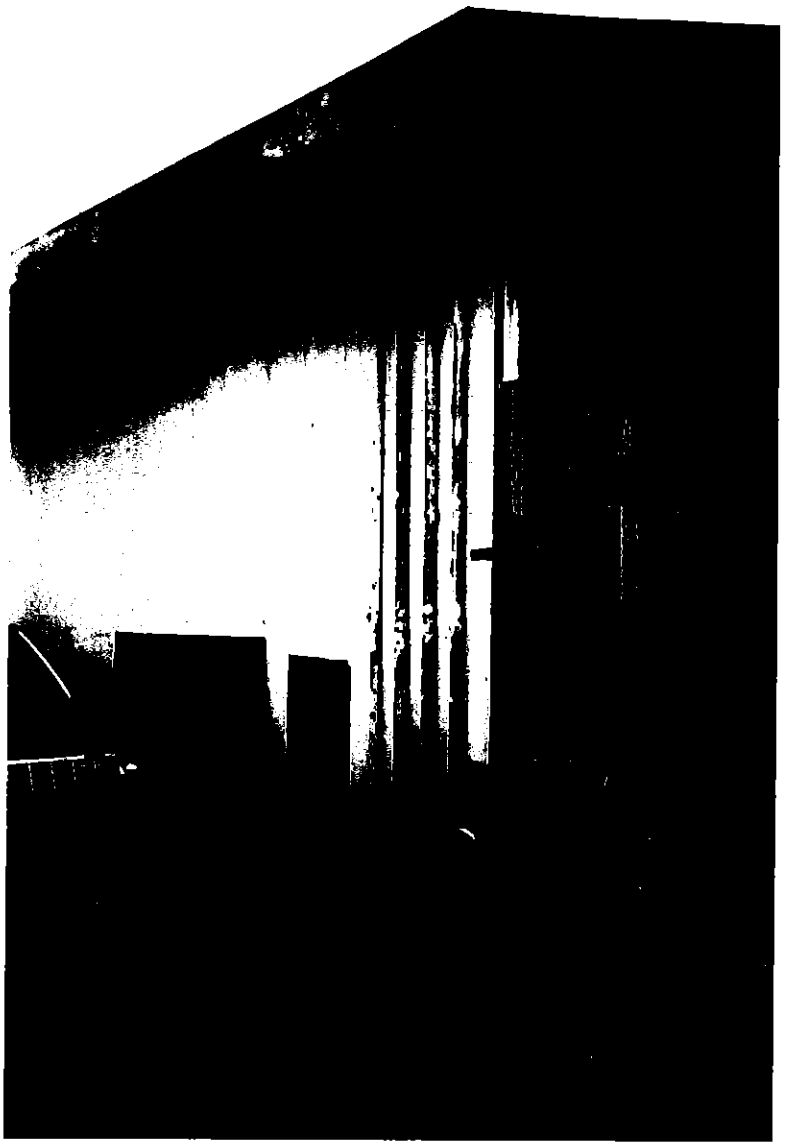
View of Shop building 8161 Redwood Boulevard, Novato.



Dispenser piping still in place.



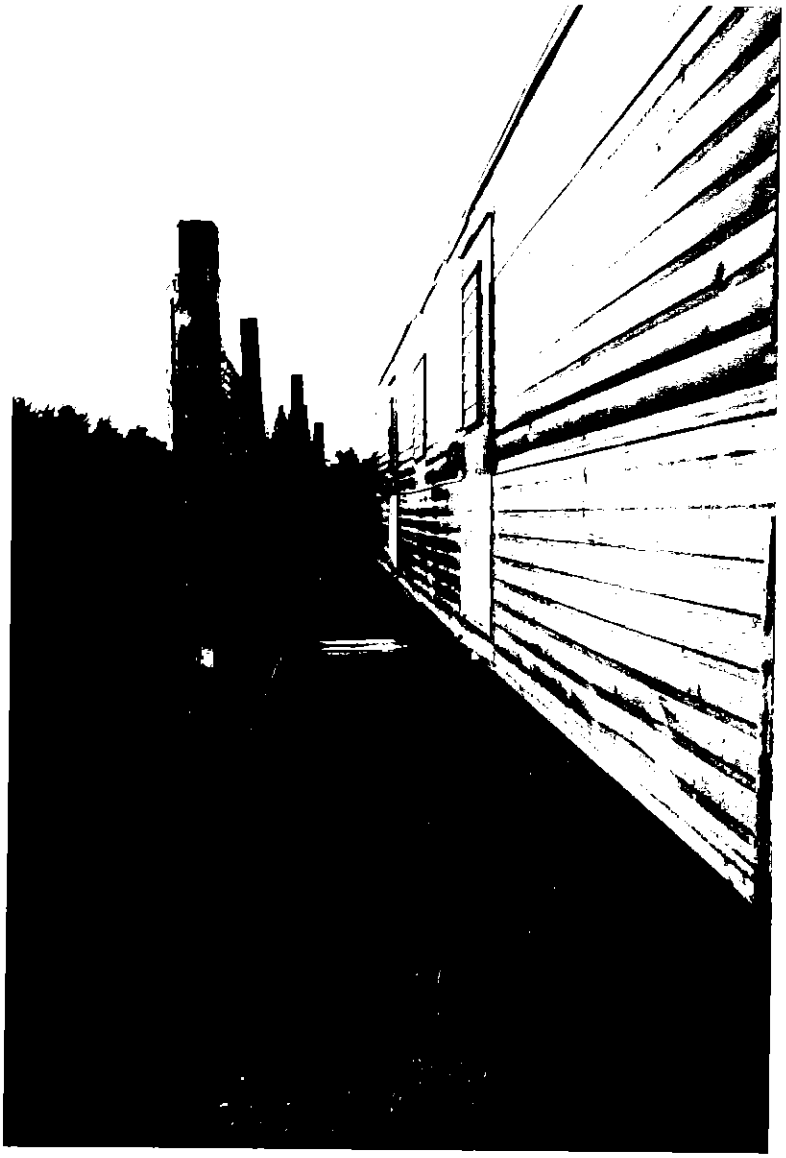
Patched area of pavement adjacent to fueling area.



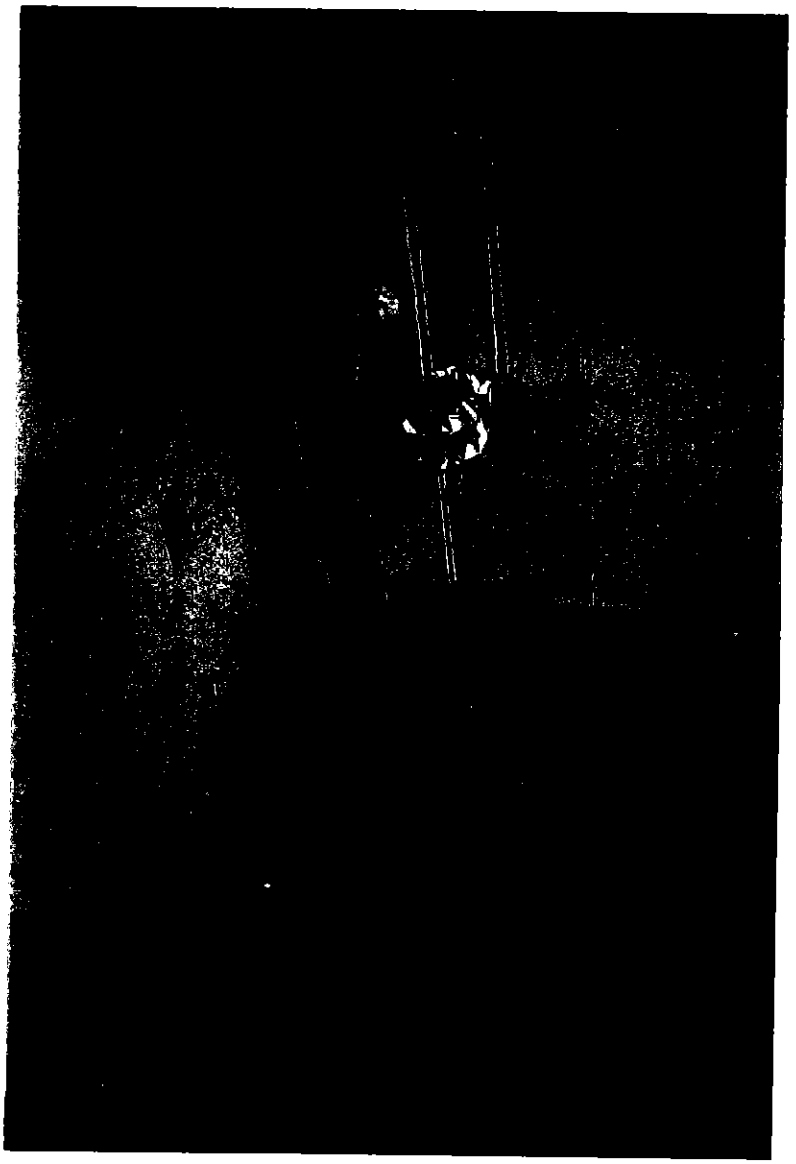
Four tank vent pipes at rear of building.



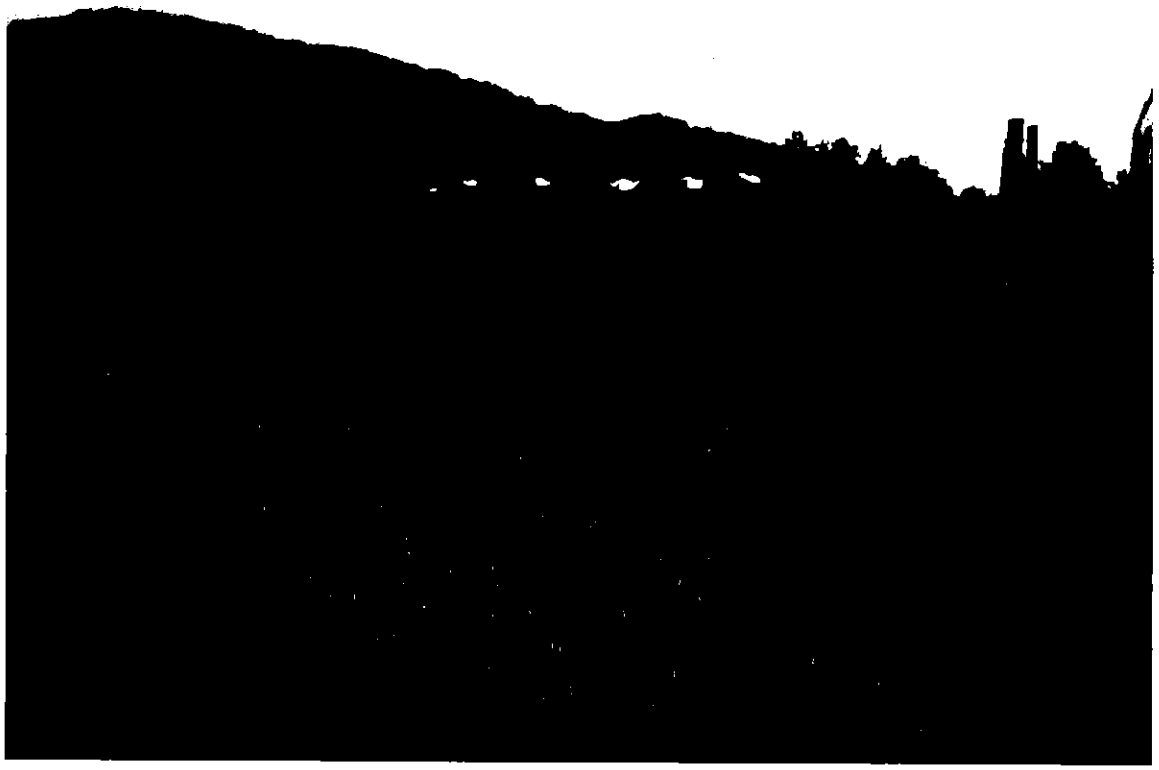
View from shop building towards east. Redwood Boulevard and Highway 101 in foreground. Marsh area in background.



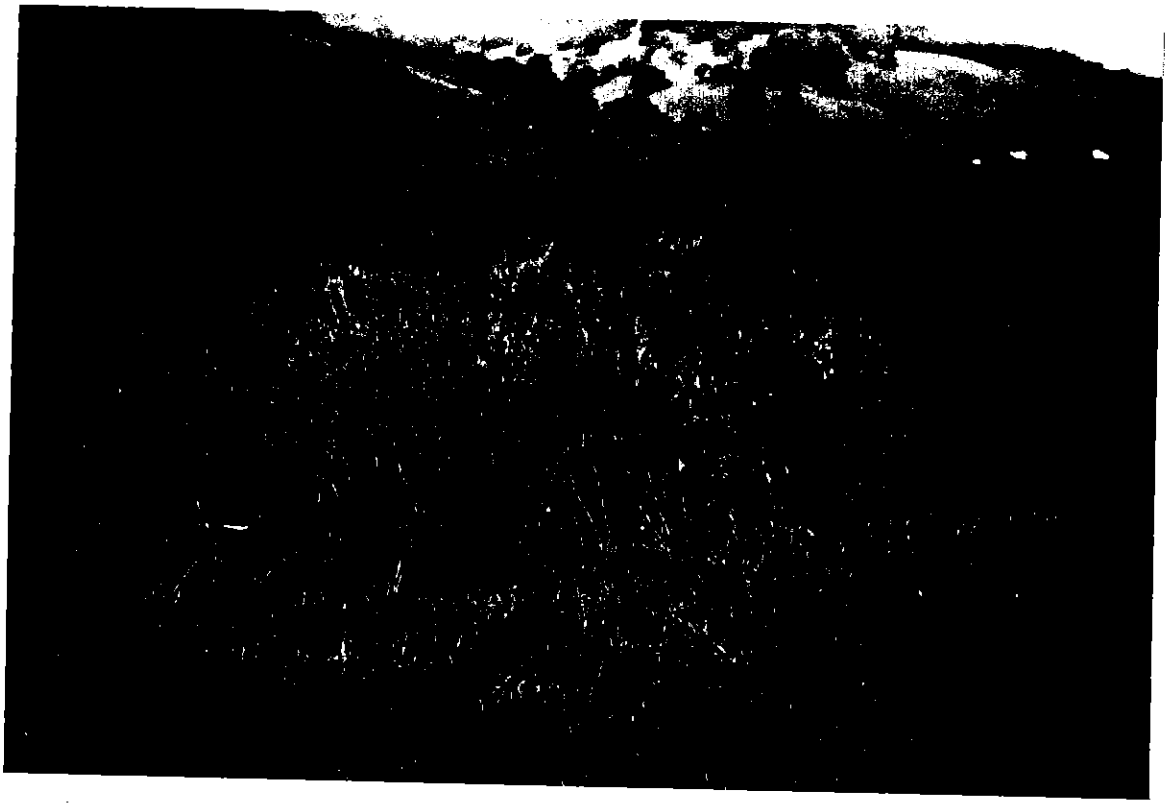
Mobile home behind shop building.



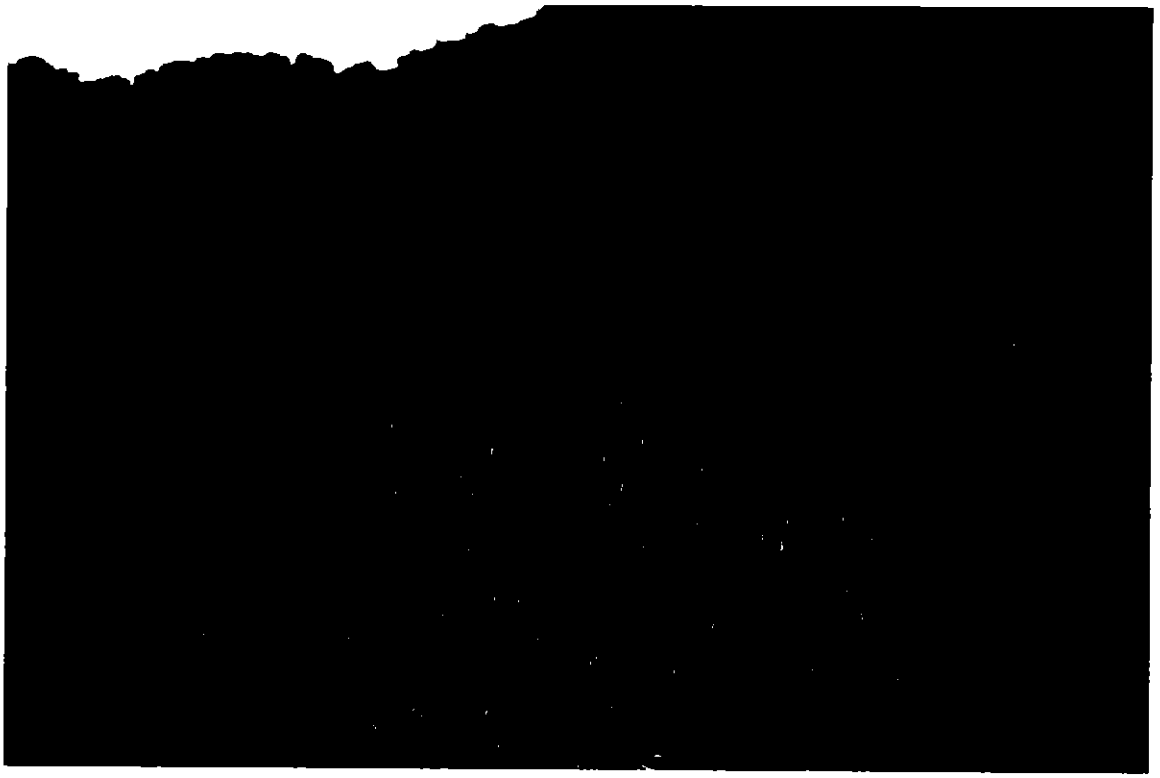
Sewer manhole and faucet adjacent to shop.



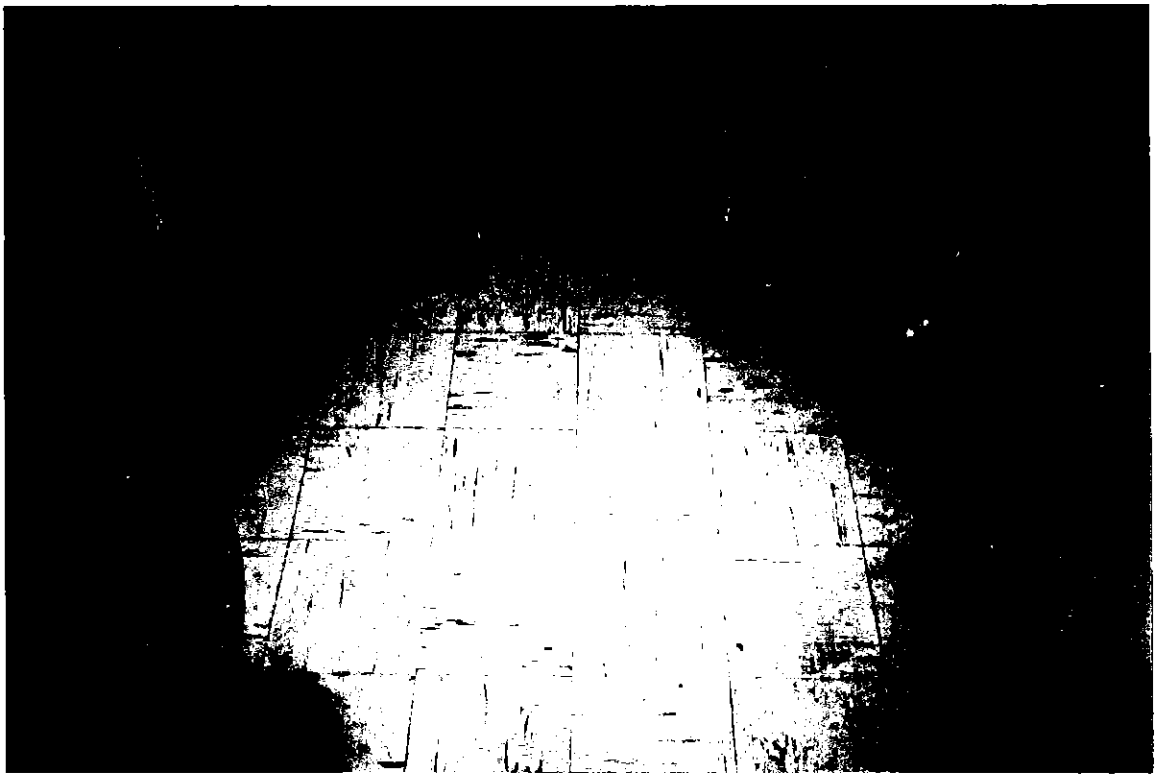
View to west behind building.



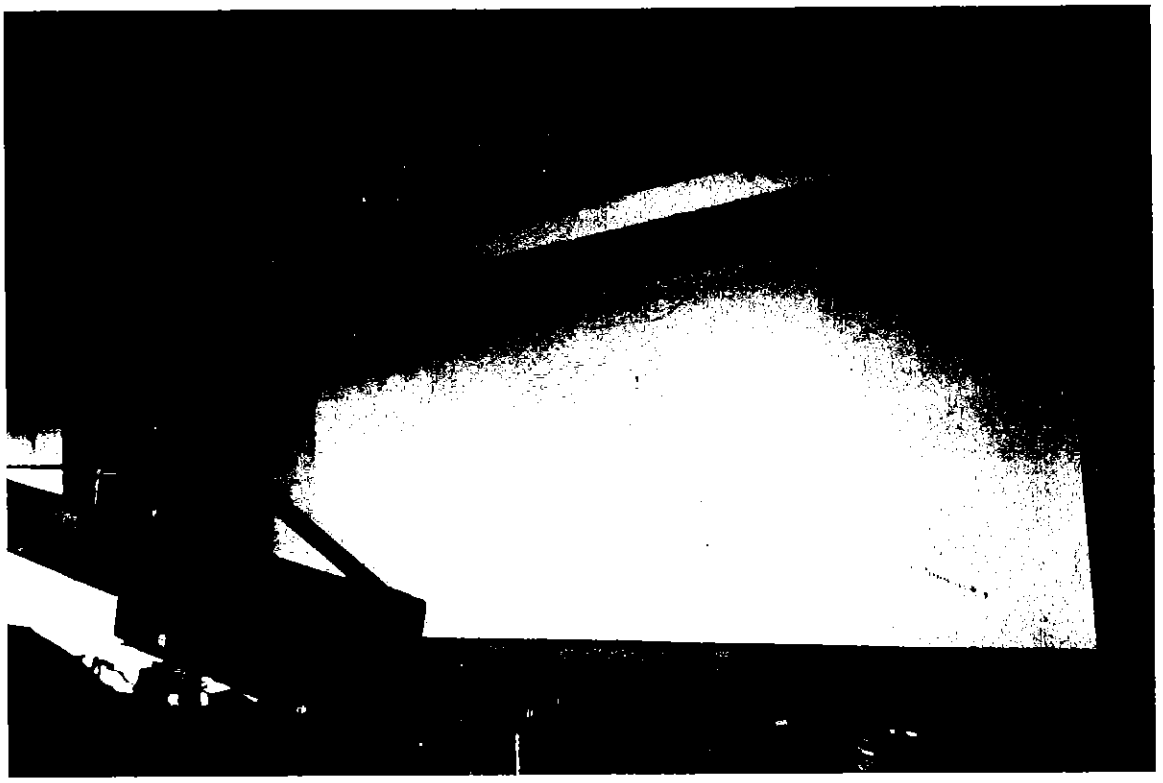
View to west behind building.



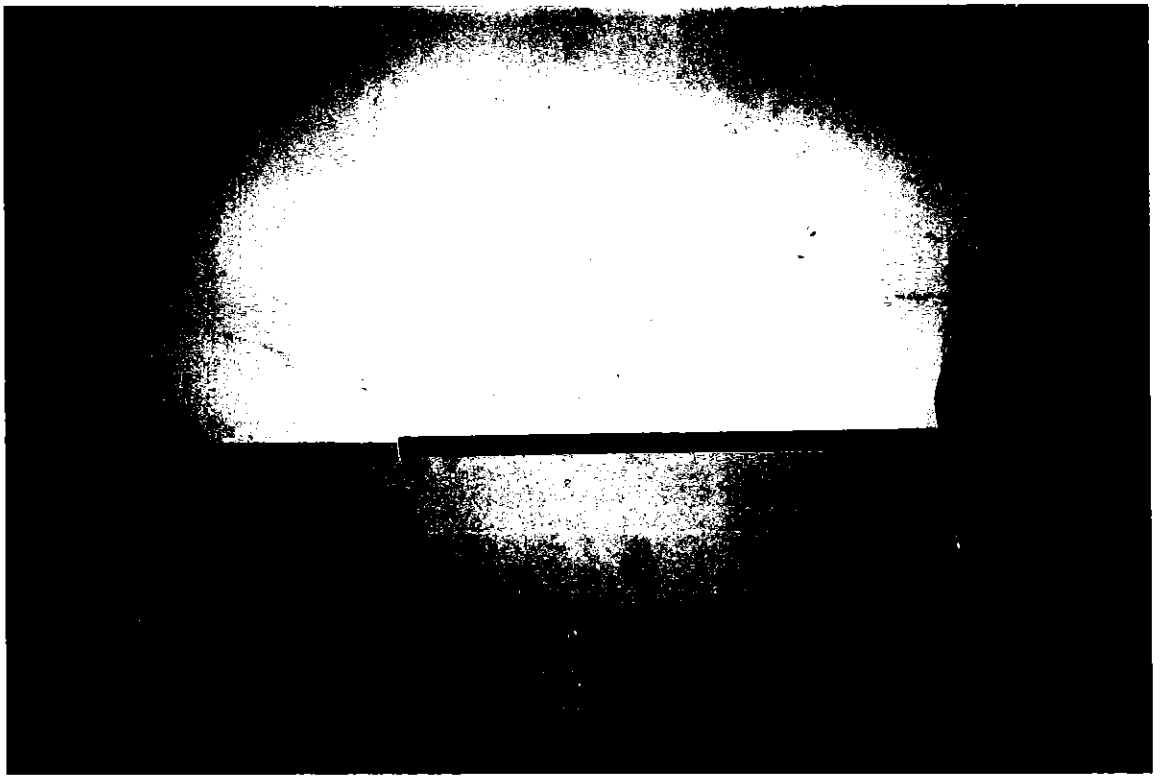
View to south west behind building.



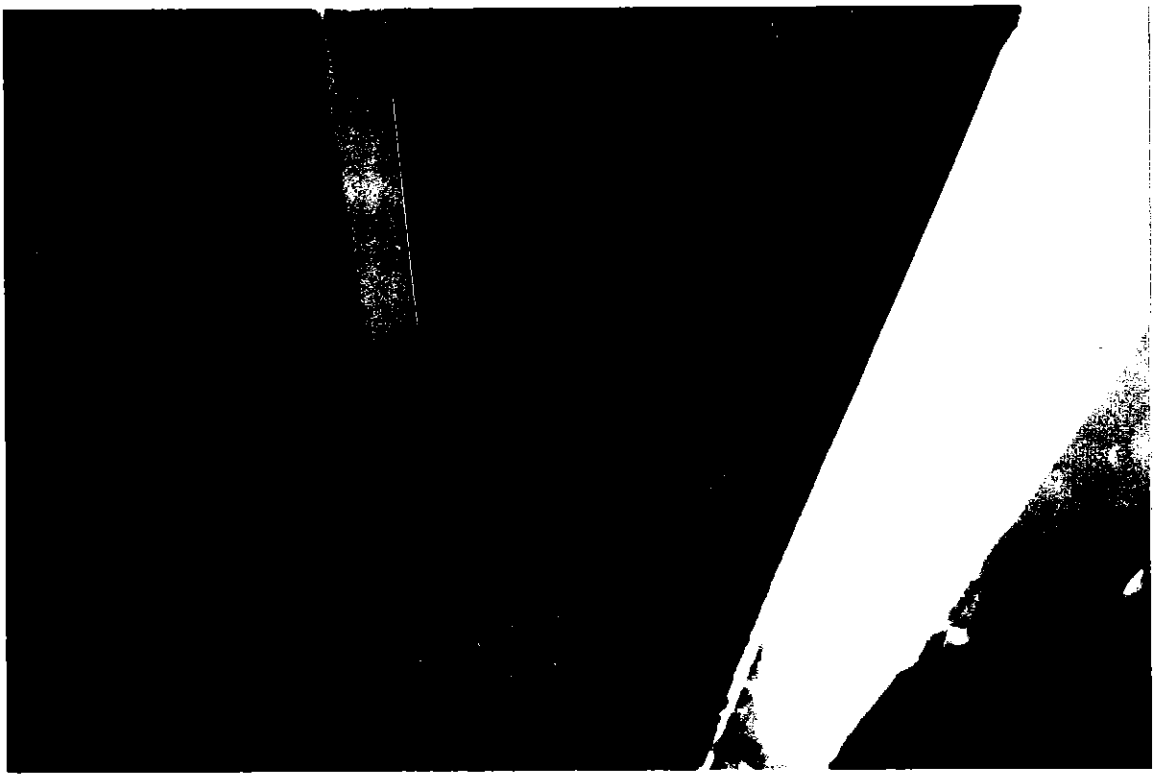
Suspect Asbestos Containing Building Material #1 (ACBM), resilient floor tile in office space



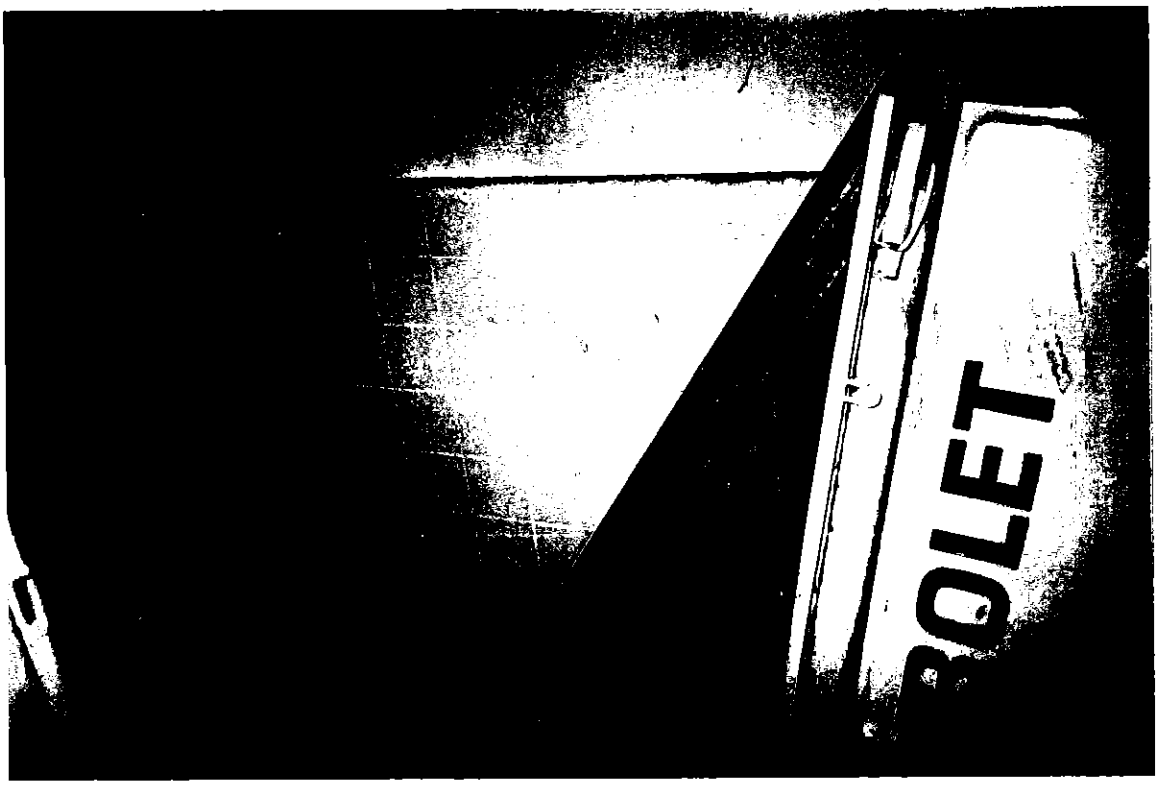
Suspect ACBM #2, stucco wall and ceiling located inside Property garage



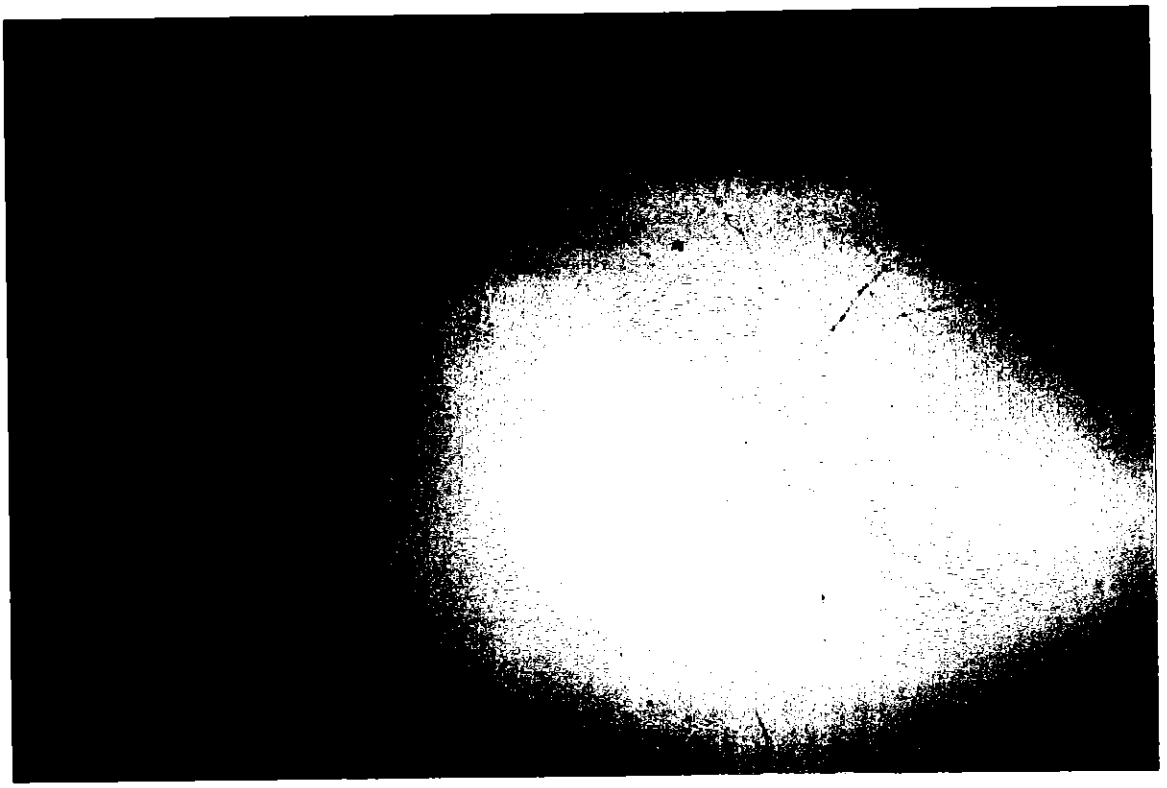
Suspect ACBM #3, stucco walls and ceiling located inside Property office space



Suspect ACBM #4, porcelain floor and mastic inside Property bathrooms



Suspect ACBM #5, porcelain wall and backing inside Property bathrooms



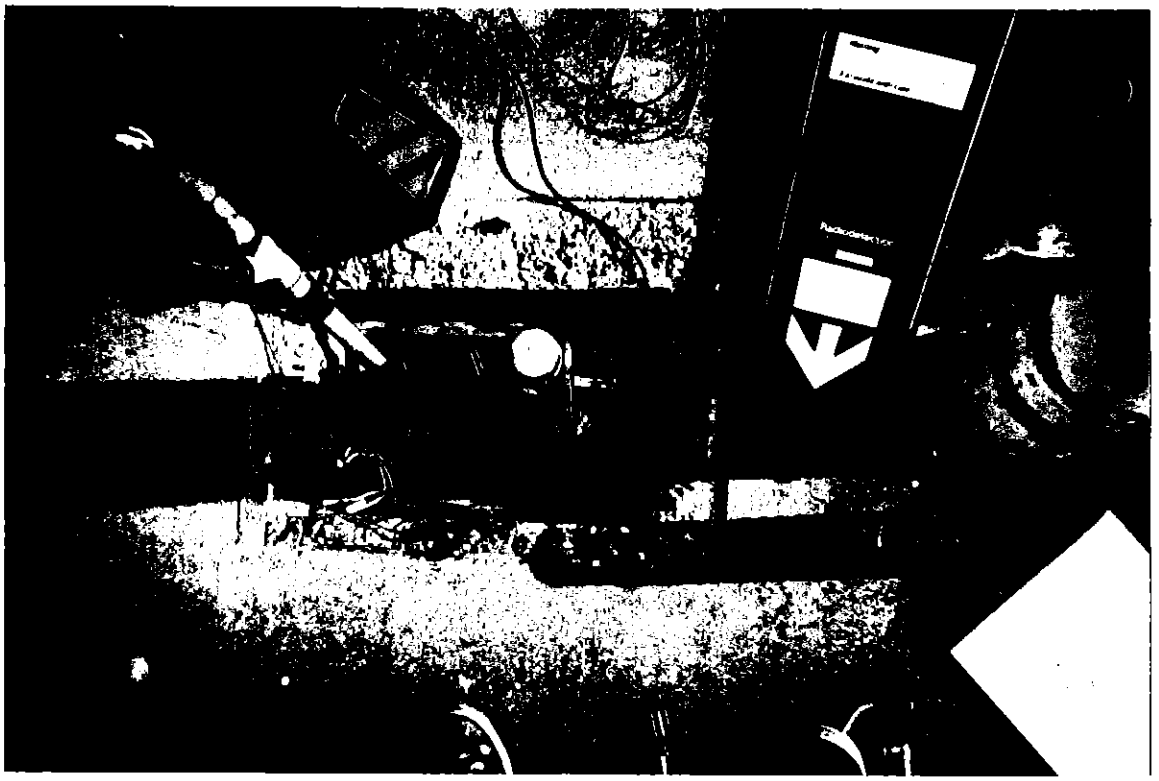
Suspect ACBM #6, sheet rock wall inside Property bathrooms



Suspect ACBM #7, exterior stucco trim



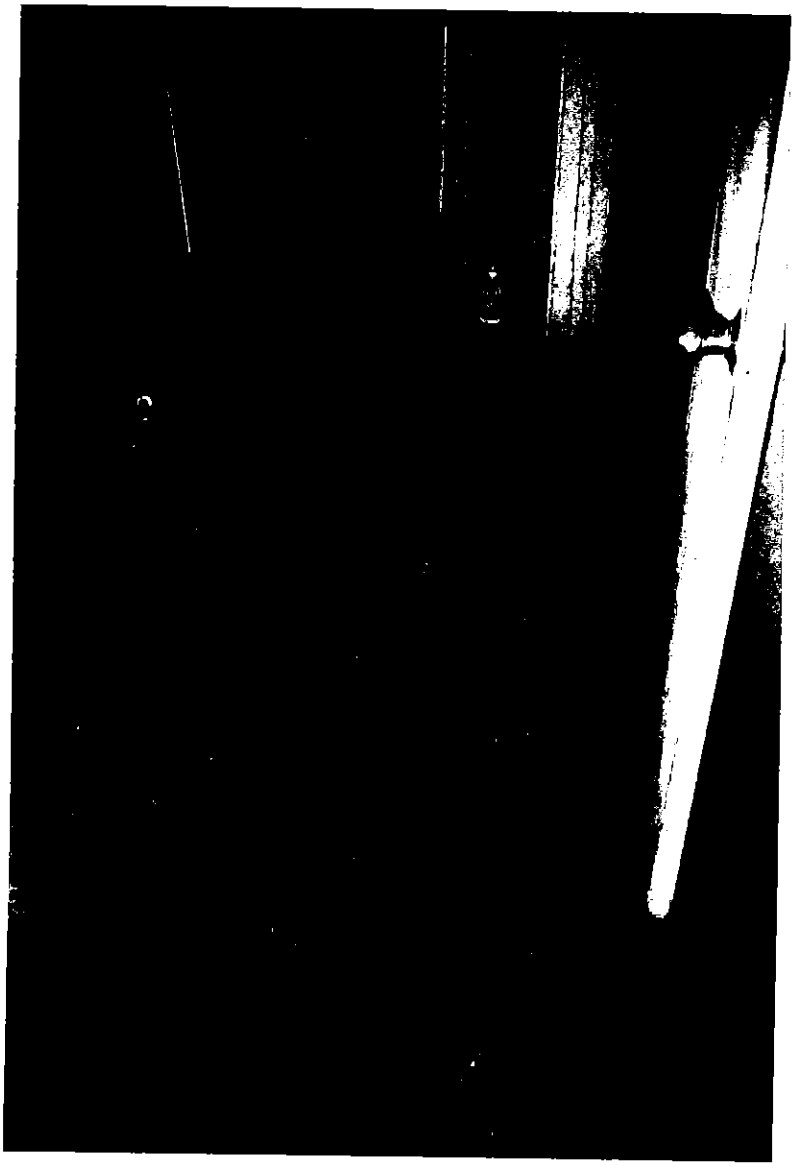
Waste oil and other underground tank vents on back wall of building



Former dispenser showing capped piping.



Electronic sensor signal outline outside building



Electronic sensor signal of waste oil tank area. Fill port in background.

APPENDIX C

DATABASE SEARCH RESULTS

SITE ASSESSMENT PLUS REPORT

PROPERTY INFORMATION	CLIENT INFORMATION
Project Name/Ref #: 08661 P G E - NOVATO SERVICE CENTER US HIGHWAY 101 NOVATO, CA 94945 Latitude/Longitude: (38.133395, 122.565322)	SUSAN WICKHAM ESE - CONCORD 4090 NELSON AVE STE J CONCORD, CA 94520

Environmental Risk Distribution Summary Agency / Database - Type of Records			within 1/8 mile	1/8 to 1/4 mile	1/4 to 1/2 mile	1/2 to 1 mile
A) RISK SITES searched to 1 mile:						
US EPA	NPL	Sites designated for Superfund cleanup by the US EPA	0	0	0	0
US EPA	TSD	Facilities that treat, store and/or dispose of hazardous waste	0	0	0	0
US EPA	CORRACTS	Facilites under RCRA Corrective actions	0	0	0	0
STATE	SPL	Sites prioritized by the State for cleanup	0	0	0	0
B) RISK SITES searched to 1/2 mile:						
US EPA	CERCLIS	Sites under review by the US EPA	0	0	0	-
STATE	SCL	Sites under review by the State	0	1	0	-
STATE/ REG/CO	LUST	Sites with leaking underground storage tanks	0	0	0	-
STATE/ REG/CO	SWLF	Sites permitted as solid waste landfills, incinerators, or transfer stations	0	0	0	-
STATE	BRDR ZONE	Sites with deed restrictions	0	0	0	-
REGIONAL	NORTH BAY	Sites on North Bay toxic list	0	0	0	-
REGIONAL	SOUTH BAY	Sites on South Bay toxic list	N/A	N/A	N/A	-
STATE	CORTESE	Sites on state index of properties with hazardous waste	0	1	0	-
STATE	TOXIC PITS	Toxic Pits cleanup facilites	0	0	0	-

Environmental Risk Distribution Summary Agency / Database - Type of Records			within 1/8 mile	1/8 to 1/4 mile	1/4 to 1/2 mile	1/2 to 1 mile
C) RISK SITES searched to 1/4 mile:					-	
US EPA	RCRA VIOL	Sites with RCRA Violations or Enforcement Actions	0	0	-	-
US EPA and	TRIS	Facilities with toxic chemical releases, inventories	0	0	-	-
STATE	UST/AST	Sites with registered underground or aboveground storage tanks	0	0	-	-
COUNTY	UNIQUE CO	Sites listed on unique county databases	N/A	N/A	-	-
COUNTY	HB17	Sites on San Diego County index of properties with hazardous waste	N/A	N/A	-	-
D) RISK SITES searched to 1/8 mile:						
US EPA	ERNS	Sites with previous hazardous materials spills	0	-	-	-
US EPA	GNRTR	Sites that generate large or small quantities of hazardous waste	0	-	-	-

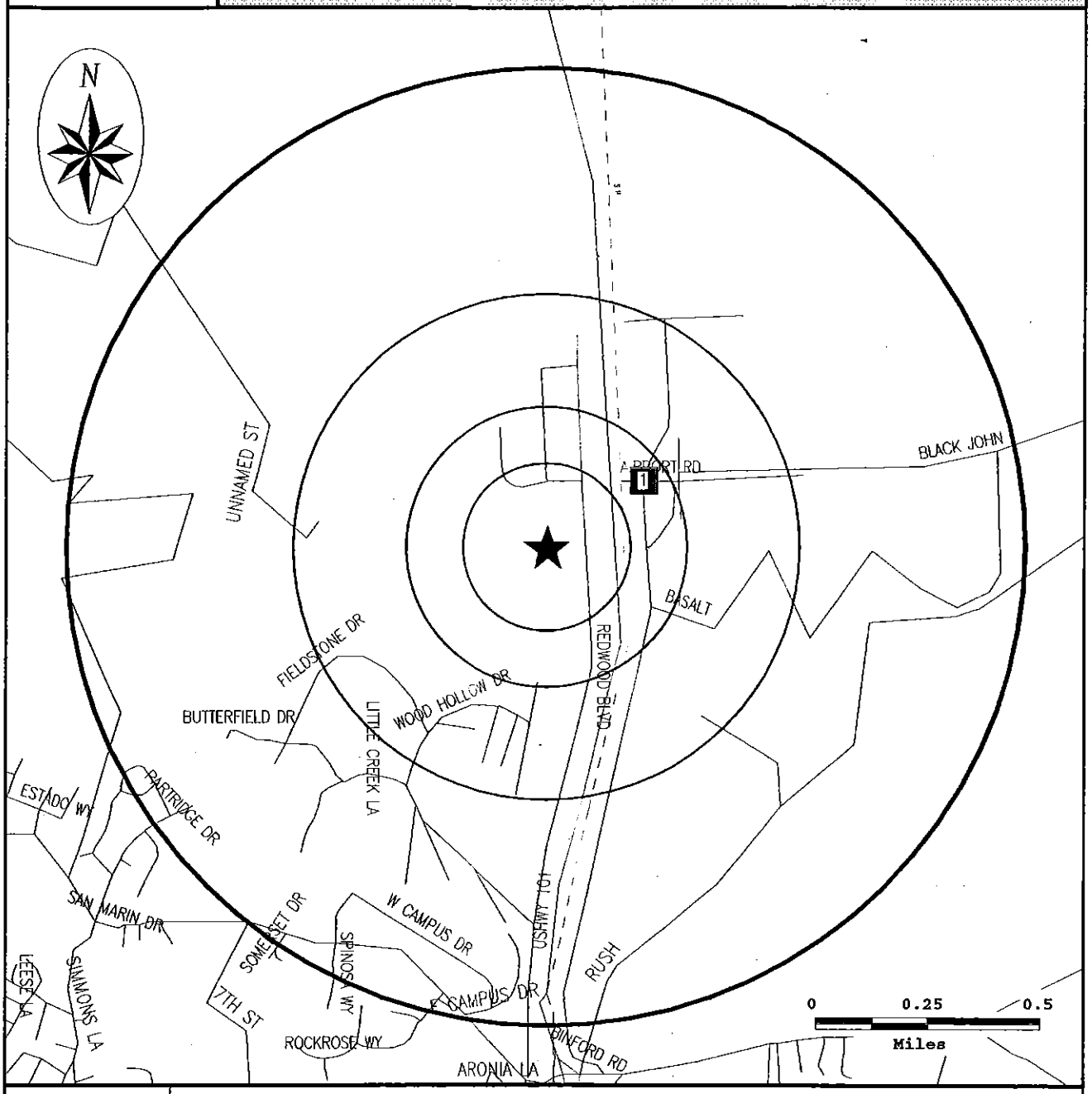
NOTES

This geographic database search meets the American Society for Testing Materials (ASTM) standards for a government records review. A (-) indicates the search distance exceeds ASTM search parameters.

LIMITATION OF LIABILITY
Customer proceeds at its own risk in choosing to rely on VISTA services, in whole or in part, prior to proceeding with any transaction. VISTA cannot be an insurer of the accuracy of the information, errors occurring in conversion of data, or for customer's use of data. VISTA and its affiliated companies, officers, agents, employees and independent contractors cannot be held liable for accuracy, storage, delivery, loss or expense suffered by customer resulting directly or indirectly from any information provided by VISTA.

SITE ASSESSMENT PLUS REPORT

Map of Risk Sites within One Mile



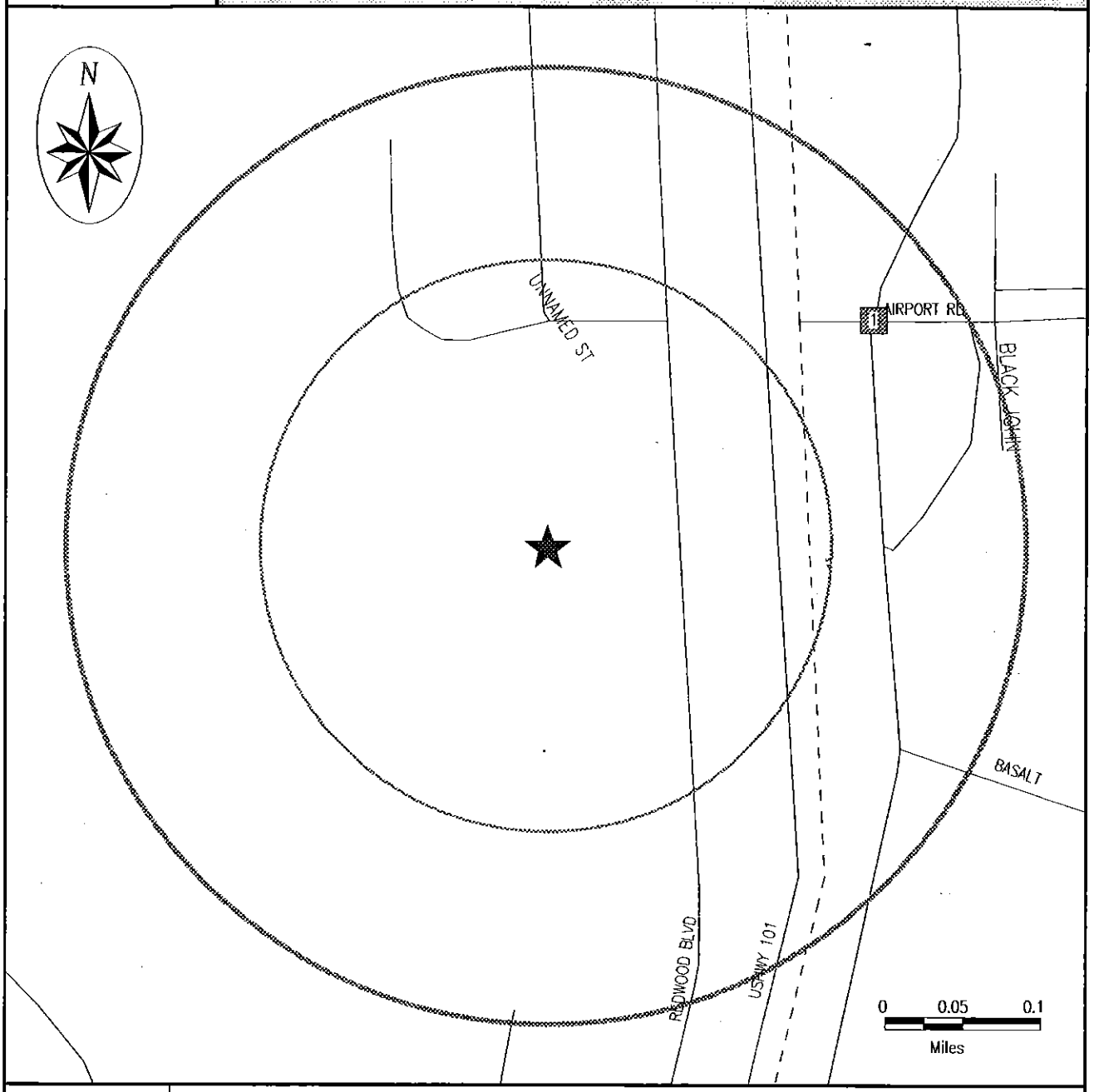
Subject Site	Category: / Databases Searched to:	A 1 mi.	B 1/2 mi.	C 1/4 mi.	D 1/8 mi.
★	Single Sites	◆	■	△	○
	Multiple Sites	◆	■	△	○
		NPL, SPL, TSD, CORRACTS	CERCLIS, SCL, LUST, SWLF	TRIS, UST	ERNS, GENERATORS

Roads
Highways
Railroads
Rivers or Water Bodies
Utilities

If additional databases are listed in the cover page of the report they are also displayed on this map. The map symbol used corresponds to the database category letter A,B,C,D.

SITE ASSESSMENT PLUS REPORT

Map of Risk Sites within Quarter Mile



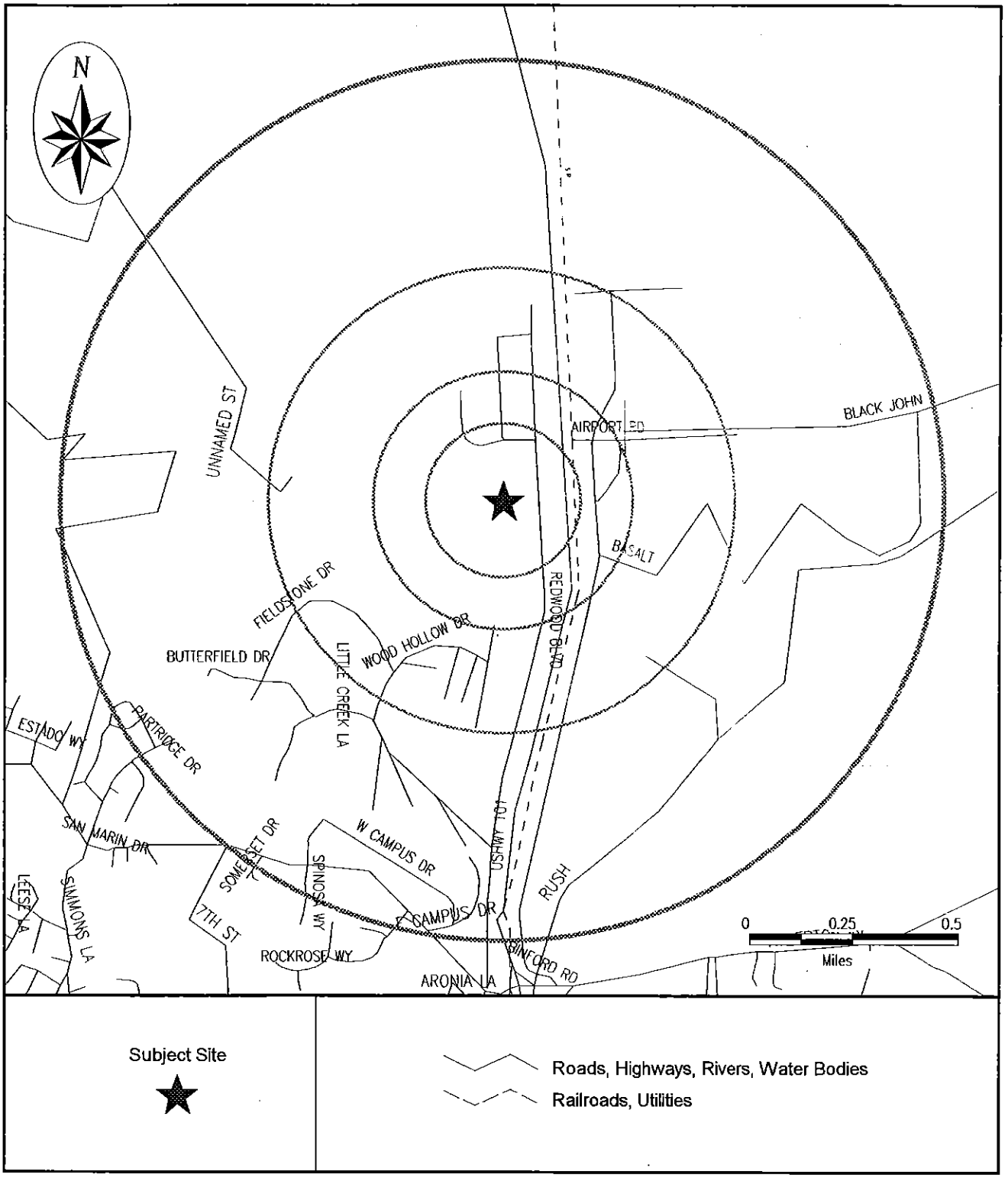
Subject Site	Category: / Databases Searched to:	A 1 mi.	B 1/2 mi.	C 1/4 mi.	D 1/8 mi.
★	Single Sites	◆	■	▲	●
	Multiple Sites	◆	■	▲	●
		NPL, SPL, TSD, CORRACTS	CERCLIS, SCL, LUST, SWLF	TRIS, UST	ERNS, GENERATORS

Roads
Highways
Railroads
Rivers or Water Bodies
Utilities

If additional databases are listed in the cover page of the report they are also displayed on this map. The map symbol used corresponds to the database category letter A,B,C,D.

SITE ASSESSMENT PLUS REPORT

Street Map



SITE ASSESSMENT PLUS REPORT

DESCRIPTION OF DATABASES SEARCHED

A) DATABASES SEARCHED TO 1 MILE

NPL
SRC#: 1803

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for NPL was May, 1994.

The National Priorities List (NPL) is the EPA's database of uncontrolled or abandoned hazardous waste sites identified for priority remedial actions under the Superfund program. A site must meet or surpass a predetermined hazard ranking system score, be chosen as a state's top priority site, or meet three specific criteria set jointly by the US Dept of Health and Human Services and the US EPA in order to become an NPL site.

RCRA-TSD
SRC#: 1832

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for RCRIS was June, 1994.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA TSDs are facilities which treat, store and/or dispose of hazardous waste.

CORRACTS
SRC#: 1952

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for RCRA Corrective Action Sites List was January, 1994.

The EPA maintains this database of RCRA facilities which are undergoing "corrective action". A "corrective action order" is issued pursuant to RCRA Section 3008 (h) when there has been a release of hazardous waste or constituents into the environment from a RCRA facility. Corrective actions may be required beyond the facility's boundary and can be required regardless of when the release occurred, even if it predates RCRA.

SPL
SRC#: 1886

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for Calsites Database: Annual Workplan Sites was May, 1994.

California's Environmental Protection Agency, Dept. of Toxic Substances Control maintains an inventory of facilities subject to investigations concerning likely or threatened releases of hazardous substances from those facilities. Annual Work Plan (AWP) sites and sites where Preliminary Endangerment Assessments are a high priority are included.

B) DATABASES SEARCHED TO 1/2 MILE

SCL
SRC#: 1885

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Calsites Database: All Sites except Annual Workplan Sites (incl. ASPIS) was May, 1994.

California's Department of Toxic Substances Control maintains an inventory of facilities subject to investigations concerning likely or threatened releases of hazardous substances from those facilities. These are lower priority than the SPL sites.

CERCLIS
SRC#: 1879

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for CERCLIS was August, 1994.

The CERCLIS List is a compilation by the EPA of the sites which the EPA has investigated or is currently investigating for a release or threatened release of hazardous substances pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Superfund Act).

Cal Cerclis **SRC#: 1884**	VISTA conducts a database search to identify all sites within 1/2 mile of your property. The agency release date for Ca Cerclis w/Regional Utility Description was June, 1994. California's U.S. Environmental Protection Agency, Region 9 maintains an inventory of regional utility descriptions for California CERCLIS sites.
LUST **SRC#: 1898**	VISTA conducts a database search to identify all sites within 1/2 mile of your property. The agency release date for Lust Information System (LUSTIS) was August, 1994. California's Environmental Protection Agency maintains an inventory of leaking underground storage tanks.
LUST RG2 **SRC#: 1721**	VISTA conducts a database search to identify all sites within 1/2 mile of your property. The agency release date for Region #2-San Francisco Bay Fuel Leaks List was April, 1994. California's Regional Water Quality Control Board, Region #2 maintains an inventory of leaking underground storage tanks.
LUST RG1 **SRC#: 1903**	VISTA conducts a database search to identify all sites within 1/2 mile of your property. The agency release date for Region #1-Active Toxic Site Investigations-Lusts was June, 1994. California's Regional Water Quality Control Board, Region #1 (North Coast Region) maintains an inventory of leaking underground storage tanks.
SWLF **SRC#: 1237**	VISTA conducts a database search to identify all sites within 1/2 mile of your property. The agency release date for Ca Solid Waste Information System (SWIS) was March, 1993. California's Integrated Waste Management Board maintains an inventory of the solid waste facilities in the state.
SWLF **SRC#: 1543**	VISTA conducts a database search to identify all sites within 1/2 mile of your property. The agency release date for San Diego County Environmental Health Services Database-Solid Waste Sites was November, 1993. California's San Diego County Department of Health Services maintains an inventory of the solid waste facilities in the state.
BORDER ZONE **SRC#: 1703**	VISTA conducts a database search to identify all sites within 1/2 mile of your property. The agency release date for Deed Restriction Properties Report was April, 1994. California's Department of Health Services-Land Use and Air Assessment maintains an inventory of voluntary deed restriction agreements with owners of property who propose building residences, schools, hospitals, or day care centers on property that is "on or within 2,000 feet of a significant disposal of hazardous waste".
North Bay **SRC#: 1718**	VISTA conducts a database search to identify all sites within 1/2 mile of your property. The agency release date for North Bay County Toxic List-Region #2 Surface Spills was April, 1994. California's Regional Water Quality Control Board, Region #2 maintains an inventory of hazardous materials incidents.
CORTESE **SRC#: 1082**	VISTA conducts a database search to identify all sites within 1/2 mile of your property. The agency release date for Cortese List-Hazardous Waste Substance Site List was November, 1992. California's Office of Environmental Protection, Office of Hazardous Materials maintains an inventory of facilities subject to investigation.
Toxic Pits **SRC#: 1708**	VISTA conducts a database search to identify all sites within 1/2 mile of your property. The agency release date for Summary of Toxic Pits Cleanup Facilities was January, 1994. California's Water Quality Control Board, Division of Loans Grants maintains an inventory of sites with toxic pits in the state.

C) DATABASES SEARCHED TO 1/4 MILE

TRIS
SRC#: 1489

VISTA conducts a database search to identify all sites within 1/4 mile of your property. The agency release date for TRIS was August, 1993.

Section 313 of the Emergency Planning and Community Right-to-Know Act (also known as SARA Title III) of 1986 requires the EPA to establish an inventory of Toxic Chemicals emissions from certain facilities(Toxic Release Inventory System). Facilities subject to this reporting are required to complete a Toxic Chemical Release Form(Form R) for specified chemicals.

AST's
SRC#: 1826

VISTA conducts a database search to identify all sites within 1/4 mile of your property. The agency release date for Aboveground Storage Tank Database was June, 1994.

California's State Water Resources Control Board maintains an inventory of registered aboveground storage tanks.

UST's
SRC#: 1612

VISTA conducts a database search to identify all sites within 1/4 mile of your property. The agency release date for Underground Storage Tank Registrations Database was January, 1994.

California's State Water Resources Control Board, Office of Underground Storage Tanks maintains an inventory of registered underground storage tanks.

RCRA-Viols
SRC#: 1832

VISTA conducts a database search to identify all sites within 1/4 mile of your property. The agency release date for RCRIS was June, 1994.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste.

D) DATABASES SEARCHED TO 1/8 MILE

ERNS
SRC#: 1951

VISTA conducts a database search to identify all sites within 1/8 mile of your property. The agency release date for ERNS was June, 1994.

The Emergency Response Notification System (ERNS) is a national database used to collect information on reported releases of oil and hazardous substances. The database contains information from spill reports made to federal authorities including the EPA, the US Coast Guard, the National Response Center and the Department of transportation. A search of the database records for the period October 1986 through September 1993 revealed the following information regarding reported spills of oil or hazardous substances in the stated area.

RCRA-LgGen
SRC#: 1832

VISTA conducts a database search to identify all sites within 1/8 mile of your property. The agency release date for RCRIS was June, 1994.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Large Generators are facilities which generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).

RCRA-SmGen
SRC#: 1832

VISTA conducts a database search to identify all sites within 1/8 mile of your property. The agency release date for RCRIS was June, 1994.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Small and Very Small generators are facilities which generate less than 1000 kg./month of non-acutely hazardous waste.

SITE ASSESSMENT PLUS REPORT

RISK INVENTORY

MAP ID	RISK AT SITE AND THE ADJACENT AREA (within 1/8 mile)	A				B									C					D	
		NPL	TSD	CORRACTS	SPL	CERCLIS	SCL	LUST	SWLF	BRDR ZONE	NORTH BAY	SOUTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	HE17	ERNS	GNRTR
No Records Found																					

MAP ID	RISK AT SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	A				B									C					D	
		NPL	TSD	CORRACTS	SPL	CERCLIS	SCL	LUST	SWLF	BRDR ZONE	NORTH BAY	SOUTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	HE17	ERNS	GNRTR
1	NOVATO STORAGE PARK AIRPORT AND BINFORD ROADS NOVATO, CA 94945						X						X								

MAP ID	RISK AT SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	A				B									C					D	
		NPL	TSD	CORRACTS	SPL	CERCLIS	SCL	LUST	SWLF	BRDR ZONE	NORTH BAY	SOUTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	HE17	ERNS	GNRTR
No Records Found																					

MAP ID	RISK AT SITES IN THE SURROUNDING AREA (within 1/2 - 1 mile)	A				B									C					D	
		NPL	TSD	CORRACTS	SPL	CERCLIS	SCL	LUST	SWLF	BRDR ZONE	NORTH BAY	SOUTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	HE17	ERNS	GNRTR
No Records Found																					

UNMAPPED SITES	A				B									C					D	
	NPL	TSD	CORRACTS	SPL	CERCLIS	SCL	LUST	SWLF	BRDR ZONE	NORTH BAY	SOUTH BAY	CORTESE	TOXIC PITS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	HIST	ERNS	GNRTR
NOVATO DECHLORINATION STATION FORMER HAMILTON AIR NOVATO, CA 94947																X				
REDWOOD SANITARY LANDFILL 4 MI NE NOVATO BTWN SANTONIO RR NOVATO, CA								X												
PGE IGNATIO SUBSTA NW COR HAMILTON BELL MARIN K NOVATO, CA 94947					X															
HAMILTON AFB HAMILTON AIR FORCE BASE NOVATO, CA 94947					X															
REDWOOD SANITARY LANDFILL 1 MI N OF MARIN CO AIRPORT, ADJ TO 1 NOVATO, CA 94947						X														
HAMILTON FIELD HIGHWAY 101; 3 MI N OR LUCAS VALLEY NOVATO, CA 94947						X														
MARIN COUNTY AIRPORT (GNOSS FIELD) AIRPORT ROAD, EAST OF HIGHWAY 101 NOVATO, CA 94945						X														
MARIN AIR SERVICES 451 AIRPORT NOVATO, CA 94947																X				

SITE ASSESSMENT PLUS REPORT

RISKS DETAILS

RISK AT SITE AND THE ADJACENT AREA (within 1/8 mile)

No Records Found

RISK AT SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)

Property Address with VISTA Verified\Enhanced City and Zip:	**NOVATO STORAGE PARK AIRPORT AND BINFORD ROADS NOVATO, CA 94945**	**Map ID#: VISTA ID#: Distance/Direction:**	**1 1592167 0.20MI / NE**
DETAILS REGARDING:	**CORTESE / SRC# 1082**	EPA/Agency ID	N/A
Agency Address:	SAME AS ABOVE		
List Name:	ABANDONED SITES PROGRAM INFORMATION SYSTEM INCLUDED IN CALSITES		
Site ID:	21420001 SITES		
DETAILS REGARDING:	**SCL / SRC# 1885**	Agency ID	21420001
Agency Address:	SAME AS ABOVE		
Status:	NOT AN NPL SITE		
Facility Type:	NOT AVAILABLE		
Lead Agency:	NOT REPORTED		
State Status:	PRELIMINARY ASSESSMENT REQ-MED		
Pollutant 1:	NOT REPORTED		
Pollutant 2:	NOT REPORTED		
Pollutant 3:	NOT REPORTED		

RISK AT SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)

No Records Found

RISK AT SITES IN THE SURROUNDING AREA (within 1/2 - 1 mile)

No Records Found

UNMAPPED SITES

Property Address with VISTA Verified\Enhanced City and Zip:	**REDWOOD SANITARY LANDFILL** **4 MI NE NOVATO BTWN SANTONIO R** **NOVATO, CA**	VISTA ID#:	1587638
DETAILS REGARDING:	**SWLF / SRC# 1237**	Agency ID	21-AA-0001
Agency Address:	SAME AS ABOVE		
Facility Type:	SANITARY LANDFILL/LANDFILL		
Facility Status:	ACTIVE		
Permit Status:	PERMITTED/LICENSED		

Property Address with VISTA Verified\Enhanced City and Zip:	**PGE IGNATIO SUBSTA** **NW COR HAMILTON BELL MARIN K** **NOVATO, CA 94947**	VISTA ID#:	1592129
DETAILS REGARDING:	**CERCLIS / SRC# 1879**	EPA ID	CAD980736367
Agency Address:	SAME AS ABOVE		
NPL Status:	NOT A PROPOSED, CURRENT, OR DELETED NPL SITE		
Site Ownership:	UNKNOWN		
Lead Agency:	NO DETERMINATION		
Site Description:	NOT REPORTED		
DETAILS REGARDING:	**Regional CERCLIS / SRC# 1884**	EPA ID	CAD980736367
Agency Address:	SAME AS ABOVE		
Regional Utility Description:	PCB'S		
DETAILS REGARDING:	**Regional CERCLIS / SRC# 1884**	EPA ID	CAD980736367
Agency Address:	SAME AS ABOVE		
Regional Utility Description:	OTHER:SPILL		
DETAILS REGARDING:	**Regional CERCLIS / SRC# 1884**	EPA ID	CAD980736367
Agency Address:	SAME AS ABOVE		
Regional Utility Description:	CURRENT DISPOSITION		
DETAILS REGARDING:	**Regional CERCLIS / SRC# 1884**	EPA ID	CAD980736367
Agency Address:	SAME AS ABOVE		
Regional Utility Description:	FOLLOW-UP FOR CLOSEOUT		

Property Address with VISTA Verified\Enhanced City and Zip:	**HAMILTON AFB** **HAMILTON AIR FORCE BASE** **NOVATO, CA 94947**	VISTA ID#:	185569
DETAILS REGARDING:	**CERCLIS / SRC# 1879**	EPA ID	CA3570024288
Agency Address:	SAME AS ABOVE		
NPL Status:	HAS SCAP PLAN REMED. ACTIVITIES		
Site Ownership:	FEDERALLY OWNED		
Lead Agency:	NOT REPORTED		
Site Description:	NOT REPORTED		
DETAILS REGARDING:	**Regional CERCLIS / SRC# 1884**	EPA ID	CA3570024288
Agency Address:	SAME AS ABOVE		
Regional Utility Description:	NEW CERCLIS SITE		

UNMAPPED SITES CONT.			
Property Address with VISTA Verified\Enhanced City and Zip:	**HAMILTON AFB HAMILTON AIR FORCE BASE NOVATO, CA 94947**	VISTA ID#:	185569
DETAILS REGARDING:	**Regional CERCLIS / SRC# 1884**	EPA ID	CA3570024288
Agency Address:	SAME AS ABOVE		
Regional Utility Description:	HAMILTON AMY AIRFIELD LANDFILL RI		
DETAILS REGARDING:	**Regional CERCLIS / SRC# 1884**	EPA ID	CA3570024288
Agency Address:	SAME AS ABOVE		
Regional Utility Description:	STORAGE TANK REMOVAL - FINAL REPORT		
DETAILS REGARDING:	**Regional CERCLIS / SRC# 1884**	EPA ID	CA3570024288
Agency Address:	SAME AS ABOVE		
Regional Utility Description:	REMEDIAL INVESTIGATION OF LANDFILL		
DETAILS REGARDING:	**Regional CERCLIS / SRC# 1884**	EPA ID	CA3570024288
Agency Address:	SAME AS ABOVE		
Regional Utility Description:	STORAGE TANK REMOVAL PROJECT		
DETAILS REGARDING:	**Regional CERCLIS / SRC# 1884**	EPA ID	CA3570024288
Agency Address:	SAME AS ABOVE		
Regional Utility Description:	INTERIM REMEDIAL INVESTIGATION OF LANDFILL WORK		
DETAILS REGARDING:	**Regional CERCLIS / SRC# 1884**	EPA ID	CA3570024288
Agency Address:	SAME AS ABOVE		
Regional Utility Description:	PER FIT TO BE ASSESSED W/NEW MODEL		

VISTA ENVIRONMENTAL INFORMATION

FEDERAL REPORT

Client Project/P.O. No.:	08661	VISTA Report No.:	058777011
Client Reference Name:		Date of Report:	Nov. 9, 1994

Site Description

Subject Property:	P G & E - NOVATO SERVICE CENTER
Address:	US HIGHWAY 101
City:	NOVATO
State:	CA
Zip:	94945
County:	MARIN

SITES FOUND

Agency/Database	Date of Data	# of Sites In Zip Code	# of Other Sites In the Area
US,EPA,DOCKETS	07/94	0	0
US,EPA,RAATS	02/94	0	0

©VISTA ENVIRONMENTAL INFORMATION, INC., 1993

FOR MORE INFORMATION CALL (619)450-6100

5060 Shoreham Place, Suite 300, San Diego, CA 92122

VISTA ENVIRONMENTAL INFORMATION

Dockets Sites

Client Project/P.O. No.:	08661	VISTA Report No.:	058777011
Client Reference Name:		Date of Report:	Nov. 9, 1994

Site Description

Subject Property:	P G & E - NOVATO SERVICE CENTER
Address:	US HIGHWAY 101
City:	NOVATO
State:	CA
Zip:	94945
County:	MARIN

SITES IN ZIP CODE

0 site(s) found in the zip code area(s)

© Vista Environmental Information, Inc. For more information call: (619) 450-6100

VISTA ENVIRONMENTAL INFORMATION

RAATS Sites

Client Project/P.O. No.:	08661	VISTA Report No.:	058777011
Client Reference Name:		Date of Report:	Nov. 9, 1994

Site Description

Subject Property:	P G & E - NOVATO SERVICE CENTER
Address:	US HIGHWAY 101
City:	NOVATO
State:	CA
Zip:	94945
County:	MARIN

SITES IN ZIP CODE

0 site(s) found in the zip code area(s)

© Vista Environmental Information, Inc. For more information call: (619) 450-6100

GLOSSARY

Description of Report:

This report is a compilation of federal environmental data which identifies environmental problem sites and activities from the records of the United States Environmental Protection Agency(US EPA). The data contained in this report are the result of a search of VISTA's proprietary database.

The VISTA database search is designed to identify all sites known to be located within the specified zip code(s). Because not all government records have complete and accurate addresses, VISTA uses Post Office verification software to assign or to correct zip codes where necessary. For those records which cannot be assigned a zip code, VISTA uses the specifed city name(s) to identify any sites which may be located in the zip code area. If no city name is reported, the county name is used.

Limitations Of Information

All information contained in this report was obtained from US EPA records. VISTA does not warrant the accuracy,timeliness,merchantability, completeness or usefulness of any information furnished, and the subscriber accepts any and all risks resulting from decisions made solely or in part on VISTA information.

©VISTA ENVIRONMENTAL INFORMATION, INC., 1993
FOR MORE INFORMATION CALL (619)450-6100

5060 Shoreham Place, Suite 300, San Diego, CA 92122

APPENDIX D

SANBORN CERTIFICATION

VISTA ENVIRONMENTAL INFORMATION, INC.

VISTA

November 16, 1994

SUSAN WICKHAM
ESE - CONCORD
4090 NELSON AVE STE J
CONCORD, CA 94520
Phone: 5106854053 Fax: 5106855323

Dear SUSAN WICKHAM:

A SANBORN MAP-SITE SEARCH was conducted on the following address:

Name/Ref#: P G & E - NOVATO SERVICE CENTER

Address: US HIGHWAY 101
City/St/Zip: NOVATO, CA 94945

Vista Order#: 8777012

SANBORN certifies that a search was made of their holdings and no SANBORN MAPS are available. VISTA has this letter of certification on file. The charge for the search will be sent on a separate invoice. Your use of VISTA for this service is greatly appreciated.

Document Retrieval Service
VISTA ENVIRONMENTAL INFORMATION, INC.

Pacific Gas and Electric Company

Technical and Ecological Services
3400 Crow Canyon Road
San Ramon, CA 94583
510/820-2000

January 30, 1996

Marin County Department of Environmental Management
10 North San Pedro Road, Suite 1022
San Rafael, CA 94903

Subject: Request for UST Case Closure of PG&E Property (Mike's Auto Repair and Body Shop), 8161 Old Redwood Highway, Novato

Mr. Tim Underwood:

Attached is a summary of information collected to date regarding underground storage tanks formerly located at the above mentioned property. On January 9, 1996, PG&E made an attempt to excavate two suspected UST locations, and found that the tanks and product piping had already been excavated. The tank areas were re-excavated, and the excavation sidewalls and bottoms were sampled. Water entered one of the excavations, and was also sampled. Ms. Barbara Zett was on-site to oversee the excavations and sampling.

Results for soil and water samples collected from the suspected fuel tank location were all nondetect for total petroleum hydrocarbons as gasoline and as diesel. Results for samples collected from the waste oil tank excavation ranged from nondetect to 90 ppm as total recoverable petroleum hydrocarbons, and from nondetect to 71 ppm as TPH-diesel.

Pacific Gas and Electric Company requests closure of the four underground storage tanks formerly located at the above facility. Site investigation results indicate that all source material has been removed, and that groundwater was not affected by the tanks. Please call me at (707) 576-7234 or Eric Johnson at (510) 866-5888 if you wish to discuss the property.

Sincerely,

Debora L. Fudge

Enclosure

January 30, 1996

FILE COPY
Request for UST Case Closure of PG&E Property

Marin County Department of Environmental Management
10 North San Pedro Road, Suite 1022
San Rafael, CA 94903

Subject: Request for UST Case Closure of PG&E Property (Mike's Auto Repair and Body Shop), 8161 Old Redwood Highway, Novato

Mr. Tim Underwood:

Attached is a summary of information collected to date regarding underground storage tanks formerly located at the above mentioned property. On January 9, 1996, PG&E made an attempt to excavate two suspected UST locations, and found that the tanks and product piping had already been excavated. The tank areas were re-excavated, and the excavation sidewalls and bottoms were sampled. Water entered one of the excavations, and was also sampled. Ms. Barbara Zett was on-site to oversee the excavations and sampling.

Results for soil and water samples collected from the suspected fuel tank location were all nondetect for total petroleum hydrocarbons as gasoline and as diesel. Results for samples collected from the waste oil tank excavation ranged from nondetect to 90 ppm as total recoverable petroleum hydrocarbons, and from nondetect to 71 ppm as TPH-diesel.

Pacific Gas and Electric Company requests closure of the four underground storage tanks formerly located at the above facility. Site investigation results indicate that all source material has been removed, and that groundwater was not affected by the tanks. Please call me at (707) 576-7234 or Eric Johnson at (510) 866-5888 if you wish to discuss the property.

Sincerely,

Debora L. Fudge

DLF(251-5888):dlf
960129/ks128w

bpc: NEBrose
KDCreek

Enclosure

SITE INFORMATION

Site Name: Unnamed Parcel owned by Pacific Gas and Electric Company (formerly Mike's Auto Repair and Body Shop)

Site Address: 8161 Old Redwood Highway, Novato

Contact: Eric Johnson

Contact Address: 3400 Crow Canyon Road, San Ramon, CA 94583

History

An unnamed parcel of PG&E's property occupies approximately 14 acres in Novato. Figure 1 shows a site location map. The property was purchased by PG&E in 1973, for potential use as a service center. However, PG&E never used the property, and leased it to Mike's Auto Repair and Body Shop since its purchase.

Prior to 1973, a vehicle service station was located on the property. The service station comprised a building with canopy, a cement pad, two fuel dispenser islands, and an unknown quantity of underground storage tanks. The remainder of the site was undeveloped. Mike's Auto performed vehicle repairs at the service station. When PG&E took possession of the property from Mike's Auto in 1995, it demolished the building, cement pad, and fuel dispenser islands. Demolition spoils were transported off-site and disposed of at an approved landfill. During demolition, four vent pipes were observed, indicating that there were up to four underground fuel storage tanks located near the service station.

On January 9, PG&E directed AllWaste, Inc (a licensed tank puller from San Martin, CA) to excavate the tanks and piping. Barbara Zett, a representative of the Marin County Department of Environmental Management was on-site to oversee the excavation process. AllWaste followed the vent lines to find the former tank locations, and discovered that all tanks and product piping had already been excavated and removed. The present location of the tanks is unknown. During the excavation process, PG&E discovered that the previous excavations (one the suspected former site of three fuel tanks, and one the suspected former site of a waste oil tank) had been backfilled with concrete, sand, bricks, and asphalt. AllWaste excavated the backfill material, and scraped native soil from the sidewalls and bottom of each excavation. The excavated material was separated into three piles - concrete/brick, asphalt/soil, and contaminated soil. The concrete/brick was hauled to a recycler. The asphalt/soil is stockpiled on-site pending final approval for recycling or landfilling. The excavated soil was stockpiled on-site with plastic sheeting over and under pending testing and proper disposal. Approximately 180 cubic yards of backfill material and 20 cubic yards of native soil were excavated from NP-1, the former fuel tanks location. Approximately 7 cubic yards of backfill material and one cubic yard of native soil were excavated from NP-2, a suspected former hydraulic lift location. Approximately 90 cubic yards of backfill and 10 cubic yards of native soil were excavated from NP-3, the former waste oil tank location.

CASE CLOSURE EVALUATION

Background

Cause and location of leak: Fuel tanks (3?) - unknown if leak or spill occurred. Waste oil tank (1) - definite spill or leak, cause and location unknown.

How leak was discovered: Two former tank locations were excavated, and soil sample were collected for laboratory analysis.

Estimate of volume of release: Unknown quantity of waste oil. No fuel hydrocarbons.

Duration of leak: Unknown.

Effectiveness of leak detection monitoring program: Unknown.

Pollutants involved: Although soil was tested for the presence of gasoline, diesel, and waste oil, only waste oil was encountered.

Investigative Methods

Soil sampling methodology:

Four sidewall and one bottom soil samples from NP-1, the fuel tank excavation, were collected by hand and submitted to ChromaLab, Inc. (a state-certified laboratory located in Pleasanton) for analysis of total petroleum hydrocarbons as gasoline (TPH-g) (EPA method 5030/8015) and diesel (TPH-d) (EPA method 3550/8015M). One sidewall soil sample from NP-2, the suspected hydraulic lift location, was collected by hand and submitted for analysis of total petroleum hydrocarbons as diesel (TPH-d), as motor oil (TPH-mo), and as hydraulic oil (TPH-ho) (EPA method 3550/8015M). Four sidewall and one bottom soil samples from NP-3, the waste oil tank excavation, were collected by hand and submitted for analysis of total petroleum hydrocarbons as motor oil (TPH-mo), and total recoverable petroleum hydrocarbons (TRPH) (EPA method 418.1).

All soil samples were collected in clean glass jars with air-tight lids, labeled, and transported on ice under proper chain-of-custody documentation to the laboratory.

Groundwater monitoring well design, installation, and development:

No groundwater monitoring wells were installed.

Groundwater sampling methodology:

One water sample was collected by hand from the bottom of excavation NP-1, the fuel tank excavation. The sample was collected in a clean glass sample jar with an air-tight lid, labeled, and transported under proper chain-of-custody documentation to ChromaLab, Inc. for analysis of TPH-g and TPH-d within allowable holding times. The sample was preserved by placing it on ice immediately after collection.

No water was encountered in excavations NP-2 or NP-3. The on-site representative of the Marin County Department of Environmental Management determined that additional groundwater sampling was unnecessary.

Method used to measure free product thickness: Visual observation. No free product was encountered at the site.

Method used to measure ground water elevations: N/A

Extent of Hydrocarbon Presence in Soil and Groundwater

Table 1 summarizes the analytical results for soil and groundwater samples collected in January 1996.

Four sidewall samples and one bottom sample collected from excavation NP-1, the former location of the fuel (gasoline and/or diesel) tanks, contained nondetectable concentrations of TPH-g and TPH-d. The water sample collected from the bottom of the pit contained nondetectable concentrations of TPH-g and TPH-d.

The sidewall sample collected from excavation NP-2, the suspected former hydraulic lift location, contained nondetectable concentrations of TPH-ho.

All four sidewall samples collected from excavation NP-3, the former location of a waste oil tank, contained concentrations of TRPH in concentrations up to 90 ppm. The bottom sample did not contain any TRPH. One sidewall sample contained TPH-d (71 ppm); all other analytical results for TPH-d were nondetect.

Local and Regional Hydrogeology

The flat-lying portion of the property is underlain by intertidal and alluvial deposits of Quaternary age (Helley et al, 1979, and Wagner and Bortugno, 1982). These unconsolidated deposits are medium- to fine-grained sands and silts, grading to coarser sand and gravel near the bedrock hills. The hilly portion of the property is likely underlain by unnamed Pliocene-age continental deposits. These more consolidated units are composed of poorly-sorted sandstone and conglomerate. Beneath these surficial units and outcroppings on Burdell Mountain to the northeast, are the Burdell Mountain volcanics. These volcanics are andesitic mudflows and breccias of Miocene age. Quarries in the immediate area if the site of the site mined sandstone, conglomerate, and volcanics.

The Burdell Mountain fault trends northwest-southeast along the Burdell Mountain, and passes within one-quarter mile of the property. This Quaternary-age fault is not known to have exhibited displacement in the last two million years (Wagner and Bortugno, 1982).

The property is located at the southwestern edge of the Petaluma Valley Groundwater Basin (DWR Basin No. 2-1), which is drained by the Petaluma River. The depth to groundwater in this basin ranges from 0 to 900 feet bgs DWR Bulletin 118).

No information is available on groundwater occurrence in the vicinity of the site. However, due to the property location near the Petaluma River and associated creeks and sloughs, groundwater beneath the

property is likely shallow and follows the local topography and surface water flow westward toward the Petaluma River. Water encountered entering one of the excavations is further evidence of a shallow water table.

Beneficial Uses of Groundwater

Existing and potential future uses as shown in Basin Plan:

As defined in the SFBRWQCB's 1995 Water Quality Control Plan (basin plan), the existing beneficial uses applicable to groundwater in the Petaluma Valley Basin (DWR Basin No. 2-1) are: municipal and domestic water supply, and agricultural water supply. Potential beneficial uses include industrial process water supply and industrial service water supply. Because groundwater does not appear to be impacted beneath the site, no off-site wells are expected to have been affected by activities at the site.

Well Survey:

No well survey was performed.

Remediation Activities and Effectiveness

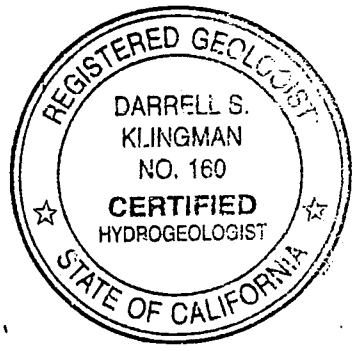
Some time before 1973, several USTs and an unknown quantity of soil were excavated by others from the site. The present location of the tanks, product piping, and excavated soil is unknown.

In January 1996, all backfill material encountered in the former tank locations was excavated and stockpiled on-site or disposed of at an approved facility. Excavation sidewalls and bottoms were scraped and sampled. Analytical results showed that no residual petroleum hydrocarbons in concentrations over 90 ppm remained in the native soil. Groundwater entered only one of the excavations. Analytical results showed that the water was free of petroleum hydrocarbons.

This remediation approach, consisting of excavation and off-site disposal of contaminated soil, has effectively accomplished source removal as verified by the results of the January 1996 site investigation. During the 1996 site investigation, the maximum concentrations of gasoline, diesel, motor oil, hydraulic oil, and total recoverable petroleum hydrocarbons encountered in subsurface soil samples collected from the sidewalls and bottoms of the excavations were ND<1 ppm, ND<1 ppm, 71 ppm, ND<1 ppm, and 90 ppm, respectively. Analytical results suggest that all source material has been excavated and removed, and that groundwater has not been affected.

CONCLUSIONS AND RECOMMENDATIONS

Based on this information, it is PG&E's opinion that further monitoring, investigation, or remedial action is not necessary to protect beneficial uses of the groundwater basin. Therefore, we request that no further action be required for this property, and that the Marin County Department of Environmental Management and the San Francisco Bay Regional Water Quality Control Board formally close this case with a signoff letter.



Eric P. Johnson
Environmental Engineer, REA

Darrell S. Klingman
Certified Hydrogeologist

TABLE 1
Analytical Results for Soil and Water Samples
Collected from Excavations NP-1, NP-2 and NP-3
on January 11, 1996

Sample Number	Sample Location	Sample Matrix	TPH-g ppm	TPH-d ppm	TPH-mo ppm	TPH-ho ppm	TRPH ppm
NP1-NW	north wall of NP-1 @ 4'	soil	nd<1	nd<1	na	na	na
NP1-EW	east wall of NP-1 @ 4'	soil	nd<1	nd<1	na	na	na
NP1-SW	south wall of NP-1 @ 4'	soil	nd<1	nd<1	na	na	na
NP1-WW	west wall of NP-1 @ 4'	soil	nd<1	nd<1	na	na	na
NP1-BT	center of NP-1 @ 8.5'	soil	nd<1	nd<1	na	na	na
NP1-water	bottom of NP-1 @ 8.5'	water	nd<0.05	nd<0.05	na	na	na
NP2-1	west wall of NP-2 @ 3'	soil	na	nd<1	nd<50	nd<1	na
NP3-NW	north wall of NP-3 @ 4'	soil	na	na	nd<50	na	11
NP3-EW	east wall of NP-3 @ 4'	soil	na	na	71	na	90
NP3-SW	south wall of NP-3 @ 4'	soil	na	na	nd<50	na	83
NP3-WW	west wall of NP-3 @ 4'	soil	na	na	nd<50	na	39
NP3-BT	center of NP-3 @ 8'	soil	na	na	nd<50	na	nd<10

Notes:
1) NP-1 = Fuel (gasoline and/or diesel) tank excavation
2) NP-2 = Hydraulic oil tank excavation
3) NP-3 = Waste oil tank excavation
4) TPH-g = total petroleum hydrocarbons as gasoline (EPA method 5030/8015)
5) TPH-d = total petroleum hydrocarbons as diesel (EPA method 3550/8015M)
6) TPH-mo = total petroleum hydrocarbons as motor oil (EPA method 3550/8015M)
7) TPH-ho = total petroleum hydrocarbons as hydraulic oil (EPA method 3550/8015M)
8) TRPH = total recoverable petroleum hydrocarbons (EPA method 418.1)
9) na = not analyzed
10) nd = not detected at or above stated detection limit
11) ppm = parts per million (mg/kg or mg/L)

960112/Novato1/PC18

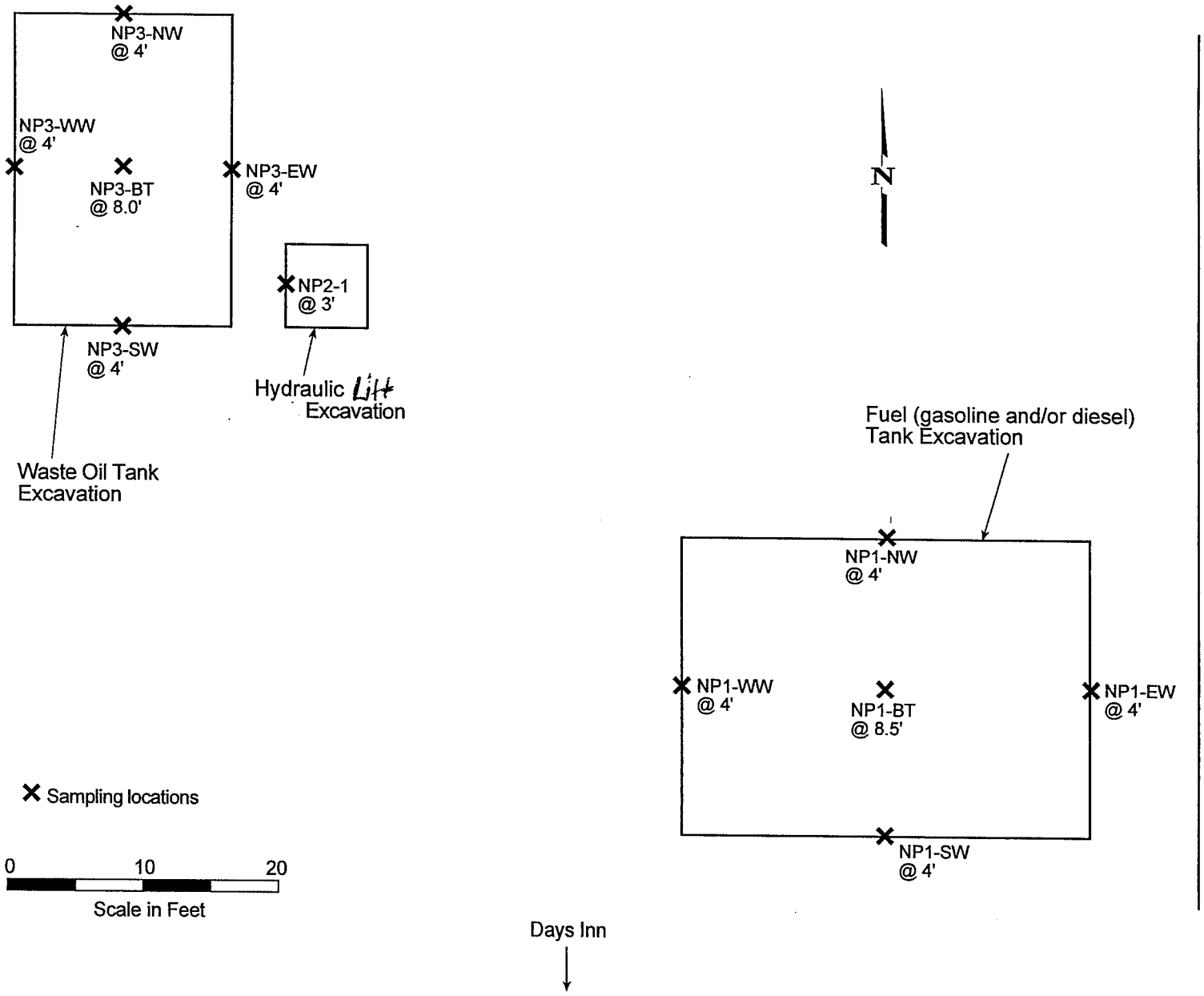


Figure 1. Excavation of former tank locations, 8161 Old Redwood Highway, Novato.

CHROMALAB, INC.

Environmental Services (SDB)

January 23, 1996 *Submission #:* 9601095

P.G.& E. LAB **REISSUED REPORT FROM JAN.19,1996**

Atten: Bryan Nicholson

Project: NOVATO PROPERTY
Received: January 12, 1996

re: 5 samples for Gasoline analysis.
Method: EPA 5030/8015M

Sampled: January 11, 1996 *Matrix:* SOIL
Run: 10119-1 *Analyzed:* January 17, 1996

Spl #	Sample ID	GASOLINE (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE RESULT (%)
116143	NP1-NW	N.D.	1.0	N.D.	92
116144	NP1-BT	N.D.	1.0	N.D.	92
116145	NP1-EW	N.D.	1.0	N.D.	92
116146	NP1-WW	N.D.	1.0	N.D.	92
116147	NP1-SW	N.D.	1.0	N.D.	92

June Zhao
Chemist

Marianne Alexander
Gas/BTEX Supervisor

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

January 23, 1996 *Submission #:* 9601095

P.G.& E. LAB **REISSUED REPORT FROM JAN.18,1996**

Atten: Bryan Nicholson

Project: NOVATO PROPERTY
Received: January 12, 1996

re: 5 samples for Diesel analysis.
Method: EPA 3550/8015M

Sampled: January 11, 1996 *Matrix:* SOIL *Extracted:* January 16, 1996
Run: 10116-K *Analyzed:* January 17, 1996

Spl #	Sample ID	DIESEL (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE RESULT (%)
116143	NP1-NW	N.D.	1.0	N.D.	80
116144	NP1-BT	N.D.	1.0	N.D.	80
116145	NP1-EW	N.D.	1.0	N.D.	80
116146	NP1-WW	N.D.	1.0	N.D.	80
116147	NP1-SW	N.D.	1.0	N.D.	80

Kayvan Kimyai
Chemist

Alex Tam
Semivolatiles Supervisor

CHROMALAB, INC.

Environmental Services (SDB)

January 23, 1996

Submission #: 9601095

P.G.& E. LAB

REISSUED REPORT FROM JAN.17,1996

Atten: Bryan Nicholson

Project: NOVATO PROPERTY
Received: January 12, 1996

re: 1 sample for Gasoline analysis.
Method: EPA 5030/8015M

Sampled: January 11, 1996 *Matrix:* WATER
Run: 10108-2 *Analyzed:* January 16, 1996

Spl #	Sample ID	GASOLINE (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE RESULT (%)
116154	NP1-WATER	N.D.	0.05	N.D.	94

Billy Thach
Chemist

Marianne Alexander
Gas/BTEX Supervisor

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

January 23, 1996 *Submission #:* 9601095

P.G.& E. LAB **REISSUED REPORT FROM JAN.18,1996**

Atten: Bryan Nicholson

Project: NOVATO PROPERTY
Received: January 12, 1996

re: 1 sample for Diesel analysis.
Method: EPA 3510/8015M

Sampled: January 11, 1996 *Matrix:* WATER *Extracted:* January 16, 1996
Run: 10114-K *Analyzed:* January 17, 1996

Spl #	Sample ID	DIESEL (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE RESULT (%)
116154	NP1-WATER	N.D.	50	N.D.	105

Kayvan Kimyai
Chemist

Alex Tam
Semivolatiles Supervisor

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

January 23, 1996

Submission #: 9601095

P.G.& E. LAB

REISSUED REPORT FROM JAN.18,1996

Atten: Bryan Nicholson

Project: NOVATO PROPERTY
Received: January 12, 1996

re: 5 samples for Motor oil analysis.
Method: EPA 3550/8015M

Sampled: January 11, 1996 *Matrix:* SOIL *Extracted:* January 16, 1996
Run: 10107-D *Analyzed:* January 17, 1996

Spl #	Sample ID	MOTOR OIL (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE RESULT (%)
116151	NP3-WW	N.D.	50	N.D.	97
116152	NP3-SW	N.D.	50	N.D.	97

Sampled: January 11, 1996 *Matrix:* SOIL *Extracted:* January 16, 1996
Run: 10116-K *Analyzed:* January 17, 1996

Spl #	Sample ID	MOTOR OIL (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE RESULT (%)
116148	NP3-NW	N.D.	50	N.D.	80
116149	NP3-BT	N.D.	50	N.D.	80
116150	NP3-EW	71	50	N.D.	80

Kayvan Kimyai
Chemist

Alex Tam
Semivolatiles Supervisor

Diesel is used for spike recoveries.

CHROMALAB, INC.

Environmental Services (SDB)

January 23, 1996 *Submission #:* 9601095

P.G.& E. LAB

REISSUED REPORT FROM JAN.15,1996

Atten: Bryan Nicholson

Project: NOVATO PROPERTY
Received: January 12, 1996

re: 5 samples for Total Recoverable Petroleum Hydrocarbons analysis.
Method: EPA 418.1

Sampled: January 11, 1996 *Matrix:* SOIL *Extracted:* January 15, 1996
Run: 10080-C *Analyzed:* January 15, 1996

Spl #	Sample ID	TRPH (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE RESULT (%)
116148	NP3-NW	11	10	N.D.	94
116149	NP3-BT	N.D.	10	N.D.	94
116150	NP3-EW	90	10	N.D.	94
116151	NP3-WW	39	10	N.D.	94
116152	NP3-SW	83	10	N.D.	94

Carolyn House
Extractions Supervisor

Chip Poalinelli
Operations Manager

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

January 23, 1996

Submission #: 9601095

REISSUED REPORT FROM JAN.18,1996

P.G.& E. LAB

Atten: Bryan Nicholson
Project: NOVATO PROPERTY
Received: January 12, 1996
re: One sample for 8015 MOD TEPH WITH OTHER HYDROCARBON-SOIL analysis.
Method: EPA 3550/8015M
SampleID: **NP2-1**
Sample #: 116153 *Matrix:* SOIL *Extracted:* January 16, 1996
Sampled: January 11, 1996 *Run:* 10116-K *Analyzed:* January 17, 1996

Analyte	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE RESULT (%)
DIESEL	N.D.	1.0	N.D.	80
OTHER HYDROCARBON	N.D.	1.0	N.D.	--
MOTOR OIL	N.D.	50	N.D.	--

Kayvan Kimyai
Chemist

Alex Tam
Semivolatiles Supervisor

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

STATE OF CALIFORNIA - CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
2101 WEBSTER STREET, Suite 500
OAKLAND, CA 94612
Tel: (510) 286-1255
FAX: (510) 286-1380
BBS: (510) 286-0404

RECEIVED
MAR 08 1996

Date: March 1, 1996

UST File No. 21-0306 (JMJ)

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 2
To Deborah Fudge	From John Jang
Co. PG&E	Co. RWQCB
Dept.	Phone # 510-286-0554
Fax # 707-577-7181	Fax #

Ms. Debora L. Fudge
PG & E Company
111 Stony Circle
Santa Rosa, CA 95401-9599

Dear Ms. Fudge:

SUBJECT: Denial of Closure Request for PG & E Property, 8161 Old Redwood Highway, Novato, Marin County

Regional Board staff have reviewed your site closure request, dated February 5, 1996. Your closure report indicate that the underground fuel tanks, the waste oil tank (WOT), and a hydraulic lift have been removed from this site. Soil and groundwater samples from the former fuel tank location indicate non-detectable concentrations of TPH-g and TPH-d. A soil sample from the former hydraulic lift location indicate non-detectable concentrations of TPH-d, TPH-mo, and TPH-ho. The soil samples from the former WOT location indicate detectable concentrations of TPH-mo (up to 71 ppm) and TRPH (up to 90 ppm). We cannot approve your closure request because Table #2 from the "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites," (enclosed) recommends that the soil and/or groundwater at a WOT site as a minimum be analyzed for TPH-g, TPH-d, BTEX, oil and grease, chlorinated hydrocarbons, cadmium, chromium, lead, zinc, nickel, and EPA Method 8270 constituents. Most of these chemical parameters were not analyzed for.

Leaks from underground storage tanks must be reported using an "Underground Storage Tank Unauthorized Release (Leak)/Contamination Site Report" form. We have no record that you filed this form with us in regards to the WOT leakage. If this form has already been filed with us or with the Marin County Office of Waste Management (MCOWM), please send us a copy. If this form has not been filed before, please file a completed form with MCOWM and us, and explain why this form was not filed earlier.

In order for Board staff to consider closure for this site, you must provide the additional information requested above. If you have questions regarding this letter, please call John Jang of my staff at (510) 286-0554.

Sincerely,

Loretta Barsamian
Executive Officer

Steve Morse
Chief, Toxics Cleanup Division

Enclosure

cc: Mr. Timothy Underwood, Marin Co. Office of Waste Management

Pacific Gas and Electric Company

111 Stony Circle
Santa Rosa, CA 95401-9599

March 5, 1996

RECEIVED
MAR 0 8 1996

Mr. John Jang
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, CA 94612

RE: PG&E Property at 8161 Old Redwood Highway, Novato--
Underground Storage Tank Unauthorized Release/Report
Form

Dear Mr. Jang:

As you requested to me on March 1, 1996, please find enclosed a copy of the Underground Storage Tank Unauthorized Release (Leak)/Contamination Site Report form. This form was submitted to the Marin County Office of Waste Management on January 10, 1996, per the distribution instructions on the back of the form.

We will follow up with you later this month regarding the additional testing your agency is requiring for the waste oil pit portion of this site.

Sincerely,

Debora Fudge

Debora L. Fudge
Sr. Environmental Consultant

Enclosure

cc: Tim Underwood, Marin County
Nancy Brose
Armando Rodriguez

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY ☐ YES ☒ NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED ? ☐ YES ☒ NO

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I HAVE DISTRIBUTED THIS INFORMATION ACCORDING TO THE DISTRIBUTION SHOWN ON THE INSTRUCTION SHEET ON THE BACK PAGE OF THIS FORM.
SIGNED ____ DATE ____

REPORT DATE: 01/09/96 (M/D/Y) | CASE #:

REPORTED BY

NAME OF INDIVIDUAL FILING REPORT: Debora Fudge | PHONE: (707) 577-7234 | SIGNATURE:

REPRESENTING ☒ OWNER/OPERATOR ☐ REGIONAL BOARD ☐ LOCAL AGENCY ☐ OTHER ____

COMPANY OR AGENCY NAME: Pacific Gas & Electric Company

ADDRESS: 111 Stony Circle, Santa Rosa, CA 95401 (STREET / CITY / STATE / ZIP)

RESPONSIBLE PARTY

NAME: Pacific Gas & Electric and ☒ UNKNOWN | CONTACT PERSON: Debora Fudge | PHONE: (707) 577-7234

ADDRESS: 111 Stony Circle, Santa Rosa, CA 95401 (STREET / CITY / STATE / ZIP)

SITE LOCATION

FACILITY NAME (IF APPLICABLE): Pacific Gas & Electric Novato Site | OPERATOR: N/A | PHONE: (707) 577-7234

ADDRESS: 8161 Old Redwood Highway, Novato, Marin County, CA 94947 (STREET / CITY / COUNTY / ZIP)

CROSS STREET: San Marin Drive

IMPLEMENTING AGENCIES

LOCAL AGENCY: Marin County | AGENCY NAME | CONTACT PERSON: Tim Underwood/Barbara Zett | PHONE: (415) 499-6647

REGIONAL BOARD: San Francisco Bay RCO QCB | CONTACT PERSON: John Jang | PHONE: (510) 286-1255

SUBSTANCES INVOLVED

(1) NAME: Waste Oil | QUANTITY LOST (GALLONS): ____ ☒ UNKNOWN

(2) ____ ☐ UNKNOWN

DISCOVERY/ABATEMENT

DATE DISCOVERED: 01/09/95 (M/D/Y) | HOW DISCOVERED: ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☐ TANK REMOVAL ☒ OTHER tank removal-but tank not present

DATE DISCHARGE BEGAN: ____ (M/D/Y) ☒ UNKNOWN

HAS DISCHARGE BEEN STOPPED ? ☐ YES ☐ NO IF YES, DATE ____ (M/D/Y)

METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY)
☐ REMOVE CONTENTS ☐ CLOSE TANK & REMOVE ☐ REPAIR PIPING ☐ REPAIR TANK ☐ CLOSE TANK & FILL IN PLACE ☐ CHANGE PROCEDURE ☐ REPLACE TANK ☒ OTHER tank was removed in early 1970's

SOURCE/CAUSE

SOURCE OF DISCHARGE: ☐ TANK LEAK ☒ UNKNOWN ☐ PIPING LEAK ☐ OTHER

CAUSE(S): ☐ OVERFILL ☐ RUPTURE/FAILURE ☐ SPILL ☐ CORROSION ☒ UNKNOWN ☐ OTHER ____

CASE TYPE

CHECK ONE ONLY
☒ UNDETERMINED ☐ SOIL ONLY ☐ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS

CHECK ONE ONLY
☐ NO ACTION TAKEN ☐ PRELIMINARY SITE ASSESSMENT WORKPLAN SUBMITTED ☐ POLLUTION CHARACTERIZATION
☐ LEAK BEING CONFIRMED ☐ PRELIMINARY SITE ASSESSMENT UNDERWAY ☐ POST CLEANUP MONITORING IN PROGRESS
☐ REMEDIATION PLAN ☐ CASE CLOSED (CLEANUP COMPLETED OR UNNECESSARY) ☒ CLEANUP UNDERWAY

REMEDIAL ACTION

CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS)
☒ EXCAVATE & DISPOSE (ED) ☐ REMOVE FREE PRODUCT (FP) ☐ ENHANCED BIO DEGRADATION (IT)
☐ CAP SITE (CD) ☐ EXCAVATE & TREAT (ET) ☐ PUMP & TREAT GROUNDWATER (GT) ☐ REPLACE SUPPLY (RS)
☐ CONTAINMENT BARRIER (CB) ☐ NO ACTION REQUIRED (NA) ☐ TREATMENT AT HOOKUP (HU) ☐ VENT SOIL (VS)
☐ VACUUM EXTRACT (VE) ☐ OTHER (OT) ____

COMMENTS

This site was formerly a gas station. PG&E bought the site in the early 1970's and never operated it. It was believed tanks were still at site. On 1-9-96, PG&E hired a contractor to remove tanks but none were found. Waste oil contamination was found where former waste oil tank had been located.

HSC 05 (8/90)

STATE OF CALIFORNIA - CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION
2101 WEBSTER STREET, Suite 500
OAKLAND, CA 94612
Tel: (510) 286-1255
FAX: (510) 286-1380
BBS: (510) 286-0404

DATE: April 12, 1996

UST File No. 21-0306 (JMJ)
2158.12

Ms. Debora Fudge
PG and E Company
111 Stony Circle
Santa Rosa, CA 95401-9599

Dear Ms. Fudge:

SUBJECT: Underground Storage Tank (UST) Case Closure for PG and E Property, 8161 Old Redwood Highway, Novato, Marin County, UST Case No. 21-0306

This letter confirms the completion of site investigation and remedial action for the underground storage tanks formerly located at the above described location. Enclosed is the Closure Summary for the referenced site for your records.

Based upon the available information, including the current land use, and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground storage tank release is required. If a change in land use is proposed, the owner must promptly notify this agency.

This notice is issued pursuant to a regulation contained in Title 23, California Code of Regulations, Division 3, Chapter 16, Section 2721(e).

Please contact John Jang at (510) 286-0554 if you have any questions regarding this matter.

Sincerely,

Loretta Barsamian
Executive Officer

Steve Morse
Chief, Toxics Cleanup Division

Enclosure
cc w/ enclosure:
Tim Underwood, Marin Co. Office of Waste Management

SITE CLOSURE SUMMARY

I. AGENCY INFORMATION

Date: April 10, 1996

Agency Name: S.F.B.R.W.Q.C.B.	Address: 2101 Webster Street
City/State/Zip: Oakland, CA 94612	Phone: (510) 286-1255
Responsible Staff Person: John M. Jang	Title: Associate WRCE

II. SITE INFORMATION

Site Facility Name: PG and E Property		
Site Facility Address: 8161 Old Redwood Highway, Novato, Marin County		
RB LUSTIS Case No.: 21-0306	Local or LOP Case No.:	Priority: 1C3
URF Filing Date: 1/10/96	SWEEPS No.:	

Responsible Parties (include addresses and phone numbers)

PG&E Company
111 Stony Circle
Santa Rosa, CA 95401-9599
Debora Fudge, 707-577-7234

Tank No.	Size in Gallons	Contents	Closed In Place/Removed?	Date
Up to 4	tanks were removed (date Unknown). Information			
on	tank removal not available.			

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: Unknown		
Site characterization complete? (Yes) No	Date Approved By Oversight Agency: this closure letter	
Monitoring wells installed? Yes (No)	Number:	Proper screened interval? Yes No
Highest GW Depth Below Ground Surface:	Lowest Depth:	Flow Direction:
Most Sensitive Current Use: None known		
Most Sensitive Potential Use and Probability of Use: None known		
Are drinking water wells affected? Yes (No)	Aquifer Name:	
Is surface water affected? Yes (No)	Nearest/Affected SW Name:	
Off-Site Beneficial Use Impacts (Addresses/Locations): None known		
Report(s) on file? (Yes) No	Where is report(s) filed? RWQCB's office	

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	up to 4 tanks	disposal location not available	
Piping			
Free Product			
Soil	308 yd^3		
Groundwater			
Barrels			

MAXIMUM DOCUMENTED POLLUTANT CONCENTRATIONS BEFORE AND AFTER CLEANUP

POLLUTANT	Soil (ppm)		Water (ppm)		POLLUTANT	Soil (ppm)		Water (ppm)	
	Before	After	Before	After		Before	After	Before	After
TPH (Gas)		ND		ND	Xylene		ND		
TPH (Diesel)		ND		ND	Ethylbenzene		ND		
Benzene		ND			~~Oil & Grease~~ TRPH		90		
Toluene		ND			Heavy Metals	within background concentrations			
~~Other~~ TPH-water oil		71			~~Other~~ 8010 & 8270		ND		

Comments (Depth of Remediation, etc.): TPH - hydraulic oil is also ND.

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? (Yes) No

Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? (Yes) No

Does corrective action protect public health for current land use? (Yes) No

Site Management Requirements: None required -

Monitoring Wells Decommissioned: Yes No	Number Decommissioned:	Number Retained:

List Enforcement Actions Taken: None

List Enforcement Actions Rescinded:

V. TECHNICAL REPORTS, CORRESPONDENCE ETC., THAT THIS CLOSURE RECOMMENDATION WAS BASED UPON

Title:	Date:
(1) Request for UST Case Closure package (by PG&E)	2/5/96
(2) Supplemental Analytical Results & Closure Request (PG&E)	3/26/96

VI. ADDITIONAL COMMENTS, DATA, ETC.

PLEASE INCLUDE/ATTACH THE FOLLOWING AS APPROPRIATE:

1) SITE MAP INDICATING TANK PIT LOCATION, MONITORING WELL LOCATION, GROUNDWATER GRADIENT, ETC.; AND,

2) SITE COMMENTS WORTHY OF NOTICE (E.G., AREA OF RESIDUAL POLLUTION LEFT IN PLACE, DEED NOTICES ETC.)

Property purchased by PG&E in 1973. PG&E never used the property & leased it to Mike's Auto Repair & Body Shop. Prior to 1973, a service station was located on the property. When PG&E took possession of the property from Mike's Auto in 1995, it demolished the building and fuel dispenser islands. Four vent pipes were observed and on 1/9/96, PG&E followed the vent lines and discovered that all USTs and product piping had already been excavated and removed. The previous excavations backfilled with concrete, sand, bricks, and asphalt. The backfill materials were excavated and some native soil were scraped from the sidewalls and bottom and disposed of off-site. Soil samples from the three excavations indicated low or ND concentrations (see attached Figure 1 and Table 1). One GW sample from excavation NP-1 was also ND for TPH-g & TPH-d. No water was encountered in excavations NP-2 and NP-3. On 3/13/96, a soil sample was collected from the center of the waste oil tank excavation at 8 feet below grade. TPH-g, TPH-d, BTEX, oil & grease, chlorinated hydrocarbons and the semivolatile organics (EPA Method 8270) were all below detection limits. Chromium, lead, zinc, and nickel were detected at background concentrations.

This document and the related CASE CLOSURE LETTER, shall be retained by the lead agency as part of the official site file.

960112/Novato1/PC18

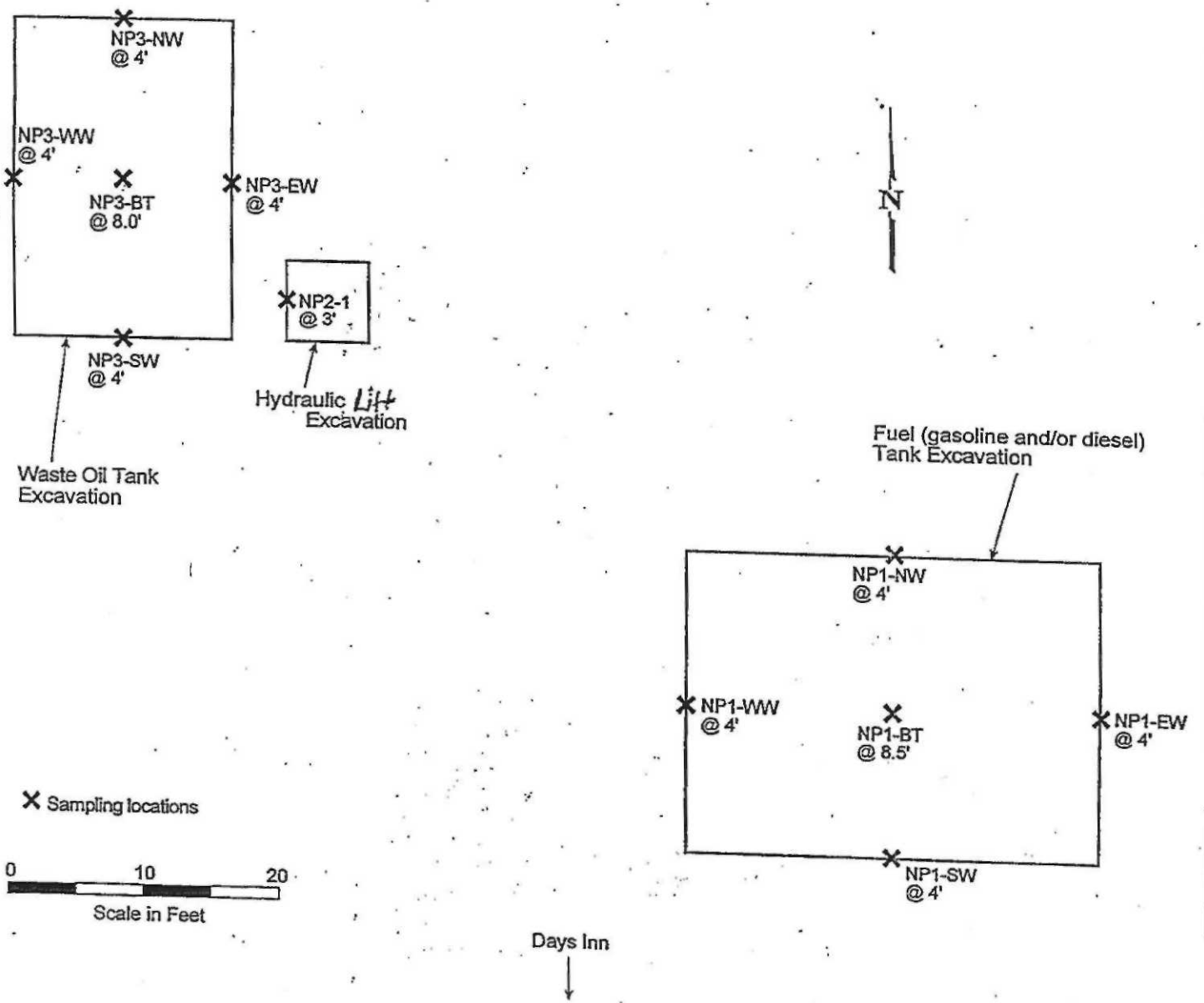


Figure 1. Excavation of former tank locations, 8161 Old Redwood Highway, Novato.

TABLE 1
Analytical Results for Soil and Water Samples
Collected from Excavations NP-1, NP-2 and NP-3
on January 11, 1996

Sample Number	Sample Location	Sample Matrix	TPH-g ppm	TPH-d ppm	TPH-mo ppm	TPH-ho ppm	TRPH ppm
NP1-NW	north wall of NP-1 @ 4'	soil	nd<1	nd<1	na	na	na
NP1-EW	east wall of NP-1 @ 4'	soil	nd<1	nd<1	na	na	na
NP1-SW	south wall of NP-1 @ 4'	soil	nd<1	nd<1	na	na	na
NP1-WW	west wall of NP-1 @ 4'	soil	nd<1	nd<1	na	na	na
NP1-BT	center of NP-1 @ 8.5'	soil	nd<1	nd<1	na	na	na
NP1-water	bottom of NP-1 @ 8.5'	water	nd<0.05	nd<0.05	na	na	na
NP2-1	west wall of NP-2 @ 3'	soil	na	nd<1	nd<50	nd<1	na
NP3-NW	north wall of NP-3 @ 4'	soil	na	na	nd<50	na	11
NP3-EW	east wall of NP-3 @ 4'	soil	na	na	71	na	90
NP3-SW	south wall of NP-3 @ 4'	soil	na	na	nd<50	na	83
NP3-WW	west wall of NP-3 @ 4'	soil	na	na	nd<50	na	39
NP3-BT	center of NP-3 @ 8'	soil	na	na	nd<50	na	nd<10

Notes:
1) NP-1 = Fuel (gasoline and/or diesel) tank excavation
2) NP-2 = Hydraulic oil tank excavation
3) NP-3 = Waste oil tank excavation
4) TPH-g = total petroleum hydrocarbons as gasoline (EPA method 5030/8015)
5) TPH-d = total petroleum hydrocarbons as diesel (EPA method 3550/8015M)
6) TPH-mo = total petroleum hydrocarbons as motor oil (EPA method 3550/8015M)
7) TPH-ho = total petroleum hydrocarbons as hydraulic oil (EPA method 3550/8015M)
8) TRPH = total recoverable petroleum hydrocarbons (EPA method 418.1)
9) na = not analyzed
10) nd = not detected at or above stated detection limit
11) ppm = parts per million (mg/kg or mg/L)

Phase I Environmental Site Assessment
PG&E Novato Property

8161 Redwood Boulevard
Novato, California 94945
PN: 185702091



July 28, 2009

Limitations and Certifications

The conclusions and recommendations contained in this report/assessment are based upon professional opinions with regard to the subject matter. These opinions were prepared in accordance with generally accepted environmental consulting and engineering standards and practices applicable to this location and existing at this time. The use of this report is subject to the following limitations:

1. The data and findings presented in this report are valid as of the dates when the investigations were performed. The passage of time, manifestation of latent conditions or occurrence of future events may require further exploration at the Site, analysis of the data, and reevaluation of the findings, observations, and conclusions expressed in the report.
2. The data reported and the findings, observations, and conclusions expressed in the report are limited by the Scope of Work, budgetary constraints, site access and schedule, as defined in the contract with Stantec
3. This report is based, in part, on unverified information supplied to Stantec by third party sources, such as regulatory agencies, prior owners or operators of the property, analytical laboratories, subcontractors, etc. While efforts may have been made to substantiate this third party information, Stantec cannot guarantee the completeness or accuracy of this information.
4. The findings, observations, and conclusions expressed by Stantec in this report are not, and should not be, considered an opinion concerning the compliance of any past or present owner or operator of the Site with any federal, state or local law or regulation.
5. No warranty or guarantee, whether expressed or implied, is made with respect to the data or the reported findings, observations, and conclusions, which are based solely upon Site conditions in existence at the time of investigation.
6. Stantec reports present professional opinions and findings of a scientific and technical nature. While attempts were made to relate the data and findings to applicable environmental laws and regulations, the report shall not be construed to offer a legal opinion or representations as to the requirements of, nor compliance with, environmental laws, rules, regulations or policies of federal, state or local governmental agencies. Issues raised by the report should be reviewed by appropriate legal counsel.

7. This report is intended for the use of Stantec's client and the appropriate regulatory agency only; any other use must be approved by Stantec and the client in writing. If any such unauthorized use occurs, it shall be at the user's sole risk without liability to Stantec.

Prepared by:

Anna Radonich
Project Scientist

Information, conclusions, and recommendations provided by Stantec in this document have been prepared under the supervision of and reviewed by the licensed professional whose signature appears below.

Reviewed by:

Greg D. Hoehn
Principal Geologist

Executive Summary

Stantec Consulting Corporation (Stantec) is pleased to present this Phase I Environmental Site Assessment (Phase I ESA) report in connection with the potential sale of the PG&E property located at 8161 Redwood Boulevard in Novato, California. Presented below is an overview of the project, including a summary of our significant findings:

Property Name ("subject property"):	PG&E Novato Property
Subject Property Address (or Other Physical Location Description):	8161 Redwood Boulevard Novato, California 94945 Assessor's Parcel Number (APN): 125-180-49
Subject Property and Area Description:	The subject property is located at 8161 Redwood Boulevard in Novato, California. The property is defined by Redwood Boulevard, wire fencing, and storm-water drainage ways. Landmarks identifying portions of the northern, western, and southern property boundaries per the parcel map and aerial photography were not visible during the site reconnaissance and those boundaries were not confidently defined by Stantec. The subject property is situated on an approximate 14-acre parcel of land identified by the Marin County Assessor's Office as APN 125-180-49. The eastern portion of the subject property adjacent to Redwood Boulevard is relatively flat while the western portion of the subject property slopes up a hillside. The subject property is located within an area primarily characterized by open space to the west, highway to the east, lodging to the south, and a combination of open space and office complex to the north. Highway 101 runs parallel to Redwood Boulevard approximately 100 feet to the east of the subject property.
Observed Current Subject Property Use/Operations:	The subject property is currently vacant and unutilized with no on-site structures.

Year	**Summary of Subject Property History**
Prior to 1952	Unknown.
1952 to 1965	A portion of the subject property (vicinity of former gas station/car repair facility) appears developed.
1965 to 1973	A vehicle service station was located on the subject property and the remainder of the site was undeveloped.
1973	PG&E purchased the subject property for potential use as a service center; however, PG&E never used the subject property and leased it to Mike's Auto

	Repair and Body Shop (Mike's Auto) since its purchase.
1973 to 1995	Mike's Auto performed vehicle repairs at the service station.
1995	PG&E took possession of the subject property from Mike's Auto and demolished the site.
1996 to Present	Subject property vacant and unutilized with no on-site structures.

CONCLUSIONS

This assessment has revealed no evidence of recognized environmental conditions (RECs) in connection with the subject property.

The following historic recognized environmental condition (HREC) is noted for the Property:

- On February 5, 1996, PG&E submitted a document entitled, *"Request for UST Case Closure of PG&E Property, 8161 Old Redwood Highway, Novato,"* to the California Regional Water Quality Control Board – San Francisco Region (Water Board) requesting closure of the four underground storage tanks (USTs) formerly located at the Novato Property. The following information is taken from that report:

  > On January 9, 1996, PG&E made an attempt to excavate two suspected UST locations and found that the tanks and product piping had already been removed (prior to 1973). The tank areas were re-excavated and samples were collected. Results for the single water sample collected from the bottom of the fuel tank excavation were non-detect for all analytes. Results of soil samples collected from the suspected fuel tank location were all non-detect for total petroleum hydrocarbons as gasoline (TPHg) and diesel (TPHd). Results of soil samples collected from the waste oil tank excavation ranged from non-detect to 90 parts per million (ppm) as total recoverable hydrocarbons, and from non-detect to 71 ppm as TPHd.

  The Water Board granted case closure for the Novato Property in the document entitled, *"Underground Storage Tank (UST) Case Closure for PG and E Property, 8161 Old Redwood Highway, Novato, Marin County, UST Case No. 21-0306,"* dated April 12, 1996.

The following items are noted for the Property:

- An underground gas pipeline crosses under the western-central portion of the subject property in a generally north-south direction where the subject property begins to slope uphill. The pipeline is denoted by pole-mounted placards.

- Portions of a partially exposed deteriorated pipe, approximately 2-to-3 inches in diameter, were observed in the central eastern portion of the subject property in the approximate vicinity of the former gas station/car repair facility location. It is unknown if the pipe is associated with the former business or if the pipe is trash discarded from adjacent Redwood Boulevard, as other pieces of discarded car parts (wheels, mufflers, etc.) were observed in various areas of the flat portion of the property.

Table of Contents

1.0 INTRODUCTION 1-1
1.1 SUBJECT PROPERTY NAME AND LOCATION 1-1
1.2 CONTACT INFORMATION 1-1
1.3 OBJECTIVE 1-1
1.4 SCOPE OF WORK, SIGNIFICANT ASSUMPTIONS, TERMS AND CONDITIONS 1-2
1.5 RELIANCE 1-2

2.0 USER PROVIDED INFORMATION 2-1
2.1 SPECIALIZED KNOWLEDGE OR EXPERIENCE 2-2
2.2 RELATIONSHIP OF PURCHASE PRICE TO VALUE OF PROPERTY 2-2
2.3 USER-PROVIDED DOCUMENTS 2-2

3.0 SUBJECT PROPERTY AND AREA RECONNAISSANCE 3-1
3.1 SITE RECONNAISSANCE METHODOLOGY 3-1
3.2 GENERAL DESCRIPTION 3-1
3.3 HAZARDOUS SUBSTANCES AND PETROLEUM PRODUCTS 3-2
3.4 INTERIOR OBSERVATIONS 3-3
3.5 EXTERIOR OBSERVATIONS 3-3
3.6 UNDERGROUND STORAGE TANKS/STRUCTURES 3-4
3.7 ABOVEGROUND STORAGE TANKS 3-4
3.8 ADJOINING PROPERTIES 3-5
3.8.1 Current Uses of Adjoining Properties 3-5
3.8.2 Observed Evidence of Past Uses of Adjoining Properties 3-5
3.8.3 Pits, Ponds or Lagoons on Adjoining Properties 3-5
3.9 OBSERVED PHYSICAL SETTING 3-5
3.10 SUMMARY OF FINDINGS FROM SITE RECONNAISSANCE 3-6

4.0 PHYSICAL SETTING 4-1

5.0 ENVIRONMENTAL RECORDS REVIEW 5-1
5.1 FEDERAL, STATE AND TRIBAL ENVIRONMENTAL RECORDS 5-1
5.1.1 Listings for Subject Property 5-2
5.1.2 Listings for Nearby Sites with Potential to Impact Subject Property 5-2
5.2 LOCAL/REGIONAL ENVIRONMENTAL RECORDS 5-2
5.3 RECORDS OF ACTIVITY AND USE LIMITATIONS FOR SUBJECT PROPERTY 5-2
5.4 SUMMARY OF FINDINGS FROM ENVIRONMENTAL RECORDS REVIEW 5-2

Table of Contents - continued

6.0 HISTORICAL RECORDS REVIEW 6-1
6.1 LAND TITLE RECORDS/DEEDS 6-1
6.2 AERIAL PHOTOGRAPHS 6-1
6.3 CITY DIRECTORIES 6-2
6.4 HISTORICAL FIRE INSURANCE MAPS 6-2
6.5 PLANNING/ZONING RECORDS 6-2
6.6 BUILDING PERMIT RECORDS 6-2
6.7 HISTORICAL TOPOGRAPHIC MAPS 6-2
6.8 OTHER HISTORICAL SOURCES 6-3
6.9 SUMMARY OF FINDINGS FROM HISTORICAL RECORDS REVIEW 6-3

7.0 ENVIRONMENTAL CLEANUP LIENS 7-1

8.0 INTERVIEWS 8-1
8.1 FINDINGS FROM INTERVIEW WITH CURRENT PROPERTY OWNER 8-1
8.2 FINDINGS FROM INTERVIEW WITH KEY SITE MANAGER 8-1
8.3 FINDINGS FROM INTERVIEWS WITH MAJOR OCCUPANTS 8-2
8.4 FINDINGS FROM INTERVIEWS WITH OTHERS 8-2
8.5 SUMMARY OF FINDINGS FROM INTERVIEWS 8-2

9.0 SUMMARY OF HISTORICAL SUBJECT PROPERTY AND ADJOINING USE 9-1
9.1 SUBJECT PROPERTY USE 9-1
9.2 SURROUNDING PROPERTY USE 9-1

10.0DATA GAPS 10-1

11.0OPINION AND CONCLUSIONS 11-1

12.0DECLARATIONS OF ENVIRONMENTAL PROFESSIONAL 12-1

List of Attachments

LIST OF APPENDICES

Appendix A	Figures
Appendix B	Photographs
Appendix C	User's Questionnaire
Appendix D	Environmental Regulatory Agency Database Report and Historical Documentation
Appendix E	Database Assessment Criteria
Appendix F	Environmental Cleanup Lien Search Report

1.0 Introduction

1.1 SUBJECT PROPERTY NAME AND LOCATION

Subject Property Name:	Pacific Gas and Electric Company (PG&E) Novato Property
Street Address (or Other Physical Subject Property Location Description):	8161 Redwood Boulevard Novato, California 94945 Assessor's Parcel Number (APN): 125-180-49

Figure 1 in Appendix A presents a map showing the location of the subject property and the general vicinity within an approximately 1-mile radius.

1.2 CONTACT INFORMATION

Client ("User"):	Pacific Gas and Electric Company
Subject Property Owner ("Owner"):	Pacific Gas and Electric Company
"Key Site Manager":	Ms. Pamalet Mackey, PG&E Senior Environmental Field Specialist, (707) 483-9977 Ms. Brenda San Julian, PG&E Land Agent, (707) 577-7267 Ms. Anne Conner, PG&E Senior Remediation Project Manager, (925) 415-6381
Date Project Authorized:	June 10, 2009

1.3 OBJECTIVE

This Phase I Environmental Site Assessment (Phase I ESA) has been completed in accordance with the practices identified in the ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM Designation E 1527-05. Title 40 of the Code of Federal Regulations, Part 312 specifies standards and practices for "all appropriate inquiries" required to obtain protection from liability under the federal Comprehensive Environmental Response, Cleanup and Liability Act (CERCLA). 40 CFR 312.11(a) identifies a Phase I ESA completed in accordance with the E1527-05 practice as one way to achieve compliance with requirements of the "All Appropriate Inquiries" rule.

The objective of this Phase I ESA was, to the extent feasible pursuant to the process outlined in E1527-05 and the approved scope of work for this project, to identify Recognized Environmental Conditions (RECs) or Historic Recognized Environmental Conditions (HRECs). As defined in E1527-05, a REC is:

"...the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include de minimus conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate government agencies. Conditions determined to be de minimus are not RECs."

1.4 SCOPE OF WORK, SIGNIFICANT ASSUMPTIONS, TERMS AND CONDITIONS

The scope of work, significant assumptions, and terms and conditions applicable to this Phase I ESA are identified in the following documents:
Stantec's Proposal dated May 28, 2009.
ASTM Designation E 1527-05
Statement of Limitations presented in the Limitations and Certification section of this report.

1.5 RELIANCE

This report was prepared for the exclusive use of the following:
PG&E

No other entity may rely on the information presented in the report without the expressed written consent of Stantec. Any use of this Phase I ESA report constitutes acceptance of the terms and conditions under which it was prepared. Stantec's liability extends only to its client and not to any other parties who may obtain the Phase I ESA report.

2.0 User Provided Information

Prior to initiating the site reconnaissance, Stantec requested information relevant to performance of this Phase I ESA with a written questionnaire submitted to the User. A copy of the questionnaire completed by Ms. Brenda San Julian, PG&E Land Agent, is provided in Appendix C. Portions of Ms. San Julian's completed questionnaire are incomplete, resulting in a data gap included in Section 10.0 of this report. The significant information provided by Ms. San Julian is summarized below.

Information on Environmental Cleanup Liens on the Subject Property:	Ms. San Julian stated that she is not aware of any environmental cleanup liens against the property.
Information on Subject Property Activity or Use Limitations (including Institutional and Engineering Controls):	Ms. San Julian stated that she is not aware of any activity and use limitations imposed upon the subject property.
Commonly Known or Reasonably Ascertainable Information About Subject Property:	
1) Past Uses	Ms. San Julian stated that the past use of the subject property was as a gas station/car repair business on a portion of the property.
2) Current or former presence of chemicals, hazardous substances, or petroleum products	Ms. San Julian stated that she has knowledge of the former presence of chemicals, hazardous substances, or petroleum products at the subject property that she identified as substances typical for gas station/car repair business use.
3) Spills or releases of chemicals, hazardous substances or petroleum products	Ms. San Julian stated that she has no knowledge of any spills or release of chemicals, hazardous substances, or petroleum products on the subject property.
4) Environmental cleanups	Ms. San Julian stated that she is aware of an environmental cleanup that was conducted at the subject property. She describes this cleanup being associated with the removal of the fuel tanks at the gas station/car repair business, but that she is not familiar with the details.
5) Obvious indicators of contamination	Ms. San Julian stated that she was not aware of any obvious indicators that point to the presence or likely presence of contamination at the subject property.
Reason Why the User Wants to Have the Phase I ESA Performed:	To acquire pertinent site data prior to the potential sale of the subject property. As a component of the innocent landowner defense to CERCLA liability provided in 42 USC § 9601 (35) and §9607 (b) (3).

2.1 SPECIALIZED KNOWLEDGE OR EXPERIENCE

The Federal AAI rule (40CFR 312.28) and ASTM E1527-05 require that all appropriate inquiry must take into account relevant and applicable specialized knowledge and experience on the part of the User regarding the subject property, the area surrounding the subject property, the conditions of adjoining properties, and any other experience relevant to identifying RECs on the subject property.

Stantec submitted a written questionnaire to the User (identified in Section 1.2) inquiring whether the User had any specialized knowledge or experience relative to this inquiry. Ms. San Julian of PG&E responded that specialized knowledge or experience related to the subject property or nearby properties is not applicable to her.

2.2 RELATIONSHIP OF PURCHASE PRICE TO VALUE OF PROPERTY

The federal AAI rule (40 CFR 312.29) and ASTM E1527-05 require that all appropriate inquiry must take into account the relationship of the purchase price to the fair market value of the property if it was not contaminated. The rule states that this portion of the inquiry may be the responsibility of the User, and the User has the option of sharing or not sharing this information with the Environmental Professional performing the Phase I ESA.

Stantec has not performed an independent evaluation of the purchase price of the property and its relationship to fair market value. Stantec submitted a written questionnaire to the User (identified in Section 1.2) inquiring about the User's knowledge regarding the relationship of the purchase price to the fair market value of the property if it were not contaminated. Ms. San Julian of PG&E responded that the User is not involved in a purchase or sale of the subject property and that the inquiry is not applicable; however, Stantec understands that PG&E may potentially sell the property.

2.3 USER-PROVIDED DOCUMENTS

The User was not aware of any previous environmental site assessment reports, other environmental reports, documents, correspondence, etc., concerning the subject property and its environmental condition and did not provide any documents to Stantec for review. However, Property Owner Representative, Ms. Anne Conner of PG&E, provided Stantec with copies of previous environmental site assessment reports concerning the subject property.

Upon review of the PG&E-provided reports, no RECs and one HREC was identified in connection to the subject property. The following HREC information is summarized from PG&E's report entitled, *"Request for UST Case Closure of PG&E Property, 8161 Old Redwood Highway, Novato,"* dated February 5, 1996:

> On January 9, 1996, PG&E directed All Waste, Inc. to excavate four USTs and associated piping from the subject property. During the excavation process, PG&E discovered that the previous excavations (one the suspected former site of three fuel

tanks, and one the suspected site of a waste oil tank) had been backfilled with concrete, sand, bricks, and asphalt. All Waste excavated the backfill material, and scraped native soil from the sidewalls and bottom of each excavation. A total of 11 soil samples and one groundwater sample were collected during excavation activities and samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg), as diesel (TPHd), as motor oil (TPHmo), and as hydraulic oil (TPHho), and for total recoverable petroleum hydrocarbons (TRPH). All soil sample results were non-detect at or above the reporting limit with the exception of samples collected in the waste oil tank excavation. In the waste oil tank excavation, TPH-mo was detected at 71 parts per million (ppm) and TRPH was detected at a range of 11 ppm to 90 ppm. Results of the analyses on the single groundwater sample collected from the fuel tank excavation were all non-detect.

The California Regional Water Quality Control Board – San Francisco Bay Region (Water Board) granted UST Case Closure status to the subject property on April 12, 1996, noting that "based upon the available information, including the current land use, and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground storage tank release is required."

3.0 Subject Property and Area Reconnaissance

The site reconnaissance was conducted by Ms. Anna Radonich on June 25, 2009.

3.1 SITE RECONNAISSANCE METHODOLOGY

Stantec utilized the following methodology to observe the subject property:
Traverse the outer site boundary. Landmarks and/or fencing denoting portions of the northern, western, and southern property boundaries of the subject property were not located during the site reconnaissance. Using parcel maps and aerial photographs of the subject property, Stantec visually inspected these approximate boundaries from the central, eastern, and southern portions of the site.
Traverse transects across the site.

3.2 GENERAL DESCRIPTION

Subject Property and Area Description:	The subject property is located at 8161 Redwood Boulevard in Novato, California. The property is defined by Redwood Boulevard, wire fencing, and storm-water drainage ways. Landmarks identifying portions of the northern, western, and southern property boundaries per the parcel map and aerial photography were not visible during the site reconnaissance. The subject property is situated on an approximate 14-acre parcel of land identified by the Marin County Assessor's Office as APN 125-180-49. The eastern portion of the subject property, adjacent to Redwood Boulevard, is relatively flat while the western portion of the subject property slopes up a hillside. The subject property is located within an area primarily characterized by open space to the west, highway to the east, lodging to the south, and a combination of open space and offices to the north. Highway 101 runs parallel to Redwood Boulevard approximately 100 feet to the east of the subject property.
Structures, Roads, Other Improvements:	The subject property is currently vacant and unutilized with no on-site structures.
Subject Property Size (acres):	Approximately 14 acres.
Estimated % of Subject Property Covered by Buildings and/or Pavement:	Zero percent.

Observed Current Subject Property Use/Operations:	The subject property was observed to be vacant and unutilized.
Observed Evidence of Past Subject Property Use(s):	Although a portion of the subject property was previously sued as a gas station/car repair facility, no evidence of past subject property use was observed during the site reconnaissance.
Sewage Disposal Method:	Not applicable.
Potable Water Source:	Not applicable.
Electric Utility:	Not applicable.

Figure 2 in Appendix A presents a site plan. Subject property photographs are provided in Appendix B.

3.3 HAZARDOUS SUBSTANCES AND PETROLEUM PRODUCTS

Stantec made the following visual and/or physical observations during the site reconnaissance and/or identified the following information about hazardous substances at the subject property during the interview or records review portions of the assessment:

Observation	Description
Hazardous Substances and Petroleum Products As Defined by CERCLA 42 U.S.C. § 9601(14):	None observed.
Drums (≥ 5 gallons):	None observed.
Strong, Pungent, or Noxious Odors:	None detected.
Pools of Liquid:	None observed.
Unidentified Substance Containers:	None observed.
PCB-Containing Equipment:	Electrical power transformers, hydraulic equipment, capacitors, and similar equipment may contain polychlorinated biphenyls (PCBs) in hydraulic or dielectric insulating fluids within the unit. The Federal Toxic Substances Control Act (TSCA) generally prohibited the domestic manufacture of PCBs after 1979; however, there is a potential for the dielectric fluid in electrical and hydraulic equipment manufactured prior to that date to contain PCBs. The subject property is currently vacant and no on-site structures, no pad-mounted transformers, and no overhead power lines are present on the subject property. There was no evidence of staining that would indicate a past release.
Other Observed Evidence of Hazardous Substances or Petroleum Products:	Portions of a partially exposed deteriorated pipe, approximately 2-to-3 inches in diameter, were observed in

Observation	Description
	the central eastern portion of the subject property in the approximate vicinity of the former gas station/car repair facility location. It is unknown if the pipe is associated with the former business or if the pipe is trash discarded from adjacent Redwood Boulevard, as other pieces of discarded car parts (wheels, mufflers, etc.) were observed in various areas of the flat portion of the property.

3.4 INTERIOR OBSERVATIONS

The subject property is currently vacant and unutilized with no structures located on the property.

3.5 EXTERIOR OBSERVATIONS

Stantec made the following observations during the site reconnaissance of exterior areas of the subject property and/or identified the following information during the interview or records review portions of the assessment:

Observation	Description
On-site Pits, Ponds, or Lagoons:	None observed.
Stained Soil or Pavement:	No surface staining was observed.
Stressed Vegetation:	None observed.
Waste Streams and Waste Collection Areas:	Evidence of solid waste was not observed on the subject property, with the exception of discarded car parts scattered throughout the flat portion of the property. No surface staining or evidence of releases of hazardous substances or petroleum products was observed near the discarded car parts.
Solid Waste Disposal:	No areas indicative of solid waste disposal were observed.
Potential Areas of Fill Placement:	No mounds, piles, or depressions suggesting the placement of fill material were observed on the subject property.
Wastewater:	Not applicable.
Storm water:	Storm water generated from precipitation appears to run down the hillside of the subject property to dirt and pipe drainage ditches located throughout the property. Storm water within the subject property is expected to be directed to the cement storm drain located in the northwest corner of the subject property adjacent to Redwood Boulevard. No potential off-site sources of contamination were

Observation	Description
	observed as likely to be flowing onto the subject property via storm water.
Wells:	No wells were observed.
Septic Systems:	No visible evidence of the existence of a septic system was observed.
Other Exterior Observations:	Evidence of weed control along the eastern property boundary was observed during the site reconnaissance. An approximate 30-foot wide border of cut down weeds was observed on the subject property along Redwood Boulevard and around the Days Inn Hotel.

3.6 UNDERGROUND STORAGE TANKS/STRUCTURES

Existing USTs:	No visible evidence (fill pipes, vent pipes, dispensers, surface patches), which would indicate the presence of USTs, was discovered during the site reconnaissance.
Former USTs:	No visible evidence (fill pipes, vent pipes, dispensers, surface patches) of the former presence of USTs was discovered during the site reconnaissance. However, portions of a partially exposed deteriorated pipe, approximately 2-to-3 inches in diameter, was observed in the central eastern portion of the subject property in the approximate vicinity of the former gas station/ car repair business location. It is unknown if the pipe is associated with the former business or if the pipe is trash discarded from adjacent Redwood Boulevard, as other pieces of discarded car parts (wheels, mufflers, etc.) were observed in various areas of the flat portion of the property.
Other Underground Structures:	An underground gas pipeline crosses under the western-central portion of the subject property in a generally north-south direction where the subject property begins to slope uphill. The pipeline is denoted by pole-mounted placards.

3.7 ABOVEGROUND STORAGE TANKS

Existing ASTs:	No ASTs were observed during the site reconnaissance.
Former ASTs:	No reports or other evidence of the former presence of ASTs was discovered during this Phase I ESA.

3.8 ADJOINING PROPERTIES

3.8.1 Current Uses of Adjoining Properties

As viewed from the subject property and/or from public rights-of-way, Stantec made the following observations about use and activities on adjoining properties:

North:	Open space followed by Birkenstock Distribution USA Office Building.
South:	Days Inn Hotel followed by Black John Road.
West:	Open Space.
East:	Redwood Boulevard followed by Highway 101.

3.8.2 Observed Evidence of Past Uses of Adjoining Properties

Observations of adjoining properties providing indications of past use and activities, if any, are described below.

North:	None observed.
South:	None observed.
West:	None observed.
East:	None observed.

3.8.3 Pits, Ponds or Lagoons on Adjoining Properties

As viewed from the subject property and/or from public rights-of-way, Stantec made the following observations about the presence of pits, ponds, and lagoons on adjoining properties:

North:	None observed.
South:	None observed.
West:	None observed.
East:	None observed.

3.9 OBSERVED PHYSICAL SETTING

Topography of the Subject Property and Surrounding Area:	The eastern portion of the subject property is relatively flat at approximately 11 feet above mean sea level (amsl) while the western portion slopes uphill to approximately 60 feet amsl. The subject property is located near the base of Burdell Mountain with a general topographic gradient to the east-northeast.

3.10 SUMMARY OF FINDINGS FROM SITE RECONNAISSANCE

Based on the observations and data described above, the reconnaissance of the subject property and surrounding area did not identify evidence of a REC or HREC.

The following items are noted for the Property:

- An underground gas pipeline crosses under the western-central portion of the subject property in a generally north-south direction where the subject property begins to slope uphill. The pipeline is denoted by pole-mounted placards.

- Portions of a partially exposed deteriorated pipe, approximately 2-to-3 inches in diameter, were observed in the central eastern portion of the subject property in the approximate vicinity of the former gas station/ car repair facility location. It is unknown if the pipe is associated with the former business or if the pipe is trash discarded from adjacent Redwood Boulevard, as other pieces of discarded car parts (wheels, mufflers, etc.) were observed in various areas of the flat portion of the property.

4.0 Physical Setting

Topography:	The United States Geological Survey (USGS) 7.5-minute topographic map entitled Petaluma River, Target Quadrangle (1973 revised from: 1954) was included in the historical topographic map report provided by EDR (Appendix D). The map was reviewed to identify physical features in the vicinity of the subject property. The subject property is depicted at an elevation of approximately 11 feet amsl.
	According to the Federal Emergency Management Agency (FEMA) information gathered by EDR, the subject property was not identified as being located within the limits of a 100-year flood zone. Stantec reviewed the PG&E *Novato Wetland Survey* report dated April 1996 as part of this Phase I ESA. Results of the survey indicated that "no jurisdictional wetlands were identifies on the site during surveys conducted on March 21, 1996."
Soil/Bedrock Data:	According to the United States Department of Agriculture (USDA), the soils in the vicinity of the subject property consist of Reyes and Yorkville. The typical profile for Reyes and Yorkville soils is Class D clay with very slow infiltration rates, soils are clayey, have high water table, or are shallow to an impervious lawyer. Reyes soils are somewhat poorly drained while Yorkville soils are moderately well drained.
Estimated Depth to Groundwater/ Estimated Direction of Gradient:	No past groundwater investigation has been identified for the subject property; thus, no site-specific groundwater information was available. PG&E's report entitled, *"Request for UST Case Closure of PG&E, 8161 Old Redwood Highway, Novato,"* dated February 5, 1996, notes that the subject property is located at the southwestern edge of the Petaluma Valley Groundwater Basin and that depth to groundwater in this basin ranges from 0 to 900 ft-bgs. The report further notes that groundwater beneath the subject property is likely shallow and follows the local topography, to the east-northeast.

Sources of this information:

- USGS 7.5 Minute Topographic Map, Turlock, California, 1973 revised from: 1954.
- Environmental Data Resources, Inc. The EDR Radius Map™ Report with Geocheck®, Inquiry Number 02522549.2r, dated June 19, 2009.
- PG&E, *Novato Wetland Survey*. April 1996.

- PG&E, *Request for UST Case Closure of PG&E Property, 8161 Old Redwood Highway, Novato*. February 5, 1996.

5.0 Environmental Records Review

5.1 FEDERAL, STATE AND TRIBAL ENVIRONMENTAL RECORDS

A regulatory agency database search report was obtained from a third party environmental database search firm. A complete copy of the database search report, including the date the report was prepared, the date the information was last updated, and the definition of databases searched, is provided in Appendix D.

Stantec evaluated the properties listed within the database on the basis of potential impact to the subject property. As part of this process, inferences have been made regarding the likely groundwater flow direction. Generally, shallow groundwater can be expected to follow the topographical gradient on and around the subject property and/or move in the direction of nearby surface water bodies.

Environmental Agency Lists, Search Distance, Listings

Agency List/Database	Search Radius	Number of Listed Sites
Federal NPL Sites	1.0 mile	0
Federal Delisted NPL Sites	1.0 mile	0
Federal CERCLIS List	0.5 mile	0
Federal CERCLIS NFRAP List	0.5 mile	0
Federal RCRA CORRACTS Facilities	1.0 mile	0
Federal RCRA Non-CORRACTS TSD	0.5 mile	0
Federal RCRA Generators	Subject Property/ Adjoining Property	0 / 1
Federal ERNS	Subject Property	0
State and Tribal - Equivalent NPL	1.0 mile	0
State and Tribal - Equivalent CERCLIS	1.0 mile	1
State and Tribal Solid Waste Facilities	0.5 mile	0
State and Tribal Registered Storage Tank Sites	Subject Property/ Adjoining Property	0 / 4
State and Tribal Leaking Storage Tank Sites (LUST)	0.5 mile	Subject Property
State and Tribal Registered Storage Tank Sites (UST)	0.25 mile	Subject Property
State and Tribal Voluntary Cleanup Sites	0.5 mile	1

5.1.1 Listings for Subject Property

The subject property was identified in the LUST and UST databases searched by the environmental database report.

5.1.2 Listings for Nearby Sites with Potential to Impact Subject Property

Stantec evaluated data presented in the environmental agency database search report according to the "Database Assessment Criteria" presented in Appendix E. Based on these criteria, no facilities were identified as likely potential sources of impact to the subject property. A review of the subject property and surrounding properties on the California Water Resources Control Board GeoTracker® (GeoTracker®) website indicated no potential sources of impact to the subject property and RECs were not identified.

The remaining listings in the database search report provided in Appendix D were evaluated in accordance with the "Database Assessment Criteria" presented in Appendix E and were determined not to constitute a REC for the subject property.

5.2 LOCAL/REGIONAL ENVIRONMENTAL RECORDS

Stantec reviewed GeoTracker® to obtain information pertaining to subject property use and/or indicative of RECs in connection with the subject property. No RECs or HRECs were identified in connection with the subject property. The subject property is listed in the LUST database in the EDR report but is not listed in GeoTracker®.

5.3 RECORDS OF ACTIVITY AND USE LIMITATIONS FOR SUBJECT PROPERTY

Registries and publicly available lists of activity and use limitations (AULs), also known as institutional controls and engineering controls, were reviewed by a third party environmental database search firm to identify any AULs for the subject property. Information on the registries and lists reviewed and listings found, if any, are provided in Appendix F.

No AULs for the subject property were identified in this review.

5.4 SUMMARY OF FINDINGS FROM ENVIRONMENTAL RECORDS REVIEW

Based on the data described above, the review of government environmental records did not identify evidence of a REC or HREC for the subject property.

6.0 Historical Records Review

6.1 LAND TITLE RECORDS/DEEDS

Stantec obtained an environmental lien search report for the subject property from Environmental Data Resources, Inc. of Milford, Connecticut. A copy of the environmental lien search report is provided in Appendix F. According to the lien report, PG&E assumed title to the subject property on June 26, 1973.

6.2 AERIAL PHOTOGRAPHS

Year	Scale	Observations, Subject Property and Adjoining Properties
1952	1" = 555'	This is the earliest available aerial photograph of the subject property. A structure, potentially the former gas station/car repair facility, appears on the subject property in the general vicinity of the former gas station/car repair business location. The surrounding areas appear generally undeveloped, with the exception of farm buildings scattered throughout the subject property vicinity and multiple buildings located northeast of the subject property at the west end of Black John Slough. The Old Redwood Highway is present east of the subject property.
1965	1" = 333'	The subject property appears relatively unchanged since the previous aerial photograph. The former gas station/car repair facility is clearly visible on the 1965 aerial photograph. The hotel located adjacent to the subject property to the south is present in the 1965 aerial photograph. Additionally, an office/building complex is visible north of the subject property where the current Birkenstock complex is located and Marin County Airport is visible northeast of the subject property.
1975	1" = 550'	The 1975 aerial photograph is blurry in appearance and landmarks are not identifiable.
1982	1" = 690'	The subject property and surrounding areas appear relatively the same as the previous aerial photograph. An expanded Marin County Airport is present in the 1982 aerial photograph.
1993	1" = 666'	The subject property and surrounding areas appear relatively the same as the previous aerial photograph.
1998	1" = 666'	The former gas station/car repair building is no longer present on the subject property in the 1998 aerial photograph and the subject property appears vacant and void of structures. The surrounding areas appear relatively the same as the previous aerial photograph.

2005	1" = 604'	The subject property and surrounding areas appear relatively the same as the previous aerial photograph.
2006	1" = 604'	The subject property and surrounding areas appear relatively the same as the previous aerial photograph.

Aerial photograph research was conducted at the following location(s):

- 1952, 1965, 1975, 1982, 1993, 1998, 2005, and 2006: Environmental Data Resources, Inc. (EDR), the EDR Aerial Photo Decade Package, Inquiry Number 2522549.5, dated June 22, 2009.

6.3 CITY DIRECTORIES

Stantec requested a copy of the historic city directories abstract for the subject property from EDR. Upon review of the abstract, the subject property address was found in the Haines Criss-Cross Directory with "Mikes Auto Repair "as the User for the years 1983, 1989, and 1995. The subject property was listed as "No Return" in 2000 and 2008.

6.4 HISTORICAL FIRE INSURANCE MAPS

EDR conducted a review for Sanborn® fire insurance maps; however, there were no maps of the subject Property (Appendix D).

6.5 PLANNING/ZONING RECORDS

Agency Name, Contact Information	Finding
City of Novato Planning Department (415) 899-8989	The subject property is zoned Planned District (PD).

6.6 BUILDING PERMIT RECORDS

Stantec was provided an adequate property usage history; therefore, building permit records for the subject property were not reviewed.

6.7 HISTORICAL TOPOGRAPHIC MAPS

Year	Scale	Observations
1914	1:62,500	No indicators of potential RECs were depicted on the map.
1954	1:62,500	No indicators of potential RECs were depicted on the map.

1954	1:24,000	No indicators of potential RECs were depicted on the map.
1968 (photo revised from: 1954)	1:24,000	The former gas station/car repair building is present on the subject property. No indicators of potential RECs were depicted on the map.
1973 (photo revised from: 1954)	1:24,000	No indicators of potential RECs were depicted on the map.
1980 (photo revised from: 1954)	1:24,000	No indicators of potential RECs were depicted on the map.

Name of maps and source:

- 1914, 1954 (two), 1968, 1973, and 1980: Environmental Data Resources, Inc. (EDR), the EDR Historical Topographic Map Report, Inquiry Number 2522549.4, dated June 19, 2009.

6.8 OTHER HISTORICAL SOURCES

There were no other sources of historical information reviewed during this assessment.

6.9 SUMMARY OF FINDINGS FROM HISTORICAL RECORDS REVIEW

Stantec's historical use research indicated that a portion of the subject property was utilized as developed land from at least 1952 to 1995 with the former gas station/car repair facility located on the subject property from at least 1965 to 1995. In all available aerial photographs (earliest available is 1952) the surrounding areas appear to be primarily open space and undeveloped land, with some scattered developed land parcels within the subject property vicinity.

Based on the data described above, the review of historical records did not identify evidence of a REC or HREC for the subject property.

7.0 Environmental Cleanup Liens

Stantec retained EDR to complete a search for environmental cleanup liens recorded in the property deed records for the subject property. A copy of the search results is provided in Appendix F. According to this documentation, there are no environmental cleanup liens recorded in the property deed records for the subject property.

8.0 Interviews

8.1 FINDINGS FROM INTERVIEW WITH CURRENT PROPERTY OWNER

Since the subject property is owned by PG&E, pertinent interview information is presented in the following section.

8.2 FINDINGS FROM INTERVIEW WITH KEY SITE MANAGER

Name, Title, Telephone	Ms. Pamalet Mackey, Senior Environmental Field Specialist, PG&E, (707).483-9977.
Current Use of Subject Property:	Not utilized.
Past Use(s) of Subject Property:	PG&E previously leased out a portion of the property to an auto body shop and gas station.
Current or Past Hazardous/ Petroleum Material Use, Storage, Disposal:	Former USTs located onsite for fuel dispensing.
Current or Past Regulatory Action(s):	1996 UST closure.
Past Releases of Hazardous/Petroleum Materials on the Property:	Not aware.
Other Environmental Information (Permits, etc.):	Not aware.
Aware of Any Pending, Threatened or Past Litigation Relevant to Hazardous Substances or Petroleum Products in, on, or From Subject Property?	No.
Aware of Any Pending, Threatened or Past Administrative Proceedings Relevant to Hazardous Substances or Petroleum Products in, on, or From Subject property?	No.
Aware of Any Pending, Threatened or Past Notices From Any Governmental Entity Regarding Possible Violations Of Environmental Laws Or Possible Liability Relating To Hazardous Substances Or Petroleum Products?	No.

8.3 FINDINGS FROM INTERVIEWS WITH MAJOR OCCUPANTS

PG&E is the current occupant of the subject property. Interviews with the responsible PG&E Land Agent and PG&E Key Site Manager were performed and summaries of those interviews are included in sections 2.0 and 8.2, respectively.

8.4 FINDINGS FROM INTERVIEWS WITH OTHERS

No other interviews of people likely to be knowledgeable of the environmental condition or history of the subject property, such as local agency officials, neighbors, past owners, operators, or occupants, etc., were conducted by Stantec.

8.5 SUMMARY OF FINDINGS FROM INTERVIEWS

Based on the interview responses described above, the findings of the interviews did not indicate the existence of a REC with an HREC in the former USTs at the subject property that has subsequently been addressed and closed for regulatory purposes.

9.0 Summary of Historical Subject Property and Adjoining Use

The following summary of the historical uses of the subject property and adjoining properties was compiled from the referenced materials and interviews detailed in Sections 3.0, 5.0, 6.0, and 8.0.

9.1 SUBJECT PROPERTY USE

Year	Summary of Subject Property History
Prior to 1952	Unknown.
1952 to 1965	A portion of the subject property (vicinity of former gas station/ car repair facility) was developed.
1965 to 1973	A vehicle service station was located on the subject property and the remainder of the site was undeveloped.
1973	PG&E purchased subject property for potential use as a service center; however, PG&E never used the subject property, and leased it to Mike's Auto Repair and Body Shop (Mike's Auto) since its purchase.
1973 to 1995	Mike's Auto performed vehicle repairs at the service station.
1995	PG&E took possession of the subject property from Mike's Auto and demolished the site.
1996 to Present	Subject Property vacant and unutilized with no on-site structures.

9.2 SURROUNDING PROPERTY USE

Direction	Summary of Historical Adjoining Property Use
North:	Open space followed by Birkenstock Distribution USA Office Building.
South:	Days Inn Hotel followed by Black John Road.
West:	Open Space.
East:	Redwood Boulevard followed by Highway 101.

10.0 Data Gaps

The federal AAI rule [40 CFR 312.10(a)] and ASTM E1527-05 identify a "data gap" as the lack or inability to obtain information required by the standards and practices of the rule despite good faith efforts by the Environmental Professional or the User.

Any data gaps resulting from the Phase I ESA described in this report are listed and discussed below.

Deletions or Exceptions From Scope of Work Referenced in Section 1.4:	None.
Weather-Related Restrictions To Site Reconnaissance:	None.
Facility Access Restrictions to Site Reconnaissance:	No facilities are currently located on the subject property.
Other Site Reconnaissance Restrictions:	Landmarks and/or fencing denoting portions of the northern, western, and southern property boundaries of the subject property were not located during the site reconnaissance. Using parcel maps and aerial photographs of the subject property, Stantec visually inspected these approximate boundaries from the central, eastern, and southern portions of the site.
Data Gaps From Environmental Records Review:	None.
Data Gaps From Historical Records Review:	The 1975 aerial photograph is blurry in appearance and landmarks are not identifiable. Additionally, Sanborn® fire insurance maps were requested, but are not available for the subject property.
Data Gaps From Interviews:	Stantec did not conduct an interview with the current property owner. Additionally, portions of the completed User Questionnaire are incomplete.
Other Data Gaps:	None.

11.0 Opinion and Conclusions

Stantec has performed a Phase I ESA of the PG&E Novato Property located at 8161 Redwood Boulevard in Novato, California, the "subject property", in connection with the potential sale of the property. PG&E purchased the subject property in 1973 for potential use as a service center; however, PG&E never used the subject property and leased it to Mike's Auto since its purchase. In 1995, PG&E took possession of the subject property from Mike's Auto and demolished the site. The Phase I ESA was performed in conformance with the scope and limitations of ASTM Practice E 1527-05. Stantec has, in the course of this inquiry, attempted to identify and review commonly known or reasonably ascertainable information about the subject property that is relevant to evaluating the presence of RECs. Any exceptions to, or deletions from, this practice are described in the "Data Gaps" section of this report.

This assessment has revealed no evidence of RECs in connection with the subject property and no further investigation is warranted.

The following HREC is noted for the Property:

- On February 5, 1996, PG&E submitted a report entitled, *"Request for UST Case Closure of PG&E Property, 8161 Old Redwood Highway, Novato,"* to the California Regional Water Quality Control Board – San Francisco Region (Water Board) requesting closure of the four USTs formerly located at the Novato Property. The following information is taken from that report:

  > On January 9, 1996, PG&E made an attempt to excavate two suspected UST locations and found that the tanks and product piping had already been removed (prior to 1973). The tank areas were re-excavated and samples were collected. Results for the single water sample collected from the bottom of the fuel tank excavation were non-detect for all analytes. Results of soil samples collected from the suspected fuel tank location were all non-detect for total petroleum hydrocarbons as gasoline (TPHg) and diesel (TPHd). Results of soil samples collected from the waste oil tank excavation ranged from non-detect to 90 parts per million (ppm) as total recoverable hydrocarbons, and from non-detect to 71 ppm as TPHd.

  The Water Board granted case closure for the Novato Property in the letter entitled, *"Underground Storage Tank (UST) Case Closure for PG and E Property, 8161 Old Redwood Highway, Novato, Marin County, UST Case No. 21-0306,"* dated April 12, 1996.

The following items are noted for the Property:

- An underground gas pipeline crosses under the west-central portion of the subject property in a generally north-south direction where the subject property begins to slope uphill. The pipeline is denoted by pole-mounted placards.

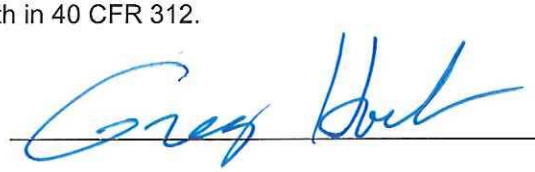
- Portions of a partially exposed deteriorated pipe, approximately 2-to-3 inches in diameter, were observed in the east-central portion of the subject property in the approximate vicinity of the former gas station/car repair facility location. It is unknown if the pipe is associated with the former business or if the pipe is trash discarded from adjacent Redwood Boulevard, as other pieces of discarded car parts (wheels, mufflers, etc.) were observed in various areas of the flat portion of the property.

12.0 Declarations of Environmental Professional

The federal AAI rule and ASTM E-1527-05 require that the Phase I ESA report include the following declarations by the Environmental Professional who completed the assessment.

1. I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in 40 CFR 312.10.

2. 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 312.

Signature: 

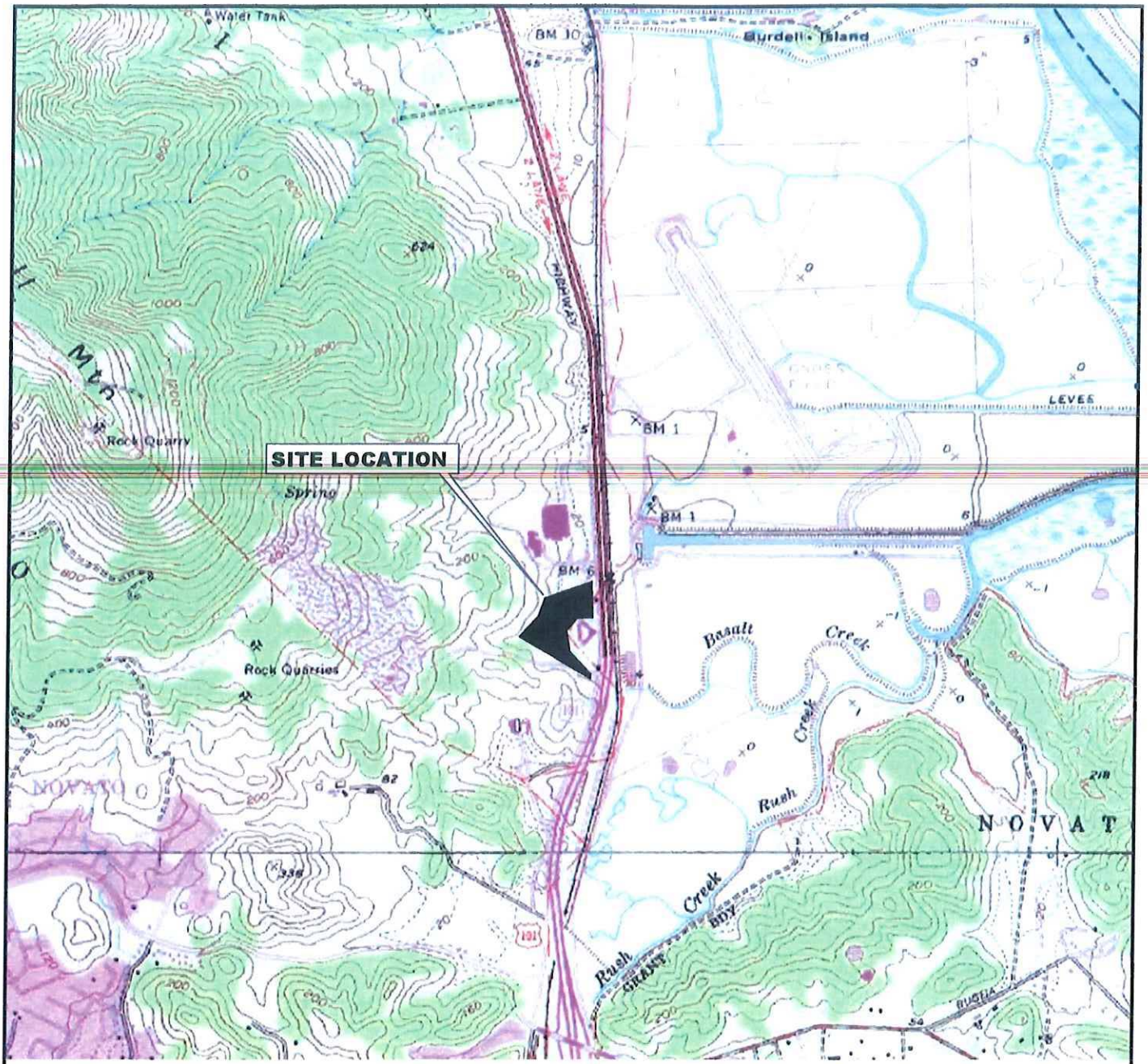
Name: Greg D. Hoehn

Title: Project Manager

Date: 7-28-09

APPENDIX A
Figures

PG&E Novato Property
8161 Redwood Boulevard
Novato, California 94945
PN: 185702091
July 28, 2009





CALIFORNIA

1 1/2 0 1

SCALE IN MILE

1000 0 1000 2000 3000 4000 5000 6000 7000

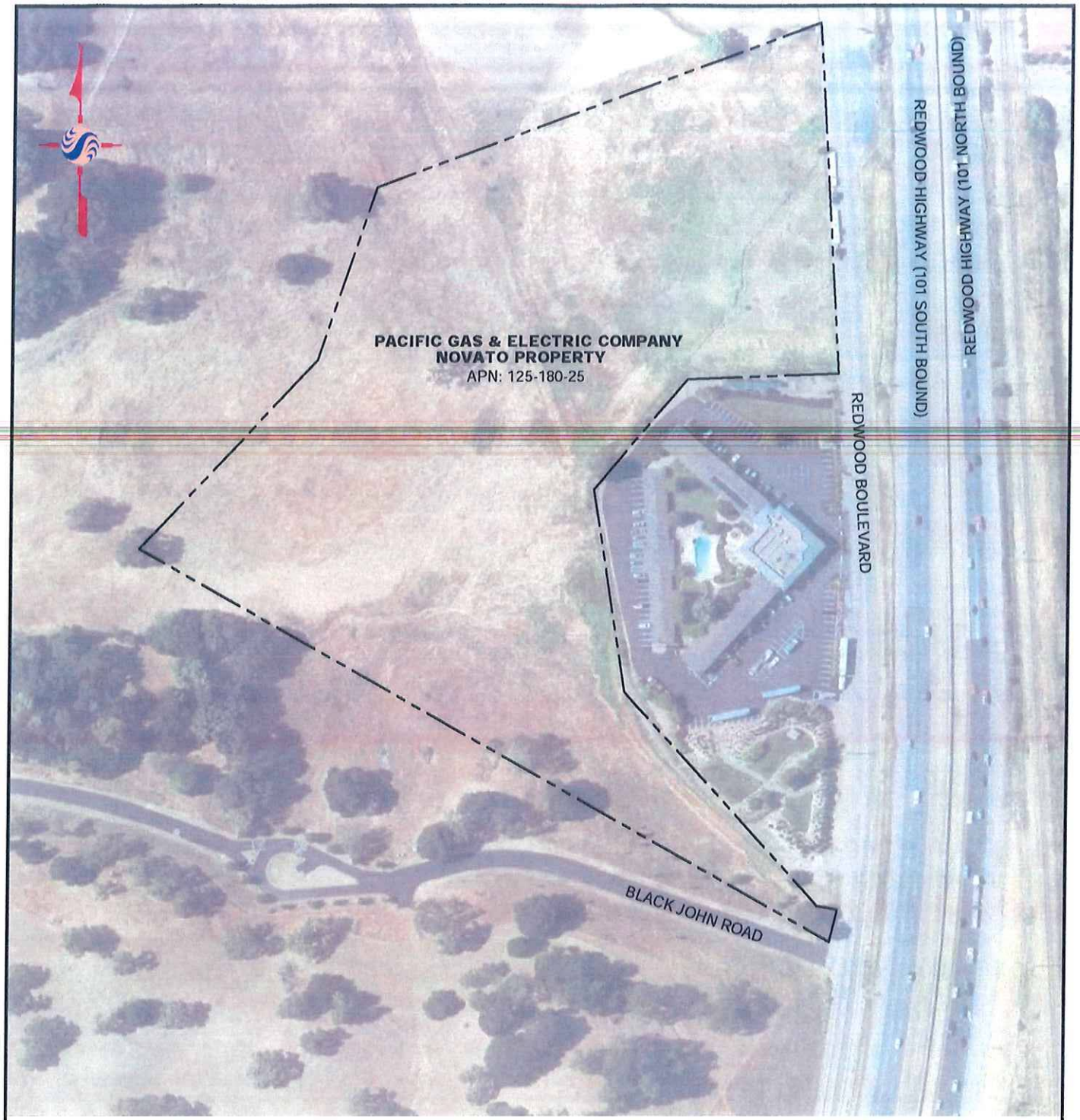
SCALE IN FEET

Image courtesy of the U.S. Geological Survey and Microsoft TerraService OpenGIS Map Server

Stantec
57 Lafayette Circle, 2nd Floor
Lafayette California
PHONE: (925) 299-9300 FAX: (925) 299-9302

FOR:		SITE LOCATION MAP		FIGURE:
PACIFIC GAS AND ELECTRIC COMPANY NOVATO PROPERTY 8161 REDWOOD BOULEVARD NOVATO, CA				1
JOB NUMBER: 185702091.22.0001	DRAWN BY: RRR	CHECKED BY: AR	APPROVED BY: GH/AR	DATE: 07/01/09

FILEPATH:M:\PG&E\PG&E - Novato\185702091_F1_F2-PGE_Novato-8161_Redwood.dwg|rroggasch|Jul 02, 2009 at 10:20|Layout: SITE LOCATION MAP



LEGEND

APPROXIMATE PROPERTY BOUNDARY

0 200 400

APPROXIMATE SCALE IN FEET

Image obtained from a licensed version of Google Earth Professional using address below

Stantec
57 Lafayette Circle, 2nd Floor
Lafayette California
PHONE: (925) 299-9300 FAX: (925) 299-9302

FOR:
PACIFIC GAS AND ELECTRIC COMPANY
NOVATO PROPERTY
8161 REDWOOD BOULEVARD
NOVATO, CA

SITE PLAN

FIGURE: 2

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185702091.22.0001	RRR	AR	GH/AR	07/01/09

FILEPATH:M:\PG&E\PG&E - Novato\185702091_F1_F2-PGE_Novato-8161_Redwood.dwg|rroggasch|Jul 02, 2009 at 10:15|Layout: F2-SP

APPENDIX B
Photographs

PG&E Novato Property
8161 Redwood Boulevard
Novato, California 94945
PN: 185702091
July 28, 2009

STANTEC CONSULTING CORPORATION
PHOTOGRAPHIC RECORD

Client: PG&E	**Job Number:** 185702091
Site Name: Novato Property, Novato, California	**Date:** June 25, 2009

PHOTO No. 1



Northern property boundary taken from northeast corner of subject property looking west.

PHOTO No. 2



View of subject property taken from northeast corner of subject property looking southwest.

STANTEC CONSULTING CORPORATION PHOTOGRAPHIC RECORD	
Client: PG&E	**Job Number:** 185702091
Site Name: Novato Property, Novato, California	**Date:** June 25, 2009

PHOTO No. 3



View of subject property taken from eastern property boundary adjacent to Days Inn Hotel looking northwest.

PHOTO No. 4



Partially exposed 2 - 3 inch piping in vicinity of former gas station/ car repair facility located on subject property.

STANTEC CONSULTING CORPORATION
PHOTOGRAPHIC RECORD

Client: PG&E	**Job Number:** 185702091
Site Name: Novato Property, Novato, California	**Date:** June 25, 2009

PHOTO No. 5



Exposed storm water drainage ditch located in central portion of subject property.

PHOTO No. 6



Underground gas pipeline pole-mounted placards located in central portion of subject property where site begins to upslope.

STANTEC CONSULTING CORPORATION PHOTOGRAPHIC RECORD	
Client: PG&E	**Job Number:** 185702091
Site Name: Novato Property, Novato, California	**Date:** June 25, 2009

PHOTO No. 7



View of western portion of subject property taken from central portion of subject property.

PHOTO No. 8



View of southern portion of subject property taken from property boundary located east of Days Inn Hotel.

APPENDIX C
User's Questionnaire

PG&E Novato Property
8161 Redwood Boulevard
Novato, California 94945
PN: 185702091
July 28, 2009

Stantec

5. Activity and Land Use Limitations. Are you aware of any activity and use limitations, such as engineering controls, land use restrictions, or institutional controls that are in place at the property and/or have been filed or recorded as applicable to the property as a result of environmental contamination, investigation, cleanup, or related matters?

_____ Yes _____**X**____ No

If yes, describe or attach details of the limitations_____

_____

6. Specialized Knowledge or Experience. As the User of this ESA, do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property, such that you would have specialized knowledge about chemicals and processes used by this type of business?

_____ Yes _____ No

If yes, describe or attach details of your specialized knowledge or experience_**N/A**

_____

7. Relationship of Purchase Price to Fair Market Value of Property. Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, do you have any reason to believe that the reduced purchase price may be related to contamination known or believed to be present at the property?

_____ Yes, I have reason to believe that the purchase price for the property has been reduced in comparison with the fair market value due to contamination known or believed to be present at the property?

_____ No, I have no reason to believe that the purchase price for the property has been reduced in comparison with the fair market value due to contamination known or believed to be present at the property?

____**X**_____ Not applicable. User is not involved in a purchase or sale of the property.

8. Commonly Known or Reasonably Ascertainable Information. Are you aware of commonly known or reasonably ascertainable information about the property that would help the Environmental Professional to identify conditions indicative of releases or threatened releases of hazardous substances or petroleum products? For example:

Do you know the past uses of the property?

____**X**____ Yes (describe) __**Former gas station/ car repair business on portion of the property.**_____

_____

_____ No

Do you know of chemicals, hazardous substances or petroleum products that are present or once were present at the property?

_____ Yes (describe) __Substances typical for above-mentioned use._____

_____

_____ No

Stantec

Do you know of spills or other releases of chemicals, hazardous substances or petroleum products that have taken place at the property?

_____ Yes (describe) _____

_____

_____**X**___ No

Do you know of any environmental cleanups that have taken place at the property?

_____ Yes (describe) __**I recall that there was some cleanup associated with the removal of the fuel tanks at the gas station/car repair business, but am not familiar with details.**_____

_____

_____ No

9. The Degree of Obviousness of Contamination. E1527-05 and the federal AAI rule (40 CFR 312.31) require that the Phase I ESA consider the degree of obviousness of the presence or likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation. Based on your knowledge and experience related to the property, are there any *obvious* indictors that point to the presence or likely presence of contamination at the property?

_____ Yes (describe) _____

_____

_____**X**___ No

10. Availability of Previous Environmental Reports. Are you aware of previous environmental site assessment reports, other environmental reports, documents, correspondence, etc. concerning the property and its environmental condition?

_____ Yes (please identify and provide copies, if available) _____

_____

____**X**____ No

Signature: _____

Name (printed): _____

Company: _____

Title: _____

Date: _____

APPENDIX D
Environmental Regulatory Agency Database Report and Historical Documentation

PG&E Novato Property
8161 Redwood Boulevard
Novato, California 94945
PN: 185702091
July 28, 2009

PG&E - Novato
8161 Redwood Blvd
Novato, CA 94945

Inquiry Number: 02522549.2r
June 19, 2009

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
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	7
Orphan Summary	14
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-10
Physical Setting Source Map Findings	A-11
Physical Setting Source Records Searched	A-19

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 2009 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 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

8161 REDWOOD BLVD
NOVATO, CA 94945

COORDINATES

Latitude (North):	38.134000 - 38° 8' 2.4"
Longitude (West):	122.565000 - 122° 33' 54.0"
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	538123.3
UTM Y (Meters):	4220566.0
Elevation:	11 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	38122-B5 PETALUMA RIVER, CA
Most Recent Revision:	1980
South Map:	38122-A5 NOVATO, CA
Most Recent Revision:	1980

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	2006, 2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 7 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
PG & E 8161 OLD REDWOOD HWY NOVATO, CA 94947	LUST Status: Completed - Case Closed	N/A
PG&E 8161 REDWOOD HWY (AKA OLD REDWOOD) NOVATO, CA 94947	UST	N/A

EXECUTIVE SUMMARY

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Transporters, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

EXECUTIVE SUMMARY

State and tribal leaking storage tank lists

SLIC---------- Statewide SLIC Cases
INDIAN LUST---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

AST---------- Aboveground Petroleum Storage Tank Facilities
INDIAN UST---------- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP---------- Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9---------- Torres Martinez Reservation Illegal Dump Site Locations
ODI---------- Open Dump Inventory
WMUDS/SWAT---------- Waste Management Unit Database
SWRCY---------- Recycler Database
HAULERS---------- Registered Waste Tire Haulers Listing
INDIAN ODI---------- Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL---------- Clandestine Drug Labs
HIST Cal-Sites---------- Historical Calsites Database
SCH---------- School Property Evaluation Program
Toxic Pits---------- Toxic Pits Cleanup Act Sites
CDL---------- Clandestine Drug Labs

Local Lists of Registered Storage Tanks

CA FID UST---------- Facility Inventory Database
HIST UST---------- Hazardous Substance Storage Container Database
SWEEPS UST---------- SWEEPS UST Listing

Local Land Records

LIENS 2---------- CERCLA Lien Information
LUCIS---------- Land Use Control Information System
LIENS---------- Environmental Liens Listing
DEED---------- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS---------- Hazardous Materials Information Reporting System

CHMIRS California Hazardous Material Incident Report System
LDS Land Disposal Sites Listing
MCS Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen RCRA - Non Generators
DOT OPS Incident and Accident Data
DOD Department of Defense Sites
FUDS Formerly Used Defense Sites
CONSENT Superfund (CERCLA) Consent Decrees
ROD Records Of Decision
UMTRA Uranium Mill Tailings Sites
MINES Mines Master Index File
TRIS Toxic Chemical Release Inventory System
TSCA Toxic Substances Control Act
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
SSTS Section 7 Tracking Systems
ICIS Integrated Compliance Information System
PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database
FINDS Facility Index System/Facility Registry System
RAATS RCRA Administrative Action Tracking System
CA BOND EXP. PLAN Bond Expenditure Plan
CA WDS Waste Discharge System
NPDES NPDES Permits Listing
Cortese "Cortese" Hazardous Waste & Substances Sites List
Notify 65 Proposition 65 Records
DRYCLEANERS Cleaner Facilities
WIP Well Investigation Program Case List
HAZNET Facility and Manifest Data
EMI Emissions Inventory Data
INDIAN RESERV Indian Reservations
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants EDR Proprietary Manufactured Gas Plants

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.

EXECUTIVE SUMMARY

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA generators list

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 11/12/2008 has revealed that there is 1 RCRA-SQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BUCK INSTITUTE FOR AGE RESEARC	8001 REDWOOD BLVD	SSE 1/8 - 1/4 (0.167 mi.)	B4	8

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 05/27/2009 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
NOVATO STORAGE PARK Status: No Further Action	*AIRPORT / BINFORD ROADS*	*NNE 1/4 - 1/2 (0.449 mi.)*	*6*	*11*

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, and dated 04/08/2009 has revealed that there are 2 UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BUCK CENTER FOR RESEARCH IN AG	8001 REDWOOD HWY.	SSE 1/8 - 1/4 (0.167 mi.)	B3	8
BUCK INSTITUTE FOR AGE RESEARC	8001 REDWOOD BOULEVARD	SSE 1/8 - 1/4 (0.167 mi.)	B5	10

State and tribal voluntary cleanup sites

VCP: Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

A review of the VCP list, as provided by EDR, and dated 05/27/2009 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
NOVATO STORAGE PARK	*AIRPORT / BINFORD ROADS*	*NNE 1/4 - 1/2 (0.449 mi.)*	*6*	*11*

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

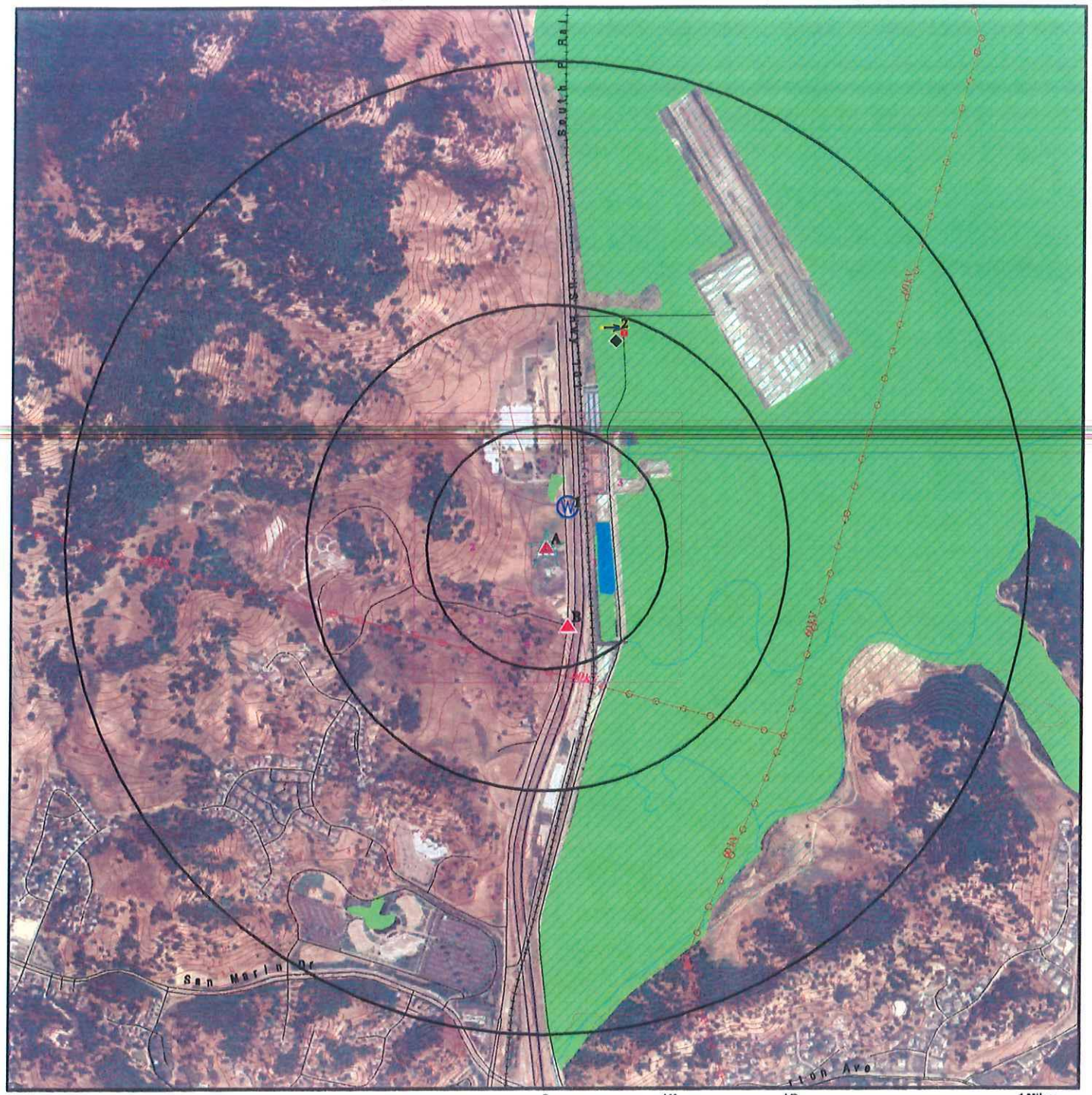
Lower Elevation	Address	Direction / Distance	Map ID	Page
NOVATO STORAGE PARK	*AIRPORT / BINFORD ROADS*	*NNE 1/4 - 1/2 (0.449 mi.)*	*6*	*11*

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
UNOCAL	HIST CORTESE
NOVATO FIRE PROTECTION DI	HIST CORTESE
NOVATO GATEWAY	NPDES
WHOLE FOODS NOVATO	NPDES
VILLAGE AT NOVATO	NPDES
HAMILTON ARMY AIRFIELD - HAMILTON	MCS
BLACK POINT ANTENNA FIELD - BLACK	MCS
US 101 EST BLYTHEDALE EXIT	CHMIRS, SLIC
NOVATO SANITARY DISTRICT - RECLAMA	UST
LIVING HISTORY CENTER	UST
NOVATO SANITARY DISTRICT - DECHLOR	UST
NOVATO SANITARY DISTRICT DECHLORIN	UST
SUPER IGNACIO SERVICE	UST
BLACK POINT, ARMY, DEPT. OF - REPO	UST
NOVATO COMMUNITY HOSPITAL	HAZNET
NOVATO STORAGE PARK	FINDS
RUSH CREEK ESTATES	SLIC
NOVATO STORAGE PARK RANCHO DEL PAN	SLIC
NOVATO AND IGNACIO STP	CA WDS
ANGEL ISLAND STATE PK - WWTP	CA WDS
NOVATO STORM WATER	CA WDS
NOVATO SANITARY DISTRICT	EMI
NW PACIFIC RR PASSENGER & FREIGHT	ENVIROSTOR

OVERVIEW MAP - 02522549.2r



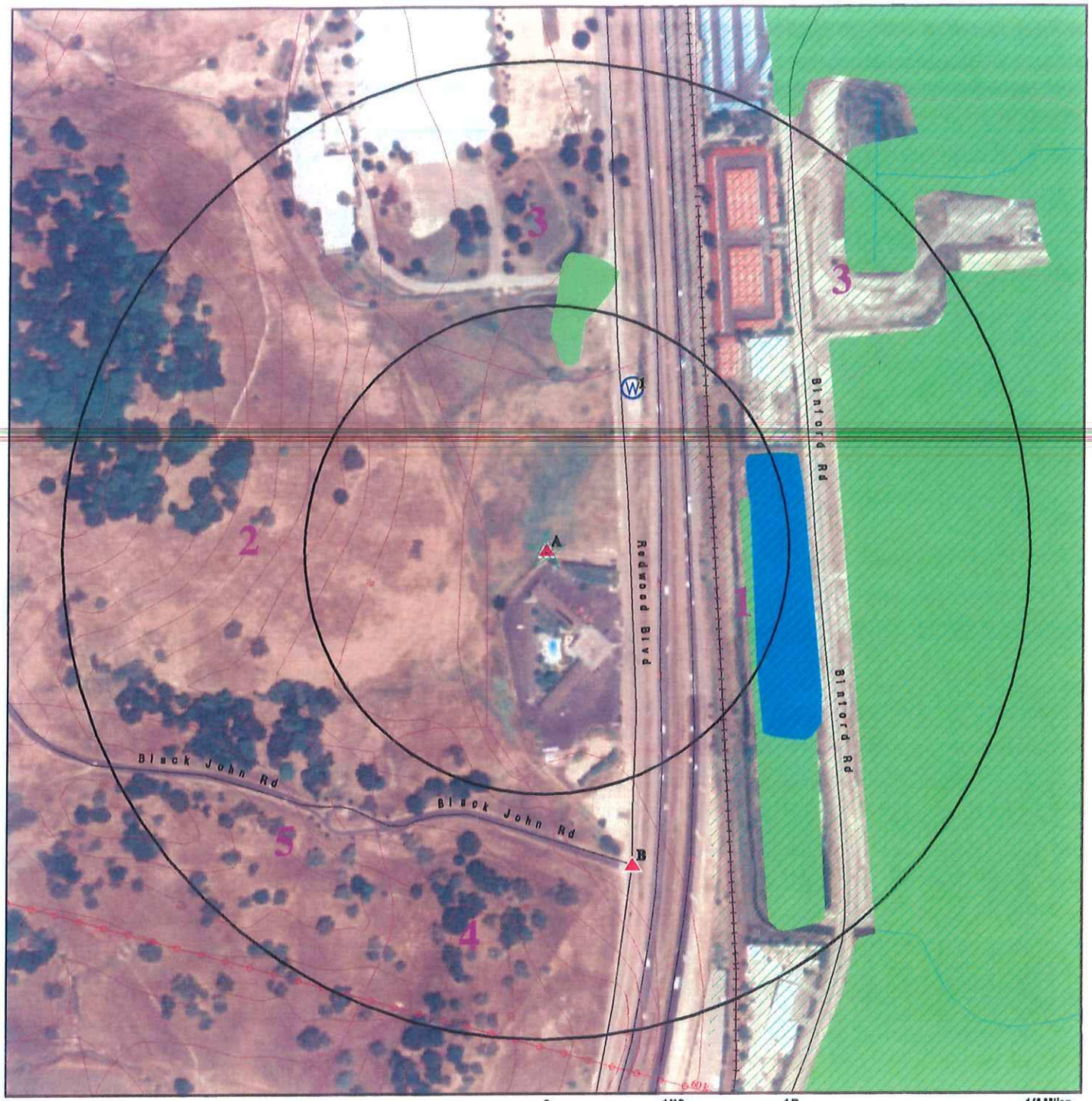
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- 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: PG&E - Novato ADDRESS: 8161 Redwood Blvd Novato CA 94945 LAT/LONG: 38.1340 / 122.5650	CLIENT: Stantec CONTACT: Anna Radonich INQUIRY #: 02522549.2r DATE: June 19, 2009 7:57 am

Copyright © 2008 EDR, Inc. © 2008 Tele Atlas Rel. 07/2007.

DETAIL MAP - 02522549.2r



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- 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: PG&E - Novato ADDRESS: 8161 Redwood Blvd Novato CA 94945 LAT/LONG: 38.1340 / 122.5650	CLIENT: Stantec CONTACT: Anna Radonich INQUIRY #: 02522549.2r DATE: June 19, 2009 7:57 am

Copyright © 2008 EDR, Inc. © 2008 Tele Atlas Rel. 07/2007.

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 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								
CERCLIS		0.500	0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		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	0	1	NR	NR	NR	1
RCRA-CESQG		0.250	0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
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	0	1	0	NR	1
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	X	0.500	0	0	0	NR	NR	0
SLIC		0.500	0	0	0	NR	NR	0
INDIAN LUST		0.500	0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
State and tribal registered storage tank lists								
UST	X	0.250	0	2	NR	NR	NR	2
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	0	1	NR	NR	1
INDIAN VCP		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								
DEBRIS REGION 9		0.500	0	0	0	NR	NR	0
ODI		0.500	0	0	0	NR	NR	0
WMUDS/SWAT		0.500	0	0	0	NR	NR	0
SWRCY		0.500	0	0	0	NR	NR	0
HAULERS		TP	NR	NR	NR	NR	NR	0
INDIAN ODI		0.500	0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US 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
Toxic Pits		1.000	0	0	0	0	NR	0
CDL		TP	NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.250	0	0	NR	NR	NR	0
HIST UST		0.250	0	0	NR	NR	NR	0
SWEEPS UST		0.250	0	0	NR	NR	NR	0
Local Land Records								
LIENS 2		TP	NR	NR	NR	NR	NR	0
LUCIS		0.500	0	0	0	NR	NR	0
LIENS		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
Other Ascertainable Records								
RCRA-NonGen		0.250	0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DOT OPS		TP	NR	NR	NR	NR	NR	0
DOD		1.000	0	0	0	0	NR	0
FUDS		1.000	0	0	0	0	NR	0
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
HIST FTTS		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
ICIS		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
RADINFO		TP	NR	NR	NR	NR	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN		1.000	0	0	0	0	NR	0
CA WDS		TP	NR	NR	NR	NR	NR	0
NPDES		TP	NR	NR	NR	NR	NR	0
Cortese		0.500	0	0	0	NR	NR	0
HIST CORTESE		0.500	0	0	1	NR	NR	1
Notify 65		1.000	0	0	0	0	NR	0
DRYCLEANERS		0.250	0	0	NR	NR	NR	0
WIP		0.250	0	0	NR	NR	NR	0
HAZNET		TP	NR	NR	NR	NR	NR	0
EMI		TP	NR	NR	NR	NR	NR	0
INDIAN RESERV		1.000	0	0	0	0	NR	0
SCRD DRYCLEANERS		0.500	0	0	0	NR	NR	0

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants		1.000	0	0	0	0	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 PG & E LUST S106610926
Target 8161 OLD REDWOOD HWY N/A
Property NOVATO, CA 94947

Site 1 of 2 in cluster A

Actual: 11 ft.

LUST:

Region:	STATE
Global Id:	T0604100288
Latitude:	38.107159
Longitude:	-122.567741
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	1996-04-12 00:00:00
Lead Agency:	SAN FRANCISCO BAY RWQCB (REGION 2)
Case Worker:	Not reported
Local Agency:	MARIN COUNTY
RB Case Number:	21-0306
LOC Case Number:	21-0306
File Location:	Not reported
Potential Media Affect:	Soil
Potential Contaminats of Concern:	Waste Oil / Motor / Hydraulic / Lubricating
Site History:	Not reported

LUST:

Region:	2
Facility Id:	21-0306
Facility Status:	Case Closed
Case Number:	21-0306
How Discovered:	Tank Closure
Leak Cause:	UNK
Leak Source:	UNK
Date Leak Confirmed:	3/1/1996
Oversight Program:	LUST
Prelim. Site Assesment Wokplan Submitted:	Not reported
Preliminary Site Assesment Began:	Not reported
Pollution Characterization Began:	Not reported
Pollution Remediation Plan Submitted:	Not reported
Date Remediation Action Underway:	Not reported
Date Post Remedial Action Monitoring Began:	Not reported

A2 PG&E UST U003981305
Target 8161 REDWOOD HWY (AKA OLD REDWOOD) N/A
Property NOVATO, CA 94947

Site 2 of 2 in cluster A

Actual: 11 ft.

UST:

Facility Id:	Not reported
Tank Number:	Not reported
Tank Status:	Not reported
Tank Contents:	Not reported
Certficate Number:	Not reported
Last Inspected:	Not reported
Active:	Not reported
Program:	UST
Location:	Not reported
Pulled Date:	Not reported

PG&E (Continued) U003981305

Reason: Not reported

B3 BUCK CENTER FOR RESEARCH IN AGING UST U003761883
SSE 8001 REDWOOD HWY. N/A
1/8-1/4 NOVATO, CA 94945
0.167 mi.
883 ft. Site 1 of 3 in cluster B

Relative: UST:
Higher Global ID: 12869
Latitude: 38.13396
Actual: Longitude: -122.56421
33 ft.

B4 BUCK INSTITUTE FOR AGE RESEARCH RCRA-SQG 1007370093
SSE 8001 REDWOOD BLVD CAR000152504
1/8-1/4 NOVATO, CA 94945
0.167 mi.
883 ft. Site 2 of 3 in cluster B

Relative: RCRA-SQG:
Higher Date form received by agency: 04/06/2004
Facility name: BUCK INSTITUTE FOR AGE RESEARCH
Actual: Facility address: 8001 REDWOOD BLVD
33 ft. NOVATO, CA 94945
EPA ID: CAR000152504
Contact: COLLEEN A STUBBS
Contact address: 8001 REDWOOD BLVD
NOVATO, CA 94945
Contact country: US
Contact telephone: 415-209-2055
Contact email: CSTUBBS@BUCKINSTITUTE.ORG
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: BUCK INSTITUTE FOR AGE RESEARCH
Owner/operator address: 8001 REDWOOD BLVD
NOVATO, CA 94945
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 05/01/1999
Owner/Op end date: Not reported

Owner/operator name: BUCK INSTITUTE FOR AGE RESEARCH
Owner/operator address: Not reported
Not reported
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private

BUCK INSTITUTE FOR AGE RESEARCH (Continued) **1007370093**

Owner/Operator Type: Operator
Owner/Op start date: 08/09/1999
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No
Off-site waste receiver: Commercial status unknown

Hazardous Waste Summary:
Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

Waste code: D002
Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

Waste code: D003
Waste name: A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.

Waste code: D006
Waste name: CADMIUM

Waste code: D008
Waste name: LEAD

Waste code: D009
Waste name: MERCURY

BUCK INSTITUTE FOR AGE RESEARCH (Continued) 1007370093

Waste code: D011
Waste name: SILVER

Waste code: D022
Waste name: CHLOROFORM

Waste code: F003
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Waste code: F005
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Waste code: P030
Waste name: CYANIDES (SOLUBLE CYANIDE SALTS), NOT OTHERWISE SPECIFIED

Waste code: P087
Waste name: OSMIUM OXIDE OSO4, (T-4)-

Waste code: P098
Waste name: POTASSIUM CYANIDE

Waste code: U188
Waste name: PHENOL

Violation Status: No violations found

B5 **BUCK INSTITUTE FOR AGE RESEARCH** **UST U003974735**
SSE **8001 REDWOOD BOULEVARD** **N/A**
1/8-1/4 **NOVATO, CA**
0.167 mi.
883 ft. **Site 3 of 3 in cluster B**

Relative: UST:
Higher
Facility Id: 60-0279

Actual:
33 ft.
Tank Number: 1
Tank Status: Active
Tank Contents: Motor vehicle fuel
Certficate Number: 15854
Last Inspected: 7/31/2008
Active: Yes
Program: Not reported
Location: Not reported
Pulled Date: Not reported

BUCK INSTITUTE FOR AGE RESEARCH (Continued) U003974735

Reason: Not reported

6
NNE
1/4-1/2
0.449 mi.
2369 ft.

NOVATO STORAGE PARK
AIRPORT / BINFORD ROADS
NOVATO, CA 94945

VCP **S100181583**
ENVIROSTOR **N/A**
HIST CORTESE

Relative:
Lower

Actual:
5 ft.

VCP:

Facility ID:	21420001
Site Type:	Voluntary Cleanup
Site Type Detail:	Voluntary Cleanup
Acres:	Not reported
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Mitigation And Brownfield Reuse Program
Project Manager:	Not reported
Supervisor:	Karen Toth
Division Branch:	Berkeley
Site Code:	Not reported
Assembly:	06
Senate:	03
Special Programs Code:	Voluntary Cleanup Program
Status:	No Further Action
Status Date:	1996-05-16 00:00:00
Restricted Use:	NO
Funding:	Not reported
Lat/Long:	38.1406 / -122.5618
Alias Name:	21420001
Alias Type:	Envirostor ID Number
Alias Name:	110033612277
Alias Type:	EPA (FRS #)
APN:	NONE SPECIFIED
APN Description:	Not reported
Comments:	Completed VCA. No further action required at the site based on the submission of a 1987 report showing the result of a detailed investigation of the drums, their contents, and the soil beneath them. Soil and drum were disposed at a Class III landfiSite Discovery. Facility identified by workplan received by DTSC.Completed Site Screening. Approximately fourteen 55-gallon drums were found in fill. A soil investigation is needed to characterize both the vertical and lateral extent of the soil contamination and see if there is potentail leachate into bay mudunderlying the fill. Recommended PEA.ll.

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	1990-02-06 00:00:00
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	*Voluntary Cleanup Agreement Completion
Completed Date:	1996-05-16 00:00:00

NOVATO STORAGE PARK (Continued) S100181583

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 1987-01-25 00:00:00

Confirmed: 31000
Confirmed Description: No Contaminants found
Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Media Affected: NONE SPECIFIED,31000
Media Affected Desc: Not reported
Media Affected Desc: Not reported

Management:
Management Required: NONE SPECIFIED
Management Required Desc: Not reported
Potential: NMA
Potenital Description: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported
PastUse: NONE

ENVIROSTOR:
Site Type: Voluntary Cleanup
Site Type Detailed: Voluntary Cleanup
Acres: Not reported
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Not reported
Supervisor: Karen Toth
Division Branch: Berkeley
Facility ID: 21420001
Site Code: Not reported
Assembly: 06
Senate: 03
Special Program: Voluntary Cleanup Program
Status: No Further Action
Status Date: 1996-05-16 00:00:00
Restricted Use: NO
Funding: Not reported
Latitude: 38.1406
Longitude: -122.5618
Alias Name: 21420001
Alias Type: Envirostor ID Number
Alias Name: 110033612277
Alias Type: EPA (FRS #)

APN: NONE SPECIFIED
APN Description: Not reported
Comments: Completed VCA. No further action required at the site based on the submission of a 1987 report showing the result of a detailed

NOVATO STORAGE PARK (Continued) S100181583

investigation of the drums, their contents, and the soil beneath them. Soil and drum were disposed at a Class III landfiSite Discovery. Facility identified by workplan received by DTSC.Completed Site Screening. Approximately fourteen 55-gallon drums were found in fill. A soil investigation is needed to characterize both the vertical and lateral extent of the soil contamination and see if there is potentail leachate into bay mudunderlying the fill. Recommended PEA.II.

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	1990-02-06 00:00:00
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	*Voluntary Cleanup Agreement Completion
Completed Date:	1996-05-16 00:00:00
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	* Discovery
Completed Date:	1987-01-25 00:00:00
Confirmed:	31000
Confirmed Description:	No Contaminants found
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Media Affected:	NONE SPECIFIED,31000
Media Affected Desc:	Not reported
Media Affected Desc:	Not reported

Management:

Management Required:	NONE SPECIFIED
Management Required Desc:	Not reported
Potential:	NMA
Potenital Description:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported
PastUse:	NONE

CORTESE:

Region:	CORTESE
Facility County Code:	21
Reg By:	CALSI
Reg Id:	21420001

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
MARIN COUNTY	S105632050		US 101 EST BLYTHEDALE EXIT		CHMIRS, SLIC
NOVATO	U004130062	NOVATO SANITARY DISTRICT - RECLAMA	HIGHWAY 37		UST
NOVATO	U003914617	LIVING HISTORY CENTER	1410 HWY. 37	94945	UST
NOVATO	1010727613	NOVATO STORAGE PARK	AIRPORT AND BINFORD ROADS	94945	FINDS
NOVATO	S106235160	RUSH CREEK ESTATES	ATHERTON AVE @ BINFORD RD		SLIC
NOVATO	S103438923	NOVATO AND IGNACIO STP	445 BEL MRN KEYES (IGNACIO)		CA WDS
NOVATO	S109452337	NOVATO GATEWAY	EAST END DELONG AVE	94945	NPDES
NOVATO	U003783655	NOVATO SANITARY DISTRICT - DECHLOR	FORMER HAMILTON AFB	94945	UST
NOVATO	U003987821	NOVATO SANITARY DISTRICT DECHLORIN	HAMILTON DRIVE AFB RUNWAY		UST
NOVATO	S109289701	HAMILTON ARMY AIRFIELD - HAMILTON	WEST HOSPITAL DRIVE		MCS
NOVATO	S109465466	WHOLE FOODS NOVATO	DE LONG AVE AT RIECHERT AVE	94945	NPDES
NOVATO	S109349160	BLACK POINT ANTENNA FIELD - BLACK	NONE NONE	94945	MCS
NOVATO	S109464281	VILLAGE AT NOVATO	NW OF REDWOOD BLVD / OLIVE A	94945	NPDES
NOVATO	S104660362	UNOCAL	7455 OLD REDWOOD	94945	HIST CORTESE
NOVATO	S109282133	NOVATO SANITARY DISTRICT	PRMTR RD HMLTN F	94945	EMI
NOVATO	S107736931	NW PACIFIC RR PASSENGER & FREIGHT	RAILROAD AVENUE AT GRANT STREE	94945	ENVIROSTOR
NOVATO	S106101798	ANGEL ISLAND STATE PK - WWTP	7665 REDWOOD SUITE 150 BLVD		CA WDS
NOVATO	U003432556	NOVATO FIRE PROTECTION DI	7025 REDWOOD	94945	HIST CORTESE
NOVATO	U004051168	SUPER IGNACIO SERVICE	5778 REDWOOD HIGHWAY		UST
NOVATO	U003914447	BLACK POINT, ARMY, DEPT. OF - REPO	RENAISSANCE LANE	94945	UST
NOVATO	S106092865	NOVATO COMMUNITY HOSPITAL	180 ROLAND WAY	94945	HAZNET
NOVATO	S106800337	NOVATO STORM WATER	STORM WATER MANAGEMENT SYSTEMS		CA WDS
NOVATO	S106234950	NOVATO STORAGE PARK RANCHO DEL PAN	UNKNOWN AIRPORT RD / BINFORD	94945	SLIC

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List
National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 02/02/2009
Date Data Arrived at EDR: 02/12/2009
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 46

Source: EPA
Telephone: N/A
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites
A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/23/2009
Date Data Arrived at EDR: 04/28/2009
Date Made Active in Reports: 05/19/2009
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens
Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 02/02/2009
Date Data Arrived at EDR: 02/12/2009
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 46

Source: EPA
Telephone: N/A
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 01/09/2009
Date Data Arrived at EDR: 01/30/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 101

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 05/29/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/03/2007
Date Data Arrived at EDR: 12/06/2007
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 76

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/25/2009
Date Data Arrived at EDR: 04/02/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 39

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/01/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Transporters, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 03/31/2009
Date Data Arrived at EDR: 04/22/2009
Date Made Active in Reports: 05/05/2009
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 03/31/2009
Date Data Arrived at EDR: 04/22/2009
Date Made Active in Reports: 05/05/2009
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 01/30/2009
Date Made Active in Reports: 05/19/2009
Number of Days to Update: 109

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 05/12/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 05/27/2009
Date Data Arrived at EDR: 05/27/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 19

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/27/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 05/27/2009
Date Data Arrived at EDR: 05/27/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 19

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/27/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 03/09/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Integrated Waste Management Board
Telephone: 916-341-6320
Last EDR Contact: 03/10/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 05/04/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: Varies

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 06/01/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/18/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/08/2009
Date Data Arrived at EDR: 04/08/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 33

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/18/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 05/11/2009
Next Scheduled EDR Contact: 08/10/2009
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/08/2009
Date Data Arrived at EDR: 04/08/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 33

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/18/2009
Next Scheduled EDR Contact: 08/17/2008
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 05/11/2009
Next Scheduled EDR Contact: 08/10/2009
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 06/01/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/26/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 12/15/2008
Date Data Arrived at EDR: 12/16/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 90

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 05/20/2009
Date Data Arrived at EDR: 05/20/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 9

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 06/04/2009
Date Data Arrived at EDR: 06/05/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 12

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 03/24/2009
Date Data Arrived at EDR: 05/20/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 28

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/20/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 06/01/2009
Date Data Arrived at EDR: 06/03/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 14

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 25

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 02/24/2009
Date Data Arrived at EDR: 03/03/2009
Date Made Active in Reports: 05/05/2009
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Semi-Annually

State and tribal registered storage tank lists

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/08/2009
Date Data Arrived at EDR: 04/08/2009
Date Made Active in Reports: 05/14/2009
Number of Days to Update: 36

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 11/01/2007
Date Data Arrived at EDR: 02/10/2009
Date Made Active in Reports: 04/14/2009
Number of Days to Update: 63

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 05/29/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 25

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 02/24/2009
Date Data Arrived at EDR: 03/03/2009
Date Made Active in Reports: 05/05/2009
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 09/08/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 10/16/2008
Number of Days to Update: 27

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/20/2009
Date Data Arrived at EDR: 05/20/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 9

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/01/2008
Date Data Arrived at EDR: 12/30/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 76

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/22/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 06/01/2009
Date Data Arrived at EDR: 06/03/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 14

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 06/04/2009
Date Data Arrived at EDR: 06/05/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 12

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 12/15/2008
Date Data Arrived at EDR: 12/16/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 90

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Quarterly

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 04/02/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 05/27/2009
Date Data Arrived at EDR: 05/27/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 19

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/27/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities–especially those without EPA Brownfields Assessment Demonstration Pilots–minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 10/01/2008
Date Data Arrived at EDR: 11/14/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 05/20/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 03/25/2008
Date Data Arrived at EDR: 04/17/2008
Date Made Active in Reports: 05/15/2008
Number of Days to Update: 28

Source: EPA, Region 9
Telephone: 415-972-3336
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 06/01/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: Quarterly

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 04/07/2009
Date Data Arrived at EDR: 04/08/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 33

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 05/28/2009
Date Data Arrived at EDR: 05/29/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 17

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 06/08/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/26/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 10/31/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 53

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/26/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database
The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program
This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 05/27/2009
Date Data Arrived at EDR: 05/27/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 19

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/27/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites
Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs
A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 09/30/2008
Date Data Arrived at EDR: 10/06/2008
Date Made Active in Reports: 10/13/2008
Number of Days to Update: 7

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 05/22/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 04/07/2009
Date Data Arrived at EDR: 04/07/2009
Date Made Active in Reports: 05/14/2009
Number of Days to Update: 37

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Varies

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/03/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/18/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 06/08/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Varies

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 05/15/2009
Date Data Arrived at EDR: 05/19/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 27

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/04/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 8

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 12/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/31/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 43

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/16/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CHMIRS: California Hazardous Material Incident Report System
California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 05/09/2008
Date Made Active in Reports: 06/20/2008
Number of Days to Update: 42

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/18/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing
The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 04/08/2009
Date Data Arrived at EDR: 04/08/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 33

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing
The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 04/08/2009
Date Data Arrived at EDR: 04/08/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 33

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/23/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 05/14/2008
Date Data Arrived at EDR: 05/28/2008
Date Made Active in Reports: 08/08/2008
Number of Days to Update: 72

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/27/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: Varies

DOD: Department of Defense Sites
This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 05/08/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 09/05/2008
Date Made Active in Reports: 09/23/2008
Number of Days to Update: 18

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 01/27/2009
Date Data Arrived at EDR: 04/23/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 18

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/21/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/23/2009
Date Data Arrived at EDR: 04/28/2009
Date Made Active in Reports: 05/19/2009
Number of Days to Update: 21

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 01/05/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 05/08/2009
Number of Days to Update: 1

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 03/24/2009
Date Made Active in Reports: 05/05/2009
Number of Days to Update: 42

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 03/24/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 04/09/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 69

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 06/16/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002
Date Data Arrived at EDR: 04/14/2006
Date Made Active in Reports: 05/30/2006
Number of Days to Update: 46

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 04/14/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 03/14/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/18/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 03/20/2009
Date Data Arrived at EDR: 03/20/2009
Date Made Active in Reports: 05/05/2009
Number of Days to Update: 46

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 02/26/2009
Date Data Arrived at EDR: 05/20/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 9

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 05/04/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/02/2009
Date Data Arrived at EDR: 04/24/2009
Date Made Active in Reports: 05/19/2009
Number of Days to Update: 25

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/28/2009
Date Data Arrived at EDR: 04/29/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/29/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/28/2009
Date Data Arrived at EDR: 05/01/2009
Date Made Active in Reports: 05/19/2009
Number of Days to Update: 18

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 05/22/2009
Number of Days to Update: 92

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 06/08/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 03/09/2009
Date Data Arrived at EDR: 03/13/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 26

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 06/11/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Quarterly

CA WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/20/2009
Date Data Arrived at EDR: 04/22/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 19

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/22/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Proposition 65 Notification Records. NOTIFY 65 contains facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 05/06/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 4

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 04/17/2009
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 03/31/2009
Date Data Arrived at EDR: 04/24/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 17

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/24/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 02/17/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 50

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 05/08/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: Annually

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 10/16/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 41

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/17/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 05/08/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing
The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 04/13/2009
Date Data Arrived at EDR: 04/14/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/08/2009
Next Scheduled EDR Contact: 08/10/2009
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 05/08/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: N/A

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/24/2009
Date Data Arrived at EDR: 04/28/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 13

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/24/2009
Date Data Arrived at EDR: 04/28/2009
Date Made Active in Reports: 05/14/2009
Number of Days to Update: 16

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 05/27/2009
Date Data Arrived at EDR: 05/28/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 18

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/26/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/17/2009
Date Data Arrived at EDR: 04/17/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 24

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 05/04/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: Semi-Annually

KERN COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 9

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: Quarterly

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 07/07/1999
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 11/26/2008
Date Data Arrived at EDR: 01/27/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 71

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 05/11/2009
Next Scheduled EDR Contact: 08/10/2009
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 05/12/2009
Date Data Arrived at EDR: 05/14/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 32

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 05/12/2009
Next Scheduled EDR Contact: 08/10/2009
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 06/08/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/11/2009
Date Data Arrived at EDR: 04/23/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 18

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 05/11/2009
Next Scheduled EDR Contact: 08/10/2009
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 05/11/2009
Date Data Arrived at EDR: 05/19/2009
Date Made Active in Reports: 06/12/2009
Number of Days to Update: 24

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 05/11/2009
Next Scheduled EDR Contact: 08/10/2009
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 06/03/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 02/23/2009
Date Data Arrived at EDR: 02/24/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 44

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 06/12/2009
Next Scheduled EDR Contact: 08/10/2009
Data Release Frequency: Semi-Annually

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 02/05/2009
Date Data Arrived at EDR: 02/17/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 51

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/27/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Semi-Annually

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Semi-Annually

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Annually

ORANGE COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 05/06/2009
Date Data Arrived at EDR: 06/09/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 6

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 06/03/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 03/02/2009
Date Data Arrived at EDR: 03/27/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 12

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 06/03/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 05/06/2009
Date Data Arrived at EDR: 06/09/2009
Date Made Active in Reports: 06/12/2009
Number of Days to Update: 3

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 04/27/2009
Date Data Arrived at EDR: 04/28/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 13

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 04/03/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/14/2009
Date Data Arrived at EDR: 04/15/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 26

Source: Department of Public Health
Telephone: 951-358-5055
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 05/06/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 05/14/2009
Number of Days to Update: 7

Source: Health Services Agency
Telephone: 951-358-5055
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Contaminated Sites

List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/04/2009
Date Data Arrived at EDR: 04/29/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 12

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/29/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

ML - Regulatory Compliance Master List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/04/2009
Date Data Arrived at EDR: 04/29/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 12

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/29/2009
Next Scheduled EDR Contact: 07/27/2009
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 04/08/2009
Date Data Arrived at EDR: 04/08/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 33

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 06/01/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 07/16/2008
Date Data Arrived at EDR: 10/29/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 28

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 04/03/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 11/01/2008
Date Data Arrived at EDR: 12/23/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 35

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/18/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 01/22/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 8

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 03/31/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Varies

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 06/01/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 10/01/2008
Number of Days to Update: 12

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST

A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 04/22/2009
Date Data Arrived at EDR: 05/12/2009
Date Made Active in Reports: 06/12/2009
Number of Days to Update: 31

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Semi-Annually

SAN MATEO COUNTY:

Business Inventory

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/29/2009
Date Data Arrived at EDR: 05/01/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 10

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Annually

Fuel Leak List

A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 04/07/2009
Date Data Arrived at EDR: 04/07/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 34

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Semi-Annually

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 05/18/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Varies

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 06/01/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: City of San Jose Fire Department
Telephone: 408-277-4659
Last EDR Contact: 06/01/2009
Next Scheduled EDR Contact: 08/31/2009
Data Release Frequency: Annually

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/23/2009
Date Data Arrived at EDR: 04/07/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 34

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/23/2009
Date Data Arrived at EDR: 04/10/2009
Date Made Active in Reports: 05/14/2009
Number of Days to Update: 34

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/20/2009
Date Data Arrived at EDR: 04/21/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 20

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 04/01/2009
Date Data Arrived at EDR: 04/02/2009
Date Made Active in Reports: 04/09/2009
Number of Days to Update: 7

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/30/2009
Next Scheduled EDR Contact: 06/29/2009
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 02/26/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 8

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/12/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 08/01/2008
Date Data Arrived at EDR: 09/04/2008
Date Made Active in Reports: 09/18/2008
Number of Days to Update: 14

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/17/2009
Next Scheduled EDR Contact: 08/17/2009
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/09/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/31/2009
Date Data Arrived at EDR: 04/08/2009
Date Made Active in Reports: 05/14/2009
Number of Days to Update: 36

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/08/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 04/21/2009
Date Data Arrived at EDR: 05/06/2009
Date Made Active in Reports: 05/14/2009
Number of Days to Update: 8

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/13/2009
Next Scheduled EDR Contact: 07/13/2009
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 12/11/2008
Date Made Active in Reports: 03/19/2009
Number of Days to Update: 98

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 06/12/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 05/05/2009
Date Made Active in Reports: 05/22/2009
Number of Days to Update: 17

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 05/05/2009
Next Scheduled EDR Contact: 08/03/2009
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/27/2009
Date Data Arrived at EDR: 02/25/2009
Date Made Active in Reports: 03/12/2009
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/27/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 09/11/2008
Date Made Active in Reports: 10/02/2008
Number of Days to Update: 21

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 06/08/2009
Next Scheduled EDR Contact: 09/07/2009
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 02/12/2009
Date Made Active in Reports: 03/11/2009
Number of Days to Update: 27

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 06/15/2009
Next Scheduled EDR Contact: 09/14/2009
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/22/2008
Date Made Active in Reports: 09/08/2008
Number of Days to Update: 17

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 04/07/2009
Next Scheduled EDR Contact: 07/06/2009
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STREET AND ADDRESS INFORMATION

© 2009 Tele Atlas 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

PG&E - NOVATO
8161 REDWOOD BLVD
NOVATO, CA 94945

TARGET PROPERTY COORDINATES

Latitude (North):	38.13400 - 38° 8' 2.4"
Longitude (West):	122.565 - 122° 33' 54.0"
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	538123.3
UTM Y (Meters):	4220566.0
Elevation:	11 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	38122-B5 PETALUMA RIVER, CA
Most Recent Revision:	1980
South Map:	38122-A5 NOVATO, CA
Most Recent Revision:	1980

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).

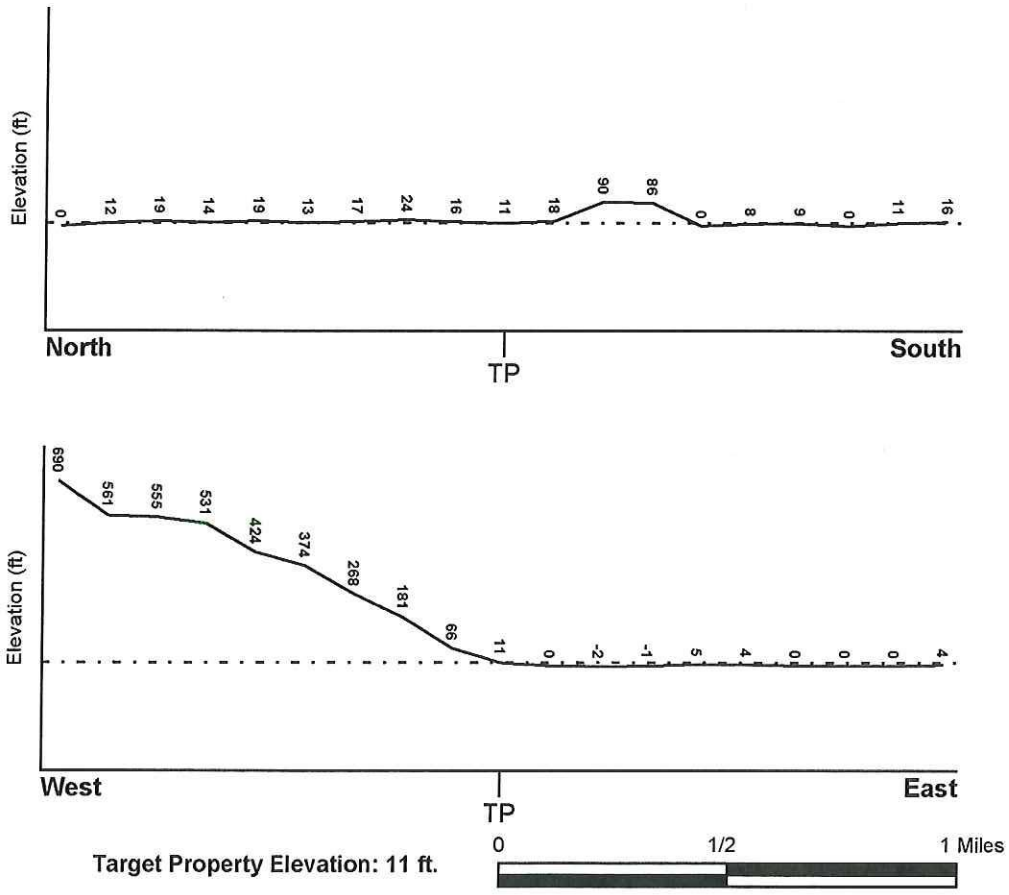
TOPOGRAPHIC INFORMATION

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 ENE

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

Target Property County	FEMA Flood Electronic Data
MARIN, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 0601730140A

Additional Panels in search area: 0601730145A
0601780001C
0601780003C
0601780002C
0601730256A
0601730255A

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
PETALUMA RIVER	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
2	1/4 - 1/2 Mile NNE	E

For additional site information, refer to Physical Setting Source Map Findings.

* ©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

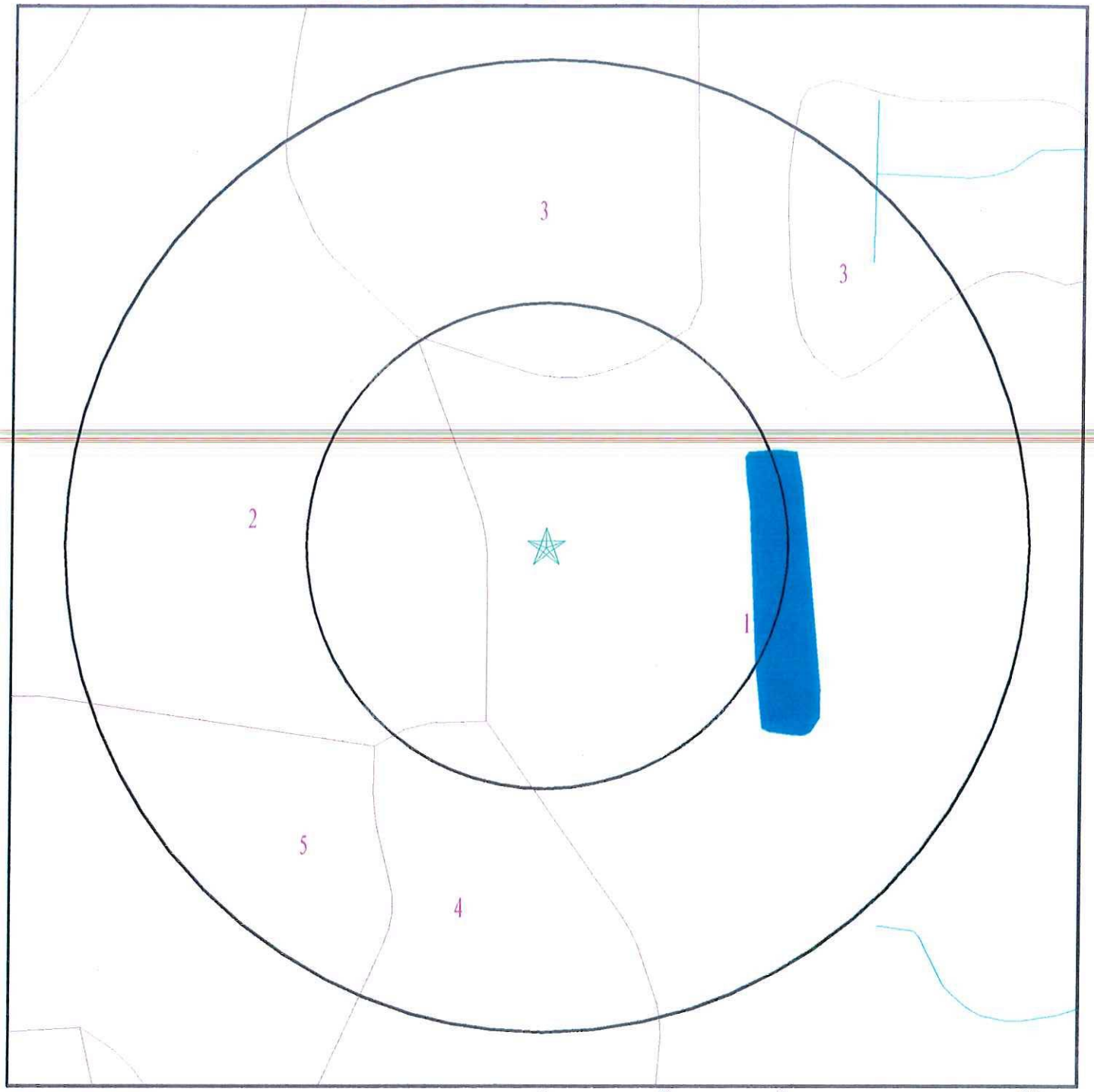
Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT **GEOLOGIC AGE IDENTIFICATION**

Era:	Mesozoic	Category:	Stratified Sequence
System:	Cretaceous		
Series:	Lower Cretaceous		
Code:	IK *(decoded above as Era, System & Series)*		

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).

SSURGO SOIL MAP - 02522549.2r



★ Target Property
SSURGO Soil
Water

SITE NAME:	PG&E - Novato	CLIENT:	Stantec
ADDRESS:	8161 Redwood Blvd Novato CA 94945	CONTACT:	Anna Radonich
		INQUIRY #:	02522549.2r
LAT/LONG:	38.1340 / 122.5650	DATE:	June 19, 2009 7:57 am

Copyright © 2008 EDR, Inc. © 2008 Tele Atlas Rel. 07/2007.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: REYES

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Elastic silt.	Max: 1.4 Min: 0.42	Max: 6 Min: 3.6
2	14 inches	62 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Elastic silt.	Max: 1.4 Min: 0.42	Max: 6 Min: 3.6

Soil Map ID: 2

Soil Component Name: YORKVILLE

Soil Surface Texture: clay loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: Min:	Max: Min:
2	14 inches	51 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: Min:	Max: Min:
3	51 inches	55 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: Min:	Max: Min:

Soil Map ID: 3

Soil Component Name: XERORTHENTS

Soil Surface Texture: clay loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class:
Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 4

Soil Component Name: GILROY

Soil Surface Texture: loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 46 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:
2	11 inches	20 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:
3	20 inches	29 inches	gravelly clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:
4	29 inches	33 inches	unweathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 5

Soil Component Name: LOS OSOS

Soil Surface Texture: loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:
2	18 inches	38 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:
3	38 inches	42 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:

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.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

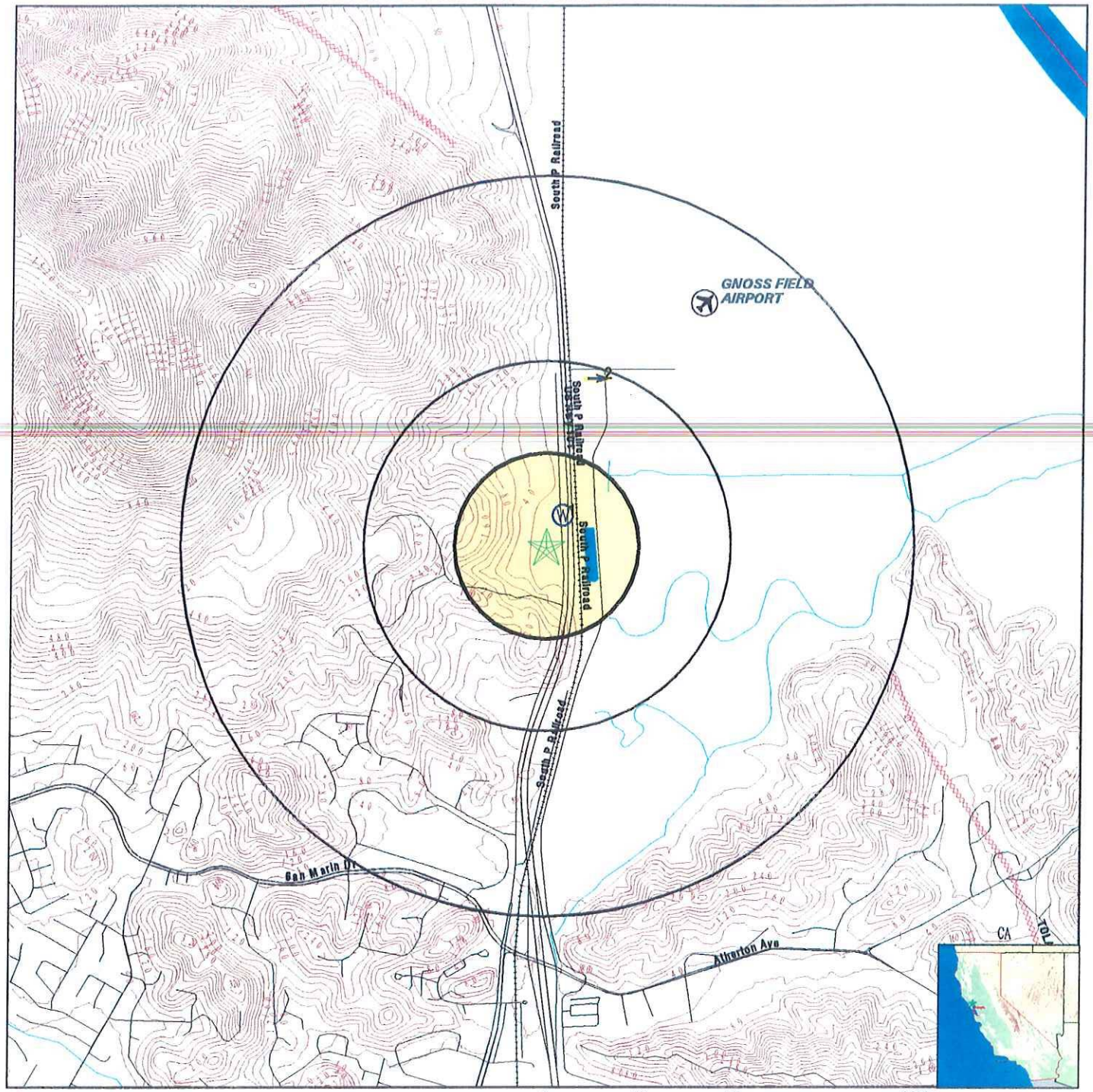
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	22362	0 - 1/8 Mile NNE

PHYSICAL SETTING SOURCE MAP - 02522549.2r



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	PG&E - Novato	CLIENT:	Stantec
ADDRESS:	8161 Redwood Blvd Novato CA 94945	CONTACT:	Anna Radonich
LAT/LONG:	38.1340 / 122.5650	INQUIRY #:	02522549.2r
		DATE:	June 19, 2009 7:57 am

Copyright © 2008 EDR, Inc. © 2008 Tele Atlas Rel. 07/2007.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
1 NNE 0 - 1/8 Mile Lower		CA WELLS	22362

Water System Information:

Prime Station Code:	D21/003-MA.AQDT	User ID:	ENG
FRDS Number:	2110003001	County:	Marin
District Number:	04	Station Type:	STREAM/AMBNT/MUN/INTAKE
Water Type:	Surface Water	Well Status:	Active Treated
Source Lat/Long:	380807.5 1223347.5	Precision:	1,000 Feet (10 Seconds)
Source Name:	MARIN AQUEDUCT-PURCHASED-SONOMA CO-TRTD		
System Number:	2110003		
System Name:	North Marin Water District		
Organization That Operates System:			
	P O BOX 146 NOVATO, CA 94948		
Pop Served:	55000	Connections:	17195
Area Served:	NOVATO-VIC		
Sample Collected:	10/10/2007 00:00:00	Findings:	5.53 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	10/10/2007 00:00:00	Findings:	3.32 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	10/10/2007 00:00:00	Findings:	1.6 UG/L
Chemical:	DICHLOROACETIC ACID (DCAA)		
Sample Collected:	10/10/2007 00:00:00	Findings:	15.32 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	10/10/2007 00:00:00	Findings:	1.1 UG/L
Chemical:	TRICHLOROACETIC ACID (TCAA)		
Sample Collected:	10/10/2007 00:00:00	Findings:	5.8 UG/L
Chemical:	HALOACETIC ACIDS (5) (HAA5)		
Sample Collected:	10/10/2007 00:00:00	Findings:	1.6 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	10/10/2007 00:00:00	Findings:	4.87 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	10/10/2007 00:00:00	Findings:	3 UG/L
Chemical:	DIBROMOACETIC ACID (DBAA)		
Sample Collected:	08/13/2007 00:00:00	Findings:	.17 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	08/13/2007 00:00:00	Findings:	.16 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	08/13/2007 00:00:00	Findings:	7.9 MG/L
Chemical:	CHLORIDE		
Sample Collected:	08/13/2007 00:00:00	Findings:	21 MG/L
Chemical:	SODIUM		
Sample Collected:	08/13/2007 00:00:00	Findings:	10 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	08/13/2007 00:00:00	Findings:	25 MG/L
Chemical:	CALCIUM		
Sample Collected:	08/13/2007 00:00:00	Findings:	97 MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		

Sample Collected:	08/13/2007 00:00:00	Findings:	116 MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	08/13/2007 00:00:00	Findings:	8.14
Chemical:	PH, LABORATORY		
Sample Collected:	08/13/2007 00:00:00	Findings:	268 US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	08/13/2007 00:00:00	Findings:	22.1 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	08/13/2007 00:00:00	Findings:	180 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	08/08/2007 00:00:00	Findings:	20.03 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	08/08/2007 00:00:00	Findings:	3.69 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	08/08/2007 00:00:00	Findings:	7.65 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	08/08/2007 00:00:00	Findings:	2.52 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	08/08/2007 00:00:00	Findings:	6.17 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	05/08/2007 00:00:00	Findings:	2.7 UG/L
Chemical:	HALOACETIC ACIDS (5) (HAA5)		
Sample Collected:	05/08/2007 00:00:00	Findings:	4.7 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	05/08/2007 00:00:00	Findings:	1.7 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	05/08/2007 00:00:00	Findings:	5.5 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	05/08/2007 00:00:00	Findings:	3.3 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	05/08/2007 00:00:00	Findings:	1.3 UG/L
Chemical:	DICHLOROACETIC ACID (DCAA)		
Sample Collected:	05/08/2007 00:00:00	Findings:	15 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	05/08/2007 00:00:00	Findings:	1.4 UG/L
Chemical:	DIBROMOACETIC ACID (DBAA)		
Sample Collected:	03/13/2007 00:00:00	Findings:	1.3 UG/L
Chemical:	TRICHLOROACETIC ACID (TCAA)		
Sample Collected:	03/13/2007 00:00:00	Findings:	15 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	03/13/2007 00:00:00	Findings:	2.3 UG/L
Chemical:	DICHLOROACETIC ACID (DCAA)		
Sample Collected:	03/13/2007 00:00:00	Findings:	6.9 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	03/13/2007 00:00:00	Findings:	2.6 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	03/13/2007 00:00:00	Findings:	3.6 UG/L
Chemical:	HALOACETIC ACIDS (5) (HAA5)		
Sample Collected:	03/13/2007 00:00:00	Findings:	4.8 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		

Sample Collected:	10/10/2006 00:00:00	Findings:	5.1 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	10/10/2006 00:00:00	Findings:	1.6 UG/L
Chemical:	HALOACETIC ACIDS (5) (HAA5)		
Sample Collected:	10/10/2006 00:00:00	Findings:	1.6 UG/L
Chemical:	DIBROMOACETIC ACID (DBAA)		
Sample Collected:	10/10/2006 00:00:00	Findings:	4 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	10/10/2006 00:00:00	Findings:	2 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	10/10/2006 00:00:00	Findings:	2.4 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	10/10/2006 00:00:00	Findings:	14 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	09/12/2006 00:00:00	Findings:	.19 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	09/12/2006 00:00:00	Findings:	21.5 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	09/12/2006 00:00:00	Findings:	160 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	09/12/2006 00:00:00	Findings:	.17 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	09/12/2006 00:00:00	Findings:	4.8 MG/L
Chemical:	CHLORIDE		
Sample Collected:	09/12/2006 00:00:00	Findings:	19 MG/L
Chemical:	SODIUM		
Sample Collected:	09/12/2006 00:00:00	Findings:	12 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	09/12/2006 00:00:00	Findings:	21.2 MG/L
Chemical:	CALCIUM		
Sample Collected:	09/12/2006 00:00:00	Findings:	101 MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	09/12/2006 00:00:00	Findings:	119 MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	09/12/2006 00:00:00	Findings:	8.44
Chemical:	PH, LABORATORY		
Sample Collected:	09/12/2006 00:00:00	Findings:	270 US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	09/12/2006 00:00:00	Findings:	2.5 UNITS
Chemical:	COLOR		
Sample Collected:	08/08/2006 00:00:00	Findings:	4.3 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	08/08/2006 00:00:00	Findings:	2.3 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	08/08/2006 00:00:00	Findings:	5.8 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	08/08/2006 00:00:00	Findings:	2.6 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	08/08/2006 00:00:00	Findings:	15 UG/L
Chemical:	TOTAL TRIHALOMETHANES		

Sample Collected:	08/08/2006 00:00:00	Findings:	1.9 UG/L
Chemical:	DIBROMOACETIC ACID (DBAA)		
Sample Collected:	08/08/2006 00:00:00	Findings:	1.9 UG/L
Chemical:	HALOACETIC ACIDS (5) (HAA5)		
Sample Collected:	05/09/2006 00:00:00	Findings:	1.6 UG/L
Chemical:	DIBROMOACETIC ACID (DBAA)		
Sample Collected:	05/09/2006 00:00:00	Findings:	14 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	05/09/2006 00:00:00	Findings:	2.7 UG/L
Chemical:	HALOACETIC ACIDS (5) (HAA5)		
Sample Collected:	05/09/2006 00:00:00	Findings:	3.8 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	05/09/2006 00:00:00	Findings:	4.8 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	05/09/2006 00:00:00	Findings:	5 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	05/09/2006 00:00:00	Findings:	1.1 UG/L
Chemical:	DICHLOROACETIC ACID (DCAA)		
Sample Collected:	03/07/2006 00:00:00	Findings:	5.5 UG/L
Chemical:	HALOACETIC ACIDS (5) (HAA5)		
Sample Collected:	03/07/2006 00:00:00	Findings:	1.6 UG/L
Chemical:	TRICHLOROACETIC ACID (TCAA)		
Sample Collected:	03/07/2006 00:00:00	Findings:	1.4 UG/L
Chemical:	DIBROMOACETIC ACID (DBAA)		
Sample Collected:	03/07/2006 00:00:00	Findings:	18 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	03/07/2006 00:00:00	Findings:	2.5 UG/L
Chemical:	DICHLOROACETIC ACID (DCAA)		
Sample Collected:	03/07/2006 00:00:00	Findings:	7.4 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	03/07/2006 00:00:00	Findings:	4.2 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	03/07/2006 00:00:00	Findings:	6.1 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	11/07/2005 00:00:00	Findings:	1.4 UG/L
Chemical:	HALOACETIC ACIDS (5) (HAA5)		
Sample Collected:	11/07/2005 00:00:00	Findings:	6.2 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	11/07/2005 00:00:00	Findings:	2.1 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	11/07/2005 00:00:00	Findings:	4.6 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	11/07/2005 00:00:00	Findings:	19 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	11/07/2005 00:00:00	Findings:	1.4 UG/L
Chemical:	DIBROMOACETIC ACID (DBAA)		
Sample Collected:	11/07/2005 00:00:00	Findings:	6.5 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	08/09/2005 00:00:00	Findings:	3.6 UG/L
Chemical:	HALOACETIC ACIDS (5) (HAA5)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	08/09/2005 00:00:00	Findings:	2.4 UG/L
Chemical:	DIBROMOACETIC ACID (DBAA)		
Sample Collected:	08/09/2005 00:00:00	Findings:	18 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	08/09/2005 00:00:00	Findings:	1.2 UG/L
Chemical:	DICHLOROACETIC ACID (DCAA)		
Sample Collected:	08/09/2005 00:00:00	Findings:	3.8 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	08/09/2005 00:00:00	Findings:	6.3 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	08/09/2005 00:00:00	Findings:	1.5 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	08/09/2005 00:00:00	Findings:	6 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	05/11/2005 00:00:00	Findings:	1.4 UG/L
Chemical:	DICHLOROACETIC ACID (DCAA)		
Sample Collected:	05/11/2005 00:00:00	Findings:	21 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	05/11/2005 00:00:00	Findings:	2 UG/L
Chemical:	DIBROMOACETIC ACID (DBAA)		
Sample Collected:	05/11/2005 00:00:00	Findings:	3.4 UG/L
Chemical:	HALOACETIC ACIDS (5) (HAA5)		
Sample Collected:	05/11/2005 00:00:00	Findings:	7 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	05/11/2005 00:00:00	Findings:	1.5 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	05/11/2005 00:00:00	Findings:	6.4 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	05/11/2005 00:00:00	Findings:	6.3 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	11/03/2004 00:00:00	Findings:	1.8 UG/L
Chemical:	DIBROMOACETIC ACID (DBAA)		
Sample Collected:	11/03/2004 00:00:00	Findings:	13 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	11/03/2004 00:00:00	Findings:	1.8 UG/L
Chemical:	HALOACETIC ACIDS (5) (HAA5)		
Sample Collected:	11/03/2004 00:00:00	Findings:	2.3 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	11/03/2004 00:00:00	Findings:	5.1 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	11/03/2004 00:00:00	Findings:	1.9 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	11/03/2004 00:00:00	Findings:	3.9 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	08/24/2004 00:00:00	Findings:	.11 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	08/24/2004 00:00:00	Findings:	150 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	08/24/2004 00:00:00	Findings:	.17 NTU
Chemical:	TURBIDITY, LABORATORY		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	08/24/2004 00:00:00	Findings:	5.8 MG/L
Chemical:	CHLORIDE		
Sample Collected:	08/24/2004 00:00:00	Findings:	19 MG/L
Chemical:	SODIUM		
Sample Collected:	08/24/2004 00:00:00	Findings:	11.4 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	08/24/2004 00:00:00	Findings:	21 MG/L
Chemical:	CALCIUM		
Sample Collected:	08/24/2004 00:00:00	Findings:	101 MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	08/24/2004 00:00:00	Findings:	115 MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	08/24/2004 00:00:00	Findings:	8.41
Chemical:	PH, LABORATORY		
Sample Collected:	08/24/2004 00:00:00	Findings:	300 US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	08/24/2004 00:00:00	Findings:	23 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	08/24/2004 00:00:00	Findings:	2.5 UNITS
Chemical:	COLOR		
Sample Collected:	09/09/2003 00:00:00	Findings:	2.5 UNITS
Chemical:	COLOR		
Sample Collected:	09/09/2003 00:00:00	Findings:	18 MG/L
Chemical:	SODIUM		
Sample Collected:	09/09/2003 00:00:00	Findings:	11.9 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04/23/2002 00:00:00	Findings:	2.5 UNITS
Chemical:	COLOR		
Sample Collected:	04/23/2002 00:00:00	Findings:	.17 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	04/23/2002 00:00:00	Findings:	296 US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	04/23/2002 00:00:00	Findings:	8.37
Chemical:	PH, LABORATORY		
Sample Collected:	04/23/2002 00:00:00	Findings:	124 MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04/23/2002 00:00:00	Findings:	121 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04/23/2002 00:00:00	Findings:	3 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	04/23/2002 00:00:00	Findings:	110 MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04/23/2002 00:00:00	Findings:	23.8 MG/L
Chemical:	CALCIUM		
Sample Collected:	04/23/2002 00:00:00	Findings:	13.8 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04/23/2002 00:00:00	Findings:	18.8 MG/L
Chemical:	SODIUM		
Sample Collected:	04/23/2002 00:00:00	Findings:	8.4 MG/L
Chemical:	CHLORIDE		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected: 04/23/2002 00:00:00 Findings: 135 MG/L
Chemical: TOTAL DISSOLVED SOLIDS

2
NNE
1/4 - 1/2 Mile
Lower

Site ID:	21-0298
Groundwater Flow:	E
Shallow Water Depth:	4.5
Deep Water Depth:	6
Average Water Depth:	Not Reported
Date:	10/31/1995

AQUIFLOW **39238**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zip	Total Sites	> 4 Pci/L	Pct. > 4 Pci/L
94945	10	0	0.00

Federal EPA Radon Zone for MARIN County: 3

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 Zip Code: 94945

Number of sites tested: 6

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	-0.083 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

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.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

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 Services
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 Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, 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 Health Services
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.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
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.

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.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

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

© 2009 Tele Atlas 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.

PG&E - Novato
8161 Redwood Blvd
Novato, CA 94945

Inquiry Number: 2522549.5
June 22, 2009

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDRs professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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.

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 2009 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.

Date EDR Searched Historical Sources:
Aerial Photography June 22, 2009

Target Property:
8161 Redwood Blvd
Novato, CA 94945

Year	*Scale*	*Details*	*Source*
1952	Aerial Photograph. Scale: 1"=555'	Flight Year: 1952	PACIFIC AIR
1965	Aerial Photograph. Scale: 1"=333'	Flight Year: 1965	CARTWRIGHT
1975	Aerial Photograph. Scale: 1"=550'	Flight Year: 1975	NASA
1982	Aerial Photograph. Scale: 1"=690'	Flight Year: 1982	USGS
1993	Aerial Photograph. Scale: 1"=666'	Flight Year: 1993	USGS
1998	Aerial Photograph. Scale: 1"=666'	Flight Year: 1998	USGS
2005	Aerial Photograph. 1" = 604'	Flight Year: 2005	EDR
2006	Aerial Photograph. 1" = 604'	Flight Year: 2006	EDR


INQUIRY #: 2522549.5
YEAR: 1952
= 555'
N


INQUIRY #: 2522549.5
YEAR: 1965
= 333'
N


INQUIRY #: 2522549.5
YEAR: 1975
= 550'
N



INQUIRY #: 2522549.5

YEAR: 1982

= 690'

N



INQUIRY #: 2522549.5

YEAR: 1993

= 666'

N



INQUIRY #: 2522549.5

YEAR: 1998

= 666'

N


INQUIRY #: 2522549.5
YEAR: 2005
= 604'
N


INQUIRY #: 2522549.5
YEAR: 2006
= 604'
N

PG&E - Novato
8161 Redwood Blvd
Novato, CA 94945

Inquiry Number: 2522549.4
June 19, 2009

The EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

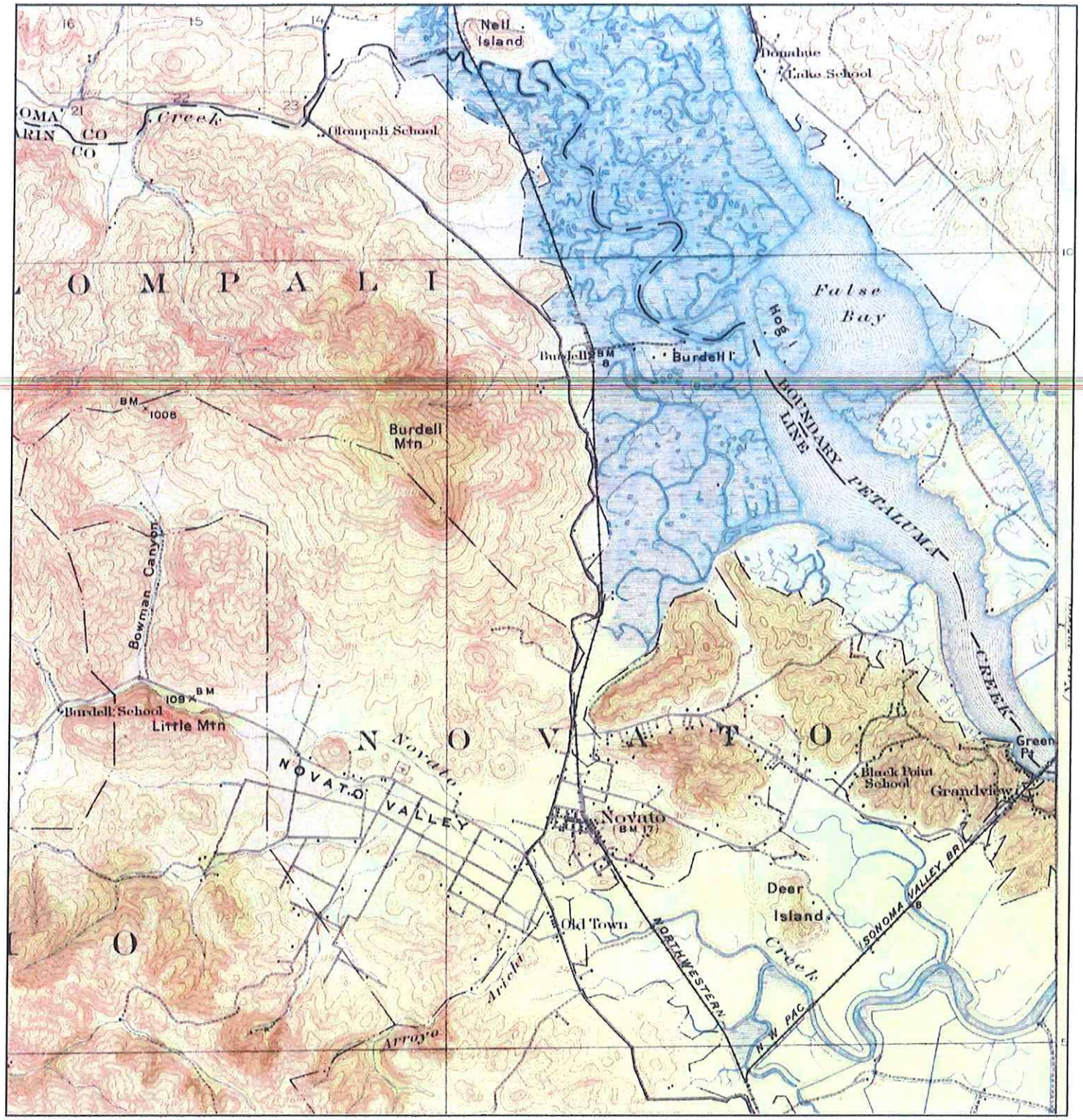
Disclaimer - Copyright and Trademark Notice

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 2009 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.

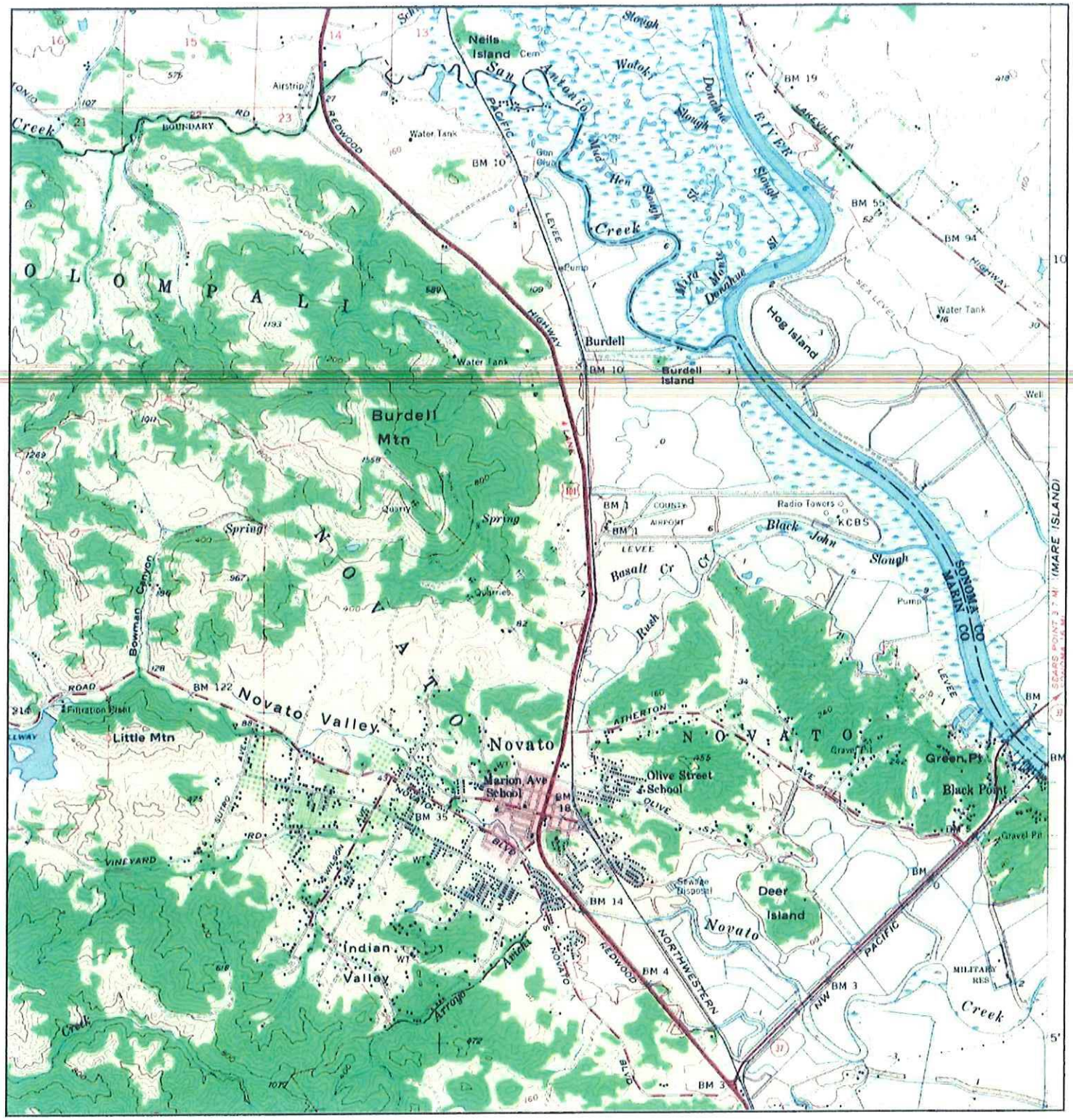
EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

Historical Topographic Map



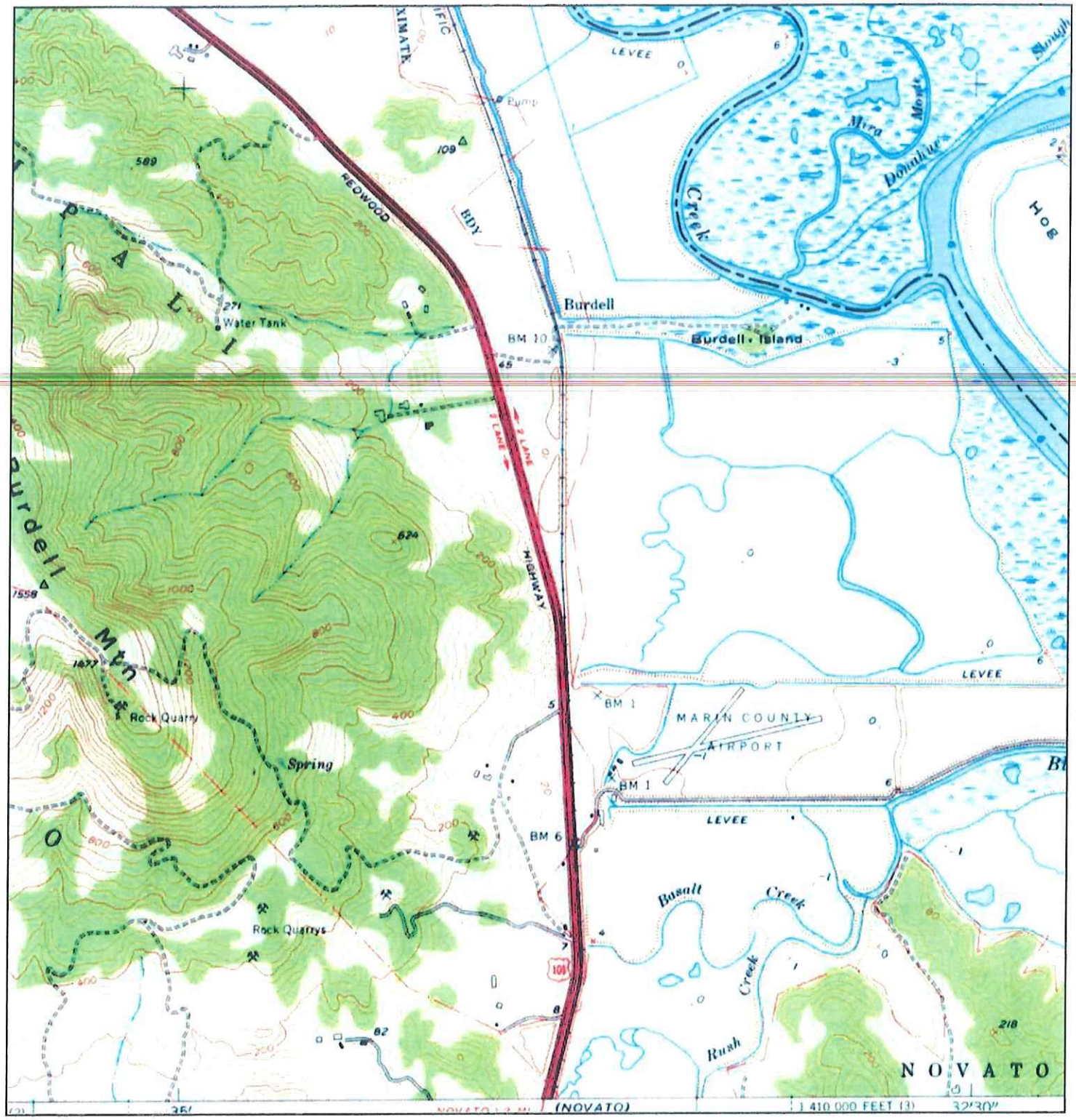
N	TARGET QUAD NAME: PETALUMA MAP YEAR: 1914 SERIES: 15 SCALE: 1:62500	SITE NAME: PG&E - Novato ADDRESS: 8161 Redwood Blvd Novato, CA 94945 LAT/LONG: 38.134 / 122.565	CLIENT: Stantec CONTACT: Anna Radonich INQUIRY#: 2522549.4 RESEARCH DATE: 06/19/2009

Historical Topographic Map



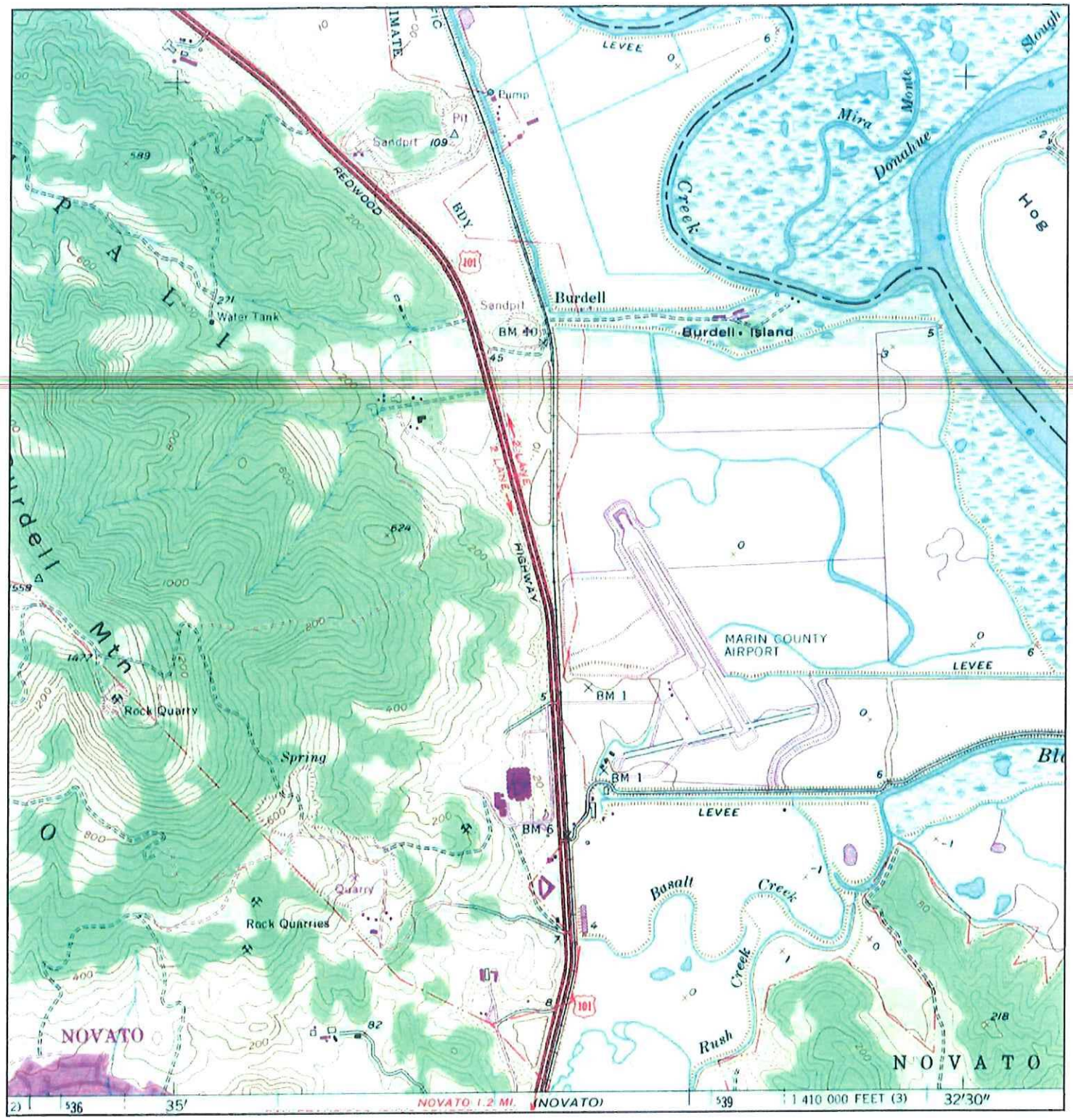
N	TARGET QUAD NAME: PETALUMA MAP YEAR: 1954 SERIES: 15 SCALE: 1:62500	SITE NAME: PG&E - Novato ADDRESS: 8161 Redwood Blvd Novato, CA 94945 LAT/LONG: 38.134 / 122.565	CLIENT: Stantec CONTACT: Anna Radonich INQUIRY#: 2522549.4 RESEARCH DATE: 06/19/2009

Historical Topographic Map



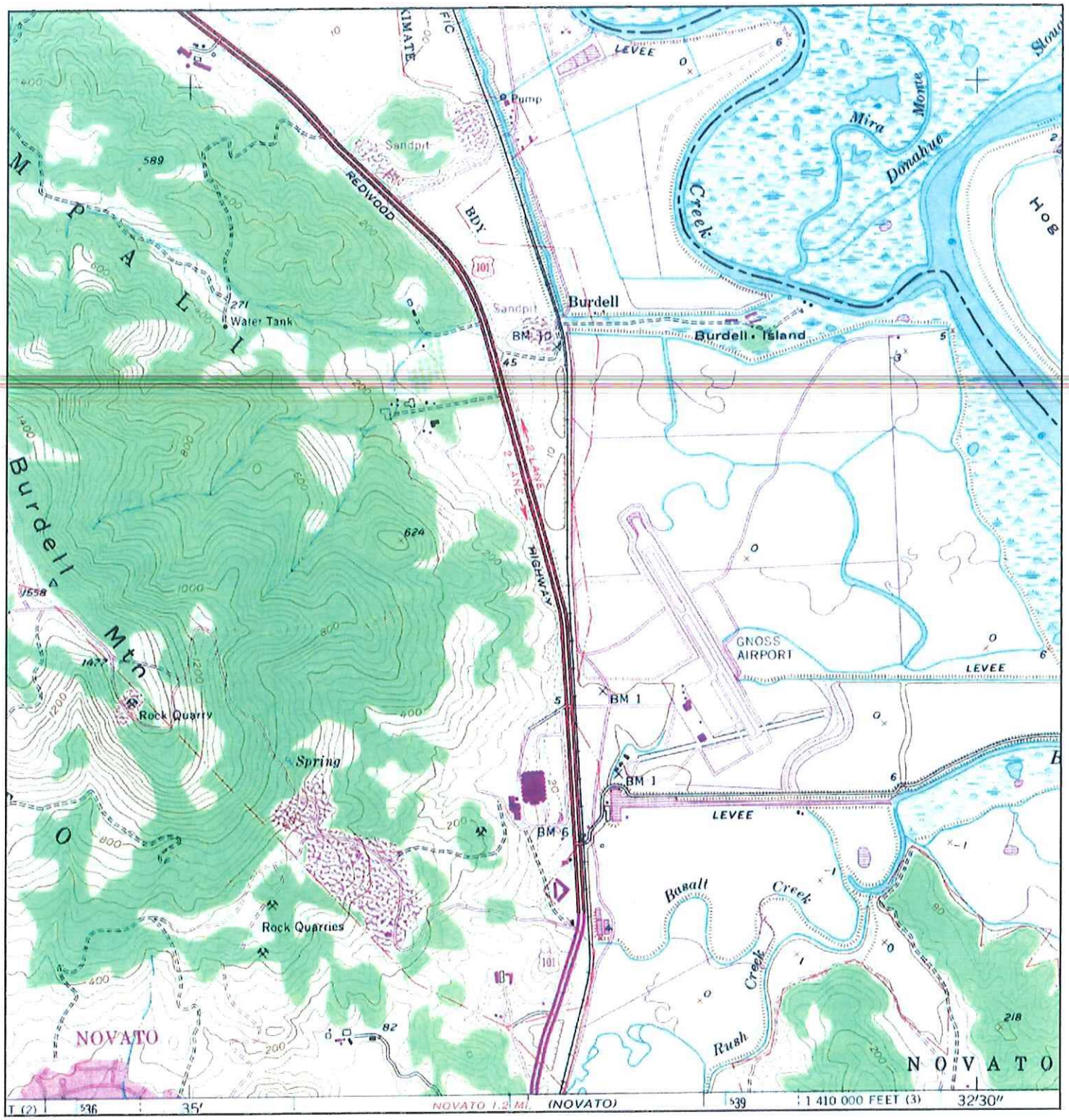
N	TARGET QUAD NAME: PETALUMA RIVER MAP YEAR: 1954 SERIES: 7.5 SCALE: 1:24000	SITE NAME: PG&E - Novato ADDRESS: 8161 Redwood Blvd Novato, CA 94945 LAT/LONG: 38.134 / 122.565	CLIENT: Stantec CONTACT: Anna Radonich INQUIRY#: 2522549.4 RESEARCH DATE: 06/19/2009

Historical Topographic Map



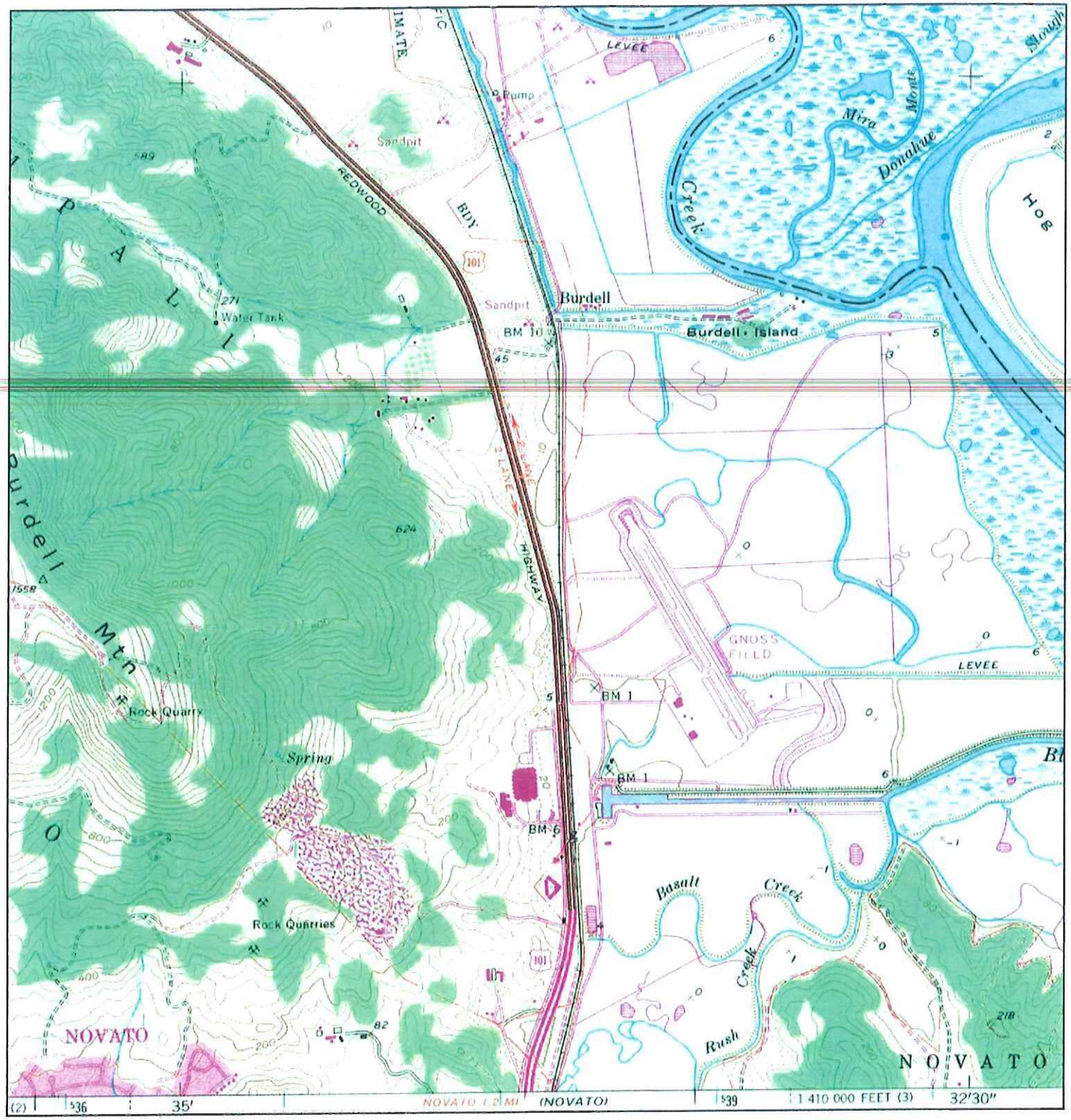
N			
	TARGET QUAD NAME: PETALUMA RIVER MAP YEAR: 1968 PHOTOREVISED FROM:1954 SERIES: 7.5 SCALE: 1:24000	SITE NAME: PG&E - Novato ADDRESS: 8161 Redwood Blvd Novato, CA 94945 LAT/LONG: 38.134 / 122.565	CLIENT: Stantec CONTACT: Anna Radonich INQUIRY#: 2522549.4 RESEARCH DATE: 06/19/2009

Historical Topographic Map



N	TARGET QUAD NAME: PETALUMA RIVER MAP YEAR: 1973 PHOTOREVISED FROM:1954 SERIES: 7.5 SCALE: 1:24000	SITE NAME: PG&E - Novato ADDRESS: 8161 Redwood Blvd Novato, CA 94945 LAT/LONG: 38.134 / 122.565	CLIENT: Stantec CONTACT: Anna Radonich INQUIRY#: 2522549.4 RESEARCH DATE: 06/19/2009

Historical Topographic Map



N	TARGET QUAD		SITE NAME:	PG&E - Novato	CLIENT:	Stantec
	NAME:	PETALUMA RIVER	ADDRESS:	8161 Redwood Blvd	CONTACT:	Anna Radonich
	MAP YEAR:	1980		Novato, CA 94945	INQUIRY#:	2522549.4
	PHOTOREVISED FROM:	1954	LAT/LONG:	38.134 / 122.565	RESEARCH DATE:	06/19/2009
	SERIES:	7.5				
	SCALE:	1:24000				

PG&E - Novato
8161 Redwood Blvd
Novato, CA 94945

Inquiry Number: 2522549.3
June 18, 2009

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/18/09

Site Name:
PG&E - Novato
8161 Redwood Blvd
Novato, CA 94945

Client Name:
Stantec
57 Lafayette Circle
Lafayette, CA 94549

EDR® Environmental Data Resources Inc

EDR Inquiry # 2522549.3

Contact: Anna Radonich

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Stantec were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: PG&E - Novato
Address: 8161 Redwood Blvd
City, State, Zip: Novato, CA 94945
Cross Street:
P.O. # NA
Project: PG&E - Novato
Certification # 7028-4F72-B86C

Sanborn® Library search results
Certification # 7028-4F72-B86C

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.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, 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

Limited Permission To Make Copies

Stantec (the client) is permitted to make up to THREE 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 2009 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.

PG&E - Novato
8161 Redwood Blvd
Novato, CA 94945

Inquiry Number: 2522549.6
June 23, 2009

The EDR-City Directory Abstract

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

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 2008 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.

2009 Enhancements to EDR City Directory Abstract

New for 2009, the EDR City Directory Abstract has been enhanced with additional information and features. These enhancements will make your city directory research process more efficient, flexible, and insightful than ever before. The enhancements will improve the options for selecting adjoining properties, and will speed up your review of the report.

City Directory Report. Three important enhancements have been made to the EDR City Directory Abstract:

1. *Executive Summary.* The report begins with an Executive Summary that lists the sources consulted in the preparation of the report. Where available, a parcel map is also provided within the report, showing the locations of properties researched.

2. *Page Images.* Where available, the actual page source images will be included in the Appendix, so that you can review them for information that may provide additional insight. EDR has copyright permission to include these images.

3. *Findings Listed by Location.* Another useful enhancement is that findings are now grouped by address. This will significantly reduce the time you need to review your abstracts. Findings are provided under each property address, listed in reverse chronological order and referencing the source for each entry.

Options for Selecting Adjoining Properties. Ensuring that the right adjoining property addresses are searched is one of the biggest challenges that environmental professionals face when conducting city directory historical research. EDR's new enhancements make it easier for you to meet this challenge. Now, when you place an order for the EDR City Directory Abstract, you have the following choices for determining which addresses should be researched.

1. *You Select Addresses and EDR Selects Addresses.* Use the "Add Another Address" feature to specify the addresses you want researched. Your selections will be supplemented by addresses selected by EDR researchers using our established research methods. Where available, a digital map will be shown, indicating property lines overlaid on a color aerial photo and their corresponding addresses. Simply use the address list below the map to check off which properties shown on the map you want to include. You may also select other addresses using the "Add Another Address" feature at the bottom of the list.

2. *EDR Selects Addresses.* Choose this method if you want EDR's researchers to select the addresses to be researched for you, using our established research methods.

3. *You Select Addresses.* Use this method for research based solely on the addresses you select or enter into the system.

4. *Hold City Directory Research Option.* If you choose to select your own adjoining addresses, you may pause production of your EDR City Directory Abstract report until you have had a chance to look at your other EDR reports and sources. Sources for property addresses include: your Certified Sanborn Map Report may show you the location of property addresses; the new EDR Property Tax Map Report may show the location of property addresses; and your field research can supplement these sources with additional address information. To use this capability, simply click "Hold City Directory research" box under "Other Options" at the bottom of the page. Once you have determined what addresses you want researched, go to your EDR Order Status page, select the EDR City Directory Abstract, and enter the addresses and submit for production.

Questions? Contact your EDR representative at 800-352-0050. For more information about all of EDR's 2009 report and service enhancements, visit www.edrnet.com/2009enhancements

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.

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
2008	Haines Criss-Cross Directory	X	X	X	-
2000	Haines Criss-Cross Directory	X	X	X	-
1995	Haines Criss-Cross Directory	X	X	X	-
1989	Haines Criss-Cross Directory	X	X	X	-
1983	Haines Criss-Cross Directory	X	X	X	-
1977	Haines Criss-Cross Directory	-	X	X	-
1972	Haines Criss-Cross Directory	-	-	-	-

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

8161 Redwood Blvd
Novato, CA 94945

FINDINGS DETAIL

Target Property research detail.

Year	Uses	Source
2008	No Return	Haines Criss-Cross Directory
2000	No Return	Haines Criss-Cross Directory
1995	Mikes Auto Repair	Haines Criss-Cross Directory
1989	Mikes Auto Repair	Haines Criss-Cross Directory
1983	Mikes Auto Repair	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.

Redwood Blvd

Redwood Blvd

Year	Uses	Source
2008	No address listings beyond (8171) Redwood Blvd	Haines Criss-Cross Directory
	No other addresses (8000 - 8299) block Redwood Blvd	Haines Criss-Cross Directory
2000	No address listings beyond (8171) Redwood Blvd	Haines Criss-Cross Directory
	No other addresses (8000 - 8299) block Redwood Blvd	Haines Criss-Cross Directory
1995	No address listings beyond (8171) Redwood Blvd	Haines Criss-Cross Directory
	No other addresses (8000 - 8299) block Redwood Blvd	Haines Criss-Cross Directory
1989	No address listings beyond (8180) Redwood Blvd	Haines Criss-Cross Directory
	No other addresses (8000 - 8299) block Redwood Blvd	Haines Criss-Cross Directory
1983	No address listings beyond (8180) Redwood Blvd	Haines Criss-Cross Directory
	No other addresses (8000 - 8299) block Redwood Blvd	Haines Criss-Cross Directory
1977	No address listings beyond (8141) Redwood Blvd	Haines Criss-Cross Directory
	No other addresses (8000 - 8299) block Redwood Blvd	Haines Criss-Cross Directory

8001 Redwood Blvd

Year	Uses	Source
2008	Buck Inst For Age Research	Haines Criss-Cross Directory
2000	Buck Inst For Age Research	Haines Criss-Cross Directory
	Walsh Construction Company	Haines Criss-Cross Directory

8141 Redwood Blvd

Year	Uses	Source
2008	Days Inn Novato	Haines Criss-Cross Directory
	Garden Court Restaurant	Haines Criss-Cross Directory
	Novato Motel	Haines Criss-Cross Directory

FINDINGS

Year	Uses	Source
2000	Office Building (5 Occupants)	Haines Criss-Cross Directory
1995	Office Building (6 Occupants)	Haines Criss-Cross Directory
1989	Office Building (5 Occupants)	Haines Criss-Cross Directory
1983	National Truck Schl	Haines Criss-Cross Directory
	Novato Motel	Haines Criss-Cross Directory
	Sportsmans Lodge	Haines Criss-Cross Directory
1977	Novato Motel	Haines Criss-Cross Directory

8171 Redwood Blvd

Year	Uses	Source
2008	Brirkenstock	Haines Criss-Cross Directory
	Brirkenstock Ftprnt Sndls Inc	Haines Criss-Cross Directory
2000	Brirkenstock Ftprnt Sndls Inc	Haines Criss-Cross Directory
1995	Brirkenstock Ftprnt Sndls Inc	Haines Criss-Cross Directory
1989	McGraw Hill Book Co	Haines Criss-Cross Directory
1983	Firemans Fund Ins	Haines Criss-Cross Directory
	McGraw Hill Book Co	Haines Criss-Cross Directory

8180 Redwood Blvd

Year	Uses	Source
1989	No Return	Haines Criss-Cross Directory
1983	No Return	Haines Criss-Cross Directory

FINDINGS

STREET NOT LISTED IN RESEARCH SOURCE

The following Streets were researched for this report, and the Streets were not listed in the research source.

Street Researched	Street Not Listed in Research Source
Redwood Blvd	1972

TARGET PROPERTY: ADDRESS NOT LISTED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not listed in the research source.

Address Researched	Address Not Listed in Research Source
8161 Redwood Blvd	1977

ADJOINING PROPERTY: ADDRESSES NOT LISTED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not listed in research source.

Address Researched	Address Not Listed in Research Source
8001 Redwood Blvd	1995, 1989, 1983, 1977
8171 Redwood Blvd	1977
8180 Redwood Blvd	1977

APPENDIX E
Database Assessment Criteria

PG&E Novato Property
8161 Redwood Boulevard
Novato, California 94945
PN: 185702091
July 28, 2009

REGULATORY DATABASE ASSESSMENT CRITERIA

Research into environmental regulatory agency database listings was performed by a third party environmental regulatory agency database search firm. The purpose of the review was to identify reported environmental issues for the subject property and other properties in the vicinity. The database search firm utilized the more stringent of the approximate minimum search distances specified in the Scope of Work described in Section 1.40 for each of the referenced federal and state environmental databases. The definition of the databases searched and the associated search distances from the subject property are identified in the regulatory agency database search report.

The regulatory agency database search report lists a number of sites identified as "unmappable." The database search firm was unable to confirm the physical locations of these sites relative to the subject property or to assess whether they were located within the designated search radii. Stantec independently reviewed the locations of these "unmappable" sites, to the extent possible, using various maps and our knowledge of the subject property area. Any of the "unmappable" sites determined to be within the designated search radii were included in our evaluation of the various listed sites potential to result in a recognized environmental condition relative to the subject property.

Stantec reviewed the results of the database search report to note reported release sites in the vicinity of the subject property that were considered to have a potential to have adversely impacted the subject property (i.e., are known to have or are expected to result in recognized environmental conditions). Reported release sites identified in the regulatory agency database search report were evaluated with respect to the nature and extent of a given release, the distance of the reported release site from the subject property, the stratigraphy of soils, the expected soil permeability, and the topographic position of a reported release site with respect to known or expected local and/or regional groundwater flow direction. Those release sites that were considered likely to have impacted the subject property are identified in the report as recognized environmental conditions, as defined in ASTM 1527. Sites that were listed in the database search report, but not identified as a release site (for example, a site listed as a hazardous waste generator but not as having had a release), and sites that were listed as being "closed" were not considered likely to have impacted the subject property.

APPENDIX F
Environmental Cleanup Lien Search Report

PG&E Novato Property
8161 Redwood Boulevard
Novato, California 94945
PN: 185702091
July 28, 2009

Site Name: PG & E - Novato

Inquiry Number: 2522549.7
07/08/2009

The EDR Environmental LienSearch™ Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Environmental LienSearch™ Report

The EDR Environmental LienSearch Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls.

A network of professional, trained researchers, following established procedures, uses client supplied address information to:

- search for parcel information and/or legal description;
- search for ownership information;
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

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 was prepared for the use of Environmental Data Resources, Inc., exclusively. This report is neither a guarantee of title, a commitment to insure, or a policy of title insurance. **NO WARRANTY, EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WTH THIS REPORT**. Environmental Data Resources, Inc. (EDR) specifically disclaim the making of any such warranties, including without limitation, merchantability or fitness for a particular use or purpose. The information contained in this report is retrieved as it is recorded from the various agencies that make it available. The total liability is limited to the fee paid for this report.

Copyright 2009 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 are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EDR Environmental LienSearch™ Report

TARGET PROPERTY INFORMATION

ADDRESS

PG & E - Novato
8161 REDWOOD BLVD
NOVATO, CA 94945-1403

RESEARCH SOURCE

Source 1: Marin County

PROPERTY INFORMATION

Deed 1:

Type of Deed:	Grant Deed
Title is vested in:	Pacific Gas and Electric Company, a California corporation
Deed Dated:	06/26/1973
Deed Recorded:	07/12/1973
Book:	2764
Page:	599
Instrument:	26782
Legal Description:	THAT CERTAIN REAL PROPERTY, SITUATE IN THE COUNTY OF MARIN, STATE OF CALIFORNIA, AND BEING MORE FULLY DESCRIBED IN VOLUME 2764, PAGE 599 IN THE DEED RECORDS OF MARIN COUNTY, CALIFORNIA.
Legal Current Owner:	Pacific Gas and Electric Company
Property Identifiers:	125-180-36; 125-180-39

Deed 2:

Type of Deed:	Grant Deed
Title is vested in:	Pacific Gas and Electric Company, a California corporation
Deed Dated:	06/28/1973
Deed Recorded:	07/12/1973
Book:	2764
Page:	602
Instrument:	26783
Legal Description:	THAT CERTAIN REAL PROPERTY, SITUATE IN THE COUNTY OF MARIN, STATE OF CALIFORNIA, AND BEING MORE FULLY DESCRIBED IN VOLUME 2764, PAGE 602 IN THE DEED RECORDS OF MARIN COUNTY, CALIFORNIA.
Legal Current Owner:	Pacific Gas and Electric Company
Property Identifiers:	125-180-36; 125-180-39

EDR Environmental LienSearch™ Report

Deed 3:

Type of Deed:	Grant Deed
Title is vested in:	Pacific Gas and Electric Company, a California corporation
Deed Dated:	06/26/1973
Deed Recorded:	07/12/1973
Book:	2764
Page:	606
Instrument:	26784
Legal Description:	THAT CERTAIN REAL PROPERTY, SITUATE IN THE COUNTY OF MARIN, STATE OF CALIFORNIA, AND BEING MORE FULLY DESCRIBED IN VOLUME 2764, PAGE 606 IN THE DEED RECORDS OF MARIN COUNTY, CALIFORNIA.
Legal Current Owner:	Pacific Gas and Electric Company
Property Identifiers:	125-180-36; 125-180-39

Deed 4:

Type of Deed:	Grant Deed
Title is vested in:	Pacific Gas and Electric Company, a California corporation
Deed Dated:	06/26/1973
Deed Recorded:	07/12/1973
Book:	2764
Page:	610
Instrument:	26785
Legal Description:	THAT CERTAIN REAL PROPERTY, SITUATE IN THE COUNTY OF MARIN, STATE OF CALIFORNIA, AND BEING MORE FULLY DESCRIBED IN VOLUME 2764, PAGE 610 IN THE DEED RECORDS OF MARIN COUNTY, CALIFORNIA.
Legal Current Owner:	Pacific Gas and Electric Company
Property Identifiers:	125-180-36; 125-180-39

Deed 5:

Type of Deed:	Grant Deed
Title is vested in:	Pacific Gas and Electric Company, a California corporation
Deed Dated:	06/28/1973
Deed Recorded:	07/12/1973
Book:	2764
Page:	614
Instrument:	26786
Legal Description:	THAT CERTAIN REAL PROPERTY, SITUATE IN THE COUNTY OF MARIN, STATE OF CALIFORNIA, AND BEING MORE FULLY DESCRIBED IN VOLUME 2764, PAGE 614 IN THE DEED RECORDS OF MARIN COUNTY, CALIFORNIA.
Legal Current Owner:	Pacific Gas and Electric Company
Property Identifiers:	125-180-36; 125-180-39

EDR Environmental LienSearch™ Report

Deed 6:

Type of Deed:	Grant Deed
Title is vested in:	Pacific Gas and Electric Company, a California corporation
Deed Dated:	06/25/1973
Deed Recorded:	07/12/1973
Book:	2764
Page:	618
Instrument:	26787
Legal Description:	THAT CERTAIN REAL PROPERTY, SITUATE IN THE COUNTY OF MARIN, STATE OF CALIFORNIA, AND BEING MORE FULLY DESCRIBED IN VOLUME 2764, PAGE 618 IN THE DEED RECORDS OF MARIN COUNTY, CALIFORNIA.
Legal Current Owner:	Pacific Gas and Electric Company
Property Identifiers:	125-180-36; 125-180-39

Deed 7:

Type of Deed:	Grant Deed
Title is vested in:	Pacific Gas and Electric Company, a California corporation
Deed Dated:	06/25/1973
Deed Recorded:	07/12/1973
Book:	2764
Page:	622
Instrument:	26788
Legal Description:	THAT CERTAIN REAL PROPERTY, SITUATE IN THE COUNTY OF MARIN, STATE OF CALIFORNIA, AND BEING MORE FULLY DESCRIBED IN VOLUME 2764, PAGE 622 IN THE DEED RECORDS OF MARIN COUNTY, CALIFORNIA.
Legal Current Owner:	Pacific Gas and Electric Company
Property Identifiers:	125-180-36; 125-180-39

Deed 8:

Type of Deed:	Grant Deed
Title is vested in:	Pacific Gas and Electric Company, a California corporation
Deed Dated:	06/25/1973
Deed Recorded:	07/12/1973
Book:	2764
Page:	626
Instrument:	26789
Legal Description:	THAT CERTAIN REAL PROPERTY, SITUATE IN THE COUNTY OF MARIN, STATE OF CALIFORNIA, AND BEING MORE FULLY DESCRIBED IN VOLUME 2764, PAGE 626 IN THE DEED RECORDS OF MARIN COUNTY, CALIFORNIA.
Legal Current Owner:	Pacific Gas and Electric Company
Property Identifiers:	125-180-36; 125-180-39

EDR Environmental LienSearch™ Report

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

If found:

1st Party:

2nd Party:

Dated:

Recorded:

Book:

Page:

Docket:

Volume:

Instrument:

Comments:

Miscellaneous:

OTHER ACTIVITY AND USE LIMITATIONS (AULs)

Other AUL's: Found ☐ Not Found ☒

If found:

1st Party:

2nd Party:

Dated:

Recorded:

Book:

Page:

Docket:

Volume:

Instrument:

Comments:

Miscellaneous:

2752

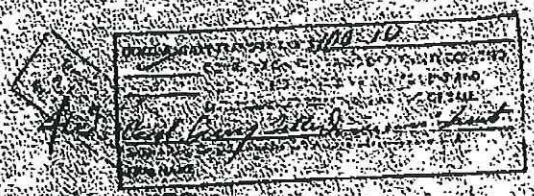
3006-1433 Rev. 10-72
(73.1)

RECORDING REQUESTED BY:

2752

FOR RECORDER'S USE ONLY

RECORDED AT REQUEST OF
TITLE INSURANCE
AND TRUST COMPANY
AT 8 MIN. PAST 1 P.M.
JUL 12 1973
OFFICIAL RECORDS
Co. Recorder
FEE $ 5.00 RECORDED



1704 PAGE 500

CHART NO.

FRANCIS EDWARD ALLISON, JR., as executor of the will of Evelyn Earle Allison, aka Evelyn M. Allison, aka Evelyn Allison, deceased, as owner of an undivided 1/4 interest, hereby grants to PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, that certain real property situate in the County of Yuba, State of California, described as follows:

(APN 125-190-36 and 125-190-39)

Beginning at the most northerly corner of the parcel of land described and designated Parcel One in the deed from Robert M. Greene and wife, to State of California dated November 30, 1972 and recorded 12 June 1973 of Official Records at page 622, Yuba County Records, said most northerly corner being a point in the westerly boundary line of the parcel of land described and designated Parcel Two in the deed from Julia C. Roberts to State of

MAIL TAX STATEMENTS TO:

Pacific Gas and Electric Company
Land Department
Land Acquisition Section
77 Beale Street
San Francisco, California 94106

-1-

1704 PAGE 500

California dated July 21, 1952 and recorded in Book 737 of Official Records at page 145, Marin County Records, thence running along the general northeasterly boundary line of said parcel of land designated PARCEL ONE

(1) south 26° 35' 00" west 30.00 feet,
(2) south 32° 53' 00" west 36.00 feet,
(3) south 0° 09' 00" west 47.63 feet and
(4) south 23° 04' 00" west 213.07 feet

to the most westerly corner of said parcel of land designated PARCEL ONE, thence leaving said general northeasterly boundary line and running along the westerly boundary line of said parcel of land designated PARCEL ONE and along the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated December 30, 1971

(5) south 3° 261 00" east 74.01 feet,

thence leaving said last mentioned westerly boundary line and running along the northwesterly boundary line of said last mentioned parcel of land designated PARCEL TWO and along the northwesterly boundary line of the parcel of land described in the trustee's deed from Sonoma Title Guaranty Company to Oliver Turlberg recorded April 23, 1968 in Book 2106 of Official Records at page 180, Marin County Records,

(6) south 19° 04' 00" west 337.79 feet

to the most westerly corner of the parcel of land described in said trustee's deed recorded April 23, 1968, said most westerly corner being the most northerly corner of the parcel of land described and designated PARCEL FIVE in the Decree Settling Final Account of Testamentary Trustee and of Final Distribution dated July 17, 1963 and recorded as Book 1706 of Official Records at page 164, Marin County Records, thence leaving said last mentioned northwesterly boundary line and running along the westerly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968

(7) south 11° 33' 00" east 225.52 feet and
(8) south 7° 28' 00" east 55.00 feet

to the most northerly corner of the parcel of land described and designated PARCEL SIX in said Final Decree dated July 17, 1963, thence leaving said last mentioned westerly boundary line and running along the northwesterly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968, said northwesterly boundary line being the northwesterly boundary line of said parcel of land designated PARCEL SIX

(9) south 43° 20' 25" east 397.07 feet

to the most westerly corner of the parcel of land described in the deed from State of California to Elyca Feabody and others dated December 21, 1970 and recorded in Book 7677 of Official Records at page 493, Marin County Records, thence leaving said northwesterly boundary line and running along the northerly boundary line of the parcel of land described in said deed dated December 21, 1970

(10) south 86° 361 00" east 72.20 feet

to the most easterly corner of the parcel of land described in said deed dated December 21, 1970, thence leaving said northerly boundary

line and running along the easterly boundary line of the parcel of land described in said deed dated December 21, 1970 and along the easterly boundary line of the parcel of land described in the deed from Alyce Pashbury and others to State of California recorded August 6, 1970 in Book 2293 of Official Records at page 92, Marin County Records;

(11) north 2° 35' 16" west 89.15 feet;

thence leaving said last mentioned easterly boundary line

(12) north 61° 04' 38" west 2133.63 feet

to a pac standard Pacific Gas and Electric Company bronze monument; thence

(13) north 42° 06' 30" west 370.89 feet

to a set 3/8 inch reinforcing rod with aluminum cap marked L.S. 3122; thence

(14) north 17° 20' 50" west 239.43 feet

to a point in the general southerly boundary line of the parcel of land described in the deed from Alyce Pashbury and others to McGraw-Hill, Inc., dated May 8, 1964 and recorded in Book 1813 of Official Records at page 17, Marin County Records; thence running along said general southerly boundary line

(15) north 69° 06' 00" east 727.12 feet and

(16) north 39° 04' 00" east 66.71 feet

to a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated July 21, 1952; thence leaving said general southerly boundary line and running along said last mentioned westerly boundary line

(17) south 5° 26' 00" east 121.40 feet, more or less,

to the point of beginning; containing 12.975 acres, more or less, and being a portion of Rancho Olompali.

This grant is made pursuant to an order of the Superior Court of the State of California in and for the County of Marin in the proceedings entitled "In the Matter of the Estate of EVELYN MARIE ALLISON, aka EVELYN M. ALLISON, aka EVELYN ALLISON, Deceased." being No. 20230 in the files of said court, in consideration of the payment by grantee to grantor of the sum of _____ $ 22706.25 _____ dollars, receipt whereof is hereby acknowledged.

Dated June 26, 1973.

Francis Edward Allison, Sr.

Francis Edward Allison, Sr., executor as aforesaid

STATE OF CALIFORNIA)
COUNTY OF MARIN) ss.

On June 26, 1973, before me, the undersigned, a Notary Public in and for said County of Marin, State of California, personally appeared Francis Edward Allison, Sr., as Executor of the Will of Evelyn Marie Allison, Deceased, known to me to be the person whose name is subscribed to the within instrument, and acknowledged to me that he executed the same as such Executor.

Notary Public

BK2764 PG601

26783

3004-3431 Novato Service Center
5-73 K
AFTER RECORDING, RETURN TO:

FOR RECORDER'S USE ONLY

RECORDED AT REQUEST OF
TITLE INSURANCE
AND TRUST COMPANY
AT 8 MIN. PAST 2 P.M.
JUL 12 1973
Book North of Fire Cert. Cal.
N. Y. Giacomini
FEE $ 6.00 RECORDER

26783

DOCUMENTARY TRANSFER TAX $ None Exempt
COMPUTED ON FULL VALUE OF PROPERTY CONVEYED,
OR COMPUTED ON FULL VALUE LESS LIENS AND
ENCUMBRANCES REMAINING AT TIME OF SALE
Carol Berry Title Insurance Agent
SIGNATURE OF DECLARANT OR AGENT DETERMINING TAX
FIRM NAME

BOOK 2704 PAGE 602

GRANT DEED

ALICE FASHBURG

PATRICIA TIDINGS, who acquired title as Patricia Martinsen

FRANK TANFORAN

ROGER TANFORAN

HAROLD TANFORAN

and CAROL BRIDGEMAN, who acquired title as Carol Warwick

as owners of an undivided 1/2 interest, hereby grant to PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, that certain real property, situate in the County of Marin, State of California, described as follows:

MAIL TAX STATEMENTS TO:

Pacific Gas and Electric Company
Land Department
Land Acquisition Section
77 Beale Street
San Francisco, California 94106

-1-

BOOK 2704 PAGE 602

(APN 125-180-36 and 125-180-39)

Beginning at the most northerly corner of the parcel of land described and designated PARCEL ONE in the deed from Robert D. Carrow and wife to State of California dated November 30, 1972 and recorded in Book 2650 of Official Records at page 621, Marin County Records, said most northerly corner being a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in the deed from Julia C. Bolla to State of California dated July 21, 1952 and recorded in Book 772 of Official Records at page 275, Marin County Recorder; thence running along the general northwesterly boundary line of said parcel of land designated PARCEL ONE

(1) south 86° 34' 00" west 30.00 feet,
(2) south 52° 53' 00" west 36.06 feet,
(3) south 0° 09' 00" west 87.63 feet and
(4) south 39° 04' 00" west 213.07 feet

to the most westerly corner of said parcel of land designated PARCEL ONE; thence leaving said general northwesterly boundary line and running along the westerly boundary line of said parcel of land designated PARCEL ONE and along the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated November 30, 1972

(5) south 3° 26' 00" east 74.01 feet;

thence leaving said last mentioned westerly boundary line and running along the northwesterly boundary line of said last mentioned parcel of land designated PARCEL TWO and along the northwesterly boundary line of the parcel of land described in the trustee's deed from Sonoma Title Guaranty Company to Oliver Kullberg recorded April 23, 1968 in Book 2206 of Official Records at page 168, Marin County Records,

(6) south 39° 04' 00" west 337.79 feet

to the most westerly corner of the parcel of land described in said trustee's deed recorded April 23, 1968, said most westerly corner being the most northerly corner of the parcel of land described and designated PARCEL FIVE in the Decree Settling Ninth and Final Account of Testamentary Trustee and of Final Distribution dated July 12, 1963 and recorded in Book 1706 of Official Records at page 164, Marin County Records; thence leaving said last mentioned northwesterly boundary line and running along the westerly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968

(7) south 12° 33' 00" east 229.52 feet and
(8) south 7° 28' 40" east 55.00 feet

to the most northerly corner of the parcel of land described and designated PARCEL SIX in said final decree dated July 12, 1963; thence leaving said last mentioned westerly boundary line and running along the southwesterly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968, said southwesterly boundary line being the northeasterly boundary line of said parcel of land designated PARCEL SIX

(9) south 43° 18' 20" east 392.01 feet

BOOK 2704 PAGE 603

to the most easterly corner of the parcel of land described in the deed from State of California to Alyce Pashbury and others dated December 21, 1970 and recorded in Book 2427 of Official Records at page 491, Marin County Records, thence leaving said southeasterly boundary line and running along the northerly boundary line of the parcel of land described in said deed dated December 21, 1970

(10) north 86° 34' 00" east 21.70 feet

to the most easterly corner of the parcel of land described in said deed dated December 21, 1970; thence leaving said northerly boundary line and running along the easterly boundary line of the parcel of land described in said deed dated December 21, 1970 and along the westerly boundary line of the parcel of land described in the deed from Alyce Pashburg and others to State of California recorded August 6, 1970 in Book 2393 of Official Records at page 92, Marin County Records

(11) south 2° 35' 16" east 85.15 feet;

thence leaving said last mentioned westerly boundary line

(12) north 61° 04' 30" west 1131.63 feet

to a set standard Pacific Gas and Electric Company bronze monument; thence

(13) north 42° 04' 30" east 370.33 feet

to a set 5/8 inch reinforcing rod with aluminum cap marked L.S. 3322; thence

(14) north 17° 20' 50" east 259.45 feet

to a point in the general southerly boundary line of the parcel of land described in the deed from Alyce Pashburg and others to McGraw-Hill, Inc., dated May 8, 1966 and recorded in Book 1813 of Official Records at page 17, Marin County Records; thence running along said general southerly boundary line

(15) south 69° 06' 00" east 727.12 feet and

(16) north 39° 04' 00" east 86.71 feet

to a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated July 21, 1952; thence leaving said general southerly boundary line and running along said last mentioned westerly boundary line

(17) south 3° 26' 00" east 121.40 feet, more or less,

to the point of beginning; containing 12.975 acres, more or less, and being a portion of Rancho Olompali.

Dated _____, 1973.

Alyce Pashburg
Alyce Pashburg

Patricia Youngs

Frank DeForan

Roger DeForan

Harold DeForan

Carol Bridgman

-3-

STATE OF CALIFORNIA
County of Marin ss.

On this 28th day of June, 1973 in the year 19__, before me, Mildred O. Phillips a Notary Public in and for the said Marin County, duly commissioned and sworn, personally appeared Alyce Eastburg

known to me to be the person whose name is subscribed to the within instrument and acknowledged that She executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in the said County of Marin the day and year in this certificate first above written.

OFFICIAL SEAL
MILDRED O. PHILLIPS
NOTARY PUBLIC-CALIFORNIA
MARIN COUNTY
My Commission Expires JUL 5, 1974

Mildred O Phillips

Notary Public in and for the County of Marin State of California
My Commission Expires 7-5-74

REC 2784 PAGE 605

26784

3008-3431 Novato Service Center
5 73 1
AFTER RECORDING, RETURN TO:

FOR RECORDER'S USE ONLY

RECORDED AT REQUEST OF 26784
TITLE INSURANCE
AND TRUST COMPANY
AT 20 MIN. PAST 12 P.M.
JUL 12 1973
Official Records of Marin County, Calif.
N. J. Giacomini
FEE $ 6.00 RECORDER

DOCUMENTARY TRANSFER TAX $ None Exempt
Carol Day Title Insurance Co.
SIGNATURE OF DECLARANT OR AGENT DETERMINING TAX
FIRM NAME

BK2704 PG636

GRANT DEED

ALMON PASHOUBC

PATRICIA HUGHES, who acquired title as Patricia Mariondas

FRANK TAMPURAS

ROGER TAMPURAS

HAROLD TAMPURAS

and CAROL BRIDGEMAN, who acquired title as Carol Warwick

as owners of an undivided 1/2 interest, hereby grant to PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, that certain real property, situate in the County of Marin, State of California, described as follows:

MAIL TAX STATEMENTS TO:

Pacific Gas and Electric Company
Land Department
Land Acquisition Section
77 Beale Street
San Francisco, California 94106

-1-

BK2704 PG636

(APN 125-180-36 and 125-180-39)

Beginning at the most northerly corner of the parcel of land described and designated PARCEL ONE in the deed from Robert D. Carnes and wife to State of California dated November 30, 1972 and recorded in Book 2650 of Official Records at page 621, Marin County Records, said most northerly corner being a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in the deed from Julia C. Rankin to State of California dated July 21, 1932 and recorded in Book 772 of Official Records at page 272, Marin County Records; thence running along the general northeasterly boundary line of said parcel of land designated PARCEL ONE

(1) south 88° 34' 00" west 30.00 feet,
(2) south 52° 53' 00" west 34.05 feet,
(3) south 0° 09' 00" west 87.61 feet and
(4) south 59° 04' 00" west 213.07 feet

to the most westerly corner of said parcel of land designated PARCEL ONE; thence leaving said general northwesterly boundary line and running along the westerly boundary line of said parcel of land designated PARCEL ONE and along the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated November 30, 1972

(5) south 3° 26' 00" east 74.01 feet;

thence leaving said last mentioned westerly boundary line and running along the northwesterly boundary line of said last mentioned parcel of land designated PARCEL TWO and along the northwesterly boundary line of the parcel of land described in the trustee's deed from Sonoma Title Guaranty Company to Oliver Kolberg recorded April 23, 1968 in Book 2206 of Official Records at page 188, Marin County Records,

(6) south 32° 04' 00" west 337.79 feet

to the most westerly corner of the parcel of land described in said trustee's deed recorded April 23, 1968, said most westerly corner being the most northerly corner of the parcel of land described and designated PARCEL FIVE in the Decree Settling Ninth and Final Account of Testamentary Trustee and of Final Distribution dated July 12, 1963 and recorded in Book 1706 of Official Records at page 166, Marin County Records; thence leaving said last mentioned northwesterly boundary line and running along the westerly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968

(7) south 11° 31' 00" east 229.52 feet and
(8) south 7° 28' 40" east 35.00 feet

to the most northerly corner of the parcel of land described and designated PARCEL SIX in said final decree dated July 12, 1963; thence leaving said last mentioned westerly boundary line and running along the southeasterly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968, said southeasterly boundary line being the northeasterly boundary line of said parcel of land designated PARCEL SIX

(9) south 43° 18' 20" east 392.07 feet

BK2764 PG007

to the most easterly corner of the parcel of land described in the deed from State of California to Alyce Pashburg and others dated December 21, 1970 and recorded in Book 2421 of Official Records at page 495, Marin County Records; thence leaving said southeasterly boundary line and running along the northerly boundary line of the parcel of land described in said deed dated December 21, 1970

(10) north 55° 34' 00" east 21.20 feet

to the most easterly corner of the parcel of land described in said deed dated December 21, 1970; thence leaving said northerly boundary line and running along the easterly boundary line of the parcel of land described in said deed dated December 21, 1970 and along the easterly boundary line of the parcel of land described in the deed from Alyce Pashburg and others to State of California recorded August 6, 1970 in Book 2393 of Official Records at page 92, Marin County Records

(11) south 2° 35' 16" west 85.15 feet;

thence leaving said last mentioned westerly boundary line

(12) north 61° 04' 30" west 1133.69 feet

to a set standard Pacific Gas and Electric Company bronze monument; thence

(13) north 62° 04' 30" west 370.99 feet

to a set 3/8 inch reinforcing rod with aluminum cap marked L.S. 3372; thence

(14) north 17° 20' 30" east 252.62 feet

to a point in the general southerly boundary line of the parcel of land described in the deed from Alyce Pashburg and others to McGraw-Hill, Inc., dated May 8, 1964 and recorded in Book 1813 of Official Records at page 17, Marin County Records; thence running along said general southerly boundary line

(15) north 69° 06' 00" east 727.12 feet and

(16) north 39° 04' 00" east 66.71 feet

to a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated July 21, 1952; thence leaving said general southerly boundary line and running along said last mentioned westerly boundary line

(17) south 3° 25' 00" east 121.40 feet, more or less,

to the point of beginning; containing 12.975 acres, more or less, and being a portion of Rancho Olompali.

Dated 2-26, 1973.

Alyce Pashburg

Patricia Young

Frank Tanforan

Roger Tanforan

Harold Tanforan

Carol Bridgman

STATE OF CALIFORNIA
County of Stanislaus

On this 26th day of June in the year 19 73 before me, Virginia L. Trautman
a Notary Public in and for the said Stanislaus County, duly commissioned and sworn, personally appeared
Patricia A. Young

known to me to be the person whose name is subscribed to the within instrument and acknowledged that she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in the said County of Stanislaus the day and year in this certificate first above written.

OFFICIAL SEAL
VIRGINIA L. TRAUTMAN
NOTARY PUBLIC-CALIFORNIA
STANISLAUS COUNTY
My Commission Expires March 25, 1977

Virginia L. Trautman

Notary Public in and for the County of Stanislaus, State of California
My Commission Expires 3-25-77

26785

3006-JAXI Novato Service Center
5-73 1
AFTER RECORDING, RETURN TO:

FOR RECORDER'S USE ONLY

26785

RECORDED AT REQUEST OF
TITLE INSURANCE
AND TRUST COMPANY
AT 2:02 MIN. PAST 2 P. M.
JUL 12 1973
Official Records of Marin County, Calif.
N. J. Giacomini
By [illegible] RECORDER

BOOK 2784 PAGE 610

DOCUMENTARY TRANSFER TAX $ No Consideration
[illegible]
Title Insurance and Trust
SIGNATURE OF DECLARANT OR AGENT DETERMINING TAX
FIRM NAME

GRANT DEED

ALICE FASSBURG

PATRICIA YOUNGS, who acquired title as Patricia Marcineau

FRANK TANFORAN

ROGER TANFORAN

HAROLD TANFORAN

and CAROL BRIDGEMAN, who acquired title as Carol Warwick

as owners of an undivided 2/3 interest, hereby grant to PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, that certain real property, situate in the County of Marin, State of California, described as follows:

MAIL TAX STATEMENTS TO:

Pacific Gas and Electric Company
Land Department
Land Acquisition Section
77 Beale Street
San Francisco, California 94106

-1-

BOOK 2784 PAGE 610

(APN 125-180-36 and 125-180-39)

Beginning at the most northerly corner of the parcel of land described and designated PARCEL ONE in the deed from Robert D. Carrau and wife to State of California dated November 20, 1972 and recorded in Book 2650 of Official Records at page 621, Marin County Records, said most northerly corner being a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in the deed from Julia L. Rodkin to State of California dated July 21, 1952 and recorded in Book 772 of Official Records at page 275, Marin County Records; thence running along the general northwesterly boundary line of said parcel of land designated PARCEL ONE

(1) south 85° 34' 00" west 30.00 feet,
(2) south 52° 51' 00" west 36.06 feet,
(3) south 0° 09' 00" west 87.63 feet and
(4) south 59° 06' 00" west 213.07 feet

to the most westerly corner of said parcel of land designated PARCEL ONE; thence leaving said general northwesterly boundary line and running along the westerly boundary line of said parcel of land designated PARCEL ONE and along the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated November 30, 1972

(5) south 3° 25' 00" east 74.01 feet;

thence leaving said last mentioned westerly boundary line and running along the northwesterly boundary line of said last mentioned parcel of land designated PARCEL TWO and along the northwesterly boundary line of the parcel of land described in the trustee's deed from Sonoma Title Guaranty Company to Oliver Kullberg recorded April 23, 1968 in Book 2206 of Official Records at page 188, Marin County Records,

(6) south 39° 04' 00" west 337.79 feet

to the most westerly corner of the parcel of land described in said trustee's deed recorded April 23, 1968, said most westerly corner being the most northerly corner of the parcel of land described and designated PARCEL FIVE in the Decree Settling Ninth and Final Account of Testamentary Trustee and of Final Distribution dated July 12, 1963 and recorded in Book 1706 of Official Records at page 164, Marin County Records; thence leaving said last mentioned northwesterly boundary line and running along the westerly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968 and

(7) south 11° 35' 00" east 229.52 feet and
(8) south 7° 28' 40" east 55.00 feet

to the most northerly corner of the parcel of land described and designated PARCEL SIX in said final decree dated July 12, 1963; thence leaving said last mentioned westerly boundary line and running along the southwesterly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968, said southwesterly boundary line being the northeasterly boundary line of said parcel of land designated PARCEL SIX

(9) south 43° 18' 20" east 192.07 feet

BK2704 PG611

to the most westerly corner of the parcel of land described in the deed from State of California to Alyce Faehburg and others dated December 21, 1970 and recorded in Book 2427 of Official Records at page 493, Marin County Records; thence leaving said northwesterly boundary line and running along the northerly boundary line of the parcel of land described in said deed dated December 21, 1970

(10) north 86° 34' 00" east 21.20 feet

to the most easterly corner of the parcel of land described in said deed dated December 21, 1970; thence leaving said northerly boundary line and running along the easterly boundary line of the parcel of land described in said deed dated December 21, 1970 and along the westerly boundary line of the parcel of land described in the deed from Alyce Faehburg and others to State of California recorded August 6, 1970 in Book 2393 of Official Records at page 92, Marin County Records

(11) south 2° 35' 16" east 85.15 feet;

thence leaving said last mentioned westerly boundary line

(12) north 61° 06' 38" east 1131.63 feet

to a set standard Pacific Gas and Electric Company bronze monument; thence

(13) north 42° 04' 30" east 370.39 feet

to a set 5/8 inch reinforcing rod with aluminum cap marked L.S. 3322; thence

(14) north 17° 20' 30" east 239.43 feet

to a point in the general southerly boundary line of the parcel of land described in the deed from Alyce Faehburg and others to McGraw-Hill, Inc., dated May 6, 1964 and recorded in Book 1815 of Official Records at page 17, Marin County Records; thence running along said general southerly boundary line

(15) north 89° 05' 00" east 727.12 feet and

(16) north 29° 04' 00" east 65.71 feet

to a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated July 24, 1952; thence leaving said general southerly boundary line and running along said last mentioned westerly boundary line

(17) south 3° 26' 00" east 121.40 feet, more or less,

to the point of beginning; containing 12.975 acres, more or less, and being a portion of Rancho Olompali.

Dated June 26, 1973.

Alyce Faehburg

Patricia Young

Frank Tanforan

Roger Tanforan

Harold Tanforan

Carol Bridgeman

STATE OF CALIFORNIA
County of SACRAMENTO } ss.

On this 24th day of June in the year 1972 before me, CHAS. T. DAVIDSON
a Notary Public in and for the said SACRAMENTO County, duly commissioned and sworn, personally appeared
FRANK FRANKLIN

known to me to be the person whose name subscribed to the within instrument and acknowledged that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in the said County of SACRAMENTO the day and year in this certificate first above written.

Frank Franklin

OFFICIAL
CHARLES T. DAVIDSON
NOTARY PUBLIC-CALIFORNIA
PRINCIPAL OFFICE IN
SACRAMENTO COUNTY
My Commission Expires FEB 24, 1976

Notary Public in and for the County of SACRAMENTO State of California
My Commission Expires FEB 24, 1976

BK2704 PG613

26786

3006-3431 Novato Service Center
5 73 L
AFTER RECORDING, RETURN TO:

FOR RECORDER'S USE ONLY

26786

RECORDED AT REQUEST OF
TITLE INSURANCE
AND TRUST COMPANY
AT 8 MIN. PAST 1 P.M.
JUL 12 1973
Official Records of Marin County, Calif.
N. J. Giacomini
FEE $ 6.00 RECORDER

DOCUMENTARY TRANSFER TAX $ no Consideration
COMPUTED ON FULL VALUE OF PROPERTY CONVEYED, OR
COMPUTED ON FULL VALUE LESS LIENS AND
ENCUMBRANCES REMAINING AT TIME OF SALE.
Pacific Gas and Electric Company
NAME

BOOK 2704 PAGE 614

GRANT DEED

ALICE FASHBURG

PATRICIA YOUNGS, who acquired title as Patricia Martineau

FRANK TANFORAN

ROGER TANFORAN

HAROLD TANFORAN

and CAROL BRIDGEMAN, who acquired title as Carol Warwick

as owners of an undivided 1/2 interest, hereby grant to PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, that certain real property, situate in the County of Marin, State of California, described as follows:

MAIL TAX STATEMENTS TO:

Pacific Gas and Electric Company
Land Department
Land Acquisition Section
77 Beale Street
San Francisco, California 94106

BOOK 2704 PAGE 614

(APN 125-180-36 and 125-180-39)

Beginning at the most northerly corner of the parcel of land described and designated PARCEL ONE in the deed from Robert D. Curran and wife to State of California dated December 30, 1972 and recorded in Book 2650 of Official Records at page 421, Marin County Records, said most northerly corner being a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in the deed from Lelia C. Boykin to State of California dated July 21, 1952 and recorded in Book 772 of Official Records at page 275, Marin County Records; thence running along the general northwesterly boundary line of said parcel of land designated PARCEL ONE

(1) south 86° 34' 00" west 30.00 feet,
(2) south 72° 53' 00" west 36.04 feet,
(3) south 0° 09' 00" east 97.03 feet and
(4) south 32° 04' 00" west 213.07 feet

to the most westerly corner of said parcel of land designated PARCEL ONE; thence leaving said general northwesterly boundary line and running along the westerly boundary line of said parcel of land designated PARCEL ONE and along the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated November 30, 1972

(5) south 3° 26' 00" east 74.01 feet;

thence leaving said last mentioned westerly boundary line and running along the northwesterly boundary line of said last mentioned parcel of land designated PARCEL TWO and along the northwesterly boundary line of the parcel of land described in the trustee's deed from Sonoma Title Guaranty Company to Oliver Kullberg recorded April 23, 1968 in Book 2206 of Official Records at page 188, Marin County Records,

(6) south 39° 04' 00" west 337.39 feet

to the most westerly corner of the parcel of land described in said trustee's deed recorded April 23, 1968, said most westerly corner being the most northerly corner of the parcel of land described and designated PARCEL FIVE in the Decree Settling Ninth and Final Account of Testamentary Trustee and of Final Distribution dated July 12, 1963 and recorded in Book 1706 of Official Records at page 164, Marin County Records; thence leaving said last mentioned northwesterly boundary line and running along the westerly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968

(7) south 11° 33' 00" east 229.52 feet and
(8) south 7° 28' 40" east 53.00 feet

to the most northerly corner of the parcel of land described and designated PARCEL SIX in said final decree dated July 12, 1963; thence leaving said last mentioned westerly boundary line and running along the northwesterly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968, said northwesterly boundary line being the northwesterly boundary line of said parcel of land designated PARCEL SIX

(9) south 43° 18' 20" east 192.07 feet

to the most westerly corner of the parcel of land described in the deed from State of California to Alyce Pashburg and others dated December 21, 1970 and recorded in Book 2427 of Official Records at page 685, Marin County Records; thence leaving said southwesterly boundary line and running along the northerly boundary line of the parcel of land described in said deed dated December 21, 1970

(10) north 85° 34' 00" east 21.20 feet

to the most easterly corner of the parcel of land described in said deed dated December 21, 1970; thence leaving said northerly boundary line and running along the easterly boundary line of the parcel of land described in said deed dated December 21, 1970 and along the ...terly boundary line of the parcel of land described in the deed from Alyce Pashburg and others to State of California recorded ...gust 6, 1970 in Book 2393 of Official Records at page 92, Marin County Records

(11) south 4° 35' 16" west 83.15 feet;

thence leaving said last mentioned westerly boundary line

(12) north 61° 04' 38" west 1137.63 feet

to a bar standard Pacific Gas and Electric Company bronze monument; thence

(13) north 62° 04' 20" east 270.92 feet

to a set 5/8 inch reinforcing rod with aluminum cap marked L.S. 3322; thence

(14) north 17° 20' 50" east 259.43 feet

to a point in the general southerly boundary line of the parcel of land described in the deed from Alyce Pashburg and others to McGraw-Hill, Inc., dated May 8, 1956 and recorded in Book 1813 of Official Records at page 17, Marin County Records; thence running along said general southerly boundary line

(15) north 69° 06' 00" east 727.12 feet and

(16) north 39° 04' 00" east 66.71 feet

to a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated July 21, 1952; thence leaving said general southerly boundary line and running along said last mentioned westerly boundary line

(17) south 3° 24' 00" east 121.40 feet, more or less, to the point of beginning; containing 12.975 acres, more or less, and being a portion of Rancho Olompali.

Dated 1-31, 1973.

Alyce Pashburg

Patricia Youngs

Frank Tanforan

Roger Tanforan

Harold Tanforan

Carol Bridgeman

-3-

STATE OF CALIFORNIA
County of Marin } ss.

On this 25 day of June in the year 1973 before me, Carol Ivory,
a Notary Public in and for the said Marin County, duly commissioned and sworn, personally appeared
Roger Tamforan

known to me to be the person whose name subscribed to the within instrument and acknowledged that he executed the same.

OFFICIAL SEAL
CAROL IVORY
NOTARY PUBLIC - CALIFORNIA
COUNTY OF MARIN
My Comm. Expires Feb. 7, 1977

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in the said County of Marin the day and year in this certificate first above written.

Carol Ivory

Notary Public in and for the City of San Rafael County of Marin, State of California

My Commission Expires

Rec 2704 pg 617

26787

3006-3431 Novato Service Center
S 73 1
AFTER RECORDING, RETURN TO:

FOR RECORDER'S USE ONLY

26787

RECORDED AT REQUEST OF
TITLE INSURANCE
AND TRUST COMPANY
AT 2:22 MIN. PAST 2 P.M.
JUL 12 1973
Official Records of Marin County, Calif.
N. J. Giacomini
FEE $ 6.00 RECORDER

DOCUMENTARY TRANSFER TAX $ None. Unmarried Grantor
COMPUTED ON FULL VALUE OF PROPERTY CONVEYED,
OR
COMPUTED ON FULL VALUE LESS LIENS AND
ENCUMBRANCES REMAINING AT TIME OF SALE.
Carol Lucy Title Insurance Trust
SIGNATURE OF DECLARANT OR AGENT DETERMINING TAX.
FIRM NAME

2704 618

GRANT DEED

ALYCE FASHBURG

PATRICIA YOUNG, who acquired title as Patricia Marchineau

VERNE ZANDORAN

ROGER ZANDORAN

HAROLD ZANDORAN

and CAROL HUDDLESTON, who acquired title as Carol Warwick

as owners of an undivided 1/2 interest, hereby grant to PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, that certain real property, situate in the County of Marin, State of California, described as follows:

MAIL TAX STATEMENTS TO:

Pacific Gas and Electric Company
Land Department
Land Acquisition Section
77 Beale Street
San Francisco, California 94106

2704 618

(APN 125-180-34 and 125-180-39)

Beginning at the most northerly corner of the parcel of land described and designated PARCEL ONE in the deed from Robert O. Curran and wife to State of California dated November 30, 1972 and recorded in Book 2850 of Official Records at page 621, Marin County Records, said most northerly corner being a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in the deed from Julia C. Bodkin to State of California dated July 21, 1952 and recorded in Book 772 of Official Records at page 275, Marin County Records; thence running along the general northeasterly boundary line of said parcel of land designated PARCEL ONE

(1) south 86° 34' 00" west 30.00 feet,
(2) south 32° 53' 00" west 56.06 feet,
(3) south 0° 09' 00" west 87.63 feet and
(4) south 39° 06' 00" east 213.02 feet

to the most westerly corner of said parcel of land designated PARCEL ONE; thence leaving said general northeasterly boundary line and running along the westerly boundary line of said parcel of land designated PARCEL ONE and along the easterly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated November 30, 1972

(5) south 3° 26' 00" east 24.01 feet;

thence leaving said last mentioned westerly boundary line and running along the northeasterly boundary line of said last mentioned parcel of land designated PARCEL TWO and along the northwesterly boundary line of the parcel of land described in the trustee's deed from Sonoma Title Guaranty Company to Oliver Kullberg recorded April 23, 1968 in Book 2206 of Official Records at page 188, Marin County Records,

(6) south 39° 06' 00" west 337.79 feet

to the most westerly corner of the parcel of land described in said trustee's deed recorded April 23, 1968, said most westerly corner being the most northerly corner of the parcel of land described and designated PARCEL FIVE in the Decree Settling Ninth and Final Account of Testamentary Trustee and of Final Distribution dated July 12, 1963 and recorded in Book 1706 of Official Records at page 164, Marin County Records; thence leaving said last mentioned northwesterly boundary line and running along the westerly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968

(7) south 11° 33' 00" east 229.52 feet and
(8) south 7° 28' 40" east 55.00 feet

to the most northerly corner of the parcel of land described and designated PARCEL SIX in said Final decree dated July 12, 1963; thence leaving said last mentioned westerly boundary line and running along the southwesterly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968, said southwesterly boundary line being the northeasterly boundary line of said parcel of land designated PARCEL SIX

(9) south 43° 18' 20" east 392.07 feet

to the most westerly corner of the parcel of land described in the deed from State of California to Alyce Faulburg and others dated December 21, 1970 and recorded in Book 2427 of Official Records at page 495, Marin County Records; thence leaving said southwesterly boundary line and running along the northerly boundary line of the parcel of land described in said deed dated December 21, 1970

(10) north 86° 34' 00" east 31.20 feet

to the most easterly corner of the parcel of land described in said deed dated December 21, 1970; thence leaving said northerly boundary line and running along the easterly boundary line of the parcel of land described in said deed dated December 21, 1970 and along the westerly boundary line of the parcel of land described in the deed from Alyce Faulburg and others to State of California recorded August 6, 1970 in Book 2393 of Official Records at page 92, Marin County Records

(11) south 2° 35' 16" west 89.13 feet;

thence leaving said last mentioned westerly boundary line

(12) north 61° 04' 38" west 1131.63 feet

to a set standard Pacific Gas and Electric Company bronze monument; thence

(13) north 42° 04' 30" west 170.92 feet

to a set 5/8 inch reinforcing rod with aluminum cap marked L.S. 3322; thence

(14) north 17° 20' 30" west 259.43 feet

to a point in the general southerly boundary line of the parcel of land described in the deed from Alyce Faulburg and others to McGraw-Hill, Inc., dated May 6, 1968 and recorded in Book 1813 of Official Records at page 13, Marin County Records; thence running along said general southerly boundary line

(15) north 69° 05' 00" east 127.12 feet and

(16) south 39° 04' 00" east 66.71 feet

to a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated July 21, 1952; thence leaving said general southerly boundary line and running along said last mentioned westerly boundary line

(17) south 3° 26' 00" east 121.40 feet, more or less,

to the point of beginning; containing 12.975 acres, more or less, and being a portion of Rancho Olompali.

Dated June 25, 1973.

Alyce Faulburg

Patricia Youngs

Frank Patterson

Roger Faulburg

Harold Patterson

Carol Bridgeman

-3-

STATE OF CALIFORNIA
COUNTY OF Sonoma } ss

On Sept 25th, 1973 before me, the undersigned, a Notary Public in and for said County and State, personally appeared Ronald Tonfonon

, known to me to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same.

Roland L. Thibault

Name (Typed or Printed)
Notary Public in and for said County and State

FOR NOTARY SEAL OR STAMP

OFFICIAL SEAL
ROLAND L. THIBAULT
NOTARY PUBLIC in CALIFORNIA
PRINCIPAL OFFICE IN
SONOMA COUNTY
My Commission Expires July 28, 1973

REC'D 1974 FEB 21

26788

3066-3431 Rovato Service Center
9'73 1
AFTER RECORDING, RETURN TO:

FOR RECORDER'S USE ONLY

26788

RECORDED AT REQUEST OF
TITLE INSURANCE
AND TRUST COMPANY
AT 8 MIN. PAST 12 P.M.
JUL 12 1973
Official Records of Marin County, Calif.
N. J. Saccamino
FEE $ 6.00 RECORDER

DOCUMENTARY TRANSFER TAX $ Exempt - Public Agency
COMPUTED ON THE VALUE OF PROPERTY CONVEYED.
OR COMPUTED ON THE VALUE LESS LIENS AND ENCUMBRANCES REMAINING THEREON AT TIME OF SALE.
Signature of Declarant or Agent determining tax
FIRM NAME

Ref 2714 822

GRANT DEED

ALICE FASHBERG

PATRICIA HUGHES, who acquired title as Patricia Harrineau,

FRANK TANTORAH

ROGER TANTORAH

HAROLD TANTORAH

and CAROL BRIDGEMAN, who acquired title as Carol Warwick,

as owners of an undivided 1/2 interest, hereby grant to PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, that certain real property, situate in the County of Marin, State of California, described as follows:

MAIL TAX STATEMENTS TO:

Pacific Gas and Electric Company
Land Department
Land Acquisition Section
77 Beale Street
San Francisco, California 94106

Ref 2714 822

(APN 125-180-36 and 125-180-39)

Beginning at the most northerly corner of the parcel of land described and designated PARCEL ONE in the deed from Robert D. Carras and wife to State of California dated November 30, 1972 and recorded in Book 2650 of Official Records at page 621, Marin County Records, said most northerly corner being a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in the deed from Julia C. Rodkin to State of California dated July 21, 1952 and recorded in Book 772 of Official Records at page 275, Marin County Records; thence running along the general northwesterly boundary line of said parcel of land designated PARCEL ONE

(1) south 86° 34' 00" west 30.00 feet,
(2) south 52° 53' 00" west 36.06 feet,
(3) south 0° 09' 00" west 67.63 feet and
(4) south 39° 04' 00" west 213.07 feet

to the most westerly corner of said parcel of land designated PARCEL ONE; thence leaving said general northwesterly boundary line and running along the westerly boundary line of said parcel of land designated PARCEL ONE and along the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated November 30, 1972

(5) south 3° 26' 00" east 74.01 feet,

thence leaving said last mentioned westerly boundary line and running along the northwesterly boundary line of said last mentioned parcel of land designated PARCEL TWO and along the northwesterly boundary line of the parcel of land described in the trustee's deed from Sonoma Title Guaranty Company to Oliver Rulhery recorded April 23, 1968 in Book 2206 of Official Records at page 186, Marin County Records,

(6) south 39° 06' 00" west 337.79 feet

to the most westerly corner of the parcel of land described in said trustee's deed recorded April 23, 1968, said most westerly corner being the most northerly corner of the parcel of land described and designated PARCEL FIVE in the Decree Settling Ninth and Final Account of Testamentary Trustee and of Final Distribution dated July 12, 1963 and recorded in Book 1706 of Official Records at page 164, Marin County Records; thence leaving said last mentioned northwesterly boundary line and running along the westerly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968

(7) south 13° 33' 00" east 229.52 feet and
(8) south 7° 28' 40" east 55.00 feet

to the most northerly corner of the parcel of land described and designated PARCEL SIX in said final decree dated July 12, 1963; thence leaving said last mentioned westerly boundary line and running along the northwesterly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968, said northwesterly boundary line being the northwesterly boundary line of said parcel of land designated PARCEL SIX

(9) south 43° 16' 20" east 792.07 feet

2794 023

to the most westerly corner of the parcel of land described in the deed from State of California to Alyce Peshburg and others dated December 21, 1970 and recorded in Book 2427 of Official Records at page 491, Marin County Records; thence leaving said southwesterly boundary line and running along the northerly boundary line of the parcel of land described in said deed dated December 21, 1970

(10) north 86° 34' 00" east 21.20 feet

to the most westerly corner of the parcel of land described in said deed dated December 21, 1970; thence leaving said northerly boundary line and running along the easterly boundary line of the parcel of land described in said deed dated December 21, 1970 and along the easterly boundary line of the parcel of land described in the deed from Alyce Peshburg and others to State of California recorded August 8, 1972 in Book 2293 of Official Records at page 92, Marin County Records

(11) south 2° 35' 26" west 85.25 feet;

thence leaving said last mentioned easterly boundary line

(12) north 61° 08' 38" east 1133.63 feet

to a set standard Pacific Gas and Electric Company bronze monument; thence

(13) north 42° 04' 30" east 370.09 feet

to a set 5/8 inch reinforcing rod with aluminum cap marked L.S. 3122; thence

(14) north 17° 20' 50" east 252.43 feet

to a point in the general southerly boundary line of the parcel of land described in the deed from Alyce Peshburg and others to McCrea-Hill, Inc., dated May 5, 1966 and recorded in Book 1810 of Official Records at page 17, Marin County Records; thence running along said general southerly boundary line

(15) north 89° 06' 00" east 727.12 feet and

(16) north 39° 04' 00" east 66.71 feet

to a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated July 21, 1952; thence leaving said general southerly boundary line and running along said last mentioned westerly boundary line

(17) south 3° 26' 00" east 121.40 feet, more or less,

to the point of beginning; containing 12.975 acres, more or less, and being a portion of Rancho Olompali.

Dated 6-25, 1973.

Alyce Peshburg

Patricia Young

Frank Tanforan

Roger Tanforan

Harold Tanforan

Carol Bridgeman

-2-

STATE OF NEVADA }
County of Washoe } ss. ACKNOWLEDGMENT

On June 25, 1973 personally appeared before me, a notary public,
Date
Carol Fairbrother aka Carol Yarwick, who acknowledged that She executed the
annexed instrument.

PATRICIA L. BROWN
Notary Public - State of Nevada
Washoe County
My Commission Expires Nov. 9, 1976

Signature

P-169 (5-67)

BOOK 704 PAGE 025

26759

3000-3422 Novato Service Center
5-73 L
AFTER RECORDING, RETURN TO:

FOR RECORDER'S USE ONLY

26759

RECORDED AT REQUEST OF
TITLE INSURANCE
AND TRUST COMPANY
AT 22 MIN. PAST 12 P.M.
JUL 12 1973
Official Records of Marin County, Calif.
N. J. Giacomini
Co. Recorder

DOCUMENTARY TRANSFER TAX $ [illegible]
[illegible]
SIGNATURE OF DECLARANT OR AGENT DETERMINING TAX
FIRM NAME

BK 2704 PG 626

GRANT DEED

BANK OF AMERICA NATIONAL TRUST AND SAVINGS ASSOCIATION, a national banking association, as trustee under the will of Lee Ross Tinsman, deceased, as set forth in the Order for Preliminary Distribution dated April 1, 1968 and recorded in Book 2202 of Official Records at page 327, Records of Marin County, State of California, as owner of an undivided 1/4 interest, hereby grants to PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, that certain real property, situate in said Marin County, described as follows:

MAIL TAX STATEMENTS TO:

Pacific Gas and Electric Company
Land Department
Land Acquisition Section
77 Beale Street
San Francisco, California 94106

-1-

BK 2704 PG 626

(APN 125-180-36 and 125-180-39)

Beginning at the most northerly corner of the parcel of land described and designated PARCEL ONE in the deed from Robert D. Carson and wife to State of California dated November 30, 1972 and recorded in Book 2650 of Official Records at page 621, Marin County Records, said most northerly corner being a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in the deed from Julia C. Rodkin to State of California dated July 22, 1952 and recorded in Book 772 of Official Records at page 275, Marin County Records; thence running along the general northwesterly boundary line of said parcel of land designated PARCEL ONE

(1) south 86° 34' 00" west 30.00 feet,
(2) south 52° 33' 00" west 36.06 feet,
(3) south 0° 09' 00" west 87.63 feet and
(4) south 39° 04' 00" west 223.07 feet

to the most westerly corner of said parcel of land designated PARCEL ONE; thence leaving said general northwesterly boundary line and running along the westerly boundary line of said parcel of land designated PARCEL ONE and along the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated November 30, 1972

(5) south 3° 29' 00" east 74.01 feet;

thence leaving said last mentioned westerly boundary line and running along the northwesterly boundary line of said last mentioned parcel of land designated PARCEL TWO and along the northwesterly boundary line of the parcel of land described in the trustee's deed from Sonoma Title Guaranty Company to Oliver Kullberg recorded April 23, 1968 in Book 2206 of Official Records at page 186, Marin County Records,

(6) south 39° 04' 00" west 332.79 feet

to the most westerly corner of the parcel of land described in said trustee's deed recorded April 23, 1968, said most westerly corner being the most northerly corner of the parcel of land described and designated PARCEL FIVE in the Decree Settling Ninth and Final Account of Testamentary Trustee and of Final Distribution dated July 12, 1963 and recorded in Book 1706 of Official Records at page 164, Marin County Records; thence leaving said last mentioned northwesterly boundary line and running along the westerly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968

(7) south 11° 33' 00" east 229.52 feet and
(8) south 7° 28' 40" east 55.00 feet

to the most northerly corner of the parcel of land described and designated PARCEL SIX in said final decree dated July 12, 1963; thence leaving said last mentioned westerly boundary line and running along the southwesterly boundary line of the parcel of land described in said trustee's deed recorded April 23, 1968, said southwesterly boundary line being the northeasterly boundary line of said parcel of land designated PARCEL SIX

(9) south 43° 18' 20" east 392.07 feet

to the most westerly corner of the parcel of land described in the deed from State of California to Alyce Peabody and others dated December 21, 1970 and recorded in Book 2427 of Official Records at page 493, Marin County Records; thence leaving said southwesterly boundary line and running along the northerly boundary line of the parcel of land described in said deed dated December 21, 1970

(10) north 85° 34' 00" east 21.20 feet

to the most easterly corner of the parcel of land described in said deed dated December 21, 1970; thence leaving said northerly boundary line and running along the easterly boundary line of the parcel of land described in said deed dated December 21, 1970 and along the easterly boundary line of the parcel of land described in the deed from Alyce Peabody and others to State of California recorded August 6, 1970 in Book 2293 of Official Records at page 92, Marin County Records

(11) south 2° 35' 16" west 85.15 feet;

thence leaving said last mentioned easterly boundary line

(12) north 61° 04' 38" west 1133.63 feet

to a set standard Pacific Gas and Electric Company bronze monument; thence

(13) north 42° 08' 30" east 370.99 feet

to a set 5/8 inch reinforcing rod with aluminum cap marked L.S. 3322; thence

(14) north 12° 28' 50" east 259.43 feet

to a point in the general southerly boundary line of the parcel of land described in the deed from Alyce Peabody and others to McGraw-Hill, Inc., dated May 8, 1964 and recorded in Book 1813 of Official Records at page 17, Marin County Records; thence running along said general southerly boundary line

(15) north 69° 06' 00" east 727.12 feet and

(16) north 29° 04' 00" east 66.71 feet

to a point in the westerly boundary line of the parcel of land described and designated PARCEL TWO in said deed dated July 21, 1952; thence leaving said general southerly boundary line and running along said last mentioned westerly boundary line

(17) south 3° 26' 00" east 121.40 feet, more or less,

to the point of beginning; containing 12.975 acres, more or less, and being a portion of Rancho Olompali.

Dated _____, 25, 1973.

BANK OF AMERICA NATIONAL TRUST AND SAVINGS ASSOCIATION, Trustee as aforesaid

By _____

By _____

CORPORATE ACKNOWLEDGMENT

State of California } S.S.
San Rafael County of Marin

On this 25 day of June, 19 73, before me Carol J. Galinski, a Notary Public in and for said Marin County, personally appeared J. H. Schoex

(SEAL)

Trust Officer
known to me to be the
and Dennis L. Elder known to me to be the
Trust Officer of the

the Corporation that executed the within instrument, and also known to me to be the person who executed the within instrument, on behalf of the Corporation therein named, and acknowledged to me that such Corporation executed the same, and further acknowledged to me that such Corporation executed the within instrument pursuant to its by-laws or a resolution of its Board of Directors.

WITNESS my hand and official seal.

OFFICIAL SEAL
CAROL J. GALINSKI
NOTARY PUBLIC - CALIFORNIA
MARIN COUNTY
My Commission Expires June 6, 1977

Carol J. Galinski

Notary Public in and for said Marin County and State.

My commission expires June 6, 19 77

BOOK 7154 PAGE 629

ERAS

Environmental, Inc.

1533 B Street

Hayward, CA 94541

(510) 247-9885 Facsimile: (510) 886-5399

info@eras.biz

PHASE I ENVIRONMENTAL SITE ASSESSMENT
8161 Redwood Boulevard
Novato, California 94945
ERAS Project Number 16257

Prepared for:

Mr. Yates McKenzie
Bay Vista, Inc.
386 Moraga Avenue, Suite 300
San Francisco, California 94129

Prepared by:

ERAS Environmental, Inc.
February 9, 2017

ERAS Environmental, Inc.

1533 B Street
Hayward, CA 94541

(510) 247-9885 Facsimile: (510) 886-5399 info@eras.biz

February 9, 2017

Mr. Yates McKenzie
Bay Vista, Inc.
386 Moraga Avenue, Suite 300
San Francisco, California 94129

Re: **PHASE I ENVIRONMENTAL SITE ASSESSMENT**
8161 Redwood Boulevard
Novato, California 94945
ERAS Project Number 16257

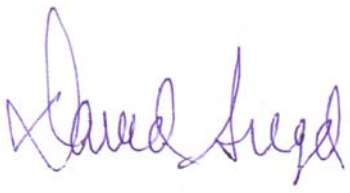
Dear Mr. McKenzie:

ERAS Environmental (ERAS) is pleased to provide you with the attached Phase I Environmental Site Assessment (ESA) for the above referenced Property. The assessment included a visual reconnaissance of the Property, a review of environmental databases and files for nearby sites, a review of historical maps and aerial photographs, an interview with the Property owner, and a review of available files regarding the Property with the regional water quality control board. Conclusions and recommendations presented in our report were based upon the completion of these activities.

If you have any questions regarding the information in this report, please don't hesitate to call us. It has been a pleasure working with you on this project.

Sincerely,
ERAS Environmental, Inc.





William K. McIntosh
Senior Staff Geologist

David Siegel
Senior Program Manager

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1

1.1 Purpose and Scope 1
1.2 Authorization 1
1.3 Limitations and Exceptions 1

2.0 PROPERTY DESCRIPTION 3

2.1 Location and Jurisdiction 3
2.2 Property Description 3
2.3 Property Use 3
2.4 Suspect ACM/PCBs/Lead Paint/Lead in Drinking Water 4
2.5 Physical Setting 4

3.0 REGULATORY AGENCY RECORDS REVIEW 6

3.1 Standard Federal and State Environmental Record Sources 6
3.2 Findings from Database Review 7
3.3 Off-site Sources and Agency File Reviews 9

4.0 HISTORICAL USE INFORMATION 10

4.1 Historical Information Review 10
4.2 Interview 10
4.3 Building Department and Hazardous Materials Document Review 11
4.4 Synopsis of Previous Environmental Investigations 11
4.5 Environmental Liens 11
5.1 Visual Reconnaissance of the Property 12
5.2 Adjacent and Nearby Site Uses 13

6.0 CONCLUSIONS AND RECOMMENDATIONS 14

6.1 Conclusions 14
6.2 Recommendations 16

7.0 REFERENCES AND APPENDICES 17

APPENDICES

A Environmental Professional's Resume
B Location and Site Maps
C Property Photographs
D ASTM Transaction Screen and Environmental Site Assessment Questionnaire
E EDR First Report
F Case Closure Document for the Property

1.0 INTRODUCTION

1.1 Purpose and Scope

This Phase I Environmental Site Assessment (ESA) was performed to identify, to the extent feasible, recognized environmental conditions in connection with the subject site (cited hereinafter as the "Property"). The protocol utilized for this assessment is in general accordance with the requirements of ASTM Standard E 1527-13.

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of this part (40 CFR Part 312). We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

The environmental professional's resume and certification are included in **Appendix A**.

The assessment included four main components: Records Review, Historical Use Information Review, Visual Reconnaissance of the Property, and Report Preparation. The purpose of the records review is to obtain and review records that will help identify recognized environmental conditions in connection with the Property. The objective of the visual reconnaissance is to obtain information indicating the likelihood of identifying recognized environmental conditions in connection with the Property. The objective of the interviews is to obtain additional information indicating recognized environmental conditions in connection with the Property. The report includes documentation to support the analysis, opinions and conclusions as presented.

1.2 Authorization

Authorization to perform this assessment was provided by Mr. Yates McKenzie of Bay Vista Inc. on December 26, 2016 in response to ERAS proposal dated December 15, 2016.

1.3 Limitations and Exceptions

ERAS has performed the services for this project in accordance with our proposal, and in accordance with current standards of the American Society for Testing and Materials (ASTM) for Phase I Environmental Site Assessments (ASTM standard E1527-13). No guarantees are either expressed or implied.

The investigation was limited to a search for *recognized environmental conditions*. The term *recognized environmental condition* means the presence or likely presence of any hazardous substances or petroleum products on the Property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the Property or into the ground, groundwater, or surface water of the Property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

There is no investigation, which is thorough enough to preclude the presence of hazardous

materials, which presently, or in the future, may be considered hazardous at the Property. Because regulatory evaluation criteria are constantly changing, concentrations of constituents presently considered low may, in the future, fall under more stringent regulatory standards that require remediation.

The visual reconnaissance was limited to observation of surface conditions at the Property. *Reasonably ascertainable* information was obtained. This information is publicly available and obtainable from its source within reasonable time and cost constraints, and is reasonably reviewable. This approach reflects current ASTM standards unless the information obtained as part of this work suggests the need for further investigation. No warranty or guarantee of Property conditions is intended.

The investigation addressed recognized environmental conditions at the Property. However, certain conditions, such as those listed below, may not be revealed:

1) naturally occurring toxic materials in the subsurface soils, rocks, water or toxicity of on site-flora;

2) toxicity of substances common in current habitable environments, such as stored household products, building materials, and consumables;

3) biological pathogens;

4) contaminant plumes below sampled or observed surface levels, originating from a remote source;

5) constituents or constituent concentrations that do not violate present regulatory standards, but may violate future standards;

6) unknown impact to the Property, such as "midnight" dumping and/or accidental spillage which may occur following the visual reconnaissance of the Property by ERAS.

Opinions and judgments expressed herein, which are based upon our understanding and interpretation of current regulatory standards, should not be construed as legal opinions.

2.0 PROPERTY DESCRIPTION

2.1 Location and Jurisdiction

The subject property (hereinafter the "Property") is located at 8161 Novato Boulevard and on the west side of the Redwood Boulevard north of Buck Center Drive in the northern portion of the City of Novato.

The Property consists of a single parcel (APN 125-180-49) with an approximate area of 13.6 acres that was vacant and undeveloped at the time of the site inspection.

The 1 Mile Radius Map included as a site location map in **Appendix B** shows the location of the Property. Current photographs showing important details of the Property are included in **Appendix C**.

2.2 Property Description

An ERAS representative visited the exterior of the Property on January 6, 2017. The Property was located in an area of commercial land uses. To the north was the Birkenstock office building at 8171 Redwood Boulevard. To the south and southwest were the buck Center Drove and Buck Center (a research facility). To the east was Redwood Boulevard and Highway 101, across which were undeveloped land and retention ponds. To the west was an undeveloped hillside covered with grass and a few trees.

The Property surrounds the Days Inn at 8141 Redwood Boulevard on the south, west and northern sides. The Property was a vacant undeveloped lot that was covered with grass and several shrubs.

The northwest portion of the Property appeared to have been graded and was slightly higher in elevation compared to the central portion of the parcel. Recent rains resulted in some standing water at this break in slope. Three pieces of Franciscan Complex bedrock and several pieces of broken concrete were noted in this area.

The western side of the parcel extends up the adjacent hillside and is also undeveloped grassland. No fence or boundary larkers were noted in this area. Near the break in slope are markers for an underground natural gas pipeline.

Septic systems, drywells, monitoring wells or other evidence of subsurface investigations were not observed on the Property by ERAS. No evidence of the current or former presence of USTs or ASTs were observed on the Property by ERAS.

Photographs illustrating important features of the Property are included in **Appendix C**. Observations made by ERAS at the time of the site visit are shown on the site reconnaissance checklist in **Appendix D**.

2.3 Property Use

The area of the Property was vacant and undeveloped from 1914 through approximately 1952. By 1965, the building on the Redwood Boulevard side of the Property clearly had the footprint consistent with a gas station. This building operated as a gas station and an auto service center from at least 1968 through approximately 1995.

The service station and residence trailer were removed by PG&E in 1995 and the former UST locations and waste oil UST locations were over-excavated and confirmation samples were collected. The former USTs and product piping were found to have been removed, apparently prior to 1973, when PG&E bought the Property. The Property has remained vacant and undeveloped (except for the underground natural gas pipeline) since 1995.

See additional information in **Section 4.0, Historical Use Information**.

2.4 Suspect ACM/PCBs/Lead Paint/Lead in Drinking Water

Asbestos

Based on the removal of the former buildings on the Property (in 1995), it is unlikely that there are quantities of asbestos containing materials (ACM) remaining. Some materials such as sheetrock materials, mastics (adhesives) and roofing materials, even of newer age, could contain asbestos. All building materials were noted to be in good condition.

ACM may become a hazard if the materials are disturbed during demolition, renovation or remodeling activities. All materials suspected to contain asbestos should be sampled and analyzed prior to activities that could damage them.

PCBs

No transformers were observed on the Property. Oil containing electrical transformers are usually owned and serviced by Pacific Gas and Electric Company who would be responsible to remedy any releases. There were no indications of hydraulic equipment on the Property that would be likely to contain oil or PCBs.

Lead Paint

Based on the undeveloped status of and the removal of former buildings (in 1995), it is unlikely that there are quantities of lead containing paint present. Sampling and testing for lead-based paint was not requested in the Scope of Work for this assessment.

Lead in Drinking Water

A survey of the building for lead in drinking water was not requested in the Scope of Work for this assessment. Testing for lead in drinking water inside commercial buildings in not usually recommended unless the planned uses are for specific sensitive uses such as hospitals, residential, elderly care facilities, children's' day care centers. Since ERAS understands this building is to be used for its current purposes, this sampling is not recommended.

2.5 Physical Setting

The Property is in the northeastern part of the City of Novato, in Marin County. The site lies in the Petaluma River basin which slopes gently to the southeast toward the San Pablo Bay.

Surface topography in the immediate vicinity of the Property is gently sloping to the west. Elevation of the Property is approximately 20 feet above Mean Sea Level (MSL) according to the United States Geological Survey (USGS) Petaluma River, California, 7.5 Minute Quadrangle Topographic Map (1954). Regionally, topography in the area of the Property slopes gently to the south east toward the Petaluma River.

2.6 Geologic and Soil Conditions

The Petaluma River Basin, where the subject site is located, contains discontinuous, fluvial and alluvial deposits that consist primarily of interbedded silt, sand, and gravel. The local stratigraphy consists of younger alluvium to a depth of approximately 30 feet bgs and older alluvium to several hundred feet below ground surface (bgs) in some areas. Hills in the area are underlain by the Franciscan Assemblage and Burdell Volcanics.

2.7 Groundwater Conditions

The subject site is located at an elevation of approximately 20 feet above MSL in the Petaluma River Basin, the surface of which slopes gently southeast toward the San Pablo Bay. The regional groundwater flow follows the topography, moving from areas of higher elevation to areas of lower elevation. Based on regional topography, the groundwater flow direction is estimated to be to the southeast.

3.0 REGULATORY AGENCY RECORDS REVIEW

3.1 Standard Federal and State Environmental Record Sources

Groundwater provides the primary migration route for subsurface contamination from off-site sources to the Property. The groundwater flow direction in the area of the Property is estimated to be to the southeast based on topography.

Only the sites that are directly up-gradient or in close proximity (adjacent) are usually considered to pose a threat to subsurface environmental conditions under the Property. The potential impact of off-site contaminants to the Property are based on the type of chemical released, the severity of the release, status of remediation or cleanup, and nature of the groundwater in the area of impact and area of the Property.

Sites where groundwater is known to be impacted are listed on a variety of Federal and State databases and are the cases most likely to affect other nearby parcels. These databases are listed below. Databases searched for specified radii around the Property also include reported spills of hazardous materials (ERNS).

Fuel hydrocarbons generally do not migrate as readily as other chemicals such as certain solvents; consequently, reported fuel leak sites at distances greater than ½ mile from the Property are not considered imminent threats and are not plotted on database maps. Leaks from underground storage tank sites are the most common source of local contamination. Leaks of this type generally do not extend down-gradient more than approximately 500 feet (approximately 1/10 mile) except under unusual conditions. All toxic sites within a 1-mile radius are plotted and reviewed to determine potential threats to the Property.

Information from standard Federal and State environmental databases was provided to ERAS by Environmental Data Resources, Inc (EDR). Data from governmental agency lists are updated and integrated into one database, which is updated as these data are released. This integrated database also contains postal service data to enhance matching of street addresses. Records from one government source are compared to records from another to clarify any address ambiguities. The demographic and geographic information available provides assistance in identifying and managing risk. The accuracy of the geo-coded locations is +/- 300 feet.

Maps in the EDR report show the locations of all sites identified relative to the location of the Property. The Property is indicated as TP (Target Property) on the database. The following databases represent the known and likely leak sites that could potentially pose a threat to environmental conditions under the Property. These represent the databases that are consistent with the ASTM-standard environmental databases.

The database includes a large number of supplemental, proprietary and non ASTM-standard databases that include many duplicate listings of sites that are already listed in the below-listed databases. ERAS reviews all of the listings provided in the databases as part of the process of evaluation of risk to the Property and further evaluates any site listings that ERAS considers significant.

List Type	Approximate Search Distance in Miles
NPL	1.0

CERCLIS	0.5
CORRACTS	1.0
CONTROLS	0.5
ERNS	Property
ENVIRONSTOR	1.0
LUST	0.5
SLIC	0.5
VCP	0.5
Brownfields	0.5

3.2 Findings from Database Review

The Property was listed twice as a Closed LUST case and once as a UST site. Agency records were reviewed for the Property based on these listings.

An apparently adjacent site, Buck Center at 8001 Redwood Boulevard, a UST site, is incorrectly mapped on the environmental database. This site is actually located approximately 1,500 feet west from the Property in a cross-gradient direction. Only the Buck Center access road is located adjacent to the Property in an undeveloped area. Based on the distance and direction, this site is not considered likely to pose a risk to the Property.

Locations of the identified sites are shown on the **1 Mile Radius, .5 Mile Radius and .25 Mile Radius** maps in the EDR Report in **Appendix E**.

NPL

NPL National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

No NPL sites or delisted NPL sites were listed within 1 mile of the Property.

CERCLIS/SEMS/SEMS-Archive

CERCLIS is the Comprehensive Environmental Response, Compensation, and Liability Information System. CERCLIS contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities across the nation, including sites that are on the National Priorities List (NPL) or being considered for the NPL. This database contains a listing of NPL Sites.

No SEMS-Archive sites were listed within ½ mile.

CORRACTS This database contains Investigation or cleanup activities at Resource Conservation and Recovery Act (RCRA) or state-only hazardous waste reported by the California Department of Toxic and Substance Control.

No CORRACTS sites were listed within 1 mile of the Property.

CONTROLS Controls, this database identifies sites that have liens reported by the California Department of Toxic and Substance Control, land use control information pertaining to the former

Navy base realignment and closure properties, engineering controls sites, and sites with institutional controls.

No Controls sites were listed in this database within ½ mile of the Property.

ERNS
The primary function of the National Response Center is to serve as the sole national point of contact for reporting all oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories. This database contains a listing of discharge locations. Agency: National Response Center

The Property was not listed on this database.

ENVIROSTOR/STATE RESPONSE
This database identifies confirmed release sites where DTSC is involved in remediation, either in a lead role or oversight capacity.

No RESPONSE sites and **one** ENVIROSTOR site was listed within 1 mile of the Property. The ENVIROSTOR site, Novato Storage Park at Airport and Binford is located approximately 2,700 feet north northeast from the Property, in a down gradient direction. Based on the distance and direction, this site is not considered likely to pose a threat to subsurface environmental conditions beneath the Property.

LUST
The California State Water Resources Control Board's Underground Storage Tank Program keeps a list of all underground storage tanks which have been reported as having had a release. These sites include those that have not yet been cleaned up and now have a status of Case Open and those which have been cleaned up and have a case status of Closed. Fuel leak sites rarely affect an area more than 1/8 mile from its source except under unusual conditions. Most contamination from these sites is confined to areas within 500-700 feet of the leak source.

One LUST site, the Property, was listed twice. The case status is listed as closed. Based on these listings, agency records were reviewed for the property. Results of the records review are discussed in **Section 4.4**.

SLIC
The Spills, Leaks, Investigation & Cleanup (SLIC) Program deals with site investigation and corrective action involving sites not overseen by the Underground Tank Program and the Well Investigation Program. Sites listed as “closed” have had remediation completed and are now considered closed by the agency. These listings include SLIC sites that are listed on Federal, state and county listings.

Two SLIC sites were listed within ½ mile of the Property. Both sites, Black John Slough and Novato Storage Park, are located to the east across Highway 101 from the Property, in a down-gradient direction. Neither site is in close proximity to the Property.

None of the listed sites were located in close proximity or in a direction directly up-gradient of the Property. Therefore, these sites are not considered likely to pose a threat to the subsurface

environmental conditions beneath the Property.

VCP
This database contains a listing of sites with either confirmed or unconfirmed releases, and the project proponents have requested that DTSC oversee evaluation, investigation, and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

No VCP sites were listed within ½ mile of the Property.

BROWNFIELDS, a listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provide information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

No US Brownfields sites were listed on the database within ½ mile.

Only sites that are listed as potentially contaminated and are in close proximity or in a direction directly up-gradient are considered as potential threats to the Property. No additional sites, other than those leak sites identified above, were identified on these databases.

3.3 Off-site Sources and Agency File Reviews

No threats to subsurface conditions beneath the Property were identified in the database or by the historical information and site inspection. Consequently, no review of agency information for offsite contamination sources was necessary.

4.0 HISTORICAL USE INFORMATION

Available historical data were researched to obtain information regarding the past uses of the Property and adjacent sites, especially as the information may pertain to environmental conditions or concerns.

4.1 Historical Information Review

Historical Sanborn Fire Insurance Maps

ERAS searched for historic Sanborn Fire Insurance Maps at the San Francisco Public Library. No Sanborn Map coverage was located for the Property.

Historical USGS Topographic Maps

The United States Geological Survey Petaluma River, California 7.5 Minute Series Topographic Map, 1980 shows the site elevation at approximately 20 feet with a topographic slope very gently down to the southeast.

ERAS reviewed the United States Geological Survey Petaluma River 7.5 Minute Series Topographic maps and Petaluma 15 Minute Series Topographic Maps supplied by EDR dated 1914, 1954, 1968, 1973 and 1980 were reviewed.

In 1914, the area of the Property was vacant and undeveloped. In 1954, a small building was located on the Property, near the eastern side, close to the Redwood Highway.

By 1968, a second small building was located near the highway and the adjacent sites were developed. In 1973 and 1980 the same buildings were located on the Property.

Historical Aerial Photographs

Aerial photographs, supplied by EDR, dated in 1952, 1965, 1975, 1982, 1993, 1998, 2000, 2005, and 2006 were reviewed.

In 1952, a building which appeared to be similar to a gas station in outline, was located on the eastern side (at Old Redwood Highway. The remainder of the parcel appeared to be undeveloped. In 1965, 1975, 1982 and 1993 the Property is of the same configuration as in 1952.

In 1998, 2000, 2005 and 2006, the former gas station/auto repair building had been removed and the entire Property appears to be vacant and undeveloped.

4.2 Interview

ERAS reviewed an ASTM Standard interview form completed by the North Coast Land Rights Supervisor for PG&E, Ms. Maya Spark on February 2, 2017. According to Ms. Spark, PG&E has owned the Property since 1973, but never occupied or developed the Property. Between 1973 and 1995 Mike's Auto occupied the Property for an auto repair business. PG&E demolished the former gas station/auto service structure and the adjacent residential trainer in 1995. The Property has been vacant and undeveloped from 1995 through the time of the site inspection.

Ms. Spark was aware that there were former USTs and petroleum products related to the former gas station/auto service business. Ms. Spark was not aware of any governmental notifications relating to violations of environmental laws regarding the Property.

Ms. Spark's responses were compiled on ERAS Environmental Questionnaire along with observations made by ERAS at the time of the site visit. The Environmental Questionnaire is included as **Appendix D**.

4.3 Building Department and Hazardous Materials Document Review

ERAS requested a review of building department records, under the address for the Property on January 6, 2017. No records were found for the Property.

Marin County Waste Management Division

The Marin County, CUPA, Hazardous Materials and inspection records are maintained by the Marin County Waste Management Division. A search for records under the Property address and under the APN discovered no such records.

4.4 Synopsis of Previous Environmental Investigations

A former gas station/auto repair business operated on the Property, this business was discontinued in 1995 and the facility was removed. The owner at the time, PG&E investigated the former UST sites in 1996 and found no evidence of the USTs or product piping. To complete the UST closure, PG&E over excavated the UST areas (fuel and waste oil tank locations) and the hydraulic lift location) and collected soil confirmation samples and one groundwater sample was collected from within the fuel UST excavation.

The groundwater sample was laboratory analyzed and the sample did not contain detectable concentrations of the contaminants that were tested. Soil samples did not contain detectable concentrations of petroleum hydrocarbons as gasoline (TPH-g) and as diesel (TPH-d). The analytical results are summarized on Table 1 in the Case Closure Summary included in **Appendix F**.

Based on the subsurface investigation which identified no contamination above the environmental screening levels, the RWQCB wrote a UST Case Closure letter and Case Closure summary which stated that no further action was required regarding the UST leak. The only condition was that the agency be notified when the owner proposes a change in use is proposed for the Property.

4.5 Environmental Liens

There was no indication that the Property was the site of any ongoing or incomplete subsurface investigations or remedial activities related to any release of hazardous materials on the Property, therefore a search for environmental liens for the Property was not considered likely to add additional information for this assessment.

The former UST case on the Property has been properly closed by the oversight agency.

5.0 RECONNAISSANCE

Photographs were taken during the reconnaissance to document the features observed and any environmental conditions of concern. Photographs are included in **Appendix C**.

5.1 Visual Reconnaissance of the Property

ERAS conducted a visual reconnaissance of the Property on January 6, 2017 to identify potential indications of environmental concern. The items listed in this section, if any, are representative of those which could pose recognized environmental conditions as indicated in the ASTM standard for conducting environmental site assessments.

Drums, Containers, and Storage Tanks

The on-site reconnaissance addressed containers, drums, above ground storage tanks, and other storage units containing materials, which may pose an environmental threat at the Property. No such items were noted.

Evidence of Waste Disposal

The on-site reconnaissance addressed dumps, pits, ponds, landfills, borrow pits and lagoons, which may have been used for disposal purposes at the Property. None of these items were observed.

Surface Fill

The on-site reconnaissance did not reveal any evidence of surface fill.

Surface Staining and Stressed Vegetation

Stressed vegetation was not observed in the exterior areas of the Property during the on-site reconnaissance. Surface staining was not noted in the driveway, paved rear yard and loading dock area.

Transformers

No transformers were observed on the Property.

Air Stacks, Vents, and Odors

The on-site reconnaissance addressed air stacks, vents, and strong, pungent or noxious odors at the Property. No such items or unusual noxious odors were observed on or near the Property.

Evidence of Underground or Aboveground Storage Tanks

No evidence the current or former presence of UST's, or AST's were observed on the Property.

Conduits to Groundwater

Groundwater production wells, monitoring wells, or dry wells were not discovered on the Property.

Evidence of Improper Waste Discharge

Pipes and/or vents, indicating improper discharge of wastes, were not found at the Property.

On-Site Environmental Management Practices

The on-site reconnaissance addressed the following environmental management practices.

Solid Waste
No solid waste was observed at the Property aside from several pieces of broken concrete and rocks.

Hazardous Materials and Waste
No hazardous materials were observed on the Property during the site visit. No evidence of previous development was visible.

Treatment Facilities
No indications of wastewater disposal or treatment facilities were observed at the Property during the on-site reconnaissance.

Application of Pesticides, Herbicides or Fertilizers
No such items were observed.

General Environmental Practices
No indications of adverse environmental practices were observed on the Property during the on-site reconnaissance.

5.2 Adjacent and Nearby Site Uses
The following observations were made of parcels adjacent to the Property:

North	Birkenstock Corporate offices at 8171 Redwood Boulevard
South	Buck Center at 8001 Redwood Highway
East	Days Inn at 8141 Redwood Boulevard, Highway 101 and retention ponds east of the highway
West	A vacant, undeveloped hillside with grass and shrub cover

.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

ERAS has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 for the Property. Any exceptions to, or deletions from this Practice are described in the report.

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of this part.

We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

A data failure occurred for this assessment from 1914 through 1952. The development of the former gas station/auto service building was completed by 1952. This facility was removed in 1995, on land which was vacant and undeveloped from at least 1914. Based on the documented history of the use for a portion of the Property for a gas station/auto service business, which was removed and properly remediated with agency oversight, this data failure is not considered likely to affect the conclusions of this assessment.

Site Visit

An ERAS representative visited the exterior of the Property on January 6, 2017. The Property was located in an area of commercial land uses. To the north was the Birkenstock office building at 8171 Redwood Boulevard. To the south and southwest were the buck Center Drove and Buck Center (a research facility). To the east was Redwood Boulevard and Highway 101, across which were undeveloped land and retention ponds. To the west was an undeveloped hillside covered with grass and a few trees.

The Property surrounds the Days Inn at 8141 Redwood Boulevard on the south, west and northern sides. The Property was a vacant undeveloped lot that was covered with grass and several shrubs.

The northwest portion of the Property appeared to have been graded and was slightly higher in elevation compared to the central portion of the parcel. Recent rains resulted in some standing water at this break in slope. Three pieces of Franciscan Complex bedrock and several pieces of broken concrete were noted in this area.

The western side of the parcel extends up the adjacent hillside and is also undeveloped grassland. No fence or boundary larkers were noted in this area. Near the break in slope are markers for an underground natural gas pipeline.

Septic systems, drywells, monitoring wells or other evidence of subsurface investigations were not observed on the Property by ERAS. No evidence of the current or former presence of USTs or ASTs were observed on the Property by ERAS.

Historical Review Summary

The area of the Property was vacant and undeveloped from 1914 through approximately 1952. By 1965, the building on the Redwood Boulevard side of the Property clearly had the footprint consistent with a gas station. This building operated as a gas station and an auto service center from at least 1968 through approximately 1995.

The service station and residence trailer were removed by PG&E in 1995 and the former UST locations and waste oil UST locations were over-excavated and confirmation samples were collected. The former USTs and product piping were found to have been removed, apparently prior to 1973, when PG&E bought the Property. The Property has remained vacant and undeveloped (except for the underground natural gas pipeline) since 1995.

Database Review Summary

A former gas station/auto repair business operated on the Property, this business was discontinued in 1995 and the facility was removed. The owner at the time, PG&E investigated the former UST sites in 1996 and found no evidence of the USTs or product piping. To complete the UST closure, PG&E over excavated the UST areas (fuel and waste oil tank locations) and the hydraulic lift location) and collected soil confirmation samples and one groundwater sample was collected from within the fuel UST excavation.

Based on the subsurface investigation which identified no contamination above the environmental screening levels, the RWQCB wrote a UST Case Closure letter and Case Closure summary which stated that no further action was required regarding the UST leak. The only condition was that the agency be notified when the owner proposes a change in use is proposed for the Property.

Based on location and distance, none of the other identified sites are considered likely to pose a threat to subsurface environmental conditions under the Property.

Recognized Environmental Conditions

Recognized environmental conditions (REC), controlled recognized environmental conditions (CREC) or historical recognized environmental conditions (HREC) or de minimis conditions were identified as follows:

- The former use of a portion of the Property for a gas station/auto service business is a closed case with proper remedial actions completed and the RWQCB has closed the case with the requirement that the owner promptly notify RWQCB of any proposed change in land use. This is a CREC.

- A natural gas pipeline is mapped in the west central portion of the Property. Properly maintained and operated, this pipeline is not considered likely to pose a risk to subsurface conditions beneath the Property.

There was no indication that the Property was the site of remedial activities related to any release of hazardous materials on the Property other than documented in the Case Closure documents, therefore a search for environmental liens for the Property was not considered likely to add additional information for this assessment.

6.2 Recommendations

No evidence was discovered during this assessment to indicate that activities currently or historicaly conducted on or near the Property have contributed contamination to soil or groundwater under conditions which could pose a risk to human health or groundwater resources. ERAS recommends the owner of the Property notify the RWQCB when the Property is redeveloped.

Based on the information obtained during this assessment, ERAS recommends no further action pertaining to environmental conditions at the Property identified as 8161 Redwood Boulevard, in Novato, California.

7.0 REFERENCES AND APPENDICES

Maps, Aerial Photographs, and Other Geographic References

The United States Geological Survey Petaluma River 7.5 Minute and Petaluma 15 Minute Series Topographic Maps supplied by EDR, dated 1914, 1954, 1968, 1973 and 1980 were reviewed.

Aerial photographs

Aerial photographs, supplied by EDR, dated in 1952, 1965, 1975, 1982, 1993, 1998, 2000, 2005, and 2006 were reviewed.

Published References

California Regional Water Quality Control Board, Water Quality Control Plan, San Francisco Bay Basin Region (2), December 1986.

California Regional Water Quality Control Board, Underground Storage Tank (UST) Case Closure for PG and E Property, 8161 Old Redwood Highway, Novato, Marin County, UST Case No. 21-0306. April 12, 1996

EDR First Report, 8161 Redwood Boulevard, Novato, CA 94945, Inquiry No. 4815709.1s, December 28, 2016.

Goldman, Harold B., Geology of San Francisco Bay prepared for San Francisco Bay Conservation and Development Commission, February 1967.

Helley, E.J., La Joie, K.R., Spangle, W.E., and Blair, M.L., Flatland Deposits of the San Francisco Bay Region, California - their geology and engineering properties and their importance to comprehensive planning, U.S. Geological Survey Professional Paper 943, 1974.

Records Review, Interviews and Agency Contacts

Interview with the PG&E North Coast Land Rights Supervisor, Ms. Maya Spark, February 2, 2017.

Novato Building Department records review request, January 6, 2017.

Marin County Waste Management Division file review request document search, January 13, 2017

Regional Water Quality Control Board, file review request January 13, 2017.

APPENDIX A

ENVIRONMENTAL PROFESSIONALS RESUME

William K. McIntosh

William K. (Skip) McIntosh is a key member of ERAS Environmental, Inc., a full service environmental consulting company. Prior to joining ERAS, Mr. McIntosh was a Staff Geologist with Gettler-Ryan Inc. where he specialized in all aspects of subsurface contamination investigations including workplan preparation, permitting, field services, data analyses, and report preparation. Previously, Mr. McIntosh was a Consulting Geologist and Project Geologist with several Nevada, California and Colorado based mining companies. Mr. McIntosh holds a Bachelors in Geology from University of California, Davis and has completed Masters degree work at Colorado State University. Mr. McIntosh's work has been published by the Utah Geological and Mineral Survey.

QUALIFICATIONS

Involved in environmental and mining geology since 1978. Strong technical background in investigative methods, geological and environmental assessment, installation and development of monitoring and remediation wells, and chemical and biological data interpretation and evaluation. Mr. McIntosh has completed environmental baseline studies, reclamation planning programs including bonding cost estimates, environmental hazards monitoring and remediation for both mining development and reclamation projects throughout the Western US.

WORK HISTORY

2000-2001: ***Staff Geologist for Gettler-Ryan, Inc.***
Provided field and office support for gasoline station UST removal, over excavation, groundwater and soil contamination investigation , site remediation and all appropriate permitting and reporting. Responsibilities included workplan preparation, permitting, subcontractor coordination, field team supervision, field data collection, monitoring and remediation well installation and development, report preparation including remedial investigation.

1997-2000: ***Consulting Geologist and Project Geologist on projects for Cyprus-Amax Corp.***
Conducted and supervised site characterization activities including subsurface investigations, well installation, groundwater well abandonment and site reclamation. Responsibilities included and tracking simultaneous project drilling, logging and reclamation work, data analysis, report preparation and review.

1978 to 1997: ***Geologist, Exploration Geologist and Senior Geologist for Homestake Mining Company, Echo Bay Minerals, Inc., Santa Fe Pacific Gold Corp. and AMAX Gold, Inc.*** Key accomplishments included successful mineral exploration, mineral and environmental studies, project management and permitting. Completed statistical and economic modeling for active mines. Completed reclamation studies and tests, which produced a practical, economical reclamation plan which was permitted and bonded in accordance with my estimates. Participated in assessment of groundwater water resources, waste dump locations, slope stability studies and revegetation testing.

EDUCATION AND LICENCES

- ◊ 2007 Registered Environmental Assessor
- ◊ 1991-1997 Geostatistics and MEDSystem Training @ Mintec, Inc.
- ◊ 1992-1995 M.S. Coursework Economic Geology, Colorado State Univ.
- ◊ 1977 BA Degree, Geology, University of California, Davis

David Siegel

David Siegel is president of ERAS Environmental, Inc., an environmental consulting company formed in October 1998. Prior to that, Mr. Siegel was principle of Siegel Environmental Consulting Services, formed in February 1994, an environmental consulting company providing due diligence services, geological and hydrogeological research, Phase 2 field services such as groundwater well installation and sampling, waste disposal, project management and remediation planning and permitting.

Before involvement with management of these environmental consulting firms, Mr. Siegel was a Project Hydrogeologist, Project Geologist, and Staff Geologist with three San Francisco Bay Area environmental consulting companies from 1987 to 1998. Mr. Siegel holds a master's degree in geology from California State University East Bay and was a State of California Registered Environmental Assessor II.

QUALIFICATIONS

Experience since 1987 in hazardous materials consulting including due diligence projects, soil and groundwater investigations and remediation, and asbestos surveying. Strong organizational background in project management including budget development and management and client contact and service. Strong technical background in groundwater well design and installation, soil and groundwater chemical data evaluation and hydrogeological assessment. Inspection experience with thousands of commercial sites including retail, office, industrial and residential. Experience providing management, business development, technical oversight, client contact and regulatory agency negotiation and interaction for environmental case closures.

WORK HISTORY

1994-Present: ***President of ERAS Environmental, Inc. and Principle of Siegel Environmental***
Management and completion of due diligence projects for a wide variety of commercial properties throughout California. Management and completion of Phase 2 soil and groundwater and asbestos sampling projects at former and operating gasoline stations and industrial facilities. Responsible for project initiation, planning, report preparation and technical oversight. Responsible for business development, client contact and local and state regulatory agency compliance for ongoing investigation, cost recovery and case closures.

1987-1994: ***Project Hydrogeologist (McCulley, Frick & Gilman, San Francisco; 1992-1994), Project Manager (Converse Environmental, San Francisco; 1989-1992), Project Manager (Exceltech, Inc., Fremont; 1987-1989)***
Management and completion of environmental and geotechnical investigations involving soil and groundwater contamination. Responsible for project planning, budgeting and operation, professional staff supervision and report completion. Interface with engineers for site remediation planning.

EDUCATION AND LICENCES

1995 to Present - EPA Certified Asbestos Building Inspector

1990 to 2012 - California Registered Environmental Assessor II

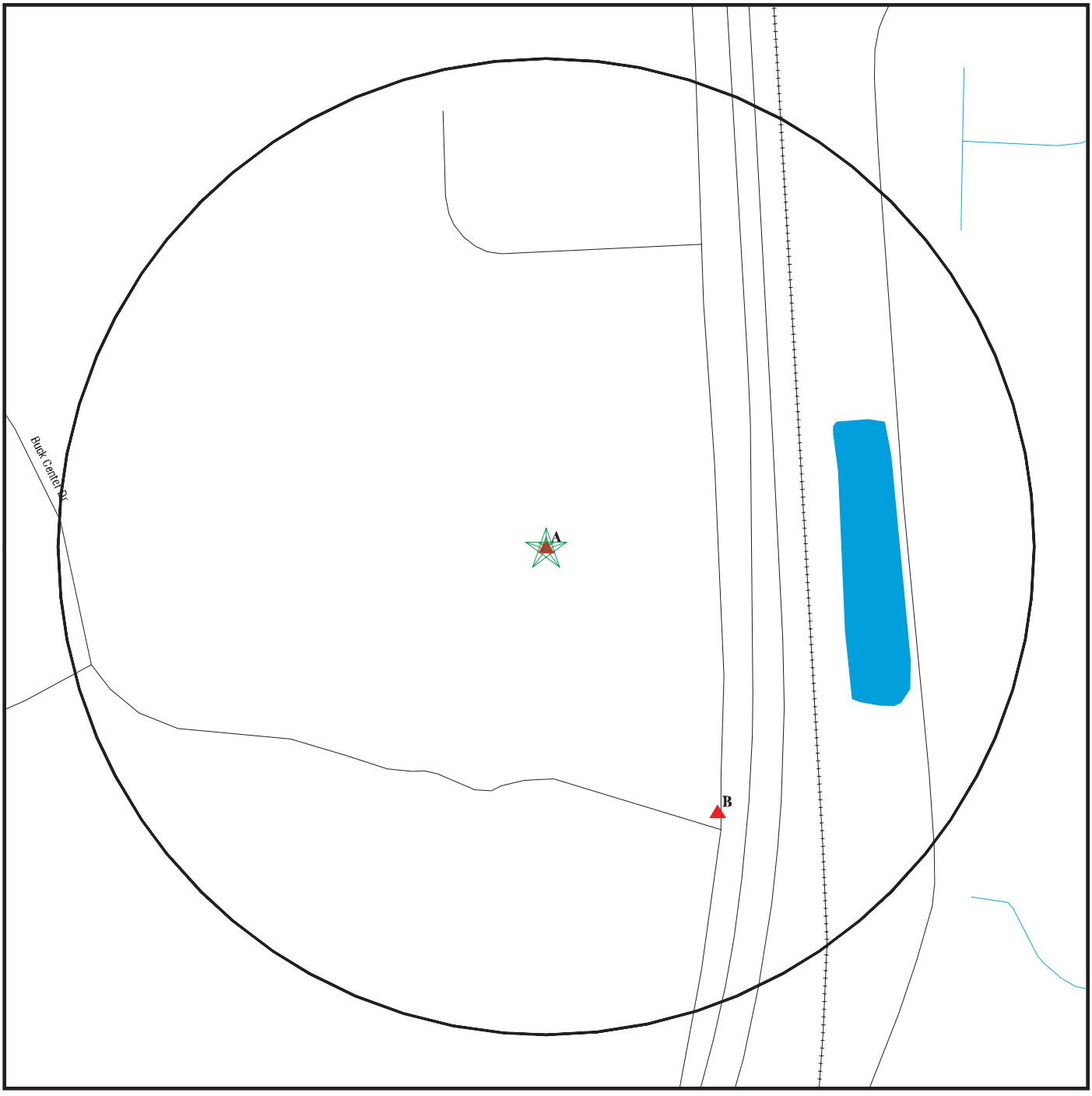
1988 - M.S. Geological Sciences, California State University, East Bay

APPENDIX B

LOCATION AND SITE MAPS

0.250 Mile Map

8161 REDWOOD BLVD NOVATO, CA 94945

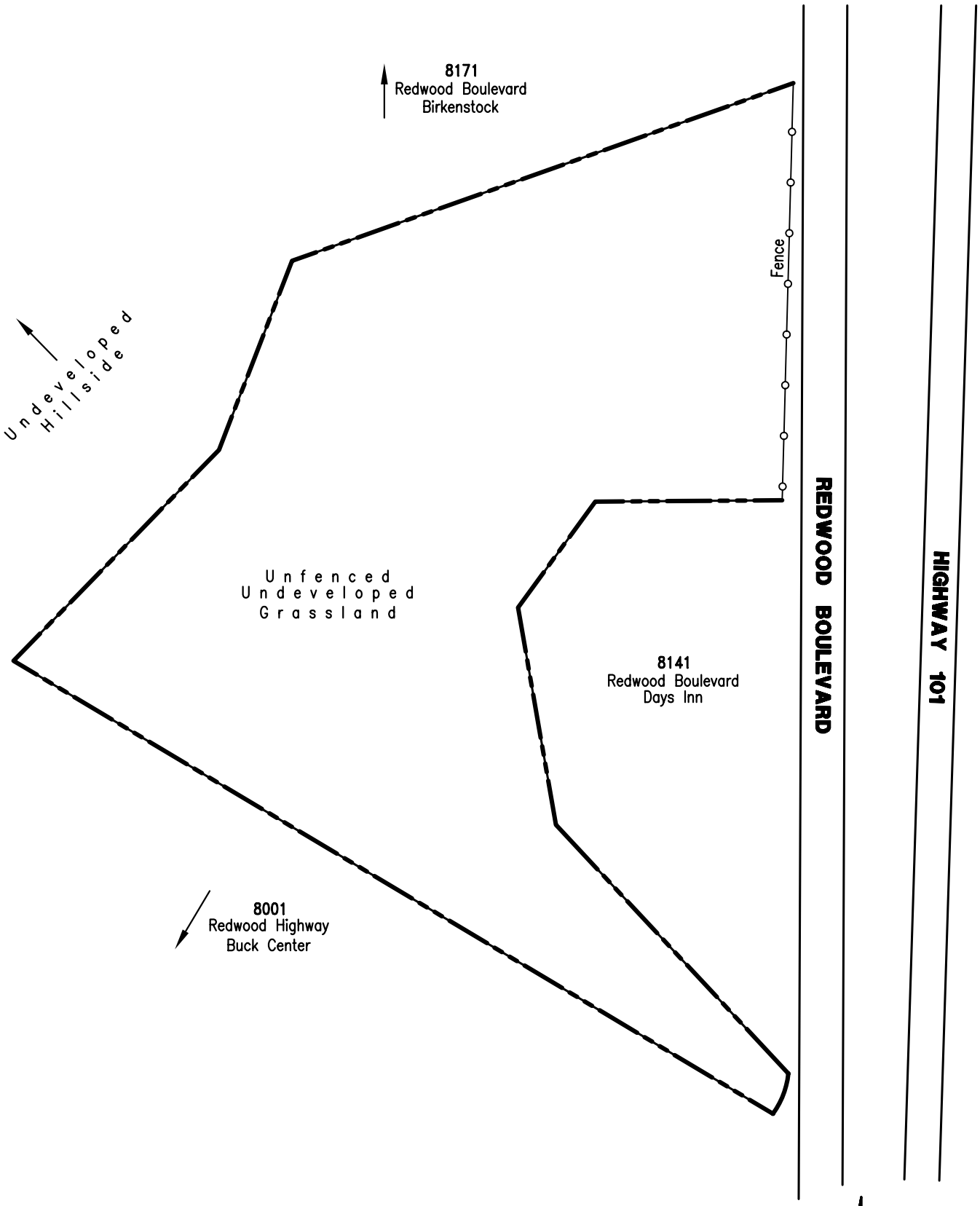


Black Rings Represent Qtr. Mile Radius

- Target Property (Latitude: 38.133768 Longitude: 122.565815)
- High or Equal Elevation Sites
- Low Elevation Sites
- National Priority List Sites

EDR First Report

EDR Reference Code (EDR internal use only): 4815709.1s
Copyright © 2016 EDR, Inc. © 2015 TomTom Rel. 2015.
16-12-28.12:36:46.Wed



PROPERTY SITE PLAN **FIGURE 2**

Project No. 17257
8161 Redwood Boulevard
Novato, California

March, 2017
Not to Scale

ERAS Environmental

APPENDIX C

PROPERTY PHOTOGRAPHS



Photograph 1 - View of the from Redwood Boulevard south toward Days Inn.



Photograph 2 - View of the from Redwood Boulevard west toward the undeveloped hill



Photograph 3 - View to the north toward the Birkenstock offices



Photograph 4 - View from the Property to the east toward Highway 101

APPENDIX D

SITE ASSESSMENT CHECKLIST AND ASTM TRANSACTION SCREEN AND ENVIRONMENTAL SITE ASSESSMENT QUESTIONNAIRE

Date: 2/2/2017

Site Address: 8161 Redwood Blvd., Novato

Person Interviewed/Title: Maya Spark, North Coast Land Rights Supervisor

ASTM Transaction Screen and Environmental Site Assessment Questionnaire

	Owner	Occupants	Observed during site visit
1. Is the property or any adjoining site used for an industrial use?	Yes (No) Unk	Yes No Unk	Yes No Unk
2. To the best of your knowledge, has the property or any adjoining site been used for an industrial use?	Yes No (Unk)	Yes No Unk	Yes No Unk
3. Is the property or any adjoining site used for a gasoline station, motor repair, commercial printing, dry cleaning, photo processing, junkyard, landfill, or waste storage, disposal, processing or recycling?	Yes (No) Unk	Yes No Unk	Yes No Unk
4. To the best of your knowledge, has the Property or any adjoining site been used for a gasoline station, motor repair, commercial printing, dry cleaning, photo processing, junkyard or for waste storage, disposal, processing or recycling?	(Yes) No Unk	Yes No Unk	Yes No Unk
5. Are there, or has there been to the best of your knowledge, discarded batteries or pesticides, paints, or other chemicals in more than 5 gallon containers or 50 gallons in total stored or used at the Property?	Yes No (Unk)	Yes No Unk	Yes No Unk
6. Are there, or has there been to the best of your knowledge, any industrial drums (usually 55 gallon) or sacks of chemicals on the Property	Yes No (Unk)	Yes No Unk	Yes No Unk
7. Are there, or has there been to the best of your knowledge, any fill dirt from a contaminated or unknown site put on the property	Yes No (Unk)	Yes No Unk	Yes No Unk
8. Are there, or has there been to the best of your knowledge, any pits, ponds or lagoons on the Property in connection with waste treatment or disposal?	Yes No (Unk)	Yes No Unk	Yes No Unk
9. Is there, or has there been to the best of your knowledge, any stained soil or ground on the property?	Yes No (Unk)	Yes No Unk	Yes No Unk

return to:
510.886.5399 - fax
or info@eras.biz

Site Address: _____

	Owner	Occupants	Observed during site visit
10. Are there, or has there been to the best of your knowledge any registered or unregistered underground (UST) or above ground (AST) storage tanks on the property?	Yes No (Unk)	Yes No Unk	Yes No Unk
11. Are there, or has there been to the best of your knowledge, any vent pipes, fill pipes or access ways indicating a fill pipe on the Property?	Yes No (Unk)	Yes No Unk	Yes No Unk
12. Are there, or has there been to the best of your knowledge, any flooring, drains, or walls on the Property that are stained by substances other than water or are emitting foul odors?	Yes No (Unk)	Yes No Unk	Yes No Unk
13. If the Property is served by a non public water system, is there any indication that the water supply was contaminated or were contaminants identifie that exceeded guidelines.	Yes No (Unk)	Yes No Unk	Yes No Unk
14. Does the owner or occupant have knowledge of liens or governmental notification relating to violations of environmental law	Yes (No) Unk	Yes No Unk	Yes No Unk
15. Does the owner or occupant have knowledge of the current or past presence o f hazardous substances or petroleum products on the Property?	(Yes) No Unk	Yes No Unk	Yes No Unk
16. Does the owner or occupant have knowledge of any environmental site assessment that indicated the presence of contamination or recommended further assessment	Yes (No) Unk	Yes No Unk	Yes No Unk
17. Does the owner or occupant have knowledge of past, threatened or pending lawsuits regarding a release of any hazardous release of any hazardous substance on the Property.	Yes (No) Unk	Yes No Unk	Yes No Unk
18. Does the Property discharge waste water, other than storm or sanitary water into sewer?	Yes No (Unk)	Yes No Unk	Yes No Unk
19. Is there any evidence to the best of your knowledge that hazardous substances, tires, batteries or other waste materials have been dumped, buried, or burned on the Property.	Yes No (Unk)	Yes No Unk	Yes No Unk
20. Is there a transformer, capacitor or other hydraulic equipment for which there are records indicating the presence of PCB's.	Yes No (Unk)	Yes No Unk	Yes No Unk

return to:
510.886.5399 - fax
or info@eras.biz

Site Address: _____

How long have you owned the Property and who have the occupants been? What has the Property been used for in the past? (please provide duration)

Please see 2009 Phase I that outlines past uses

Who Occupied the Property prior to you?

Please see 2009 Phase I that outlines past uses



Interviewee Signature: _____

Interviewee Printed Name: Maya Spark

Date: 2/2/2017

Phone Number: 415-973-5736

Interviewer Signature: _____

Interviewer Printed Name: _____

return to:
510.886.5399 - fax
or info@eras.biz

APPENDIX E

EDR FIRST REPORT

16257
8161 Redwood Blvd
Novato, CA 94945

Inquiry Number: 4815709.1s
December 28, 2016

EDR FIRST REPORT

A Search of ASTM E1527-13 §8.2.1 Databases

Table of Contents

This report includes a search of reasonably available environmental records to assist the professional in compliance with Section 8.2.1 Standard Federal, State, and Tribal Environmental Record Source of ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (E1527-13). Additional environmental records sources may be available for your property.

Target Site: 8161 REDWOOD BLVD
NOVATO, CA 94945

Site Location

	Degrees (Decimal)	Degrees (Min/Sec)	UTMs	
Longitude:	122.565815	122.5658150 - 122° 33' 56.93''	Easting:	538052.0
Latitude:	38.133768	38.1337680 - 38° 8' 1.56''	Northing:	4220540.0
Elevation:	20 ft. above sea level		Zone:	Zone 10

SECTION	PAGE
Search Summary	**ES-1**
Sites Sorted by Distance	**ES-3**
Sites Sorted by Database	**ES-4**
1 Mile Map	**2**
0.25 Mile Map	**3**
Mapped Sites Summary	**4**
Orphan Summary	**OR-1**
Records Searched/Data Currency Tracking	**GR-1**
USGS 7.5 Minute Topographic Map	**TM-1**

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., as described herein. 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 2015 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.

Search Summary

TARGET SITE: **8161 REDWOOD BLVD**
NOVATO, CA 94945

Category	Database	Update	Radius	Site	1/8	1/4	1/2	> 1/2	Orphan	TOTALS
Federal NPL site list										
	NPL	03/07/2016	1.000	0	0	0	0	0	0	0
	Proposed NPL	03/07/2016	1.000	0	0	0	0	0	0	0
	NPL LIENS	10/15/1991	TP	0	-	-	-	-	0	0
Federal Delisted NPL site list										
	Delisted NPL	03/07/2016	1.000	0	0	0	0	0	0	0
Federal CERCLIS list										
	FEDERAL FACILITY	09/14/2016	0.500	0	0	0	0	-	0	0
	SEMS	03/07/2016	0.500	0	0	0	0	-	0	0
Federal CERCLIS NFRAP site list										
	SEMS-ARCHIVE	03/07/2016	0.500	0	0	0	0	-	0	0
Federal RCRA CORRACTS facilities list										
	CORRACTS	06/27/2016	1.000	0	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list										
	RCRA-TSDF	06/21/2016	0.500	0	0	0	0	-	0	0
Federal RCRA generators list										
	RCRA-LQG	06/21/2016	0.250	0	0	0	-	-	0	0
	RCRA-SQG	06/21/2016	0.250	0	0	1	-	-	0	1
	RCRA-CESQG	06/21/2016	0.250	0	0	0	-	-	0	0
Federal institutional controls / engineering controls registries										
	LUCIS	05/28/2015	0.500	0	0	0	0	-	0	0
	US ENG CONTROLS	05/09/2016	0.500	0	0	0	0	-	0	0
	US INST CONTROL	05/09/2016	0.500	0	0	0	0	-	0	0
Federal ERNS list										
	ERNS	09/26/2016	TP	0	-	-	-	-	0	0
State- and tribal - equivalent NPL										
	RESPONSE	08/01/2016	1.000	0	0	0	0	0	0	0
State- and tribal - equivalent CERCLIS										
	ENVIROSTOR	08/01/2016	1.000	0	0	0	0	1	0	1

Search Summary

TARGET SITE: **8161 REDWOOD BLVD**
NOVATO, CA 94945

Category	Database	Update	Radius	Site	1/8	1/4	1/2	> 1/2	Orphan	TOTALS
State and tribal landfill and/or solid waste disposal site lists										
	SWF/LF	08/15/2016	0.500	0	0	0	0	-	0	0
State and tribal leaking storage tank lists										
	LUST	11/01/2016	0.500	2	0	0	0	-	0	2
	INDIAN LUST	10/27/2015	0.500	0	0	0	0	-	0	0
	SLIC	09/12/2016	0.500	0	0	0	2	-	1	3
State and tribal registered storage tank lists										
	FEMA UST	01/01/2010	0.250	0	0	0	-	-	0	0
	UST	09/12/2016	0.250	1	0	1	-	-	0	2
	AST	07/06/2016	0.250	0	0	0	-	-	0	0
	INDIAN UST	10/20/2015	0.250	0	0	0	-	-	0	0
State and tribal voluntary cleanup sites										
	INDIAN VCP	07/27/2015	0.500	0	0	0	0	-	0	0
	VCP	08/01/2016	0.500	0	0	0	0	-	0	0
State and tribal Brownfields sites										
	BROWNFIELDS	02/29/2016	0.500	0	0	0	0	-	0	0
	- Totals --			3	0	2	2	1	1	9

Sites Sorted by Distance

TARGET PROPERTY ADDRESS:

8161 REDWOOD BLVD
NOVATO, CA 94945

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft, mi.) DIRECTION
A1	PG & E	8161 OLD REDWOOD HWY	LUST		TP
A2	PG & E	8161 OLD REDWOOD HWY	LUST		TP
A3	PG&E	8161 REDWOOD HWY (AK	UST		TP
B4	BUCK INSTITUTE FOR A	8001 REDWOOD BLVD	RCRA-SQG	Higher	853, 0.162, SSE
B5	BUCK CENTER FOR RESE	8001 REDWOOD HWY.	UST	Higher	853, 0.162, SSE
6	NOVATO STORAGE PARK	UNKNOWN AIRPORT RD &	SLIC	Lower	1806, 0.342, NNE
7	BLACK JOHN SLOUGH RA	8190 BINFORD RD	SLIC	Lower	2409, 0.456, NNE
8	NOVATO STORAGE PARK	AIRPORT AND BINFORD	ENVIROSTOR	Lower	2798, 0.530, NNE

Sites Sorted by Database

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 1 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
PG & E 8161 OLD REDWOOD HWY NOVATO, CA 94947	LUST Facility Id: 21-0306 Facility Status: Case Closed date9: 4/12/1996	N/A
PG & E 8161 OLD REDWOOD HWY NOVATO, CA 94947	LUST Status: Completed - Case Closed Global Id: T0604100288	N/A
PG&E 8161 REDWOOD HWY (AK NOVATO, CA 94947	UST	N/A

SURROUNDING SITES: SEARCH RESULTS

Federal RCRA generators list

RCRA-SQG: RCRA - Small Quantity Generators

Site	Address	Direction / Distance	Map ID	Page
BUCK INSTITUTE FOR A	8001 REDWOOD BLVD	SSE (0.162 mi. / 853 ft.)	B4	5

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

Site	Address	Direction / Distance	Map ID	Page
NOVATO STORAGE PARK Facility Id: 21420001 Status: No Further Action	***AIRPORT AND BINFORD***	***NNE (0.530 mi. / 2798 ft.)***	***8***	***6***

Sites Sorted by Database

State and tribal leaking storage tank lists

SLIC: Statewide SLIC Cases

Site	Address	Direction / Distance	Map ID	Page
NOVATO STORAGE PARK Facility Status: Open - Inactive Facility Id: 21S0007 Global Id: SLT2O124130	UNKNOWN AIRPORT RD &	NNE (0.342 mi. / 1806 ft.)	6	6
BLACK JOHN SLOUGH RA Facility Id: 21S0026	8190 BINFORD RD	NNE (0.456 mi. / 2409 ft.)	7	6

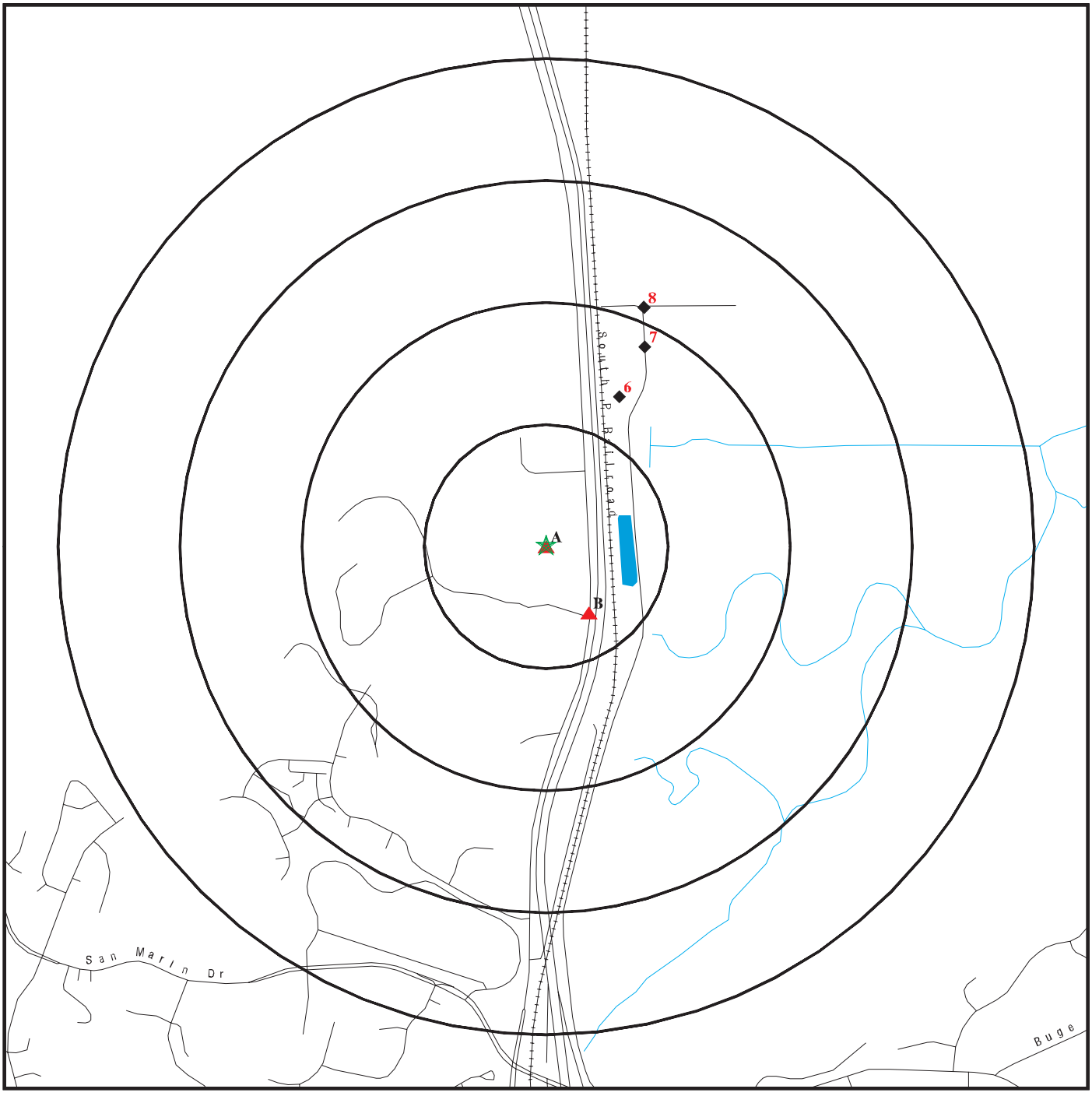
State and tribal registered storage tank lists

UST: Active UST Facilities

Site	Address	Direction / Distance	Map ID	Page
BUCK CENTER FOR RESE Tank Status: Change of Information Facility Id: 60-0279 Facility Id: 600279	8001 REDWOOD HWY.	SSE (0.162 mi. / 853 ft.)	B5	5

1.00 Mile Map

8161 REDWOOD BLVD NOVATO, CA 94945



Black Rings Represent Qtr. Mile Radius

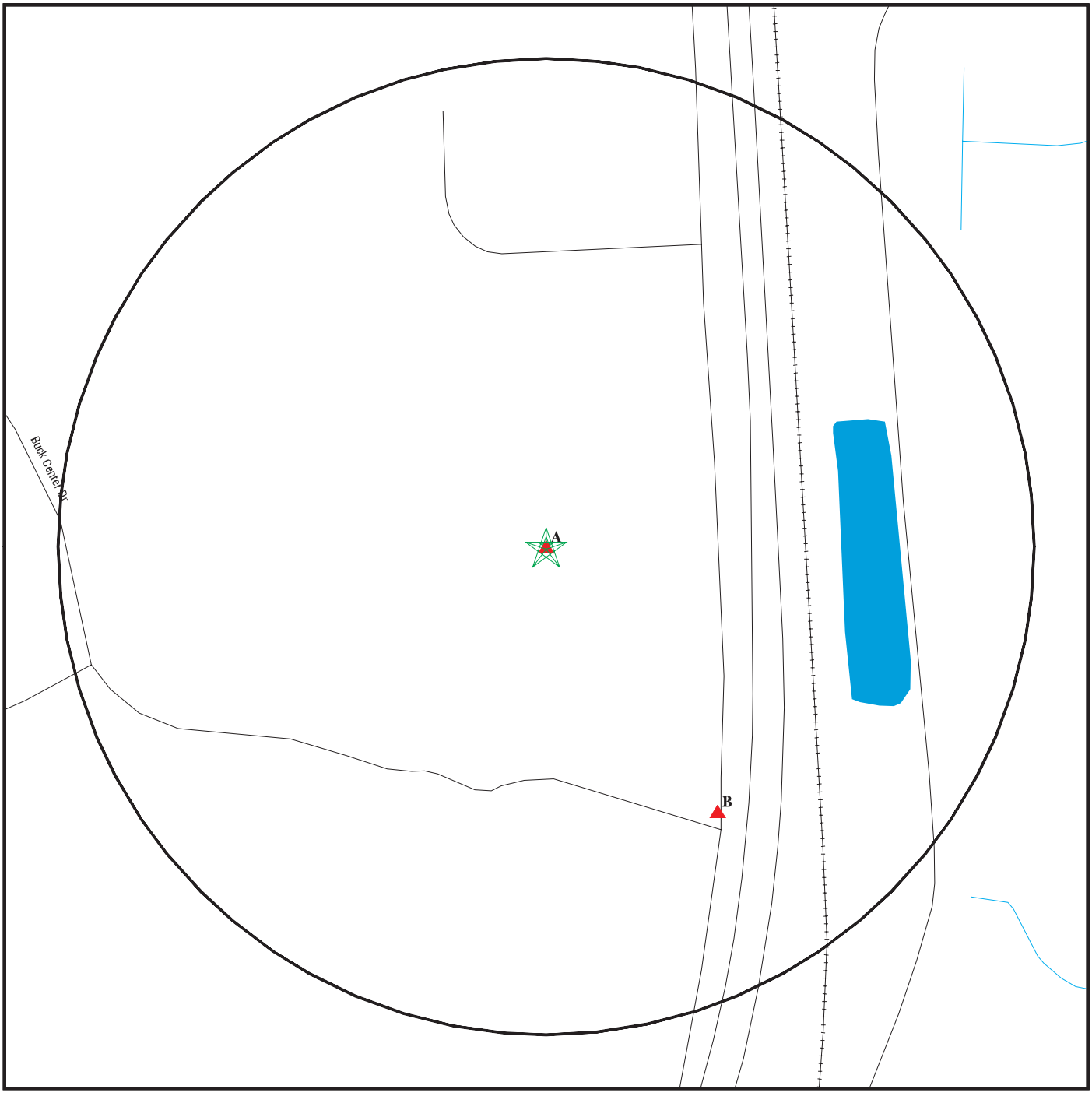
- **Target Property (Latitude: 38.133768 Longitude: 122.565815)**
- **High or Equal Elevation Sites**
- **Low Elevation Sites**
- **National Priority List Sites**

EDR First Report

EDR Reference Code (EDR internal use only): 4815709.1s
Copyright © 2016 EDR, Inc. © 2015 TomTom Rel. 2015.
16-12-28.12:36:14.Wed

0.250 Mile Map

8161 REDWOOD BLVD NOVATO, CA 94945



Black Rings Represent Qtr. Mile Radius

- Target Property (Latitude: 38.133768 Longitude: 122.565815)
- High or Equal Elevation Sites
- Low Elevation Sites
- National Priority List Sites

EDR First Report

EDR Reference Code (EDR internal use only): 4815709.1s
Copyright © 2016 EDR, Inc. © 2015 TomTom Rel. 2015.
16-12-28.12:36:46.Wed

Mapped Sites Summary

Target Property: 8161 REDWOOD BLVD
NOVATO, CA 94945

LUST

EDR ID: S106610926 **DIST/DIR:** 0.000 **ELEVATION:** 20 **MAP ID:** A1

NAME: PG & E
ADDRESS: 8161 OLD REDWOOD HWY
NOVATO, CA 94947
MARIN

Click here for full text details

LUST
Facility Status: Case Closed
Facility Id: 21-0306
date9: 4/12/1996

LUST

EDR ID: S110060779 **DIST/DIR:** 0.000 **ELEVATION:** 20 **MAP ID:** A2

NAME: PG & E
ADDRESS: 8161 OLD REDWOOD HWY
NOVATO, CA 94947
MARIN

Click here for full text details

LUST
Status: Completed - Case Closed
Global Id: T0604100288

Click here to access the California GeoTracker records for this facility

Mapped Sites Summary

Target Property: 8161 REDWOOD BLVD
NOVATO, CA 94945

UST

EDR ID: U003981305 **DIST/DIR:** 0.000 **ELEVATION:** 20 **MAP ID:** A3

NAME: PG&E
ADDRESS: 8161 REDWOOD HWY (AK
NOVATO, CA 94947

Click here for full text details

RCRA-SQG

EDR ID: 1007370093 **DIST/DIR:** 0.162 SSE **ELEVATION:** 30 **MAP ID:** B4

NAME: BUCK INSTITUTE FOR A
ADDRESS: 8001 REDWOOD BLVD
NOVATO, CA 94945
MARIN

Click here for full text details

RCRA-SQG
EPA Id: CAR000152504

UST

EDR ID: U003761883 **DIST/DIR:** 0.162 SSE **ELEVATION:** 30 **MAP ID:** B5

NAME: BUCK CENTER FOR RESE
ADDRESS: 8001 REDWOOD HWY.
NOVATO, CA 94945
MARIN

Click here for full text details

UST
Tank Status: Change of Information
Facility Id: 600279
Facility Id: 60-0279

Mapped Sites Summary

Target Property: 8161 REDWOOD BLVD
NOVATO, CA 94945

SLIC

EDR ID: S106234950 **DIST/DIR:** 0.342 NNE **ELEVATION:** 6 **MAP ID:** 6

NAME: NOVATO STORAGE PARK
ADDRESS: UNKNOWN AIRPORT RD &
NOVATO, CA 94945
MARIN

Click here for full text details

SLIC
Global Id: SLT2O124130
Facility Status: Open - Inactive
Facility Id: 21S0007

Click here to access the California GeoTracker records for this facility

SLIC

EDR ID: S102859647 **DIST/DIR:** 0.456 NNE **ELEVATION:** 4 **MAP ID:** 7

NAME: BLACK JOHN SLOUGH RA
ADDRESS: 8190 BINFORD RD
NOVATO, CA 94945
MARIN

Click here for full text details

SLIC
Facility Id: 21S0026

ENVIROSTOR

EDR ID: S100181583 **DIST/DIR:** 0.530 NNE **ELEVATION:** 5 **MAP ID:** 8

NAME: NOVATO STORAGE PARK
ADDRESS: AIRPORT AND BINFORD
NOVATO, CA 94945
MARIN

Click here for full text details

- Continued on next page -

Mapped Sites Summary

Target Property: 8161 REDWOOD BLVD
NOVATO, CA 94945

ENVIROSTOR

EDR ID: S100181583 **DIST/DIR:** 0.530 NNE **ELEVATION:** 5 **MAP ID:** 8

NAME: NOVATO STORAGE PARK
ADDRESS: AIRPORT AND BINFORD
NOVATO, CA 94945
MARIN

ENVIROSTOR
Facility Id: 21420001
Status: No Further Action

Count: 1 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
NOVATO	S106235160	RUSH CREEK ESTATES	ATHERTON AVE @ BINFORD RD		SLIC

RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Gov Date	Arvl. Date	Active Date	Last EDR Contact
CA	AST	Aboveground Petroleum Storage Tank Facilities	07/06/2016	07/12/2016	09/19/2016	12/22/2016
CA	BROWNFIELDS	Considered Brownfieds Sites Listing	02/29/2016	03/07/2016	05/04/2016	12/22/2016
CA	ENVIROSTOR	EnviroStor Database	08/01/2016	08/02/2016	10/05/2016	11/01/2016
CA	LUST	Geotracker's Leaking Underground Fuel Tank Report	11/01/2016	11/01/2016	12/15/2016	12/14/2016
CA	LUST REG 1	Active Toxic Site Investigation	02/01/2001	02/28/2001	03/29/2001	08/01/2011
CA	LUST REG 2	Fuel Leak List	09/30/2004	10/20/2004	11/19/2004	09/19/2011
CA	LUST REG 3	Leaking Underground Storage Tank Database	05/19/2003	05/19/2003	06/02/2003	07/18/2011
CA	LUST REG 4	Underground Storage Tank Leak List	09/07/2004	09/07/2004	10/12/2004	09/06/2011
CA	LUST REG 5	Leaking Underground Storage Tank Database	07/01/2008	07/22/2008	07/31/2008	07/01/2011
CA	LUST REG 6L	Leaking Underground Storage Tank Case Listing	09/09/2003	09/10/2003	10/07/2003	09/12/2011
CA	LUST REG 6V	Leaking Underground Storage Tank Case Listing	06/07/2005	06/07/2005	06/29/2005	09/12/2011
CA	LUST REG 7	Leaking Underground Storage Tank Case Listing	02/26/2004	02/26/2004	03/24/2004	08/01/2011
CA	LUST REG 8	Leaking Underground Storage Tanks	02/14/2005	02/15/2005	03/28/2005	08/15/2011
CA	LUST REG 9	Leaking Underground Storage Tank Report	03/01/2001	04/23/2001	05/21/2001	09/26/2011
CA	RESPONSE	State Response Sites	08/01/2016	08/02/2016	10/05/2016	11/01/2016
CA	SLIC	Statewide SLIC Cases	09/12/2016	09/13/2016	10/14/2016	12/14/2016
CA	SLIC REG 1	Active Toxic Site Investigations	04/03/2003	04/07/2003	04/25/2003	08/01/2011
CA	SLIC REG 2	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	09/30/2004	10/20/2004	11/19/2004	09/19/2011
CA	SLIC REG 3	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	05/18/2006	05/18/2006	06/15/2006	07/18/2011
CA	SLIC REG 4	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	11/17/2004	11/18/2004	01/04/2005	07/01/2011
CA	SLIC REG 5	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	04/01/2005	04/05/2005	04/21/2005	09/12/2011
CA	SLIC REG 6L	SLIC Sites	09/07/2004	09/07/2004	10/12/2004	08/15/2011
CA	SLIC REG 6V	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	05/24/2005	05/25/2005	06/16/2005	08/15/2011
CA	SLIC REG 7	SLIC List	11/24/2004	11/29/2004	01/04/2005	08/01/2011
CA	SLIC REG 8	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	04/03/2008	04/03/2008	04/14/2008	09/12/2011
CA	SLIC REG 9	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	09/10/2007	09/11/2007	09/28/2007	08/08/2011
CA	SWF/LF (SWIS)	Solid Waste Information System	08/15/2016	08/16/2016	10/05/2016	11/15/2016
CA	UST	Active UST Facilities	09/12/2016	09/14/2016	10/14/2016	12/15/2016
CA	UST MENDOCINO	Mendocino County UST Database	09/22/2016	09/27/2016	10/20/2016	11/28/2016
CA	VCP	Voluntary Cleanup Program Properties	08/01/2016	08/02/2016	10/05/2016	11/01/2016
US	BRS	Biennial Reporting System	12/31/2013	02/24/2015	09/30/2015	11/23/2016
US	CORRACTS	Corrective Action Report	06/27/2016	06/30/2016	09/02/2016	09/28/2016
US	Delisted NPL	National Priority List Deletions	03/07/2016	04/05/2016	04/15/2016	10/05/2016
US	ERNS	Emergency Response Notification System	09/26/2016	09/29/2016	11/11/2016	09/29/2016
US	FEDERAL FACILITY	Federal Facility Site Information listing	09/14/2016	10/04/2016	10/21/2016	10/04/2016
US	FEDLAND	Federal and Indian Lands	12/31/2005	02/06/2006	01/11/2007	10/14/2016
US	FEMA UST	Underground Storage Tank Listing	01/01/2010	02/16/2010	04/12/2010	10/11/2016
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	10/27/2015	10/29/2015	01/04/2016	10/28/2016
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	01/07/2016	01/08/2016	02/18/2016	10/28/2016
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	02/05/2016	04/29/2016	06/03/2016	10/28/2016
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	02/17/2016	04/27/2016	06/03/2016	10/28/2016
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	12/11/2015	02/19/2016	06/03/2016	10/28/2016
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	10/09/2015	02/12/2016	06/03/2016	10/28/2016
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	10/13/2015	10/23/2015	02/18/2016	10/28/2016
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	02/25/2016	04/27/2016	06/03/2016	10/28/2016
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	10/20/2015	10/29/2015	01/04/2016	10/28/2016
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	01/07/2016	01/08/2016	02/18/2016	10/28/2016

RECORDS SEARCHED / DATA CURRENCY TRACKING

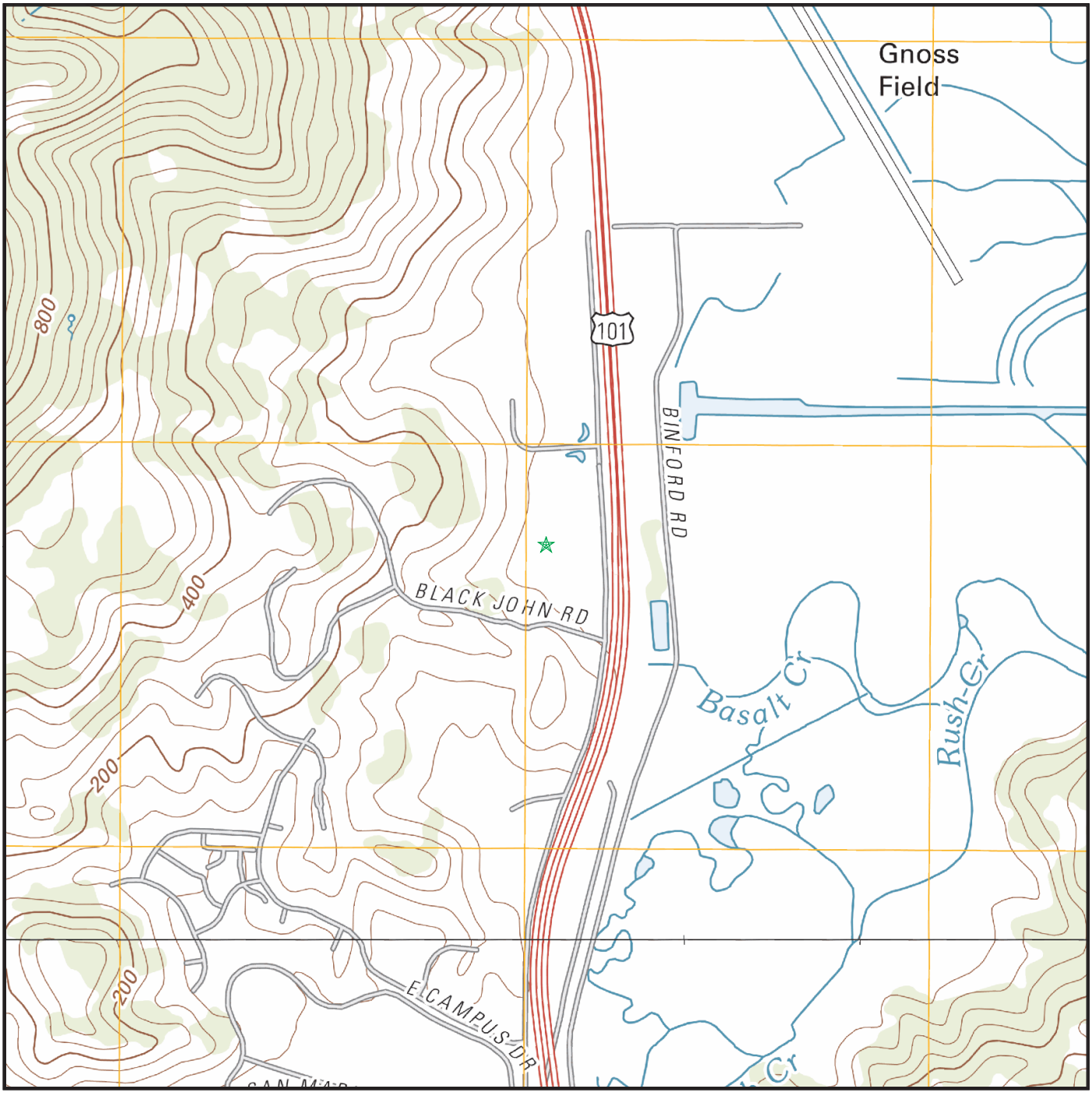
St	Acronym	Full Name	Gov Date	Arvl. Date	Active Date	Last EDR Contact
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	02/05/2016	04/29/2016	06/03/2016	10/28/2016
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	11/05/2015	11/13/2015	01/04/2016	10/28/2016
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	12/03/2015	02/04/2016	06/03/2016	10/28/2016
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	09/23/2014	11/25/2014	01/29/2015	10/28/2016
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	01/26/2016	02/05/2016	06/03/2016	10/28/2016
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	02/25/2016	04/27/2016	06/03/2016	10/28/2016
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	07/27/2015	09/29/2015	02/18/2016	09/26/2016
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	03/20/2008	04/22/2008	05/19/2008	04/20/2009
US	LUCIS	Land Use Control Information System	05/28/2015	05/29/2015	06/11/2015	11/18/2016
US	NPL	National Priority List	03/07/2016	04/05/2016	04/15/2016	10/05/2016
US	NPL LIENS	Federal Superfund Liens	10/15/1991	02/02/1994	03/30/1994	08/15/2011
US	PRP	Potentially Responsible Parties	10/25/2013	10/17/2014	10/20/2014	11/07/2016
US	Proposed NPL	Proposed National Priority List Sites	03/07/2016	04/05/2016	04/15/2016	10/05/2016
US	RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generators	06/21/2016	06/30/2016	09/02/2016	09/28/2016
US	RCRA-LQG	RCRA - Large Quantity Generators	06/21/2016	06/30/2016	09/02/2016	09/28/2016
US	RCRA-SQG	RCRA - Small Quantity Generators	06/21/2016	06/30/2016	09/02/2016	09/28/2016
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	06/21/2016	06/30/2016	09/02/2016	09/28/2016
US	SEMS	Superfund Enterprise Management System	03/07/2016	04/05/2016	04/15/2016	10/20/2016
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	03/07/2016	04/05/2016	04/15/2016	10/20/2016
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	06/30/2016	07/25/2016	10/21/2016	12/22/2016
US	US AIRS MINOR	Air Facility System Data	06/30/2016	07/25/2016	10/21/2016	12/22/2016
US	US ENG CONTROLS	Engineering Controls Sites List	05/09/2016	06/01/2016	09/02/2016	11/29/2016
US	US INST CONTROL	Sites with Institutional Controls	05/09/2016	06/01/2016	09/02/2016	11/29/2016

STREET AND ADDRESS INFORMATION

© 2010 Tele Atlas 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.

USGS 7.5 Minute Topographic Map

8161 REDWOOD BLVD NOVATO, CA 94945



Map Image Position: TP
Map Reference Code & Name: 5602160 Petaluma River
Map State(s): CA
Version Date: 2012
Map Image Position: S
Map Reference Code & Name: 5602156 Novato
Map State(s): CA
Version Date: 2012

EDR First Report

APPENDIX F

CLOSURE DOCUMENTS-THE PROPERTY

STATE OF CALIFORNIA - CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
2101 WEBSTER STREET, Suite 500
OAKLAND, CA 94612
Tel: (510) 286-1255
FAX: (510) 286-1380
BBS: (510) 286-0404

DATE: April 12, 1996

UST File No. 21-0306 (JMJ)
2158.12

Ms. Debora Fudge
PG and E Company
111 Stony Circle
Santa Rosa, CA 95401-9599

Dear Ms. Fudge:

SUBJECT: Underground Storage Tank (UST) Case Closure for PG and E Property, 8161 Old Redwood Highway, Novato, Marin County, UST Case No. 21-0306

This letter confirms the completion of site investigation and remedial action for the underground storage tanks formerly located at the above described location. Enclosed is the Closure Summary for the referenced site for your records.

Based upon the available information, including the current land use, and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground storage tank release is required. If a change in land use is proposed, the owner must promptly notify this agency.

This notice is issued pursuant to a regulation contained in Title 23, California Code of Regulations, Division 3, Chapter 16, Section 2721(e).

Please contact John Jang at (510) 286-0554 if you have any questions regarding this matter.

Sincerely,

Loretta Barsamian
Executive Officer

Steve Morse
Chief, Toxics Cleanup Division

Enclosure
cc w/ enclosure:
Tim Underwood, Marin Co. Office of Waste Management

SITE CLOSURE SUMMARY

I. AGENCY INFORMATION

Date: April 10, 1996

Agency Name: S.F.B.R.W.Q.C.B.	Address: 2101 Webster Street
City/State/Zip: Oakland, CA 94612	Phone: (510) 286-1255
Responsible Staff Person: John M. Jang	Title: Associate WRCE

II. SITE INFORMATION

Site Facility Name: PG and E Property		
Site Facility Address: 8161 Old Redwood Highway, Novato, Marin County		
RB LUSTIS Case No.: 21-0306	Local or LOP Case No.:	Priority: 1C3
URF Filing Date: 1/10/96	SWEEPS No.:	

Responsible Parties (include addresses and phone numbers)

PG&E Company
111 Stony Circle
Santa Rosa, CA 95401-9599
Debora Fudge, 707-577-7234

Tank No.	Size in Gallons	Contents	Closed In Place/Removed?	Date
up to 4	tanks were removed (date Unknown). Information			
on	tank removal not available.			

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: Unknown		
Site characterization complete? (Yes) No	Date Approved By Oversight Agency: this closure letter	
Monitoring wells installed? Yes (No)	Number:	Proper screened interval? Yes No
Highest GW Depth Below Ground Surface:	Lowest Depth:	Flow Direction:
Most Sensitive Current Use: None known		
Most Sensitive Potential Use and Probability of Use: None known		
Are drinking water wells affected? Yes (No)	Aquifer Name:	
Is surface water affected? Yes (No)	Nearest/Affected SW Name:	
Off-Site Beneficial Use Impacts (Addresses/Locations): None known		
Report(s) on file? (Yes) No	Where is report(s) filed? RWQCB's office	

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL			
Material	**Amount (Include Units)**	**Action (Treatment or Disposal w/Destination)**	**Date**
Tank	up to 4 tanks	disposal location not available	
Piping			
Free Product			
Soil	308 yd^3		
Groundwater			
Barrels			

MAXIMUM DOCUMENTED POLLUTANT CONCENTRATIONS BEFORE AND AFTER CLEANUP

POLLUTANT	Soil (ppm)		Water (ppm)		POLLUTANT	Soil (ppm)		Water (ppm)	
	Before	After	Before	After		Before	After	Before	After
TPH (Gas)		ND		ND	Xylene		ND		
TPH (Diesel)		ND		ND	Ethylbenzene		ND		
Benzene		ND			~~Oil & Grease~~ TRPH		90		
Toluene		ND			Heavy Metals	within background concentrations			
~~Other~~ TPH-motor oil		71			~~Other~~ 8010 & 8270		ND		

Comments (Depth of Remediation, etc.): TPH-hydraulic oil is also ND.

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? (Yes) No		
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? (Yes) No		
Does corrective action protect public health for current land use? (Yes) No		
Site Management Requirements: None required		
Monitoring Wells Decommissioned: Yes No	Number Decommissioned:	Number Retained:
List Enforcement Actions Taken: None		
List Enforcement Actions Rescinded:		

V. TECHNICAL REPORTS, CORRESPONDENCE ETC., THAT THIS CLOSURE RECOMMENDATION WAS BASED UPON

Title:	Date:
(1) Request for UST Case Closure package (by PG&E)	2/5/96
(2) Supplemental Analytical Results & Closure Request (PG&E)	3/26/96

VI. ADDITIONAL COMMENTS, DATA, ETC.

PLEASE INCLUDE/ATTACH THE FOLLOWING AS APPROPRIATE:

1) SITE MAP INDICATING TANK PIT LOCATION, MONITORING WELL LOCATION, GROUNDWATER GRADIENT, ETC.; AND,

2) SITE COMMENTS WORTHY OF NOTICE (E.G., AREA OF RESIDUAL POLLUTION LEFT IN PLACE, DEED NOTICES ETC.)

Property purchased by PG&E in 1973. PG&E never used the property & leased it to Mike's Auto Repair & Body Shop. Prior to 1973, a service station was located on the property. When PG&E took possession of the property from Mike's Auto in 1995, it demolished the building and fuel dispenser islands. Four vent pipes were observed and on 1/9/96, PG&E followed the vent lines and discovered that all USTs and product piping had already been excavated and removed. The previous excavations backfilled with concrete, sand, bricks, and asphalt. The backfill materials were excavated and some native soil were scraped from the sidewalls and bottom and disposed of off-site. Soil samples from the three excavations indicated low or ND concentrations (see attached Figure 1 and Table 1). One GW sample from excavation NP-1 was also ND for TPH-g & TPH-d. No water was encountered in excavations NP-2 and NP-3. On 3/13/96, a soil sample was collected from the center of the waste oil tank excavation at 8 feet below grade. TPH-g, TPH-d, BTEX, oil & grease, chlorinated hydrocarbons and the semivolatile organics (EPA Method 8270) were all below detection limits. Chromium, lead, zinc, and nickel were detected at background concentrations.

TABLE 1
Analytical Results for Soil and Water Samples
Collected from Excavations NP-1, NP-2 and NP-3
on January 11, 1996

Sample Number	Sample Location	Sample Matrix	TPH-g ppm	TPH-d ppm	TPH-mo ppm	TPH-ho ppm	TRPH ppm
NP1-NW	north wall of NP-1 @ 4'	soil	nd<1	nd<1	na	na	na
NP1-EW	east wall of NP-1 @ 4'	soil	nd<1	nd<1	na	na	na
NP1-SW	south wall of NP-1 @ 4'	soil	nd<1	nd<1	na	na	na
NP1-WW	west wall of NP-1 @ 4'	soil	nd<1	nd<1	na	na	na
NP1-BT	center of NP-1 @ 8.5'	soil	nd<1	nd<1	na	na	na
NP1-water	bottom of NP-1 @ 8.5'	water	nd<0.05	nd<0.05	na	na	na
NP2-1	west wall of NP-2 @ 3'	soil	na	nd<1	nd<50	nd<1	na
NP3-NW	north wall of NP-3 @ 4'	soil	na	na	nd<50	na	11
NP3-EW	east wall of NP-3 @ 4'	soil	na	na	71	na	90
NP3-SW	south wall of NP-3 @ 4'	soil	na	na	nd<50	na	83
NP3-WW	west wall of NP-3 @ 4'	soil	na	na	nd<50	na	39
NP3-BT	center of NP-3 @ 8'	soil	na	na	nd<50	na	nd<10

Notes:
1) NP-1 = Fuel (gasoline and/or diesel) tank excavation
2) NP-2 = Hydraulic oil tank excavation
3) NP-3 = Waste oil tank excavation
4) TPH-g = total petroleum hydrocarbons as gasoline (EPA method 5030/8015)
5) TPH-d = total petroleum hydrocarbons as diesel (EPA method 3550/8015M)
6) TPH-mo = total petroleum hydrocarbons as motor oil (EPA method 3550/8015M)
7) TPH-ho = total petroleum hydrocarbons as hydraulic oil (EPA method 3550/8015M)
8) TRPH = total recoverable petroleum hydrocarbons (EPA method 418.1)
9) na = not analyzed
10) nd = not detected at or above stated detection limit
11) ppm = parts per million (mg/kg or mg/L)

Walsh Construction Company

An Atkinson Company

Submission Cover Sheet

RECEIVED

JUL - 8 1997

WALSH CONST. CO.

Buck Center for Research in Aging
PCF&P Project No. 9310

Submittal No.: MMC-C-035-1 **Date:** 7/7/97

Subcontractor: MARELICH MECHANICAL CO.

Specific Section: 15600 **Paragraph:** 2.4, 2.6

Drawing Reference: M100

Item: FUEL OIL TANK + ACCESORIES

Manufacture: FLUID CONTAINMENT

Complies with Specification	YES ☑	NO ☐
Substitution from Contract Documents	YES ☐	NO ☑
Material Safety Data Sheets Required	YES ☐	NO ☑
Material Safety Data Sheets Enclosed	YES ☐	NO ☑

(Subcontractors to leave space below blank for reviewers stamp)

The undersigned certifies this submittal has been reviewed, and approved for use on this project.

Name D. FOLEY Date 7/8/97

Title

RECEIVED
JUL 10 1997
PEI COBB FREED

- SOIL ANALYSIS WAS PERFORMED BY THE OWNER REFERENCE GEOTECHNICAL INVESTIGATION REPORT BY ALAN KROPP & ASSOCIATES, DATED MARCH 1995.
- HYDROCARBONS WERE ENCOUNTERED, CONTAMINATED MATERIAL WAS REMOVED PER KITCHELL'S DIRECTION - SEE FIELD ORDER 9 (NC-6)

D FOLEY

RECEIVED
JUL 21 1997
WALSH CONST CO.

NOTE: Work using materials requiring Material Safety Data Sheets shall not proceed until MSDS documents have been submitted. There will be NO exceptions.

P. O. Box 2739, Novato, California 94948 Tel. (415) 893-7737 Fax (415) 893-7743

EXHIBIT B

ARELICH MECHANICAL CO., INC.

Continuous Service Since 1931
CALIFORNIA STATE CONTRACTOR'S LICENSE NO. 519464

October 27, 1997

Mr. Gregory Mobley
County of Marin
Department of Public works
PO Box 4186
San Rafael, CA 94913

Re: Buck Center for Research in Aging, Novato, California, Fuel Oil Tank Installation

Dear Greg:

Pursuant to our conversation concerning the permit application for the installation of the fuel tank for the Buck Center Job, we researched the need for a Hazardous Material Removal Certificate, and whether we could quickly obtain one. Apparently, an applicant must wait until the next available test. The next exam date is in December 1997. Marelich will take the exam at that time, but the earliest date we could be certified would be sometime in January of 1998.

Due to the time pressures of the project, we will not be able to delay the installation until we have the certification. Consequently, it appears that we will be forced to use a subcontractor. We found that contrary to the letter you received from the Contractor's License Board, it appears to be permissible to subcontract the installation, even though we are not currently certified. Enclosed is a copy of a section of the 1994 Contractor's License Law, further quoting from the Business and Professions Code, Section 7058.7, in reference to the utilization of a subcontractor to perform the tank installation. As you will note, paragraph (e)(2) provides that latitude.

Thank you for your kind attention. If you have any comments or questions on the above, please contact me.

Sincerely,

MARELICH MECHANICAL CO., INC.

Bill Longbotham
Project Manager

COUNTY OF MARIN
ENVIRONMENTAL HEALTH SERVICES

Community Development Agency

3501 Civic Center Drive, Rm 236
San Rafael, CA 94903
(415) 499-6907 FAX (415) 507-4120
www.co.marin.ca.us/ehs

PERMIT TO INSTALL MONITORING WELLS

Date of Issuance: 10-18-02
Date of Expiration: 10-18-03

Permit No.: MW 02/03 - 8 (2)

Street Address: 80001 Redwood Blvd

City: Novato

Assessor's Parcel No: 125-180-69

To: Buck Center
8001 Redwood Blvd.
Novato, CA 94945

Permission is hereby granted to construct two (2) monitoring well(s) at the above indicated site.

In order to provide the necessary inspections, the well driller shall notify this office *at (415) 499-6907* at least **two working days** in advance of drilling the well. Also, contact Environmental Health on the day of the work. The annular seal shall not be placed until approval from Environmental Health Service is granted.

Well construction shall meet the requirements of the current State of California Well Standards Bulletin 74-90 (as revised) and the CCR Title 26. The well driller shall submit a Department of Water Resources Form 188 (Water Well Drillers Report) within 30 days of project completion.

Marin County Office of Waste Management must be notified prior to drilling well.

Issued by,

Steve Rosso, EHS

RECEIVED
OCT 2 1 2002
DPW
Waste Management

cc: Weeks Drilling & Pump co.
PO Box 176
Sebastopol, CA 95473

Joyce Associates
8041 Hill Dr.
Sebastopol, CA 95472

Marin County Waste Management

OFFICE USE ONLY

1. _____

2. _____

3. _____

APPENDIX E

Resumes

Education
B.S. Geology,
Engineering Option,
Texas A&M University, 2004

Years of Experience
Total - 16 years
With ARCADIS – 1 year

Professional Certifications/ Registrations
PG (Texas, No. 10682)
Geologist in Training
(California, No. 149)

Melissa Landry

Project Manager – Houston, Texas

Ms. Landry is primarily involved in remediation, remedial investigations and site closures involving various environmental media (soil, sediment, groundwater, surface water) Phase I environmental assessments. Her expertise includes the use of multiple techniques for soil and groundwater sampling and developing remediation programs for these impacted media. Ms. Landry also specializes in the geologic interpretation of chemical analytical data and interpretation of subsurface geological data. Ms. Landry has been managing small to medium sized projects for five years for various clients and has been a deputy project manager for Chevron EMC projects for three years. Ms. Landry is a licensed Professional Geologist in the state of Texas and a Geologist-in-Training in the State of California.

Project Experience

Project Manager

Exxon Mobil, Multiple Phase Is, Texas and Lousiana

As a project manager, oversaw Phase I Due Diligence projects throughout the EP&SD portfolio, scheduled field work, and reviewed reports.

.

Project Manager

Chevron, Pipeline Management

Hearne Pipeline

As a project manager, oversaw management of the Texas811 program, subcontractors, managing pipeline removal requests, and project management.

Deputy Project Manager

Chevron EMC, McPherson, Kansas

Conway Chloride Remediation

As a deputy project manager, oversaw the operation of the remediation system, collected remediation data, redesigned valve boxes, evaluated new designs for remediation system components, tracked costs and evaluated cost avoidance measures, maintained operations and maintenance equipment inventory, and participated in the management of change process.

Deputy Project Manager

Chevron EMC, Oklahoma City, Oklahoma

Hoops Lease Assessment

As a deputy project manager and field operations manager, oversaw field operations at the site including an extensive geophysical survey, the drilling of three deep wells and on-site piezometers, waste disposal, and groundwater and surface water sampling, directed work efforts at the site, identified cost savings measures, participated in the management of change process, prepared reports detailing work conducted at the site, prepared workplans for work to be conducted at the site.

Project Geologist

Chevron EMC, Lufkin, Texas

MP 80.1 Assessment

As a project geologist, prepared workplans for the site, assisted in the preparation of the Affected Property Assessment Report for the site, directed and planned field work, oversaw the execution of field work, and identified cost savings measures for the site.

Project Scientist

Chevron, Various Locations

Due Diligence Screening Assessments

As a project scientist, performed due diligence screenings throughout the Chevron Mid-Continent area, scheduled field work, and prepared reports.

Project Manager

ONEOK, Various Locations

Spill Response

As a project manager, oversaw the field operations and sampling at the sites, prepared change orders, analyzed data and directed additional work as necessary, and prepared reports for work conducted at the sites.

Project Geologist

LANXESS, Texas

TPDES Permit Groundwater Monitoring

As a project geologist, wrote proposals, managed five small projects, oversaw a staff member collecting groundwater samples, and prepared groundwater monitoring reports.

Project Geologist

Railroad Commission of Texas, Texas

Gladewater, Keopp, McKinney and Humble Pit Assessments

As a project geologist, collected water, sediment, and soil samples from an oilfield pit. Also collected data to measure depth of sediment in the pit and collected measurements of the pit.

Project Geologist

Railroad Commission of Texas, Texas

B&N and C&C Saltwater Assessment

As a project geologist, collected soil, groundwater, and sediment samples to determine the aerial extent of saltwater contamination from leaking saltwater disposal pits. Oversaw a geophysical mapping crew. Prepared an assessment reports for submission to the Railroad Commission.

Project Geologist

Railroad Commission of Texas, Texas

Daisetta Sinkhole Assessment

As a project geologist, collected water samples from gridded locations and multiple depths at each location within the sinkhole and collected water parameters from each gridded location. Oversaw a bathymetry mapping crew. Installed shallow monitoring wells at the site to assess the presence of chloride impacted water. Prepared an assessment report for submission to the Railroad Commission.

Project Geologist

Railroad Commission of Texas, Texas

Kilgore Brownfields Assessment

As a project geologist, installed soil borings at multiple locations to assess the presence of hydrocarbons near a former tank battery. Prepared an assessment report for submission to the Railroad Commission.

Project Geologist

Texas Department of Transportation, Texas

Various Projects

As a project geologist, assessed the presence of hydrocarbons collecting soil and groundwater samples. Prepared assessment reports for submission to the TCEQ.

Melissa Landry

Project Manager –
Houston, Texas

Project Geologist

City of Houston, Texas

METRO Phase II Assessments and Water Line ROW Clearances

As a project geologist, installed groundwater monitoring wells and collected soil and groundwater samples. Assisted in report preparation. Also wrote variance applications for properties in the right-of-way.

Environmental Professional

Phase I Site Assessments, California and Texas

As an environmental professional, reviewed records, conducted field visits, and prepared reports.

Staff Geologist

Phase II Assessments and Remediation, California

Shuster Oil, Culligan Water, B&J Auto Sales, and Pine Valley Trailer Park

As a staff geologist, managed projects including billing, collected groundwater samples for TPH, prepared groundwater monitoring reports, oversaw remediation at sites, prepared a corrective action plans, and prepared remediation reports.

Specialized Training

29 CFR 1910.120, OSHA 40-Hour HAZWOPER

29 CFR 1910.120, OSHA 8-Hour Refresher – Annually

DIVYA MEHTA

ENVIRONMENTAL SCIENTIST II

EDUCATION

BS, Biological Sciences, University of California, Irvine 2011

MPH with Concentration in Environmental Health, Boston University 2015

YEARS OF EXPERIENCE

Total - 4

With ARCADIS - 4

PROFESSIONAL REGISTRATIONS

OSHA 40-Hour Hazardous Waste Operations and Emergency Response (HAZWOPER) since 2015

First Aid CPR AED Trained since 2016

Ms. Mehta is an environmental scientist with more than four years of experience in environmental due diligence, compliance assessments, product stewardship, and toxicology. She has coordinated and performed numerous Phase I Environmental Site Assessments (Phase I ESAs) in support of asset and real estate transactions. Ms. Mehta has conducted Phase I ESA's for a range of facilities including pharmaceutical manufacturing, medical device manufacturing, biotechnology manufacturing, small- and large-scale manufacturing, commercial retail, and banking properties. She has performed several Limited Compliance Assessments to evaluate facility compliance with both local and national regulations including hazardous waste storage, materials storage, air emissions, and stormwater permitting. She has provided product stewardship support to evaluate compliance of laboratory reagents and biological products with chemical and biological regulations in several countries including, among others, New Zealand and Thailand. Ms. Mehta has also provided toxicological support to large capitalization pharmaceutical clients to develop aquatic exposure guidelines for wastewater discharge.

Project Experience

Environmental Assessments

Phase I Environmental Site Assessments

Pharmaceutical Production Facilities

Ms. Mehta was responsible for report writing and site visits for pharmaceutical production facilities in California, Massachusetts, New Hampshire, and Pennsylvania. Tasks for the assessment included a walk-through of the facilities and a review of materials storage, hazardous waste generation, wastewater generation, and air emissions. Ms. Mehta reviewed historical documents (i.e. aerial photography) as well as state and federal databases to assess environmental impacts from on and off-site operations. The findings from the assessment were utilized to evaluate environmental risk and potential liability for historical on and off-site activities.

Phase I Environmental Site Assessments

Medical Device Manufacturing Facilities

Ms. Mehta was responsible for report writing and site visits for medical device manufacturing facilities in California, Massachusetts, and New Hampshire. Tasks for the assessment included a walk-through of the facilities and a review of materials storage, hazardous waste generation, wastewater generation, and air emissions. Ms. Mehta reviewed historical documents (i.e. aerial photography) as well as state and federal databases

Project Experience Continued

to assess environmental impacts from on and off-site operations. The findings from the assessment were utilized to evaluate environmental risk and potential liability for historical on and off-site activities.

Phase I Environmental Site Assessments
Biotechnology Manufacturing Facilities

Ms. Mehta was responsible for report writing and site visits for medical device manufacturing facilities in California and New Hampshire. Tasks for the assessment included a walk-through of the facilities and a review of materials storage, hazardous waste generation, wastewater generation, and air emissions. Ms. Mehta reviewed historical documents (i.e. aerial photography) as well as state and federal databases to assess environmental impacts from on and off-site operations. The findings from the assessment were utilized to evaluate environmental risk and potential liability for historical on and off-site activities.

Phase I Environmental Site Assessments
Manufacturing Facilities

Ms. Mehta was responsible for report writing and site visits for both small- and large-scale manufacturing facilities in Arkansas, California, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Missouri, Nevada, and New Hampshire. Tasks for the assessment included a walk-through of the facilities and a review of materials storage, hazardous waste generation, wastewater generation, and air emissions. Ms. Mehta reviewed historical documents (i.e. aerial photography) as well as state and federal databases to assess environmental impacts from on and off-site operations. The findings from the assessment were utilized to evaluate environmental risk and potential liability for historical on and off-site activities.

Phase I Environmental Site Assessments
Bank and Retail Properties

Ms. Mehta was responsible for report writing and site visits for both bank and commercial retail properties in California, Colorado, Kansas, Michigan, Minnesota, Missouri, New Hampshire, North Carolina, Ohio, Pennsylvania, and Washington. Tasks for the assessment included a walk-through of the facilities and a review of materials storage, hazardous waste generation, wastewater generation, and air emissions. Ms. Mehta reviewed historical documents (i.e. aerial photography) as well as state and federal databases to assess environmental impacts from on and off-site operations. The findings from the assessment were utilized to evaluate environmental risk and potential liability for historical on and off-site activities.

Compliance Reviews

Limited Compliance Assessments
Manufacturing Facilities

Ms. Mehta was responsible for limited compliance reviews for manufacturing facilities in Arkansas, California, Colorado, Canada, Michigan, and the UK. The assessment was conducted to evaluate the facility's compliance with local and national regulations pertaining to materials storage, hazardous waste storage, air emissions, and stormwater permitting. These assessments were primarily conducted for buy-side transactions to evaluate current and future environmental liability.

Project Experience Continued

Limited Compliance Assessments
Transport Vehicle Maintenance Facilities

Ms. Mehta was responsible for two limited compliance reviews for transport vehicle maintenance facilities in Arkansas and Louisiana. The assessment was conducted to evaluate the facility's compliance with local and national regulations pertaining to materials storage, hazardous waste storage, air emissions, and stormwater permitting. These assessments were primarily conducted for buy-side transactions to evaluate current and future environmental liability.

Product Stewardship Support

Regulatory Analysis Summaries
Confidential Client, Global

Ms. Mehta generated regulatory analysis summaries for an international client to assess compliance with national chemical and biological regulations. Products evaluated included analytical chemical laboratory reagents and biological products. She conducted these assessments for products in several countries including, among others, New Zealand and Thailand.

Toxicology Support

Development of Predicted No-Affect Concentrations Exposure Guidelines for Active Pharmaceutical Ingredients Used in Human Healthcare Products
Confidential Client, Global

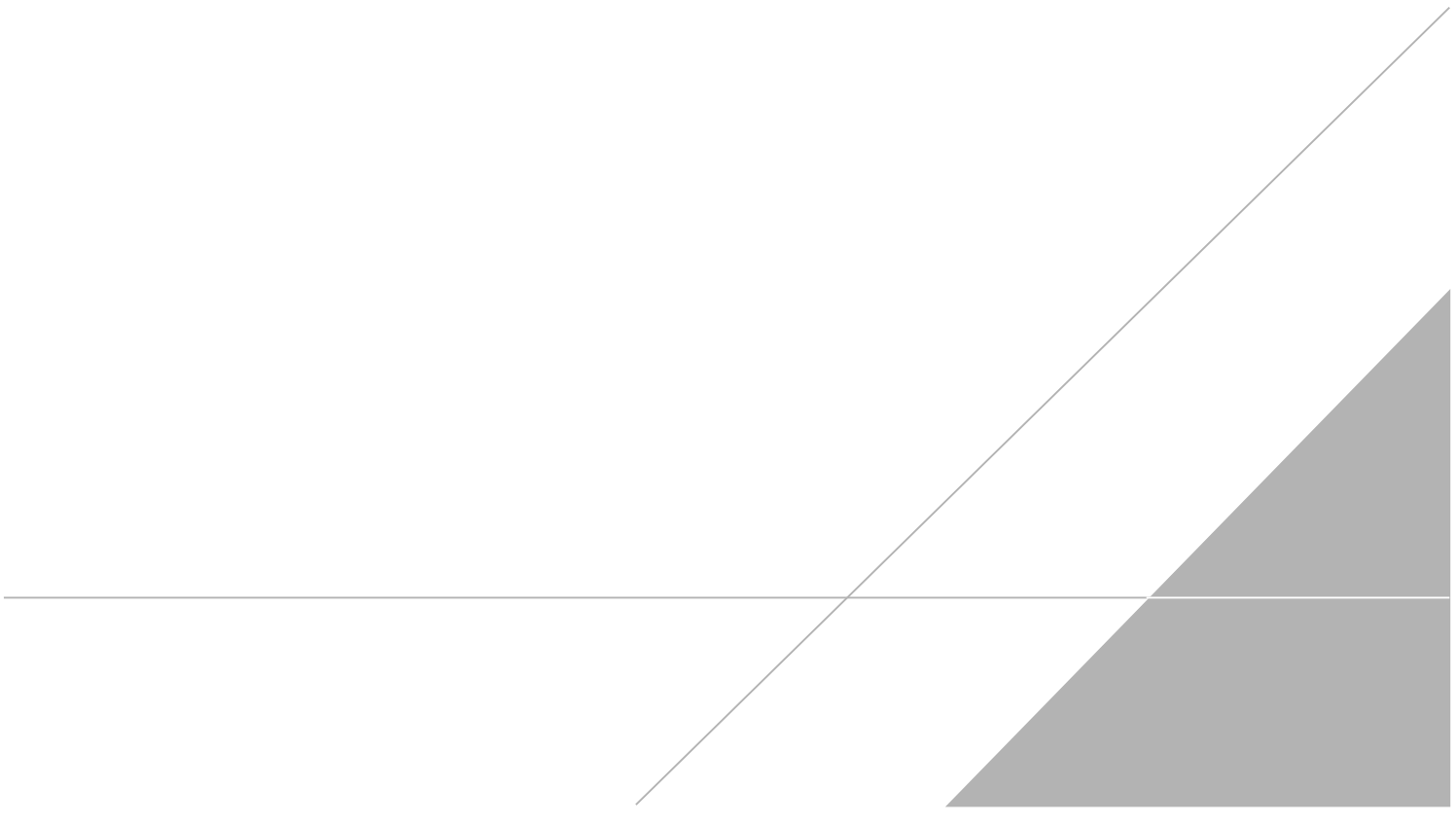
Ms. Mehta developed predicted no-affect concentrations (PNECs) for 25 human health active pharmaceutical ingredients (APIs). The PNECs were generated for human health, environmental, and anti-microbial resistance. The PNEC values were derived primarily based on published values (i.e. AMR Industry Alliance) as well as acute and chronic toxicology data.

Development of Aquatic Exposure Guidelines for Active Pharmaceutical Ingredients Used in Animal Healthcare Products
Confidential Client, Global

Ms. Mehta developed aquatic exposure guidelines (AEGs) for 35 veterinary APIs using risk-based approaches. This work was performed to support the client's product stewardship and risk-management objectives. AEGs were determined using regulatory approaches applicable to waters of the United States and Europe. Data collection relied on toxicological, microbiological, and physical-chemical property information provided directly by the client as well as *de novo* literature searches.

APPENDIX F

User Questionnaire



ASTM E1527-13
User Questionnaire

Site Name and Address: Habitat Redwood Blvd - 8161 Redwood Blvd, Novato CA 94945

1. **Environmental liens that are filed or recorded against the property (40 CFR 312.25)**
   Did a search of recorded land title records (or judicial records where appropriate) identify any environmental liens filed or recorded against the property under federal, tribal, state or local law?

   ☐ Yes ☐ No If yes, provide explanation: _____

2. **Activity and use limitations that are in place on the property or that have been filed or recorded against the property (40 CFR 312.2(a)(1)(v) and (vi))**
   Did a search of recorded land title records (or judicial records where appropriate) identify any activity and use limitations, such as engineering controls, land use restrictions or institutional controls that are in place at the property and/or have been filed or recorded against the property under federal, tribal, state or local law?

   ☒ Yes ☐ No If yes, provide explanation: Water Board to be notified if change of land use is approved

3. **Specialized knowledge or experience of the person seeking to qualify for the landowner liability protections (40 CFR 312.28)**
   Do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

   ☐ Yes ☒ No If yes, provide explanation: _____

4. **Relationship of the purchase price to the fair market value of the property if it were not contaminated (40 CFR 312.29)**
   Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?

   ☐ Yes ☒ No If no, provide explanation: Owner intends to donate the property to Habitat GSF.

5. **Commonly known or reasonably ascertainable information about the property (40 CFR 312.30)**
   Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example,

   a. Do you know the past uses of the property?
      ☐ Yes ☐ No If yes, provide explanation: Previous Uses detailed in previous Phase I ESA's provided by current land owner

   b. Do you know of specific chemicals that are present or once were present at the property?
      ☐ Yes ☐ No If yes, provide explanation: Former Auto Shop / Gas station per previous Phase I ESA's

   c. Do you know of spills or other chemical releases that have taken place at the property?
      ☐ Yes ☐ No If yes, provide explanation: Former Auto Shop / Gas station per previous Phase I ESA's

   d. Do you know of any environmental cleanups that have taken place at the property?
      ☐ Yes ☐ No If yes, provide explanation: LUST Closure letter provided by Water Board

6. **The degree of obviousness of the presence of likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31)**
   Based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination at the property?

   ☐ Yes ☐ No If yes, provide explanation: _____

Name: Doug Fowler Title: Senior Project Manager

Company: Habitat for Humanity Greater San Francisco Date: 6/9/21

Arcadis U.S., Inc.

6296 San Ignacio Avenue

Suite C & D

San Jose, California 95119

Tel 408 797 2000

Fax 408 456 0320

www.arcadis.com

Appendix G

Stormwater Control Plan

STORMWATER CONTROL PLAN
FOR A REGULATED PROJECT
for
HABITAT FOR HUMANITY

PLANNING APPLICATION SUBMIT #2

APRIL 2, 2021



DANIEL JOHN HUGHES
RCE 60225 Exp. 6/30/22

HABITAT FOR HUMANITY GREATER SF,
CONTACT: PETER DUNNE
500 WASHINGTON ST, SUITE 250
SAN FRANCISCO, CA
415-625-1034

Prepared under the supervision of:

DVC GROUP, INC.
707-395-0968
dan@dvcgroup.net

TABLE OF CONTENTS

I. Project Data 4

Table 1. Project Data 4

II. Setting 4

II.A. Project Location and Description 4

II.B. Existing Site Features and Conditions 5

II.C. Opportunities and Constraints for Stormwater Control 5

III. Low Impact Development Design Strategies 5

III.A. Optimization of Site Layout 5

III.B. Setbacks from Creeks, Wetlands, and Riparian Habitats 5

III.C. Minimization of Impervious Area 6

III.D. Use of Drainage as a Design Element 6

III.E. Use of Permeable Pavements 6

III.F. Dispersal of Runoff to Pervious Area 6

III.G. Feasibility Assessment of Harvesting and Use for Treament and Flow-Control 6

III.G.1. Permeability of Site Soils 6

III.G.2. Potential Opportunities for Harvesting and Use 6

III.H. Integrated Management Practices 6

III.I. Stormwater Control Measures 6

IV. Documentation of Drainage Design 8

IV.A. Descriptions of each Drainage Management Area 8

IV.A.1. Table of Drainage Management Areas 8

Table 2. Description of each Drainage Management Area 8

IV.A.2. Drainage Management Area Descriptions 9

IV.B. Tabulation and Sizing Calculations 13

IV.B.1. Information Summary for IMP Design 13

Table 3. Information Summary for IMP Design 13

IV.B.2. Self-Treating Areas 14

Table 4. Self-Treating Drainage Management Areas 14

IV.B.3. Self-Retaining Areas 14

IV.B.4. Areas Draining to IMPs 14

Table 5. Bioretention Facility 1 14

Table 6. Bioretention Facility 2 15

Table 7. Bioretention Facility 3 16

Table 8. Bioretention Facility 4 17

IV.B.5. Areas Draining to Non-LID Treatment ["Special Projects" only] 17

V. Source Control Measures 17

V.A. Site activities and potential sources of pollutants 17

V.B. Source Control Table 17

Table 9. Source Control Table 17
V.C. Features, Materials, and Methods of Construction of Source Control BMPs 19
VI. Stormwater Facility Maintenance 19
VI.A. Ownership and Responsibility for Maintenance in Perpetuity 19
VI.B. Summary of Maintenance Requirements for Each Stormwater Facility 19
VII. Construction Plan Checklist 19
VIII. Certifications 19
Vicinity map 20
Figures
Figure 1. Bioretention Cross-Section 7
Figure 2. Vicinity Map 20
Attachments
Stormwater Control Plan Exhibit

I. PROJECT DATA

Table 1. Project Data

Project Name/Number	Habitat for Humanity
Application Submittal Date	
Project Location	8161 Redwood Blvd, Novato
Name of Developer	Habitat for Humanity, Greater SF
Project Phase No.	N/A
Project Type and Description	23 multi-family residential buildings (80 total units) and 1 office building proposed.
Project Watershed	Rush Creek
Total Project Site Area (acres)	13.57 acres
Total Area of Land Disturbed (acres)	13.57 acres
Total New Impervious Surface Area (sq. ft.)	220,174 sf
Total Replaced Impervious Surface Area	0 sf
Total Pre-Project Impervious Surface Area	0 sf
Total Post-Project Impervious Surface Area	220,174 sf
50% Rule[*]	Applies
Project Density:	23.5 units/acre (Net)
Applicable Special Project Categories [Complete even if all treatment is LID]	None
Percent LID and non LID treatment	100% LID Treatment
HMP Compliance [†]	Applies

[*50% rule applies if:
Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area]

[†HMP applies if:
(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre]

II. SETTING

II.A. Project Location and Description

The project is located at 8161 Redwood Blvd in Novato, CA (APN 125-180-49). The project includes the subdivision of a parcel into 23 new parcels for 23 proposed residential buildings, 1 parcel for commercial/office/assembly use, 13 private parcels, 9 private roadway parcels. According

to the City of Novato General Plan 2035, the existing zoning is business and professional office (BPO), and the proposed zoning is Medium Density Multiple-Family Residential (R10), Planned District (PD).

II.B. Existing Site Features and Conditions

The V-shaped lot is 13.57 acres and has an average slope of approximately 9.81%, although slopes vary from flat to 35%. The Days Inn Hotel is directly east of the subject parcel. The existing site consists of undeveloped, naturally vegetated land with few trees that slopes generally towards the east. The site is bound by Cherry Hill to the West and Redwood Blvd. and US Highway 101 to the east. There are several PG&E easements criss-crossing the site, which contains several high-pressure gas lines buried below ground. Existing gas equipment, including signs and PG&E vault, are located within the PG&E easements as well. There are two storm drain easements located on the northeastern corner of the site, leading to an existing box culvert that outlets into existing storm drains under US Highway 101. There is one existing storm drain pipe on site and existing ephemeral streams, existing wetlands, and existing manmade ditches on or adjacent to the site. Runoff sheetflows overland and is collected in ephemeral streams, manmade ditches, and storm drain pipes downhill that ultimately convey water through culverts under US Highway 101. The soil is classified by the USDA soil survey as Yorkville clay loam, 15 to 30 percent slopes, hydrologic group D; Reyes clay, 0 to 2 percent slopes, hydrologic group C; Gilroy-Typic Argixerolls-Bonnydoon, 30 to 50 percent slopes, hydrologic group C; Los Osos-Bonnydoon complex, 15 to 30 percent slopes, hydrologic group D; and Xerorthents, fill.

II.C. Opportunities and Constraints for Stormwater Control

Constraints:

The site contains type C and D soils which have limited permeability. Existing high-pressure gas lines buried within PG&E easements on site limit placement of area drains and storm drains.

Opportunities:

Two opportunities for stormwater control are the two areas on the northeast and southeast areas of the site – these areas are fairly flat and open, and will be perfect locations for the four bioretention facilities. Refer to the attached DMA map and/or the improvement plans for the proposed bioretention facility locations. Additionally, existing ephemeral streams, wetlands, and manmade ditches promote the use of self-treating areas.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization of Site Layout

The buildings are sited to allow for vegetated areas between the building's impervious areas and storm drain inlets. "Clean" water from vegetated areas will remain clean by not running over impervious areas. The project site is designed to preserve and incorporate existing drainage features. Existing drainage features that are impacted will be diverted around the project site.

III.B. Setbacks from Creeks, Wetlands, and Riparian Habitats

There area existing ephemeral streams, wetlands, and/or biological communities per WRA. For streams and drainage features that will not be diverted, there is a 5 ft. setback from the stream top of bank. Any wetlands, biological communities, or grasses will be mitigated with new plantings, replanting, and new mitigation ditches and streams.

III.C. Minimization of Impervious Area

Imperviousness has been minimized in several ways. Landscape areas have been maximized to the extent possible. The proposed site will feature landscaped common areas in between buildings, as well as landscaping entrances/exits to both reduce imperviousness and add aesthetic quality. These landscaped areas will include various trees and other plants. Trees intercept stormwater with their branches/leaves, allowing for some evaporation, and their roots increase infiltration. Trees also provide shade over impervious surfaces, reducing peak flow and the "heat island" effect. Refer to the landscape architect's plans for landscape design.

III.D. Use of Drainage as a Design Element

The proposed drainage system includes the design of dispersing runoff from roofs/pavement to vegetated/landscaped areas. Impervious areas will be sloped so that runoff is directed to nearby landscaping and atrium grate inlets will be used in central locations of landscaped areas to ensure that runoff has some time to disperse and infiltrate across landscaped areas.

Runoff that is sheetflowing overland across existing natural vegetation from the south will be managed with a self-treating, diverted swale/ephemeral stream.

The main design element of the proposed drainage system is the bioretention facilities. Most of the property's runoff is ultimately directed to one of the four bioretention facilities (one in the southerly area, three in the northeastern corner). The bioretention facilities provide treatment, erosion control, and infiltration time. Refer to the attached DMA Map for bioretention facility locations and refer to the improvement plans for all the drainage system components' locations.

III.E. Use of Permeable Pavements

Permeable pavements can have high maintenance costs and were not needed on this project.

III.F. Dispersal of Runoff to Pervious Areas

The design of the drainage system includes dispersal of runoff to pervious areas.

III.G. Feasibility Assessment of Harvesting and Use for Treatment and Flow-Control

III.G.1. Permeability of Site Soils

The soils onsite are classified as hydrologic group as hydrologic group C and D. This is not considered suitable for infiltration BMPs.

III.G.2. Potential Opportunities for Harvesting and Use

Not applicable for this project.

III.H. Integrated Management Practices

Bioretention will be utilized as IMPs for this site. Diverted swale will be utilized as a self-treating area for vegetated/pervious areas uphill from the project site.

III.I. Stormwater Control Measures

Runoff from all impervious areas on the site, including roofs and paved areas, will be routed to four bioretention facilities (see Exhibit). The facilities will be designed and constructed to the criteria in the BASMAA *Post-Construction Manual* (January 2019) including the following features:

- Surrounded by berm. Maximum slope from top of berm to flat bottom elevation of bioretention to be a maximum of 3H:1V.
- Each layer of bioretention facility built flat, level, and to the elevations specified in the plans and details.
- Minimum 18-inch layer of permeable bio-treatment soil (BSM) meeting BASMAA specifications.
- Minimum 12-inch layer of Class II permeable rock per Caltrans specifications.
- Native soil subgrade; do not compact.
- 4-inch diameter perforated PVC pipe subdrain, installed with the invert at the top of the Class II permeable rock layer with holes facing down, and connected to the overflow structure at that same elevation.
- 6-inch-deep reservoir (ponding) between top of soil elevation and overflow spillway elevation.
- Overflow spillway elevation to be set 3-inches minimum below top of berm.
- Low points of bioretention facility shall be no more than 12-inch below crest of overflow riser.
- Plantings selected for water conservation.
- Sign identifying the facility as a stormwater treatment facility.

The only areas on the site which do not drain to a bioretention facility are portions of the southeastern parcel corner, and portions of the parcel along the southern property line. These areas are 100% pervious and are considered to be self-treating. Drainage from these areas will be controlled through the use of proposed swales and an existing man-made drainage ditch, which will route runoff away from proposed buildings and features and towards the existing storm drain system adjacent to public road Redwood Boulevard.

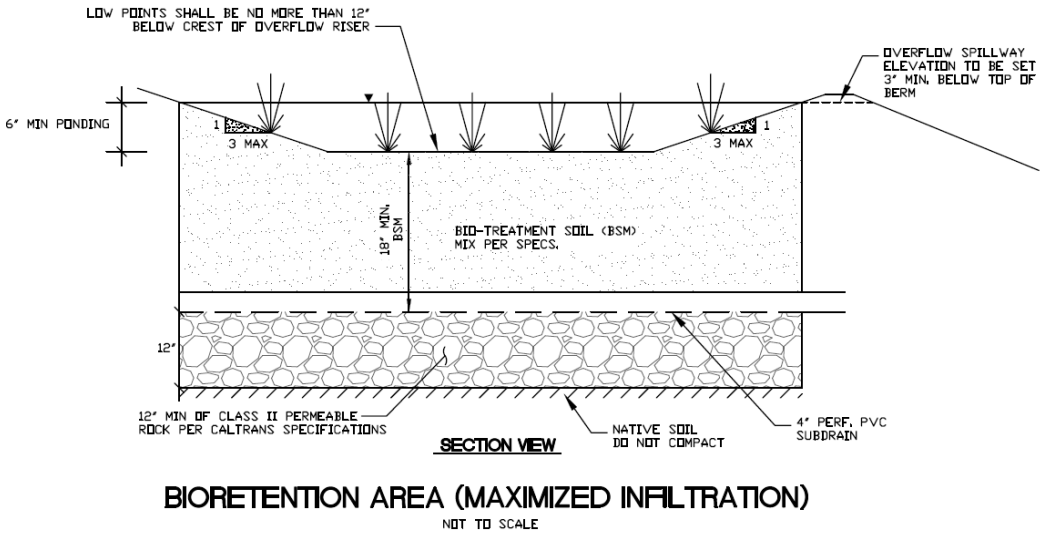


Figure 1. Bioretention cross-section detail from Vesting Tentative Map, Sheet T13

IV. DOCUMENTATION OF DRAINAGE DESIGN

IV.A. Descriptions of each Drainage Management Area

IV.A.1. Table of Drainage Management Areas

Table 2. Descriptions of each Drainage Management Area

DMA NAME	SURFACE TYPE	AREA	DRAINS TO
DMA-I1.1	Roof/Paving	1269	IMP-1
DMA-I1.2	Roof/Paving	1264	IMP-1
DMA-I1.3	Roof/Paving	4741	IMP-1
DMA-I1.4	Roof/Paving	3151	IMP-1
DMA-I1.5	Landscaped	15273	IMP-1
DMA-I1.6	Roof/Paving	1079	IMP-1
DMA-I1.7	Landscaped	1713	IMP-1
DMA-I1.8	Roof/Paving	19957	IMP-1
DMA-I1.9	Roof/Paving	2763	IMP-1
DMA-I1.10	Landscaped	2434	IMP-1
DMA-I1.11	Landscaped	392	IMP-1
DMA-I1.12	Landscaped	267	IMP-1
DMA-I1.13	Landscaped	545	IMP-1
DMA-I2.1	Landscaped	41962	IMP-2
DMA-I2.2	Roof/Paving	1520	IMP-2
DMA-I2.3	Roof/Paving	3397	IMP-2
DMA-I2.4	Roof/Paving	3073	IMP-2
DMA-I2.5	Landscaped	166	IMP-2
DMA-I2.6	Landscaped	11955	IMP-2
DMA-I2.7	Roof/Paving	1736	IMP-2
DMA-I2.8	Roof/Paving	3438	IMP-2
DMA-I2.9	Landscaped	1401	IMP-2
DMA-I2.10	Landscaped	3977	IMP-2
DMA-I2.11	Roof/Paving	36968	IMP-2
DMA-12.12	Landscaped	202	IMP-2
DMA-I2.13	Roof/Paving	1259	IMP-2
DMA-I2.14	Roof/Paving	4647	IMP-2
DMA-I2.15	Roof/Paving	5116	IMP-2
DMA-I2.16	Roof/Paving	3253	IMP-2
DMA-I2.17	Roof/Paving	4729	IMP-2
DMA-I2.18	Roof/Paving	5039	IMP-2
DMA-I2.19	Roof/Paving	4700	IMP-2
DMA-I2.20	Landscaped	32087	IMP-2
DMA-I2.21	Roof/Paving	6430	IMP-2
DMA-I2.22	Landscaped	3410	IMP-2
DMA-I2.23	Landscaped	240	IMP-2
DMA-I2.24	Landscaped	13202	IMP-2
DMA-I2.25	Landscaped	877	IMP-2
DMA-I3.1	Landscaped	70339	IMP-3

Table 2. Descriptions of each Drainage Management Area (cont.)

DMA-I3.2	Roof/Paving	1253	IMP-3
DMA-I3.3	Roof/Paving	1498	IMP-3
DMA-I3.4	Landscaped	2937	IMP-3
DMA-I3.5	Roof/Paving	2846	IMP-3
DMA-I3.6	Landscaped	291	IMP-3
DMA-I3.7	Roof/Paving	3198	IMP-3
DMA-I3.8	Landscaped	250	IMP-3
DMA-I3.9	Landscaped	319	IMP-3
DMA-I3.10	Roof/Paving	3222	IMP-3
DMA-I3.11	Roof/Paving	4668	IMP-3
DMA-13.12	Roof/Paving	1946	IMP-3
DMA-I3.13	Roof/Paving	4983	IMP-3
DMA-13.14	Landscaped	28552	IMP-3
DMA-13.15	Roof/Paving	5581	IMP-3
DMA-13.16	Roof/Paving	5947	IMP-3
DMA-13.17	Landscaped	3202	IMP-3
DMA-13.18	Landscaped	2440	IMP-3
DMA-13.19	Landscaped	75	IMP-3
DMA-14.1	Roof/Paving	3203	IMP-4
DMA-14.2	Landscaped	8809	IMP-4
DMA-14.3	Landscaped	8378	IMP-4
DMA-14.4	Roof/Paving	1754	IMP-4
DMA-14.5	Roof/Paving	9062	IMP-4
DMA-14.6	Landscaped	6778	IMP-4
DMA-14.7	Roof/Paving	805	IMP-4
DMA-T1.1	Landscaped/Undeveloped	66667	Self-Treating Area
DMA-T1.2	Landscaped	4302	Self-Treating Area
DMA-T1.3	Landscaped	15961	Self-Treating Area
DMA-T1.4	Landscaped/Undeveloped	9967	Self-Treating Area
DMA-T1.5	Landscaped/Undeveloped	1395	Self-Treating Area
Total DMA Area		580,258	
Bioretention Facility 1 (IMP-1)		1,938	
Bioretention Facility 2 (IMP-2)		4,119	
Bioretention Facility 3 (IMP-3)		4,139	
Bioretention Facility 4 (IMP-4)		816	
Total Bioretention Facility (IMP) Area		11,012	
Total DMA + IMP Area		591,270	

IV.A.2. Drainage Management Area Descriptions

DMA I1.1, totaling 1,269 square feet, drains the roof of the building and paved walkway to the building entrance. DMA I1.1 drains to IMP-1 (Bioretention Facility #1).

DMA I1.2, totaling 1,264 square feet, drains the roof of the building and paved walkway to the building entrance. DMA I1.2 drains to IMP-1 (Bioretention Facility #1).

DMA I1.3, totaling 4,741 square feet, drains the roof of the building and paved walkways to the building entrances. DMA I1.3 drains to IMP-1 (Bioretention Facility #1).

DMA I1.4, totaling 3,151 square feet, drains the roof of the building and paved walkways to the building entrances. DMA I1.4 drains to IMP-1 (Bioretention Facility #1).

DMA I1.5, totaling 15,273 square feet, drains the lawn, play area, pervious informal seating area, and landscaped areas between and around the southeastern building cluster. DMA I1.5 drains to IMP-1 (Bioretention Facility #1).

DMA I1.6, totaling 1,079 square feet, drains the bike rack and paved walkways in-between the southeastern building clusters. DMA I1.6 drains to IMP-1 (Bioretention Facility #1).

DMA I1.7, totaling 1,713 square feet, drains the landscaped area between the diverted self-treating swale and the travel lanes/parking stalls, located just west of the southeastern building cluster. DMA I1.7 drains to IMP-1 (Bioretention Facility #1).

DMA I1.8, totaling 19,957 square feet, drains the travel lanes, parking stalls, trash/recycling area, and paved sidewalks located in the public right-of-way. DMA I1.8 drains to IMP-1 (Bioretention Facility #1).

DMA I1.9, totaling 2,763 square feet, drains the roof of the building and paved walkway to the building entrance. DMA I1.9 drains to IMP-1 (Bioretention Facility #1).

DMA I1.10, totaling 2,434 square feet, drains the lawn and landscaped area between the building and travel lanes/parking stalls. DMA I1.10 drains to IMP-1 (Bioretention Facility #1).

DMA I1.11, totaling 392 square feet, drains the parking lot landscaping. DMA I1.11 drains to IMP-1 (Bioretention Facility #1).

DMA I1.12, totaling 267 square feet, drains the parking lot landscaping. DMA I1.12 drains to IMP-1 (Bioretention Facility #1).

DMA I1.13, totaling 545 square feet, drains the lawn and landscaped area between the building and parking stalls. DMA I1.13 drains to IMP-1 (Bioretention Facility #1).

DMA I2.1, totaling 41,962 square feet, drains the undeveloped and landscaped areas with hillside planting in the northwestern corner of the parcel. DMA I2.1 drains to IMP-2 (Bioretention Facility #2).

DMA I2.2, totaling 1,520 square feet, drains the roof and pavement from the hillside amphitheater. DMA I2.2 drains to IMP-2 (Bioretention Facility #2).

DMA I2.3, totaling 3,397 square feet, drains the building and paved walkways to the building entrances. DMA I2.3 drains to IMP-2 (Bioretention Facility #2).

DMA I2.4, totaling 3,073 square feet, drains the building and paved walkways to the building entrances. DMA I2.4 drains to IMP-2 (Bioretention Facility #2).

DMA I2.5, totaling 166 square feet, drains the front yard landscaping/planters in front of the building cluster in the northwestern parcel corner. DMA I2.5 drains to IMP-2 (Bioretention Facility #2).

DMA I2.6, totaling 11,955 square feet, drains the lawn/play area, informal seating area, landscaping, and hillside planting between the building cluster in the northwestern parcel corner. DMA I2.6 drains to IMP-2 (Bioretention Facility #2).

DMA I2.7, totaling 1,736 square feet, drains the building and paved walkways to the building entrances. DMA I2.7 drains to IMP-2 (Bioretention Facility #2).

DMA I2.8, totaling 3,438 square feet, drains the building and paved walkways to the building entrances. DMA I2.8 drains to IMP-2 (Bioretention Facility #2).

DMA I2.9, totaling 1,401 square feet, drains the private yard and landscaping between building and travel lanes. DMA I2.9 drains to IMP-2 (Bioretention Facility #2).

DMA I2.10, totaling 3,977 square feet, drains the lawn and landscaping between the building and the parking stalls. DMA I2.10 drains to IMP-2 (Bioretention Facility #2).

DMA I2.11, totaling 36,968 square feet, drains the travel lanes, parking stalls, trash/recycling area, bike rack area, and paved sidewalks located in the public right-of-way. DMA I2.11 drains to IMP-2 (Bioretention Facility #2).

DMA I2.12, totaling 202 square feet, drains the parking lot landscaping. DMA I2.12 drains to IMP-2 (Bioretention Facility #2).

DMA I2.13, totaling 1,259 square feet, drains the building and paved walkways to the building entrances. DMA I2.13 drains to IMP-2 (Bioretention Facility #2).

DMA I2.14, totaling 4,647 square feet, drains the building and paved walkways to the building entrances. DMA I2.14 drains to IMP-2 (Bioretention Facility #2).

DMA I2.15, totaling 5,116 square feet, drains the building and paved walkways to the building entrances. DMA I2.15 drains to IMP-2 (Bioretention Facility #2).

DMA I2.16, totaling 3,253 square feet, drains the building and paved walkways to the building entrances. DMA I2.16 drains to IMP-2 (Bioretention Facility #2).

DMA I2.17, totaling 4,729 square feet, drains the building and paved walkways to the building entrances. DMA I2.17 drains to IMP-2 (Bioretention Facility #2).

DMA I2.18, totaling 5,039 square feet, drains the building and paved walkways to the building entrances. DMA I2.18 drains to IMP-2 (Bioretention Facility #2).

DMA I2.19, totaling 4,700 square feet, drains the building and paved walkways to the building entrances. DMA I2.19 drains to IMP-2 (Bioretention Facility #2).

DMA I2.20, totaling 32,087 square feet, drains the lawn and play area, the playground and nature area, the landscaped areas, and the private front yards between and surrounding the northeastern building cluster. DMA I2.20 drains to IMP-2 (Bioretention Facility #2).

DMA I2.21, totaling 6,430 square feet, drains the community event space and trellis, the concrete pathway and bike racks, and existing utilities. DMA I2.21 drains to IMP-2 (Bioretention Facility #2).

DMA I2.22, totaling 3,410 square feet, drains the pervious, landscaped, entry drop off and pickup area. DMA I2.22 drains to IMP-2 (Bioretention Facility #2).

DMA I2.23, totaling 240 square feet, drains the parking lot landscaping area. DMA I2.23 drains to IMP-2 (Bioretention Facility #2).

DMA I2.24, totaling 13,202 square feet, drains the landscaped and undeveloped areas around Bioretention Facility #2 in the northeastern property corner. DMA I2.24 drains to IMP-2 (Bioretention Facility #2).

DMA I2.25, totaling 877 square feet, drains the landscaped island between two travel lanes. DMA I2.25 drains to IMP-2 (Bioretention Facility #2).

DMA I3.1, totaling 70,339 square feet, drains the undeveloped and landscaped areas with hillside planting in the southwestern corner of the parcel. DMA I3.1 drains to IMP-3 (Bioretention Facility #3).

DMA I3.2, totaling 1,253 square feet, drains the building and paved walkway to the building entrance. DMA I3.2 drains to IMP-3 (Bioretention Facility #3).

DMA I3.3, totaling 1,498 square feet, drains the building and paved walkway to the building entrance. DMA I3.3 drains to IMP-3 (Bioretention Facility #3).

DMA I3.4, totaling 2,937 square feet, drains the lawn and play area between the building cluster located towards the southwestern parcel corner. DMA I3.4 drains to IMP-3 (Bioretention Facility #3).

DMA I3.5, totaling 2,846 square feet, drains the building and paved walkways to the building entrances. DMA I3.5 drains to IMP-3 (Bioretention Facility #3).

DMA I3.6, totaling 291 square feet, drains the private front yard. DMA I3.6 drains to IMP-3 (Bioretention Facility #3).

DMA I3.7, totaling 3,198 square feet, drains the building and paved walkways to the building entrances. DMA I3.7 drains to IMP-3 (Bioretention Facility #3).

DMA I3.8, totaling 250 square feet, drains the private front yard. DMA I3.8 drains to IMP-3 (Bioretention Facility #3).

DMA I3.9, totaling 319 square feet, drains the parking lot landscaping areas. DMA I3.9 drains to IMP-3 (Bioretention Facility #3).

DMA I3.10, totaling 3,222 square feet, drains the building and paved walkways to the building entrances. DMA I3.10 drains to IMP-3 (Bioretention Facility #3).

DMA I3.11, totaling 4,668 square feet, drains the building and paved walkways to the building entrances. DMA I3.11 drains to IMP-3 (Bioretention Facility #3).

DMA I3.12, totaling 1,946 square feet, drains the building and paved walkways to the building entrances. DMA I3.12 drains to IMP-3 (Bioretention Facility #3).

DMA I3.13, totaling 4,983 square feet, drains the building and paved walkways to the building entrances. DMA I3.13 drains to IMP-3 (Bioretention Facility #3).

DMA I3.14, totaling 28,552 square feet, drains the lawn area, play area, meadow planting, pervious informal seating area, community vegetable garden, and private front yard. DMA I3.14 drains to IMP-3 (Bioretention Facility #3).

DMA I3.15, totaling 5,581 square feet, drains the concrete pathway winding between the lawn, plan and landscaped areas. DMA I3.15 drains to IMP-3 (Bioretention Facility #3).

DMA I3.16, totaling 55,947 square feet, drains the travel lanes, parking stalls, and paved sidewalks located in the public right-of-way. DMA I3.16 drains to IMP-3 (Bioretention Facility #3).

DMA I3.17, totaling 3,202 square feet, drains the lawn and landscaped area between the building and travel lanes/parking stalls. DMA I3.17 drains to IMP-3 (Bioretention Facility #3).

DMA I3.18, totaling 2,440 square feet, drains the lawn and landscaped area between the building and travel lanes/parking stalls. DMA I3.18 drains to IMP-3 (Bioretention Facility #3).

DMA I3.19, totaling 75 square feet, drains the parking lot landscaping area. DMA I3.19 drains to IMP-3 (Bioretention Facility #3).

DMA I4.1, totaling 3,203 square feet, drains the building and paved patios. DMA I4.1 drains to IMP-4 (Bioretention Facility #4).

DMA I4.2, totaling 8,809 square feet, drains the landscaped garden area around the building. DMA I4.2 drains to IMP-4 (Bioretention Facility #4).

DMA I4.3, totaling 8,378 square feet, drains the landscaped garden area between the building and Redwood Blvd. DMA I4.3 drains to IMP-4 (Bioretention Facility #4).

DMA I4.4, totaling 1,754 square feet, drains the paved concrete pathway. DMA I4.4 drains to IMP-4 (Bioretention Facility #4).

DMA I4.5, totaling 9,062 square feet, drains the paved parking area. DMA I4.5 drains to IMP-4 (Bioretention Facility #4).

DMA I4.6, totaling 6,778 square feet, drains the lawn and landscaped garden area. DMA I4.6 drains to IMP-4 (Bioretention Facility #4).

DMA I4.7, totaling 805 square feet, drains the paved sidewalk. DMA I4.7 drains to IMP-4 (Bioretention Facility #4).

DMA T1.1, totaling 66,667 square feet, is a self-treating area that drains the undeveloped areas, the landscaped hillside planting area, the natural playground area, the fenced dog run, and the pervious trail. DMA IT.1 drains into a rock/vegetated swale diverted around the project site, which routes runoff around proposed buildings and features and outlets to an existing man-made drainage ditch onsite in the southeastern parcel corner.

DMA T1.2, totaling 4,302 square feet, is a self-treating area that drains the natural playground area, the landscaped areas, the lawns, and the pervious trail. DMA IT.2 drains into a rock overflow swale, which routes runoff and outlets to an existing man-made drainage ditch onsite in the southeastern parcel corner.

DMA T1.3, totaling 15,961 square feet, is a self-treating area that drains the landscaped hillside planting area, the fenced dog run, and the pervious trail. DMA IT.3 drains directly into an existing man-made drainage ditch onsite in the southeastern parcel corner.

DMA T1.4, totaling 9,967 square feet, is a self-treating area that drains the landscaped areas and pervious trail. DMA IT.4 drains directly off-site to the storm drain system adjacent to Redwood Blvd. on the southeastern corner of the parcel.

DMA T1.5, totaling 1,395 square feet, is a self-treating area that drains the landscaped area adjacent to the travel lane and the parcel property line. DMA IT.5 drains directly off-site to the existing man-made drainage ditch located west of the existing Days Inn Hotel.

IV.B. Tabulation and Sizing Calculations

IV.B.1. Information Summary for IMP Design

Table 3. Information Summary for IMP Design

Total Project Area (Square Feet)	591,270 sf (13.57 ac)
Mean Annual Precipitation	20
IMPs Designed For:	Treatment only

IV.B.2. Self-Treating Areas

Table 4. Self-Treating Drainage Management Areas

DMA NAME	AREA (SF)
DMA-T1.1	66,667
DMA-T1.2	4,302
DMA-T1.3	15,961
DMA-T1.4	9,967
DMA-T1.5	1,395
TOTAL	98,292

IV.B.3. Self-Retaining Areas

None

IV.B.4. Areas Draining to IMPs

Table 5. Bioretention Facility 1:

DMA Name	DMA Area (sq. ft.)	Post-Project Surface Type	DMA Runoff Factor*	DMA Area x Runoff Factor	Sizing Factor	Minimum Facility Area Required (sq. ft.)
I1.1	1269	Roof/Paving	1.0	1269		
I1.2	1264	Roof/Paving	1.0	1264		
I1.3	4741	Roof/Paving	1.0	4741		
I1.4	3151	Roof/Paving	1.0	3151		
I1.5	15273	Landscaped	0.1	1527		
I1.6	1079	Roof/Paving	1.0	1079		
I1.7	1713	Landscaped	0.1	171		
I1.8	19957	Roof/Paving	1.0	19957		
I1.9	2763	Roof/Paving	1.0	2763		
I1.10	2434	Landscaped	0.1	243		
I1.11	392	Landscaped	0.1	39		
I1.12	267	Landscaped	0.1	27		
I1.13	545	Landscaped	0.1	54		
		Total		36287	0.04	**1451**

Area Provided in Bioretention Facility 1	**1,938 sq. ft.**
Total DMA Area	**54,849 sq. ft.**

Table 6. Bioretention Facility 2:

DMA Name	DMA Area (sq. ft.)	Post-Project Surface Type	DMA Runoff Factor*	DMA Area x Runoff Factor	Sizing Factor	Minimum Facility Area Required (sq. ft.)
I2.1	41962	Landscaped	0.1	4196		
I2.2	1520	Roof/Paving	1.0	1520		
I2.3	3397	Roof/Paving	1.0	3397		
I2.4	3073	Roof/Paving	1.0	3073		
I2.5	166	Landscaped	0.1	17		
I2.6	11955	Landscaped	0.1	1196		
I2.7	1736	Roof/Paving	1.0	1736		
I2.8	3438	Roof/Paving	1.0	3438		
I2.9	1401	Landscaped	0.1	140		
I2.10	3977	Landscaped	0.1	398		
I2.11	36968	Roof/Paving	1.0	36968		
I2.12	202	Landscaped	0.1	20		
I2.13	1259	Roof/Paving	1.0	1259		
I2.14	4647	Roof/Paving	1.0	4647		
I2.15	5116	Roof/Paving	1.0	5116		
I2.16	3253	Roof/Paving	1.0	3253		
I2.17	4729	Roof/Paving	1.0	4729		
I2.18	5039	Roof/Paving	1.0	5039		
I2.19	4700	Roof/Paving	1.0	4700		
I2.20	32087	Landscaped	0.1	32087		
I2.21	6430	Roof/Paving	1.0	6430		
I2.22	3410	Landscaped	0.1	341		
I2.23	240	Landscaped	0.1	24		
I2.24	13202	Landscaped	0.1	1320		
I2.25	877	Landscaped	0.1	88		
		Total		96252	0.04	**3850**

Area Provided in Bioretention Facility 2	**4,119 sq. ft.**
Total DMA Area	**194,783 sq. ft.**

Table 7. Bioretention Facility 3:

DMA Name	DMA Area (sq. ft.)	Post-Project Surface Type	DMA Runoff Factor*	DMA Area x Runoff Factor	Sizing Factor	Minimum Facility Area Required (sq. ft.)
I3.1	70339	Landscaped	0.1	7034		
I3.2	1253	Roof/Paving	1.0	1253		
I3.3	1498	Roof/Paving	1.0	1498		
I3.4	2937	Landscaped	0.1	294		
I3.5	2846	Roof/Paving	1.0	2846		
I3.6	291	Landscaped	0.1	29		
I3.7	3198	Roof/Paving	1.0	3198		
I3.8	250	Landscaped	0.1	25		
I3.9	319	Landscaped	0.1	32		
I3.10	3222	Roof/Paving	1.0	3222		
I3.11	4668	Roof/Paving	1.0	4668		
I3.12	1946	Roof/Paving	1.0	1946		
I3.13	4983	Roof/Paving	1.0	4983		
I3.14	28552	Landscaped	0.1	2855		
I3.15	5581	Roof/Paving	1.0	5581		
I3.16	55947	Roof/Paving	1.0	55947		
I3.17	3202	Landscaped	0.1	320		
I3.18	2440	Landscaped	0.1	244		
I3.19	75	Landscaped	0.1	8		
		Total		95981	0.04	**3839**

Area Provided in Bioretention Facility 3	**4,139 sq. ft.**
Total DMA Area	**193,545 sq. ft.**

Table 8. Bioretention Facility 4:

DMA Name	DMA Area (sq. ft.)	Post-Project Surface Type	DMA Runoff Factor*	DMA Area x Runoff Factor	Sizing Factor	Minimum Facility Area Required (sq. ft.)
I4.1	3203	Roof/Paving	1.0	3203		
I4.2	8809	Landscaped	0.1	881		
I4.3	8378	Landscaped	0.1	838		
I4.4	1754	Roof/Paving	1.0	1754		
I4.5	9062	Roof/Paving	1.0	9062		
I4.6	6778	Landscaped	0.1	678		
I4.7	805	Roof/Paving	1.0	805		
		Total		17220	0.04	**689**

Area Provided in Bioretention Facility 4	**816 sq. ft.**
Total DMA Area	**38,789 sq. ft.**

IV.B.5. Areas Draining to Non-LID Treatment ["Special Projects" only—See Table 4-14, p. 60]

None

V. SOURCE CONTROL MEASURES

V.A. Site activities and potential sources of pollutants

V.B. Source Control Table

Table 9. Source Control Table

Potential source of runoff pollutants	*Permanent source control BMPs*	*Operational source control BMPs*
A. On-site storm drain inlets	Mark all inlets with the words "No Dumping! Flows to Bay" or similar.	Maintain and periodically repaint or replace inlet markings. Provide stormwater pollution prevention information to new site owners, lessees, or operators. See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com Include the following in lease

		agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
D2. Landscape/ Outdoor Pesticide Use	State that final landscape plans will accomplish all of the following. Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. Consider using pest-resistant plants, especially adjacent to hardscape. To ensure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	Maintain landscaping using minimum or no pesticides. See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com Provide IPM information to new owners, lessees and operators.
N. Fire Sprinkler Test Water	Provide a means to drain fire sprinkler test water to the sanitary sewer.	See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks
O. Roofing, gutters, and trim.	Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	
P. Plazas, sidewalks, and parking lots.		Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Wastewater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.

V.C. Features, Materials, and Methods of Construction of Source Control BMPs

To be provided at improvement plan/final map phase.

VI. STORMWATER FACILITY MAINTENANCE

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

To be provided at improvement plan/final map phase.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

To be provided at improvement plan/final map phase.

VII. CONSTRUCTION PLAN CHECKLIST

The attached construction checklist from Appendix B of the BASMAA *Post-Construction Manual* should be used.

VIII. CERTIFICATIONS

The preliminary design of stormwater treatment facilities and other stormwater pollution control measures in this plan are in accordance with the current edition of the BASMAA *Post-Construction Manual.*

This Stormwater Control Plan was prepared using the template dated February 15, 2012

VICINITY MAP

Figure 2. Vicinity Map



Bioretention Facility Size Calculation

3/22/2021

Project: Habitat for Humanity

Address: 8161 Redwood Blvd, Novato

Areas Draining to Bioretention Facilities:

Bioretention Facility 1:

DMA Name	DMA Area (sq. ft.)	Post-Project Surface Type	DMA Runoff Factor*	DMA Area x Runoff Factor	Sizing Factor	Minimum Facility Area Required (sq. ft.)
I1.1	1269	Roof/Paving	1.0	1269		
I1.2	1264	Roof/Paving	1.0	1264		
I1.3	4741	Roof/Paving	1.0	4741		
I1.4	3151	Roof/Paving	1.0	3151		
I1.5	15273	Landscaped	0.1	1527		
I1.6	1079	Roof/Paving	1.0	1079		
I1.7	1713	Landscaped	0.1	171		
I1.8	19957	Roof/Paving	1.0	19957		
I1.9	2763	Roof/Paving	1.0	2763		
I1.10	2434	Landscaped	0.1	243		
I1.11	392	Landscaped	0.1	39		
I1.12	267	Landscaped	0.1	27		
I1.13	545	Landscaped	0.1	54		
		Total		36287	0.04	**1451**

Area Provided in Bioretention Facility 1	**1,938 sq. ft.**

Bioretention Facility 2:

DMA Name	DMA Area (sq. ft.)	Post-Project Surface Type	DMA Runoff Factor*	DMA Area x Runoff Factor	Sizing Factor	Minimum Facility Area Required (sq. ft.)
I2.1	41962	Landscaped	0.1	4196		
I2.2	1520	Roof/Paving	1.0	1520		
I2.3	3397	Roof/Paving	1.0	3397		
I2.4	3073	Roof/Paving	1.0	3073		
I2.5	166	Landscaped	0.1	17		
I2.6	11955	Landscaped	0.1	1196		
I2.7	1736	Roof/Paving	1.0	1736		
I2.8	3438	Roof/Paving	1.0	3438		
I2.9	1401	Landscaped	0.1	140		
I2.10	3977	Landscaped	0.1	398		
I2.11	36968	Roof/Paving	1.0	36968		
I2.12	202	Landscaped	0.1	20		
I2.13	1259	Roof/Paving	1.0	1259		
I2.14	4647	Roof/Paving	1.0	4647		
I2.15	5116	Roof/Paving	1.0	5116		
I2.16	3253	Roof/Paving	1.0	3253		
I2.17	4729	Roof/Paving	1.0	4729		
I2.18	5039	Roof/Paving	1.0	5039		
I2.19	4700	Roof/Paving	1.0	4700		
I2.20	32087	Landscaped	0.1	3209		
I2.21	6430	Roof/Paving	1.0	6430		
I2.22	3410	Landscaped	0.1	341		
I2.23	240	Landscaped	0.1	24		
I2.24	13202	Landscaped	0.1	1320		
I2.25	877	Landscaped	0.1	88		
		Total		96252	0.04	**3850**

Area Provided in Bioretention Facility 2	**4,119 sq. ft.**

Bioretention Facility Size Calculation

3/22/2021

Project: Habitat for Humanity
Address: 8161 Redwood Blvd, Novato

Areas Draining to Bioretention Facilities:

Bioretention Facility 3:

DMA Name	DMA Area (sq. ft.)	Post-Project Surface Type	DMA Runoff Factor*	DMA Area x Runoff Factor	Sizing Factor	Minimum Facility Area Required (sq. ft.)
I3.1	70339	Landscaped	0.1	7034		
I3.2	1253	Roof/Paving	1.0	1253		
I3.3	1498	Roof/Paving	1.0	1498		
I3.4	2937	Landscaped	0.1	294		
I3.5	2846	Roof/Paving	1.0	2846		
I3.6	291	Landscaped	0.1	29		
I3.7	3198	Roof/Paving	1.0	3198		
I3.8	250	Landscaped	0.1	25		
I3.9	319	Landscaped	0.1	32		
I3.10	3222	Roof/Paving	1.0	3222		
I3.11	4668	Roof/Paving	1.0	4668		
I3.12	1946	Roof/Paving	1.0	1946		
I3.13	4983	Roof/Paving	1.0	4983		
I3.14	28552	Landscaped	0.1	2855		
I3.15	5581	Roof/Paving	1.0	5581		
I3.16	55947	Roof/Paving	1.0	55947		
I3.17	3202	Landscaped	0.1	320		
I3.18	2440	Landscaped	0.1	244		
I3.19	75	Landscaped	0.1	8		
		Total		95981	0.04	**3839**

Bioretention Facility 4:

DMA Name	DMA Area (sq. ft.)	Post-Project Surface Type	DMA Runoff Factor*	DMA Area x Runoff Factor	Sizing Factor	Minimum Facility Area Required (sq. ft.)
I4.1	3203	Roof/Paving	1.0	3203		
I4.2	8809	Landscaped	0.1	881		
I4.3	8378	Landscaped	0.1	838		
I4.4	1754	Roof/Paving	1.0	1754		
I4.5	9062	Roof/Paving	1.0	9062		
I4.6	6778	Landscaped	0.1	678		
I4.7	805	Roof/Paving	1.0	805		
		Total		17220	0.04	**689**

Area Provided in Bioretention Facility 4	**816 sq. ft.**

BASMAA STORMWATER CONTROL PLAN EXHIBIT

SCALE: 1" = 50'

0 50 100 150

(GRAPHIC SCALE IN FEET)

LEGEND

DMA–R7.2

- INDIVIDUAL DMA NUMBER
- TREATMENT AREA NUMBER
- R=SELF RETAINING OR DRAINS TO SELF RETAINING; I=DRAINS TO INTEGRATE MANAGEMENT PRACTICE FACILITY (IMP); T=SELF TREATING AREA
- DRAINAGE MANAGEMENT AREA

NOTES

1) FEMA INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV
2) BOUNDARY LINES SHOWN HEREON ARE DELINEATED FROM FIELD TIES AND RECORD DATA ONLY, AND DOES NOT CONSTITUTE A BOUNDARY SURVEY. THIS MAP IS NOT INTENDED TO PROVIDE A BOUNDARY RESOLUTION FOR THE SUBJECT PROPERTY.
3) ELEVATIONS SHOWN HEREON ARE BASED THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). BENCHMARK CONTROL POINT #104 SET 60D NAIL CONTROL POINT. ELEVATION = 21.38' NAVD 88

BMP SIZING TABLE

BIORETENTION ID	IMPERVIOUS AREA THAT DRAINS TO BMP (SF)	BIORETENTION REQUIRED AREA	BIORETENTION AREA PROVIDED
IMP-1	34,224	1,451	1,938
IMP-2	85,304	3,850	4,119
IMP-3	85,141	3,839	4,139
IMP-4	14,824	689	816
TOTAL	219,493	9,829	11,012

LEGEND

- BOUNDARY RECORD
- DIRECTION OF WATER FLOW
- FLOOD HAZARD LINE WITH BASE FLOOD INFORMATION (BFE = 10.0', NAVD88–FT) (ZONE AE)
- DMA–I1 DRAINS TO BR–1
- DMA–I2 DRAINS TO BR–2
- DMA–I3 DRAINS TO BR–3
- DMA–I4 DRAINS TO BR–4
- DMA–T1 SELF–TREATING AREA DRAINS TO DIVERTED SWALE

APN 125–580–10

APN 125–180–49

APN 125–180–83

APN 125–580–10

DAYS INN HOTEL APN 125–180–80

PRIVATE ROAD A

PRIVATE ROAD B

BUCK CENTER DRIVE

REDWOOD BLVD

US HWY 101

RECORD BOUNDARY LINE

BAY 60 CLSTR

SELF–TREATING AREA/SWALE DIVERTED AROUND PROJECT SITE 66,667 SF PERVIOUS AREA 0 SF IMPERVIOUS AREA

SELF–TREATING AREA/OVERFLOW SWALE 4,302 SF PERVIOUS AREA 0 SF IMPERVIOUS AREA

SELF–TREATING AREA/MAN–MADE DRAINAGE DITCH 15,961 SF PERVIOUS AREA 0 SF IMPERVIOUS AREA

SELF–TREATING AREA DRAINS DIRECTLY OFF SITE TO EXISTING STORM DRAIN SYSTEM 9,967 SF PERVIOUS AREA 0 SF IMPERVIOUS AREA

SELF–TREATING AREA DRAINS DIRECTLY OFF SITE TO EXISTING STORM DRAIN SYSTEM 1,395 SF PERVIOUS AREA 0 SF IMPERVIOUS AREA

IMP–1 A=1,938 SF

IMP–2 A=4,119 SF

IMP–3 A=4,139 SF

IMP–4 A=816 SF

(EX) 55 PUMP STATION, SEE SHEET T13

(EX) 24" CPP SD 4.16 INV

FEMA 100–YEAR FLOOD HAZARD LINE

DMA–I1.1 DMA–I1.2 DMA–I1.3 DMA–I1.4 DMA–I1.5 DMA–I1.6 DMA–I1.7 DMA–I1.8 DMA–I1.9 DMA–I1.10 DMA–I1.11 DMA–I1.12 DMA–I1.13

DMA–I2.1 DMA–I2.2 DMA–I2.3 DMA–I2.4 DMA–I2.5 DMA–I2.6 DMA–I2.7 DMA–I2.8 DMA–I2.9 DMA–I2.10 DMA–I2.11 DMA–I2.12 DMA–I2.13 DMA–I2.14 DMA–I2.15 DMA–I2.16 DMA–I2.17 DMA–I2.18 DMA–I2.19 DMA–I2.20 DMA–I2.21 DMA–I2.22 DMA–I2.23 DMA–I2.24 DMA–I2.25

DMA–I3.1 DMA–I3.2 DMA–I3.3 DMA–I3.4 DMA–I3.5 DMA–I3.6 DMA–I3.7 DMA–I3.8 DMA–I3.9 DMA–I3.10 DMA–I3.11 DMA–I3.12 DMA–I3.13 DMA–I3.14 DMA–I3.15 DMA–I3.16 DMA–I3.17 DMA–I3.18 DMA–I3.19

DMA–I4.1 DMA–I4.2 DMA–I4.3 DMA–I4.4 DMA–I4.5 DMA–I4.6 DMA–I4.7

DMA–T1.1 DMA–T1.2 DMA–T1.3 DMA–T1.4 DMA–T1.5

DVC GROUP INC.
CIVIL ENGINEERING ❖ SURVEYING ❖
LAND PLANNING SERVICES ❖ C.M. ❖
513 CENTER STREET
HEALDSBURG, CA 95448
(707) 395–0568

REGISTERED PROFESSIONAL ENGINEER DANIEL JOHN HUGHES No. 60225 Exp. 6-30-22 CIVIL STATE OF CALIFORNIA

DANIEL JOHN HUGHES RCE 60225 DATE

PLANNING APPLICATION SUBMIT #2

HABITAT FOR HUMANITY

BASMAA STORMWATER CONTROL PLAN EXHIBIT

APN 125–180–49

8161 REDWOOD BLVD

NOVATO, CA

APRIL 2, 2021

JOB NO. 77–18

SHEET NO. 1 OF 1 SHEETS

REVISION	DESCRIPTION	BY	DATE

P:\DVC JOBS\2018\77–18 8161 REDWOOD BLVD (DVC)\DWGS\77–18 BASMAA SCP.DWG 4/2/2021 11:55 AM UT

Appendix H

Preliminary Existing Sewer Capacity Calculations

IN PARTNERSHIP WITH

MUNSELLE
CIVIL ENGINEERING
CIVIL ENGINEERING LAND PLANNING

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448
Phone (707) 395-0968
steve@munsellecivil.com
www.munsellecivil.com

UKIAH OFFICE
100 N. Pine Street
Ukiah, CA 95482
Phone (707) 462-6536
tyler@munsellecivil.com
www.munsellecivil.com

MILL VALLEY OFFICE
225 Flamingo Road
Mill Valley, CA 94941
Phone (707) 395-0968
Phone (707-775-8686
dan@dvcgroup.net
www.dvcgroup.net

PRELIMINARY
EXISTING SEWER CAPACITY CALCULATIONS
for
PLANNING APPLICATION SUBMIT #2

HABITAT FOR HUMANITY

8161 Redwood Boulevard
Novato, CA
APN 125-180-49



DANIEL JOHN HUGHES
RCE 60225 Exp. 6/30/22

Prepared for:
Habitat for Humanity Greater SF,
Maureen Sedonaen (Executive Director)
500 Washington St, Suite 250
San Francisco, 94111
(415) 625-1034
erin@habitatgsf.org

Prepared under the supervision of:
Daniel J. Hughes
RCE #60225
License Expires 6/30/22

Report Date: April 2nd, 2021

IN PARTNERSHIP WITH

MUNSELLE CIVIL ENGINEERING
CIVIL ENGINEERING LAND PLANNING

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448
Phone (707) 395-0968
steve@munsellecivil.com
www.munsellecivil.com

UKIAH OFFICE
100 N. Pine Street
Ukiah, CA 95482
Phone (707) 462-6536
tyler@munsellecivil.com
www.munsellecivil.com

MILL VALLEY OFFICE
225 Flamingo Road
Mill Valley, CA 94941
Phone (707) 395-0968
Phone (707-775-8686
dan@dvcgroup.net
www.dvcgroup.net

Narrative

The owners of this property are proposing a new residential housing development and associated office building, along with the associated necessary grading, drainage, and utility improvements. Existing use of the site consists of an undeveloped grassy open lot, with existing PG&E gas utility easements and equipment. Currently, sewer flows from several neighboring properties in the area discharge to the Novato Sanitary District (NSD) sewer system. This includes the Redwood Boulevard Pump Station near the project site, and a number of sewer mains further south.

This analysis intends to demonstrate that the existing sewer network has sufficient capacity for both existing and proposed peak sewer flows from these properties. This analysis ends at existing sewer manhole MH#3 (see attached exhibit), because the sewer mains downstream of that location are sized at 18" or larger, which NSD has confirmed have sufficient capacity.

Capacity analysis is required to:

- Determine peak anticipated sewer flows from existing and proposed developments
- Determine capacity of the Redwood Boulevard pump station (sump and pumps)
- Calculate flow capacity of downstream force and gravity sewer mains

See the attached sewer capacity exhibit for inverts, locations, and infiltration areas.

Parameters & Assumptions

For the purposes of this capacity analysis, we used the Novato Sanitary District Standard Specifications and Drawings (1975) as a guideline for estimating peak flows and sizing sewer conveyances. Review of these standards provides the following mathematical models and constant values used in this sewer capacity analysis:

Avg. # People per Residence	3.5 persons/unit
Per Capita Domestic Sewer Flows	90 gallons/day
Commercial Sewer Flows	Per NSD winter water-use data
Storm water infiltration to sewers (areas sewered after 1962)	1,000 gallons/acre/day
Peak Load Factor (<2000 people)	2.50
Manning's n (sewer pipes)	0.013 minimum

Likewise, several worst-case assumptions were made about the existing sewer network:

Pump station normal operations	1 pump in use 1 pump in reserve (backup only)

IN PARTNERSHIP WITH

MUNSELLE CIVIL ENGINEERING
CIVIL ENGINEERING LAND PLANNING

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448
Phone (707) 395-0968
steve@munsellecivil.com
www.munsellecivil.com

UKIAH OFFICE
100 N. Pine Street
Ukiah, CA 95482
Phone (707) 462-6536
tyler@munsellecivil.com
www.munsellecivil.com

MILL VALLEY OFFICE
225 Flamingo Road
Mill Valley, CA 94941
Phone (707) 395-0968
Phone (707-775-8686
dan@dvcgroup.net
www.dvcgroup.net

Stormwater Infiltration area	Total developed area of subject site + 10' assumed sewer trench width
Buck Center	Assumed to flow to Redwood Blvd Pump Station (record data shows no connection)
Commercial winter water use	Discarding highest value (outliers of 50% or more), using 2nd highest winter water use

To be conservative, these assumptions were made because they result in higher peak flows, lower existing sewer flow capacities, or both.

Conclusions

In conclusion:

- Peak sewer flows increase compared to pre-construction conditions (61.4 gpm vs. 110.7 gpm at the Redwood Blvd pump station)
- The Redwood Boulevard pump station has:
  - more than sufficient sump capacity (553 gal needed vs. 1000 gal existing capacity)
  - more than sufficient pump capacity (110.7 gpm peak flows, 170 gpm existing 1-pump flow rate at 39 ft TDH)
- All analyzed worst-case force and gravity sewer mains have sufficient capacity for either pre-construction or post-construction anticipated peak flows

As such, the attached calculations demonstrate that the existing sewer network has more than sufficient capacity to serve both existing developments and the proposed Habitat for Humanity development (including pumps, sump basin, force main, and gravity mains).

Job # 77-18
Date: 3/18/2021

Habitat for Humanity

Neighboring Properties - Historical Winter Water Use

	(Buck Center)	?	(Days Inn)	(Birkenstock)	(Enterprise)
Year	**Buck Center Dr, BLD, 8001**	**Redwood Blvd, 8123**	**Redwood Blvd, 8141**	**Redwood Blvd, 8171**	**Rush Landing Rd, 600**
2001	263,483	29,733	238,051	105,655	34,408
2002	768,570	31,977	244,035	182,138	16,456
2003	167,552	39,831	238,051	140,063	8,976
2004	216,920	33,847	220,099	100,419	17,765
2005	134,827	30,294	215,050	118,745	41,701
2006	282,931	33,660	267,410	52,360	103,598
2007	117,810	28,611	266,662	32,725	20,944
2008	145,486	16,269	311,729	4,488	8,228
2009	125,664	21,131	248,897	6,545	11,594
2010	208,505	12,342	155,958	25,619	3,927
2011	251,328	11,781	154,275	24,497	4,301
2012	441,320	374	168,113	2,805	1,646
2013	310,981	1,122	218,229	49,555	3,553
2014	240,482	561	213,554	48,059	20,570
2015	226,457	2,057	178,211	46,189	12,342
2016	250,954	561	186,065	47,685	6,732
2017	339,966	25,058	204,017	33,473	12,529
2018	475,728	8,415	181,390	68,255	12,903
2019	451,792	4,488	217,679	60,560	7,893
2020	513,128	524	193,386	42,224	9,602
Peak Commercial Flows (gal/month):	**513,128**	**0**	**267,410**	**140,063**	**41,701**
Explanation:	Highest flow, excluding the 1 highest value	Per NSD: "It isn't connected to the sewer system."	Highest flow from when the restaurant was open, excluding 1 highest value	Highest flow from when at full production, excluding 1 highest value	Highest flow, excluding 1 highest value

Job # 77-18
Date: 3/18/2021

Habitat for Humanity

Existing/Proposed Sewer Flow and Capacity Calculations

Peak Design Flow Calculations

Known constants per Novato Sanitary District (NSD) Standards:

Average persons per single-family unit (P)	3.5	persons/residence
Per Capita Domestic Sewer Flows (D)	90	gallons/person/day
Commercial Sewer Flows (C)	Historical	per NSD historical water use data
Storm Water Infiltration (I)	1,000	gallons/acre/day
Peak Load Factor (PLF)	2.5	unitless, peak factor
Manning's n	0.013	unitless, minimum

Peak Flow (Qp):

Qp (Peak Flow): PLF x Average Daily (Domestic) Flow	= 2.5 x (# units x P x D)	gal/day (residential)
Qp (Peak Flow): PLF x Average Daily (Commercial) Flow	= 2.5 x (C)	gal/day (commercial)

Infiltration Flow (Qi)

Qi (Infiltration Flow):	= 1,000 x (infiltration area, see sewer exhibit)	gal/day

Design Flow (Qd)

Qd (Total Design Flow):	Qd = Qp + Qi	gal/day

Existing/Proposed Design Flows:

Birkenstock (Q1):	Q1p =	140,063	gal/month (avg)	(2003)
		4,669	gal/day (avg)	
		11,672	gal/day (peak)	
	Infiltration Area =	1.75	acres	
	Q1i =	**1,750**	gal/day	
	Q1d =	Q1p+Q1d	gal/day	
		13,422	gal/day (peak)	
Habitat for Humanity (Q2):	Q2p =	25,200	gal/day	(80 proposed units)
		63,000	gal/day (peak)	
	Infiltration Area =	8.05	acres	
	Q2i =	**8,050**	gal/day	
	Q2d =	Q2p+Q2d	gal/day	
		71,050	gal/day (peak)	
Days Inn (Q3):	Q3p =	267,410	gal/month (avg)	(2006)
		8,914	gal/day (avg)	
		22,284	gal/day (peak)	
	Infiltration Area =	1.69	acres	
	Q3i =	**1,690**	gal/day	
	Q3d =	Q3p+Q3d	gal/day	
		23,974	gal/day (peak)	
Buck Center (Q4):	Q4p =	513,128	gal/month (avg)	(2020)
		17,104	gal/day (avg)	
		42,761	gal/day (peak)	
	Infiltration Area =	8.25	acres	
	Q4i =	**8,250**	gal/day	
	Q4d =	Q4p+Q4d	gal/day	
		51,011	gal/day (peak)	

Landsea Homes (Q5):

Q5p =	25,200	gal/day	(80 proposed units)
	63,000	gal/day (peak)	
Infiltration Area =	4.76	acres	
Q5i =	**4,760**	gal/day	
Q5d =	Q5p+Q5d	gal/day	
	67,760	gal/day (peak)	

Enterprise (Q6):

Q6p =	41,701	gal/month (avg)	(2005)
	1,390	gal/day (avg)	
	3,475	gal/day (peak)	
Infiltration Area =	1.02	acres	
Q6i =	**1,020**	gal/day	
Q6d =	Q6p+Q6d	gal/day	
	4,495	gal/day (peak)	

Worst-case Sewer #1: (Ex) 8" Gravity Main

Diameter	8	inches
Material	C900 PVC	
manning's n	0.013	(minimum)
Slope	0.006	ft/ft
Max. pipe capacity	1.01	cfs
	453	**gpm capacity**

Pre-Construction Flows to Sewer #1:	=Q1d+Q3d	gal/day (peak)		
	37,396	gal/day (peak)		
	26.0	gpm (peak)	**< 453 gpm capacity**	**Sufficient capacity**
Post-Construction Flows to Sewer #1:	=Q1d+Q2d+Q3d	gal/day (peak)		
	108,446	gal/day (peak)		
	75.3	gpm (peak)	**< 453 gpm capacity**	**Sufficient capacity**

Worst-case Capacity: Redwood Boulevard Pump Station

Existing Pump Capacity:

Existing Pump #1 (P1):	170	gpm @	39.2	ft TDH
Existing Pump #2 (P2):	170	gpm @	39.2	ft TDH

See pump curve and friction losses below/attached.
Worst-case assumption: pumps alternate, Pump #2 will be reserved as backup only.

Existing Sump Capacity:

Internal sump diameter (U)	72	inches	Fiberglass Basin, Model 150
Sump volume per foot of depth:	211.5	gallons/ft	

Existing Pump Station Elevations:

Rim Elevation	7.0	ft
8" SS Gravity Invert (IN)	-7.00	ft
4" SS Force Main Invert (OUT)	-15.54	ft
Pump #1 On Elevation	-8.06	ft
Pump #2 On Elevation	-7.56	ft
Pump #1 & #2 Off Elevation	-12.79	ft

Existing Pump Cycling:

Pre-Construction Flows to Pump Station:	=Q1d+Q3d+Q4d	gal/day		
	88,407	gal/day		
	61.4	gpm	**< 170 gpm pump**	**Sufficient capacity**
Minimum Time Between Pump Starts	5.0	min.		
Min. Capacity between Pump Off and Pump #1 On: 5 minutes x Peak Flows (gpm)	**307.0**	gallons		
Existing Capacity between Pump Off and Pump #1 On:	**1000.4**	gallons		**Sufficient capacity**
Pump #1 Run Time: (1000 gal)/(170-61gpm):	9.2	minutes		

Proposed Pump Cycling:

Post-Construction Flows to Pump Station:	=Q1d+Q2d+Q3d+Q4d	gal/day		
	159,457	gal/day		
	110.7	gpm	**< 170 gpm pump**	**Sufficient capacity**
Minimum Time Between Pump Starts	5.0	min.		
Min. Capacity between Pump Off and Pump #1 On: 5 minutes x Peak Flows (gpm)	**553.7**	gallons		
Existing Capacity between Pump Off and Pump #1 On:	**1000.4**	gallons		**Sufficient capacity**
Pump #1 Run Time: (1000 gal)/(170-110gpm):	16.9	minutes		

Worst-case Sewer #2: (Ex) 4" Force Main

Diameter	4	inches	
Material	Yelomine (plastic)		
Friction Coefficient, c	147.6	unitless	
Length	1,110	feet	
Elevation Change	21.58	feet	(pump station to H11007 4" FM invert)

(Ex) Force Main Capacity: 1 Pump Running

Design Flow	170	gpm	per pump curve
Flow Velocity	4.34	ft/s	
Friction Loss	17.61	ft	per Hazen-Williams equation
Total Dynamic Head (TDH)	= Elevation Change + Friction Loss	ft	
	39.2	ft	used for pump curve input
Force Main Capacity	**170**	gpm	

Pre-Construction Flows to Sewer #2:	=Q1d+Q3d+Q4d	gal/day (peak)		
	88,407	gal/day (peak)		
	61.4	gpm (peak)	**< 170 gpm capacity**	**Sufficient capacity**
Post-Construction Flows to Sewer #2:	=Q1d+Q2d+Q3d+Q4	gal/day (peak)		
	159,457	gal/day (peak)		
	110.7	gpm (peak)	**< 170 gpm capacity**	**Sufficient capacity**

Worst-case Sewer #3: (Ex) 8" Gravity Main

Diameter	8	inches
Material	C900 PVC	
manning's n	0.013	(min. per NSD)
Slope	0.0035	ft/ft
Max. capacity	0.77	cfs
	345.6	gpm

Pre-Construction Flows to Sewer #3:	=Q1d+Q3d+Q4d	gal/day (peak)		
	88,407	gal/day (peak)		
	61.4	gpm (peak)	**< 345 gpm capacity**	**Sufficient capacity**
Post-Construction Flows to Sewer #3:	=Q1d+Q2d+Q3d+Q4	gal/day (peak)		
	159,457	gal/day (peak)		
	110.7	gpm (peak)	**< 345 gpm capacity**	**Sufficient capacity**

Worst-case Sewer #4: (Ex) 10" Gravity Main

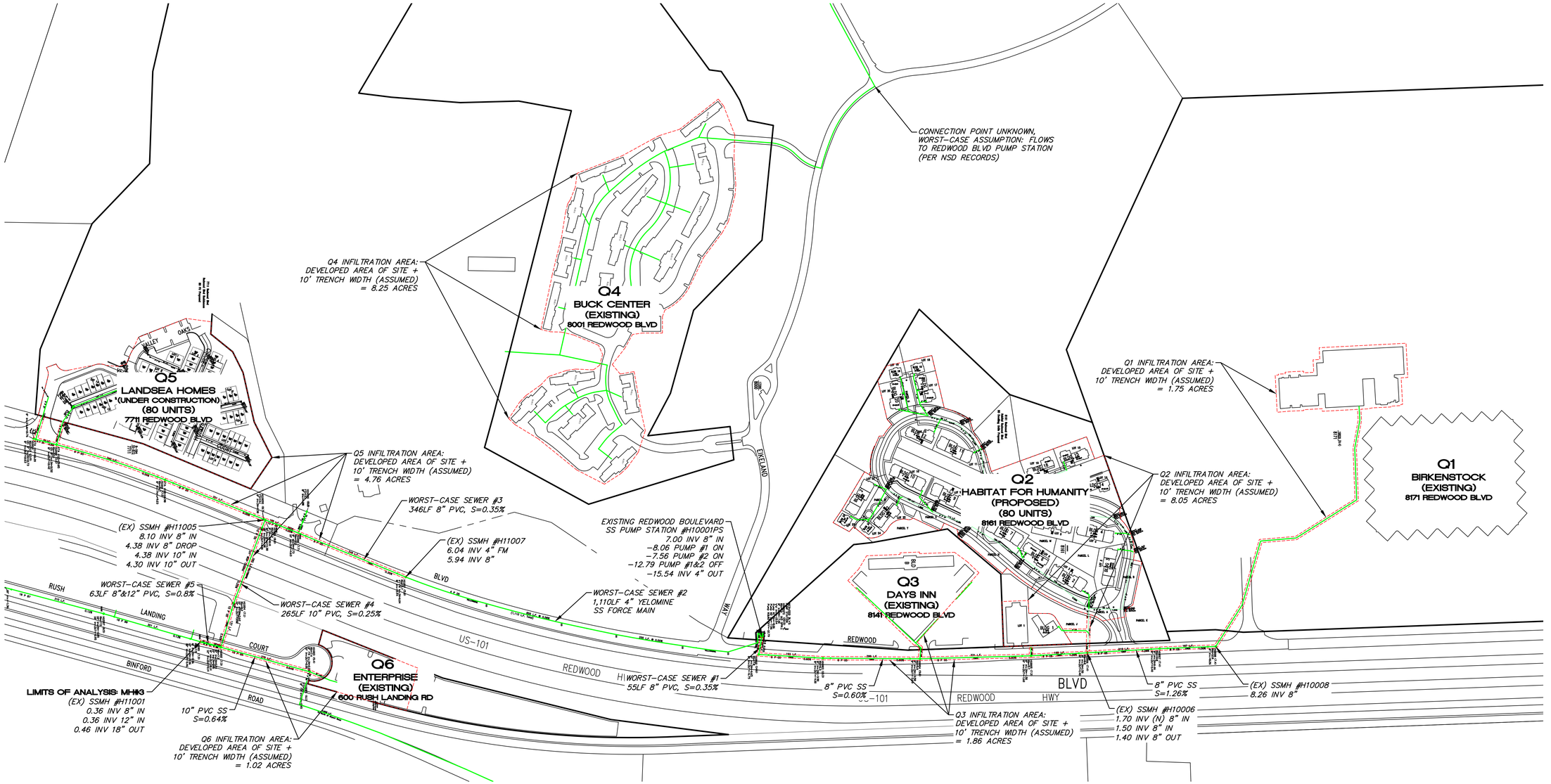
Diameter	10	inches
Material	C900 PVC	
manning's n	0.013	(min. per NSD)
Slope	0.0025	ft/ft
Max. capacity	1.16	cfs
	520.6	gpm

Pre-Construction Flows to Sewer #4:	=Q1d+Q3d+Q4d+Q5d	gal/day (peak)		
	156,167	gal/day (peak)		
	108.4	gpm (peak)	**< 520 gpm capacity**	**Sufficient capacity**
Post-Construction Flows to Sewer #4:	=Q1d+Q2d+Q3d+ Q4+Q5d	gal/day (peak)		
	227,217	gal/day (peak)		
	157.8	gpm (peak)	**< 520 gpm capacity**	**Sufficient capacity**

Worst-case Sewer #5: (Ex) 8"&12" Gravity Mains

Diameter	8	inches
	12	inches
Material	C900 PVC	
manning's n	0.013	(min. per NSD)
Slope	0.008	ft/ft
Max. capacity	1.16	cfs (8" pipe)
	3.39	cfs (12" pipe)
Combined Max. capacity	4.55	cfs (8"+12" pipes)
	2042	gpm

Pre-Construction Flows to Sewer #5:	=Q1d+Q3d+Q4d+ Q5d+Q6d	gal/day (peak)		
	160,662	gal/day (peak)		
	111.6	gpm (peak)	**< 2042 gpm capacity**	**Sufficient capacity**
Post-Construction Flows to Sewer #5:	=Q1d+Q2d+Q3d+ Q4d+Q5d+Q6d	gal/day (peak)		
	231,712	gal/day (peak)		
	160.9	gpm (peak)	**< 2042 gpm capacity**	**Sufficient capacity**



EXISTING SEWER CAPACITY EXHIBIT

SCALE: 1" = 150'

0 150 300 450

(GRAPHIC SCALE IN FEET)

N W E S

REVISION	DESCRIPTION	BY	DATE

DVC GROUP INC.
❖ CIVIL ENGINEERING ❖ SURVEYING ❖
❖ LAND PLANNING SERVICES ❖ C.M. ❖
513 CENTER STREET
HEALDSBURG, CA 95448
(707) 395-0968

PROFESSIONAL ENGINEER ★ DANIEL JOHN HUGHES ★ REGISTERED ★ No. 60225 Exp. 6-30-22 ★ CIVIL ★ STATE OF CALIFORNIA

DANIEL JOHN HUGHES DATE
RCE 60225

PLANNING APPLICATION RESUBMIT #2

HABITAT FOR HUMANITY
EXISTING SEWER CAPACITY EXHIBIT

APN 125-180-49
8161 REDWOOD BLVD,
NOVATO, CA

APRIL 2, 2021

JOB NO.
77-18

SHEET NO.
1
OF 1 SHEETS

P:\DVC JOBS\2018\77-18 8161 REDWOOD BLVD (DVC)\DWGS\77-18 SEWER EXHIBIT.DWG 4/2/2021 10:29 AM UT

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Mar 19 2021

Worst-case Sewer #1 Maximum Capacity

Circular

Diameter (ft)	= 0.67
Invert Elev (ft)	= 1.00
Slope (%)	= 0.60
N-Value	= 0.013

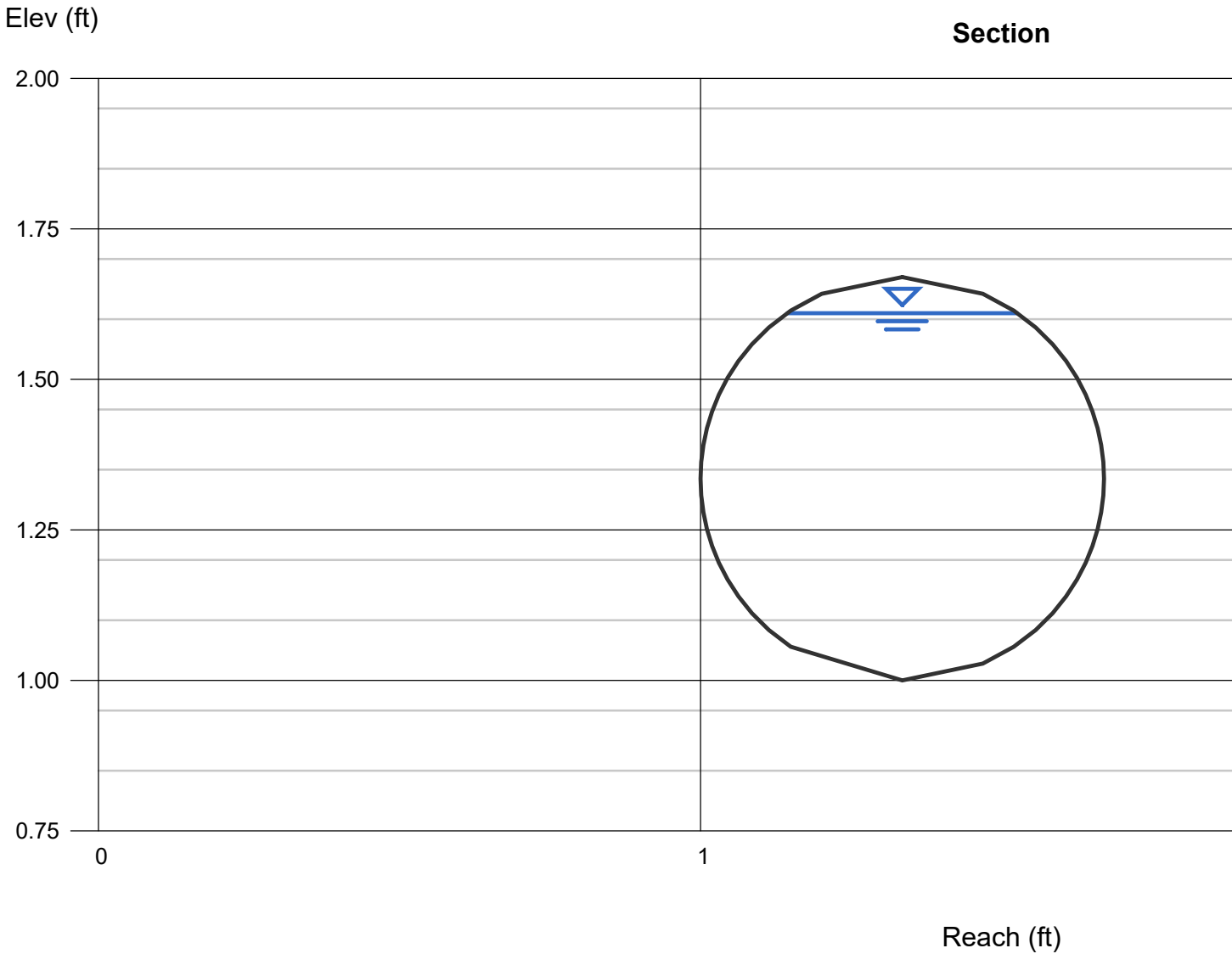
Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.01

Highlighted

Depth (ft)	= 0.61
Q (cfs)	= 1.010
Area (sqft)	= 0.34
Velocity (ft/s)	= 3.00
Wetted Perim (ft)	= 1.70
Crit Depth, Yc (ft)	= 0.48
Top Width (ft)	= 0.38
EGL (ft)	= 0.75

Maximum full-flow capacity of sewer #1



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Mar 19 2021

Worst-case Sewer #3 Maximum Capacity

Circular

Diameter (ft)	= 0.67
Invert Elev (ft)	= 1.00
Slope (%)	= 0.35
N-Value	= 0.013

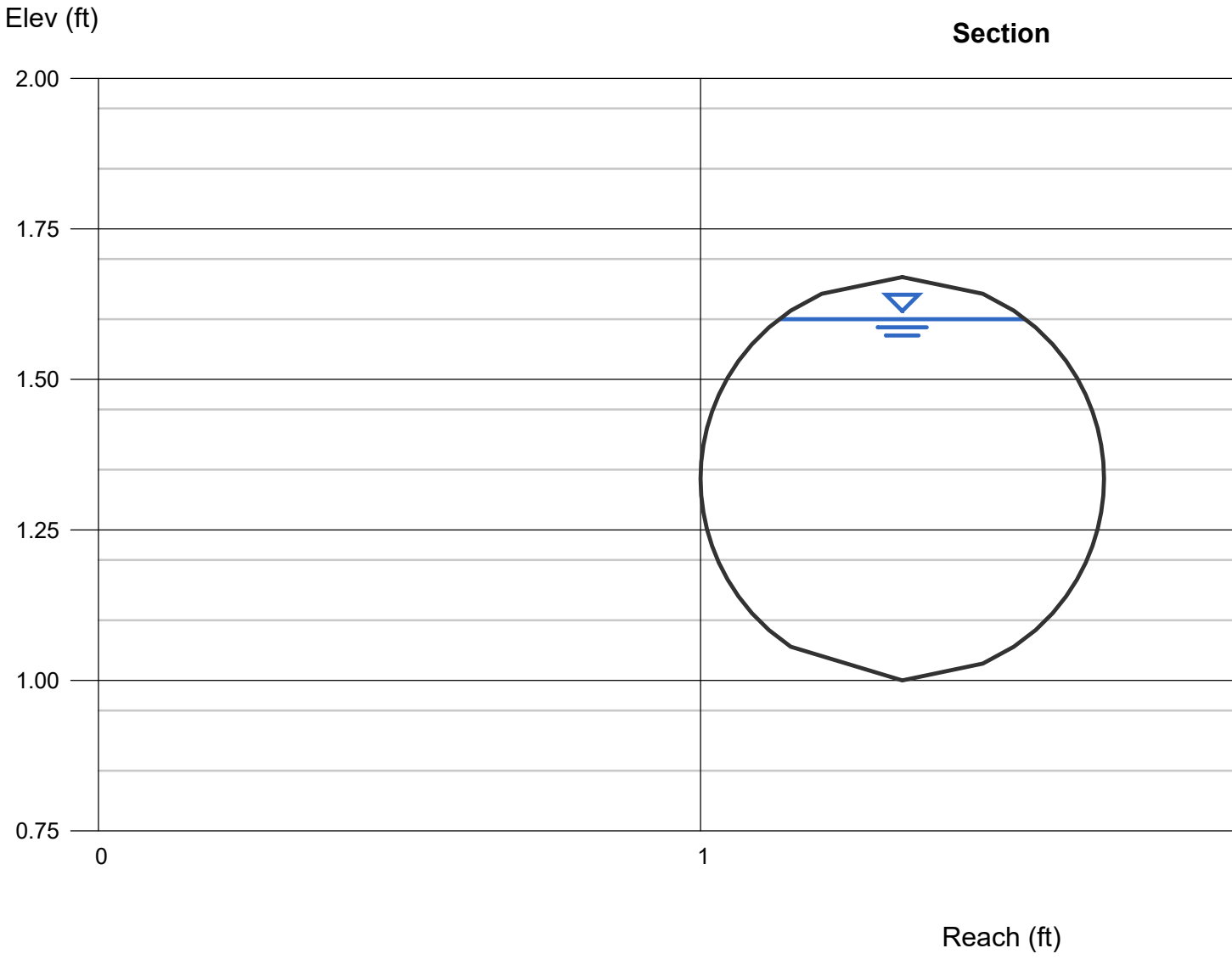
Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.77

Highlighted

Depth (ft)	= 0.60
Q (cfs)	= 0.770
Area (sqft)	= 0.33
Velocity (ft/s)	= 2.31
Wetted Perim (ft)	= 1.66
Crit Depth, Yc (ft)	= 0.42
Top Width (ft)	= 0.41
EGL (ft)	= 0.68

Maximum full-flow capacity of sewer #3



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Mar 19 2021

Worst-case Sewer #4 Maximum Capacity

Circular

Diameter (ft)	= 0.83
Invert Elev (ft)	= 1.00
Slope (%)	= 0.25
N-Value	= 0.013

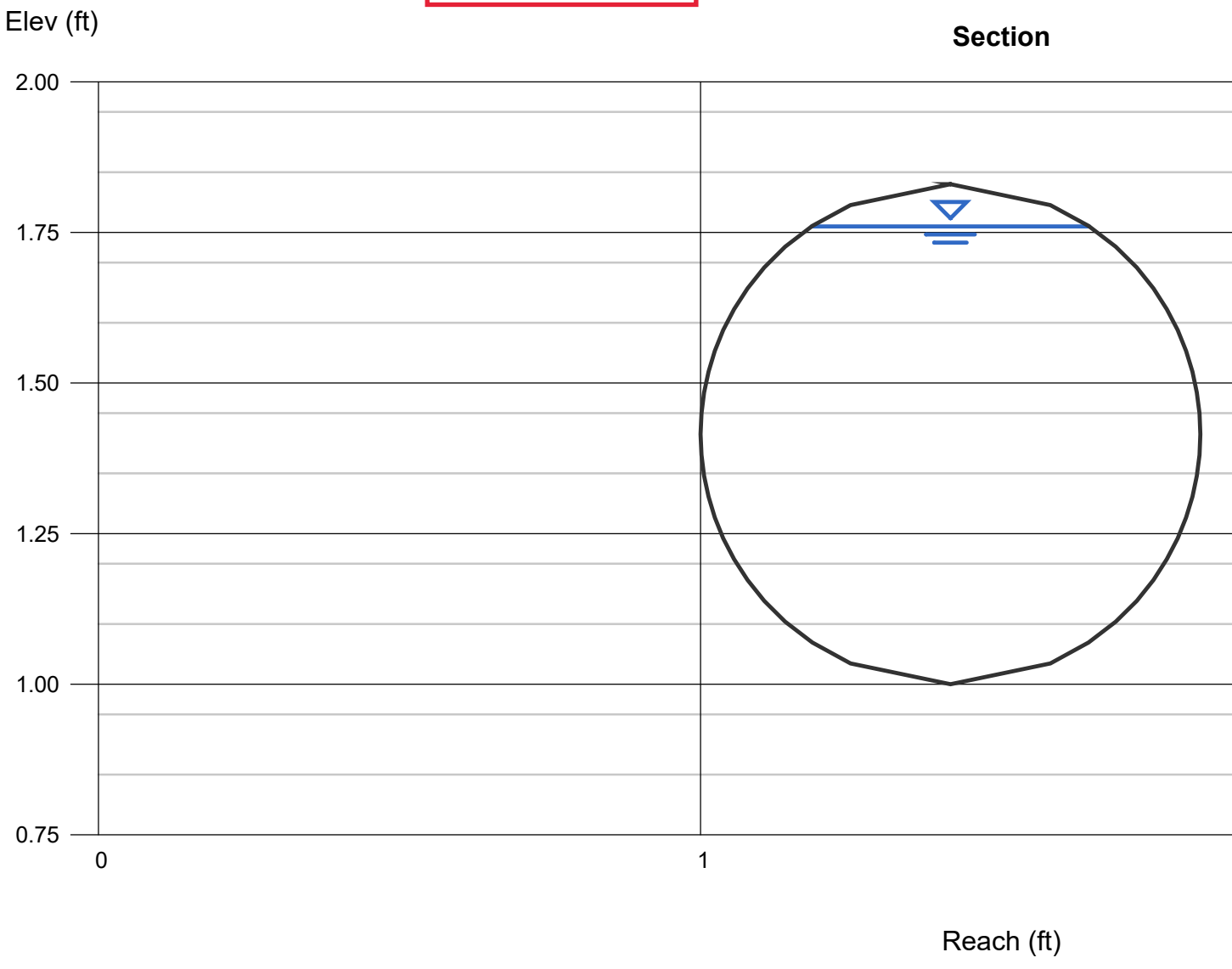
Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.16

Highlighted

Depth (ft)	= 0.76
Q (cfs)	= 1.160
Area (sqft)	= 0.52
Velocity (ft/s)	= 2.23
Wetted Perim (ft)	= 2.12
Crit Depth, Yc (ft)	= 0.48
Top Width (ft)	= 0.46
EGL (ft)	= 0.84

Maximum full-flow capacity of sewer #4



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Mar 19 2021

Worst-case Sewer #5 (8in) Maximum Capacity

Circular

Diameter (ft)	= 0.67
Invert Elev (ft)	= 1.00
Slope (%)	= 0.80
N-Value	= 0.013

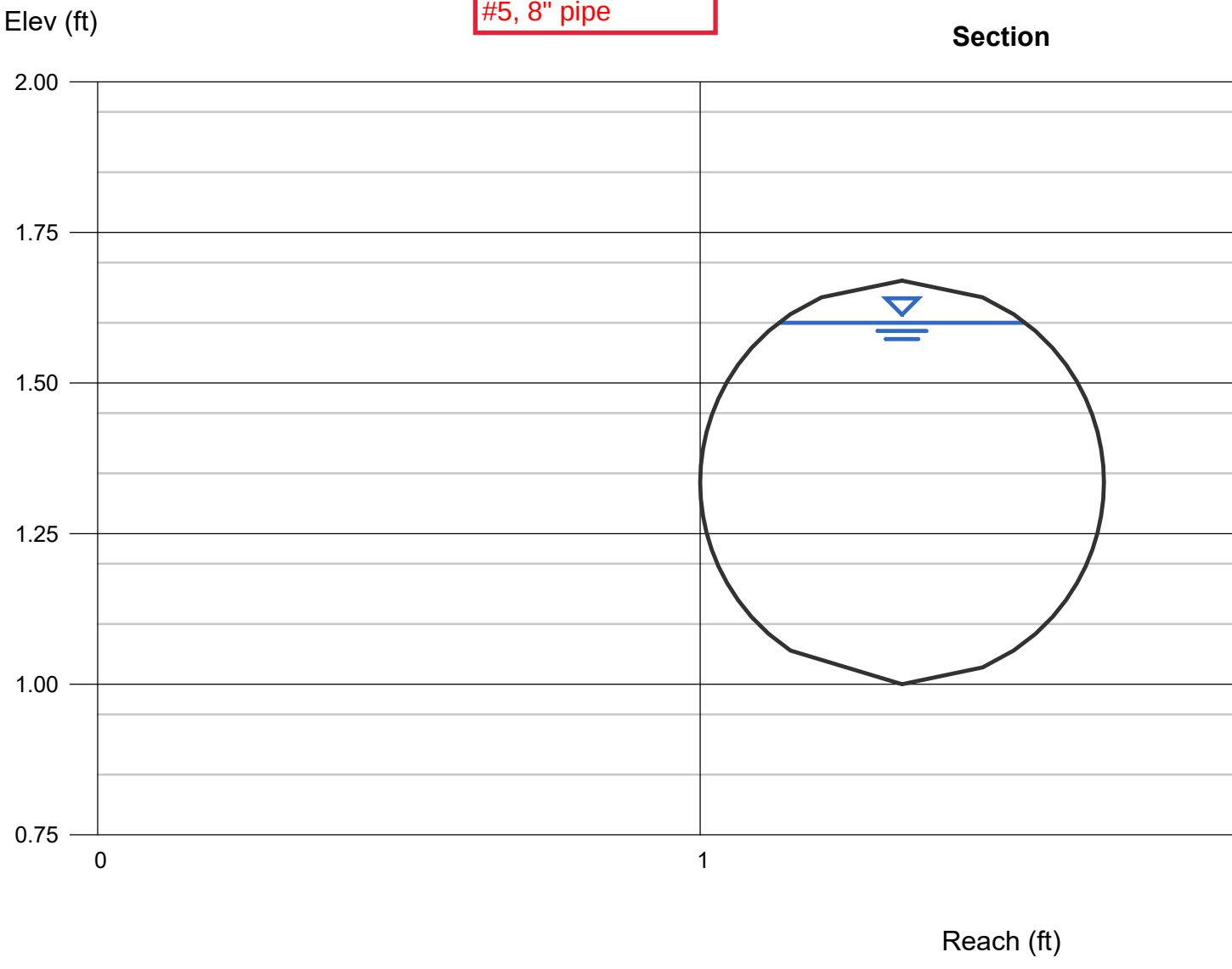
Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.16

Highlighted

Depth (ft)	= 0.60
Q (cfs)	= 1.160
Area (sqft)	= 0.33
Velocity (ft/s)	= 3.48
Wetted Perim (ft)	= 1.66
Crit Depth, Yc (ft)	= 0.51
Top Width (ft)	= 0.41
EGL (ft)	= 0.79

Maximum full-flow capacity of sewer #5, 8" pipe



Channel Report

Worst-case Sewer #5 (12in) Maximum Capacity

Circular

Diameter (ft)	= 1.00
Invert Elev (ft)	= 1.00
Slope (%)	= 0.80
N-Value	= 0.013

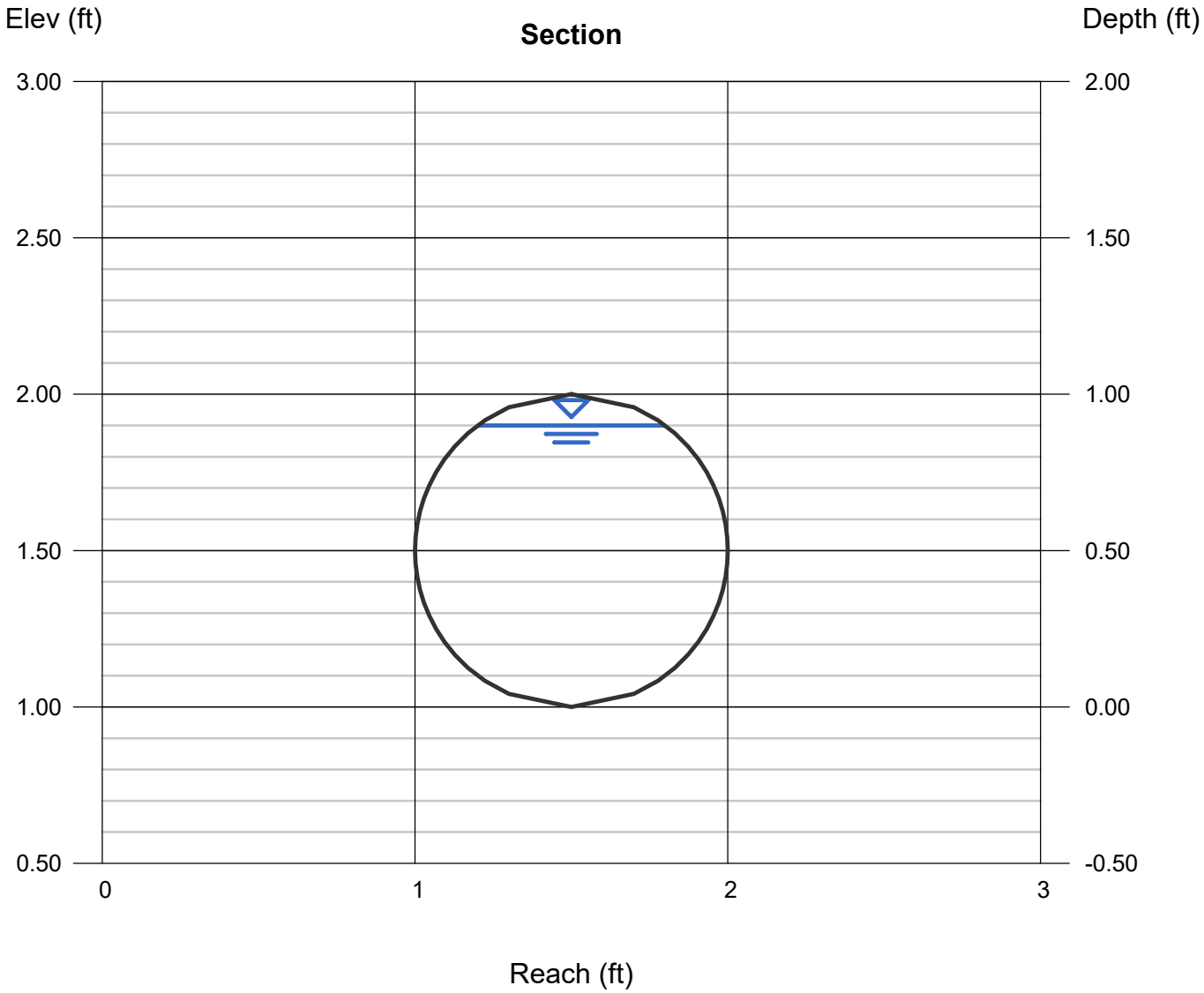
Calculations

Compute by:	Known Q
Known Q (cfs)	= 3.39

Highlighted

Depth (ft)	= 0.90
Q (cfs)	= 3.390
Area (sqft)	= 0.74
Velocity (ft/s)	= 4.55
Wetted Perim (ft)	= 2.50
Crit Depth, Yc (ft)	= 0.79
Top Width (ft)	= 0.60
EGL (ft)	= 1.22

Maximum full-flow capacity of sewer #5 (12" pipe)



2-1 (A)

SHAPE INC. SUBMITTAL

Submitted To: Pump Repair Service Co.

Date: 5/28/2003
Submittal No.: 1
Engineer: CSW St²
Salesman #: 122
SHAPE P.O.#: 3396FL

Project Name: Redwood Blvd. P.S.
Equip. Specification: 11210
Number and Name: 1.01
MARK: A

QTY	DESCRIPTION				
2	Pump: NP3102x-463	Manufacturer: ITT Flygt		Basin Depth: ~~20~~ 22ft	
	Installation: Submersible		**Design Conditions:**		
	Shut Off: 48ft.	#1) GPM: 110	#1) TDH: 41.6ft.	#2) GPM: 485	#2) TDH: 25ft.
	Suction: Flooded	Discharge: 4"			
	Options: #1) 40ft. Power Cable #2) TC/TC Mechan			nstalled in Stator Housing	
2	Motor: Submersible OK	Frame: 3102	H.P.: 5	Insulation: Class H	NEMA: B
	Volts: ~~460~~ 230	Phase: 3	Hertz: 60	R.P.M.: 1,735	S.F.: 1.15
	Description: F/M Explosion Proof				

Range of flow rates and TDH for each pump

QTY	ACCESSORIES
1	TOPS Fiberglass Sump Insert (w/ 4" Discharge Elbows)
1	ITT Flygt Mix Flush Valve (To be installed on pump volute at jobsite)
2	Mini-CAS and Sockets (To be provided to panel manufacturer – panel by others)
2	2" Upper Guide Bar Brackets, 316 Stainless Steel
2	~~20ft.~~ Lengths of Lifting Chain, 316 Stainless Steel ≈25ft. OK
4	Shackles, 316 Stainless Steel
1	ITT Flygt Grip Eye
4	Aluminum Access Covers, H-20 Loading, with; Hold Open Arm, Lift Assist Spring, Slamlock, Recessed Padlock Clip, Channel Frame, Rimseal Gasket, and Post and Chain Kit (Wetwell 36" X 48", Valve Vault 48" X 78", Odor Control 48" X 72", PIG Launching 48" X 72")
2	Lot: Spare Parts; Seals, Bearings, O-Rings, and Impellers
1	Lot: O&M Manuals, Startup Assistance and Training

Notes:
#1) Contractor to verify cable length and voltage
#2) Controls and guide bars by others

NOVATO SANITARY DISTRICT
Shop Drawing Review
ACTION
Review of this submittal does not relieve the Contractor of responsibility for deviations from the Plans and Specifications unless the Contractor has informed the Engineer in writing of such deviations at the time of submittal and the Engineer has given written approval to the specific deviation. The Contractor remains responsible for dimensions to be confirmed and correlated at the jobsite, for information that pertains solely to the fabrication processes or to techniques of construction and installation, and for coordination of the work of all trades. The review shall not relieve the Contractor of responsibility for errors or omissions in the submittal.
DATE
BY

FLYGT

PERFORMANCE CURVE

PRODUCT	TYPE
NP3102.090	MT

DATE	PROJECT	CURVE NO	ISSUE
2003-05-27		63-463-00-3730	1

	1/1-LOAD	3/4-LOAD	1/2-LOAD
POWER FACTOR	0.85	0.81	0.72
EFFICIENCY	82.5 %	82.5 %	80.0 %
MOTOR DATA	---	---	---

RATED POWER	5	hp
STARTING CURRENT ...	40	A
RATED CURRENT ...	6.6	A
RATED SPEED	1735	rpm
TOT.MOM.OF INERTIA ...	0.028	kgm2
NO. OF BLADES	2	

IMPELLER DIAMETER: 172 mm

MOTOR #	STATOR	REV
18-11-4AL	38D	10

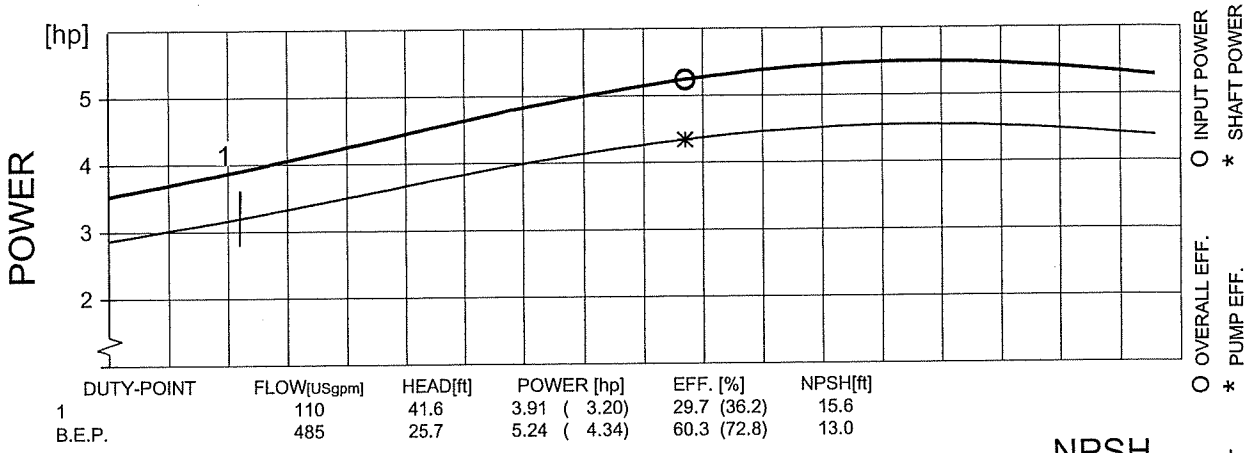
FREQ.	PHASES	VOLTAGE	POLES
60 Hz	3	460 V	4

GEARTYPE	RATIO
---	---

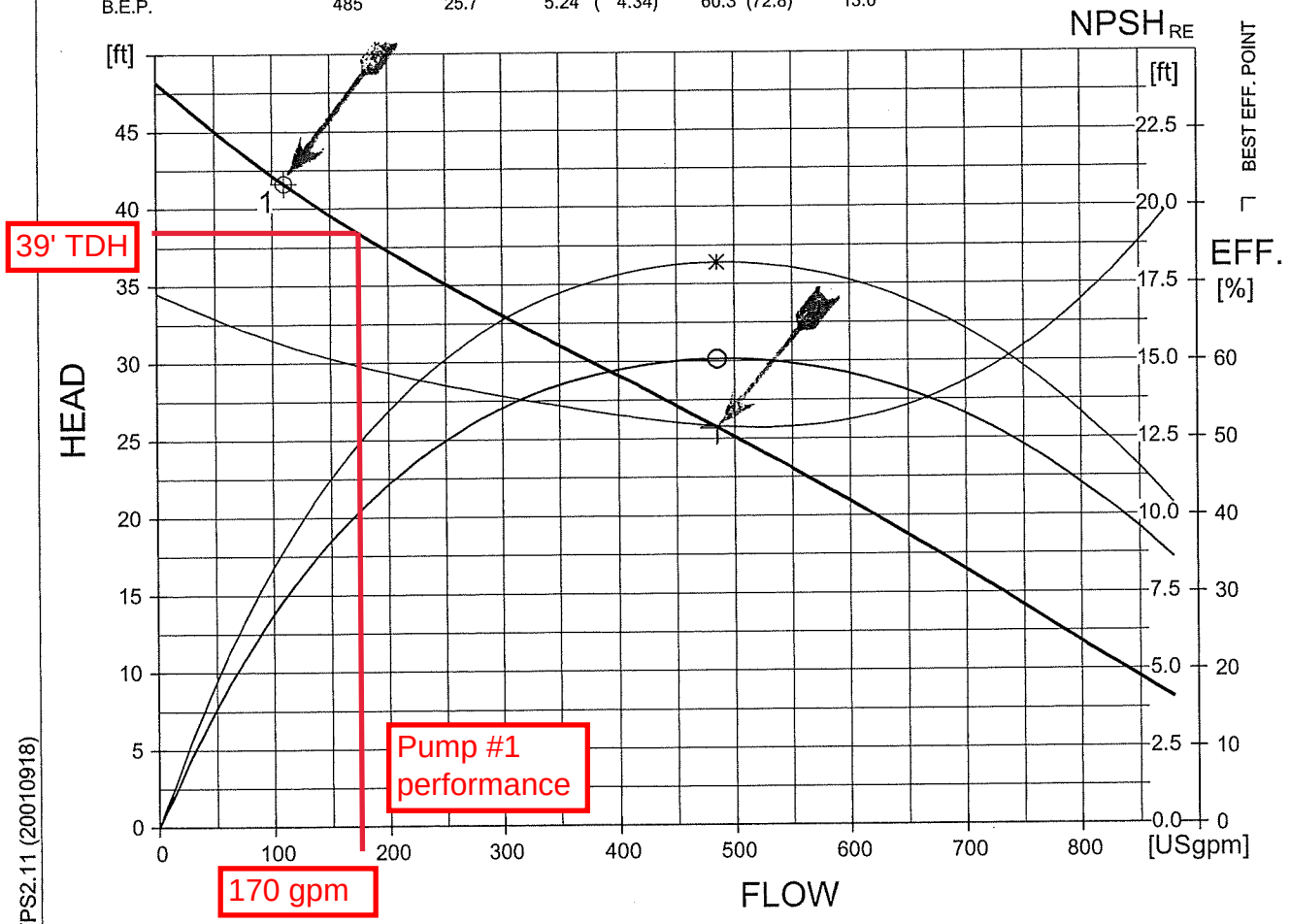
COMMENTS

INLET/OUTLET: - /100 mm

IMP. THROUGHLET: ---



DUTY-POINT	FLOW[USgpm]	HEAD[ft]	POWER [hp]	EFF. [%]	NPSH[ft]
1	110	41.6	3.91 (3.20)	29.7 (36.2)	15.6
B.E.P.	485	25.7	5.24 (4.34)	60.3 (72.8)	13.0



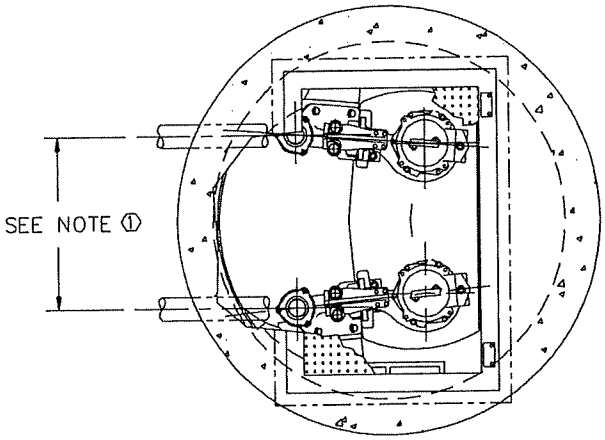
FLYPS2.11 (20010918)

Performance with clear water and ambient temp 40 °C

FLYGT CURVE

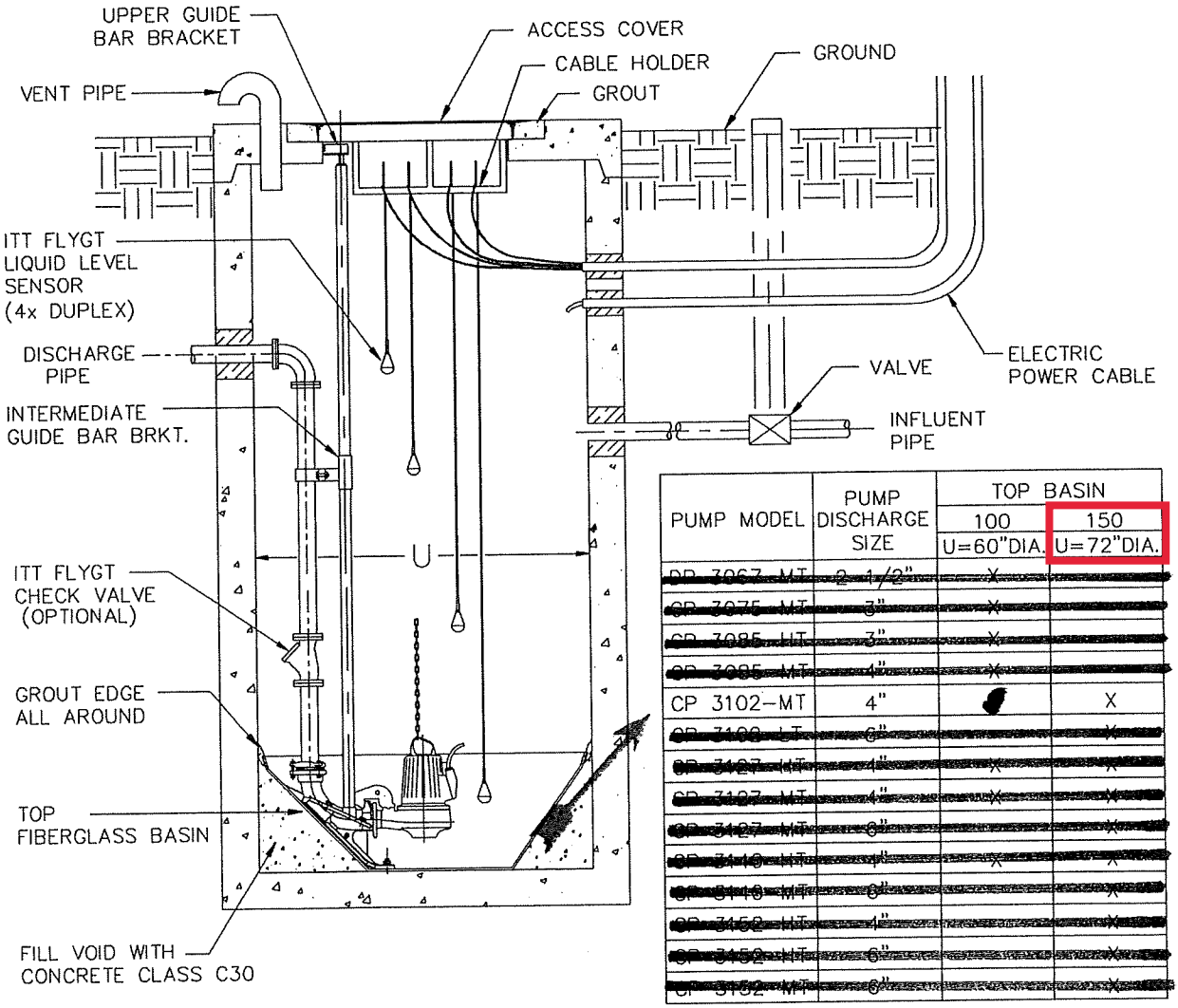
TOP Fiberglass Basin 100/150 (Duplex Station)

(Fiberglass Basin - 3067 thru 3152)



⬡ NOTE:

1. SEE OUTLINE DIMENSIONAL DRAWING OF TOP FIBERGLASS BASIN FOR DISTANCE BETWEEN DISCHARGE PIPES.



PUMP MODEL	PUMP DISCHARGE SIZE	TOP BASIN 100 U=60"DIA.	TOP BASIN 150 U=72"DIA.
~~CP 3067-MT~~	~~2 1/2"~~	~~X~~	
~~CP 3075-MT~~	~~3"~~	~~X~~	
~~CP 3085-MT~~	~~3"~~	~~X~~	
~~CP 3085-MT~~	~~4"~~	~~X~~	
CP 3102-MT	4"		X
~~CP 3100-MT~~	~~6"~~		~~X~~
~~CP 3127-MT~~	~~4"~~	~~X~~	~~X~~
~~CP 3127-MT~~	~~4"~~	~~X~~	~~X~~
~~CP 3127-MT~~	~~6"~~		~~X~~
~~CP 3140-MT~~	~~4"~~	~~X~~	~~X~~
~~CP 3152-MT~~	~~6"~~		~~X~~
~~CP 3152-MT~~	~~4"~~		~~X~~
~~CP 3152-MT~~	~~6"~~		~~X~~
~~CP 3152-MT~~	~~6"~~		~~X~~

Table 2.3 C-factors for various pipe materials

Type of Pipe	C-factor Values for Discrete Pipe Diameters					
	1.0 in. (2.5 cm)	3.0 in. (7.6 cm)	6.0 in. (15.2 cm)	12 in. (30 cm)	24 in. (61 cm)	48 in. (122 cm)
Uncoated cast iron - smooth and new		121	125	130	132	134
Coated cast iron - smooth and new		129	133	138	140	141
30 years old						
Trend 1 - slight attack		100	106	112	117	120
Trend 2 - moderate attack		83	90	97	102	107
Trend 3 - appreciable attack		59	70	78	83	89
Trend 4 - severe attack		41	50	58	66	73
60 years old						
Trend 1 - slight attack		90	97	102	107	112
Trend 2 - moderate attack		69	79	85	92	96
Trend 3 - appreciable attack		49	58	66	72	78
Trend 4 - severe attack		30	39	48	56	62
100 years old						
Trend 1 - slight attack		81	89	95	100	104
Trend 2 - moderate attack		61	70	78	83	89
Trend 3 - appreciable attack		40	49	57	64	71
Trend 4 - severe attack		21	30	39	46	54
Miscellaneous						
Newly scraped mains		109	116	121	125	127
Newly brushed mains		97	104	108	112	115
Coated spun iron - smooth and new		137	142	145	148	148
Old - take as coated cast iron of same age						
Galvanized iron - smooth and new	120	129	133			
Wrought iron - smooth and new	129	137	142			
Coated steel - smooth and new	129	137	142	145	148	148
Uncoated Steel - smooth and new	134	142	145	147	150	150
Coated asbestos cement - clean		147	149	150	152	
Uncoated asbestos cement - clean		142	145	147	150	
Spun cement-lined and spun bitumen-lined - clean		147	149	150	152	153
Smooth pipe (including lead, brass, copper, polyethylene, and PVC) - clean	140	147	149	150	152	153
PVC wavy - clean	134	142	145	147	150	150
Concrete - Scobey						
Class 1 - Cs = 0.27; clean		69	79	84	90	95
Class 2 - Cs = 0.31; clean		95	102	106	110	113
Class 3 - Cs = 0.345; clean		109	116	121	125	127
Class 4 - Cs = 0.37; clean		121	125	130	132	134
Best - Cs = 0.40; clean		129	133	138	140	141
Tate relined pipes - clean		109	116	121	125	127
Prestressed concrete pipes - clean				147	150	150

Lamont (1981)

Interpolated: C(4") = 147.6

NOVATO SANITARY DISTRICT

Sanitary District No. 6 of Marin County

STANDARD SPECIFICATIONS AND DRAWINGS

APRIL 1975*

*** Please also refer to Addendum #1 (issued March 2008) and Addendum #2 (issued November 2009) at www.novatosan.com / Documents / Permits and Requirements**

PART B - ENGINEERING AND DESIGN REQUIREMENTS

3-05 Flood Control Approval. In the event that a proposed sewer is to cross a storm water channel, conduit, structure or drainage course under the jurisdiction of the Marin County Flood Control and Water Conservation District, a detailed large scale profile of the crossing shall be incorporated on the plans and submitted to the Flood Control District for approval prior to approval of the plans by the District Engineer.

3-06 Soils Investigation. Due to the inherent hazards involved in excavation, trenching, and pipe laying in certain common soil formations within the District, the right is reserved to require a geological investigation and report prior to the approval of construction plans. In general, locations on steep side hills, locations in areas of established instability, locations in areas of bay mud or filled marshland, spring or seepage areas, or areas where concentrated or unusual development exists or is planned, shall be investigated and construction controlled by the recommendations contained in the Soils Engineer's report.

SECTION 4 DESIGN STANDARDS

4-01 Design Criteria. The following criteria for the design of gravity sewers within the jurisdiction of the Novato Sanitary District is hereby established.

A. Population Density - Population densities for determining the ultimate tributary population shall be as indicated in the District Master Plan, actual count, or based upon the character of proposed development, whichever is the greatest.

B. Average Single Family Unit - The average single family unit shall be taken as 3.5 persons per residence.

C. Per Capita Domestic Sewage Flow - The average per capita dry weather domestic sewage flow shall be taken as ninety (90) gallons per day.

D. Design Flows - Areas Containing Less Than 2,000 Persons - In the design of sewers for residential tributary areas containing 2,000 persons or less, the unit design flow used shall be 400 gallons per capita per day. This factor includes appropriate allowance for storm water infiltration.

E. Design Flows - Areas Containing More Than 2,000 Persons - For tributary areas containing more than 2,000 persons, the total design flow shall be determined by multiplying the average dry weather sewage flow times the ratio of peak flow to average flow and adding an appropriate allowance for storm water infiltration.

1. Ratio of Peak to Average Sewage Flow - The ratio of peak to average dry weather sewage flow is a function of the tributary population, and the tabulated values below shall be used.

PART B - ENGINEERING AND DESIGN REQUIREMENTS

Population Range	Ratio of Peak to Average Day Weather Sewage Flow
2,000 - 5,000	2.5
5,000 - 7,000	2.3
7,000 - 9,000	2.2
9,000 - 13,000	2.1
13,000 - 18,000	2.0
18,000 - 25,000	1.9
25,000 - 35,000	1.8
35,000 - 50,000	1.7
50,000 - 80,000	1.6
Above 80,000	1.5

2. Storm Water Infiltration - Investigation has shown that areas of the existing sewerage system constructed prior to 1962 contribute significantly higher amounts of storm water infiltration than can be expected from more recently constructed sewers. Accordingly, the following allowances shall be made for storm water infiltration flows:

For areas sewered prior to 1962 - 4,000 gallons per acre per day

For areas sewered after 1962 - 1,000 gallons per acre per day

For areas of anticipated population densities of less than five (5) persons per acre - 200 gallons per capita per day

F. Commercial or Industrial Flows - Unit design flows used for commercail or industrial areas shall be based on the type of existing or proposed development and shall be determined by special study subject to the review and approval of the District Engineer.

G. Manning Formula - The diameter of gravity sewers shall be determined by use of the Manning formula, using a roughness coefficient, "n", of 0.013 or the pipe manufacturer's recommendation, whichever is the greater.

H. Special Design Problems - Special design problems involving siphons, pumps, force mains, non-residential connections, or other unusual features, require individual study and approval.

I. References - Reference is made to the District Master Plan (see Section 1-02), to W.P.C.F. and A.S.C.E. manuals, and to Minimum Design Standards of the Federal Housing Administration (FHA-G-4518.1).

4-02 Sewer Pipes.

A. Pipe Materials - All main sewer and lateral sewer pipes shall be vitrified clay pipe, asbestos-cement pipe, PVC plastic pipe, reinforced plastic mortar pipe or cast iron pipe, unless otherwise specifically required or approved by the District Engineer. Selection of the pipe type for a given project shall be

Appendix I

Preliminary Drainage Report

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

PRELIMINARY DRAINAGE REPORT
for
PLANNING APPLICATION SUBMIT #2

HABITAT FOR HUMANITY

8161 REDWOOD BLVD.
NOVATO, CA
APN 125-180-49



DANIEL JOHN HUGHES
RCE 60225 Exp. 6/30/22

Prepared for:
Habitat for Humanity Greater SF,
Maureen Sedonaen (Executive Director)
500 Washington St, Suite 250
San Francisco, 94111
(415) 625-1034
erin@habitatgsf.org

Prepared under the supervision of:
Dan Hughes
RCE #60225
License Expires 6/30/22

Report Date: April 2nd, 2021

MILL VALLEY OFFICE
225 Flamingo Road
Mill Valley, CA 94941
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

MILL VALLEY OFFICE
225 Flamingo Road
Mill Valley, CA 94941
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

Table of Contents:

Project Narrative
Design Parameters
Hydrology
Preliminary Drainage and Capacity Analysis
Downstream Impacts
Stormwater Treatment
Conclusions

Exhibits:

Pre- vs. Post-Construction Hydrology Map
Hydraulic Capacity Map
Weighted Runoff Coefficient Calculations
Time of Concentration Calculations
Pre- and Post-Construction Runoff Volumes
Design Rainfall Intensities/Variations Map
1 in 100 Years Design Rainfall Intensity Duration Curves
Channel Reports

Project Narrative:

This drainage report details the methodology and calculations for a preliminary analysis for the drainage improvements proposed at 8161 Redwood Blvd. (APN 125-180-49). The 13.57-acre subject parcel is located two miles from the City of Novato and has an average slope across the site of approximately 9.81%. The Days Inn Hotel lies directly to the east of the subject parcel. Existing site conditions for the subject parcel consists of an undeveloped vegetated area sloping generally to the East. The site is bound by Cherry Hill to the West and Redwood Blvd/US Highway 101 to the East. This project proposes the development of a Habitat for Humanity housing community consisting of the construction of new 1-3 story residential buildings, a single office building, community green space areas, a new roadway that provides vehicular access to and around the site and associated landscaping, grading and drainage improvements.

Existing Drainage Conditions:

Storm water is currently conveyed through the subject parcel from an approximate 60-acre tributary area that lies along an eastern portion of the Mt. Burdell preserve (See attached Preliminary Drainage Plan, Pre-Construction Hydrology Map). This major tributary was divided into four pre-construction sub-tributaries, EC-1 through EC-4 according to the

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

varying points of concentration (POCs) that each tributary flows toward (See attached Pre-Construction Hydrology Map, POC-1 through POC-4). Note that POC-1 (southernmost existing roadside culvert) does not convey any project runoff (pre- or post-construction), but only collects runoff from the uphill roadway leading to the Buck Institute.

Sub-tributary EC-1:

Sub-tributary EC-1 consists of an approximate 30-acre drainage which encompasses a portion of the AC roadway that leads to the existing Buck Institute (APN 125-180-83). The portion of drainage area that flows onto the Buck Institute access road is conveyed through roadside drainage ditches where water is collected through drain inlets and piped across the roadway where water outlets along the hillside below. Drainage continues down slope until it meets an un-named, non-blueline natural drainage, a portion of which is proposed for replacement with a manmade diversion swale. At the lower end of this un-named stream, water fans out onto a flat, grassy area until it meets a manmade drainage ditch that conveys drainage to the south-east around the property of the Days Inn Hotel (APN 125-180-80), joining EC-4. Water is then conveyed below HWY 101 (POC #2 on attached Hydrology Maps) through an existing culvert, (EX) SD-2, and flow ultimately outlets to roadside drainage along HWY 101 tributary to Basalt Creek.

Sub-tributary EC-2:

Sub-tributary EC-2 consists of an approximate 20-acre drainage area that conveys stormwater as sheet flow over a grassy vegetated hillside toward the subject parcel's north-west side. Drainage from EC-2 continues toward the drainage ditch along the property edge of the Days Inn Hotel where water is conveyed toward the north-east. From here, drainage is conveyed through a separate existing culvert (at POC #3), (EX) SD-3, through HWY 101 eventually outletting to an existing roadside drainage along HWY 101 tributary to Basalt Creek.

Sub-tributary EC-3:

Sub-tributary EC-3 consists of an approximately 8-acre tributary area to the north of the subject parcel. Water from this tributary area flows through a separate culvert, (EX) SD-4, (POC #4 on hydrology maps) below HWY 101 and outletting to an existing roadside drainage along HWY 101 tributary to Basalt Creek.

Sub-tributary EC-4:

MILL VALLEY OFFICE
225 Flamingo Road
Mill Valley, CA 94941
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

Sub-tributary EC-4 consists of the approximately 2-acre area draining directly to the manmade drainage ditch to the southeast of the Days Inn Hotel (APN-180-80) as described in EC-1, but without flowing through the unnamed non-blueline drainage. This sub-tributary also outlets to (EX) SD-2, draining to an existing roadside drainage along HWY 101 tributary to Basalt Creek.

Design Parameters:

Hydrology

This drainage study was developed using the Drainage Design Criteria from the County of Marin Department of Public Works Hydrology Manual, "Revision 8/2/00". All flow calculations were performed using the Rational Method (Q=CIA). Detailed calculations are presented in the attached exhibits.

Review of the Hydrology Manual provides the following mathematical models and constant values used in the hydraulic analysis:

- Initial Time of Concentration $t_c = \frac{1.8(1.1-C)\sqrt{L}}{\sqrt[3]{S(100)}} + 5\ min$
- Zone from Map V — Zone B1, 0.68/0.71
- I_{60} from Map I — 1.3"/hr
- Runoff Coefficient — C = 0.7 for vegetated areas

  C = 0.9 for hard scape areas

The initial time of concentration was calculated following county standards with a minimum of 5 minutes. A C(p) value of 0.9 was used for impervious (hardscape) area and a C(v) value of 0.7 was used for pervious (vegetated) area, to calculate the weighted runoff coefficients. The rainfall intensities are calculated based on Chart K, Zone B (sub-zone 2) of the Caltrans District 4 Hydrology Procedures included in the County of Marin Drainage Criteria Standards.

The project site falls within the region of 1.3-inches for the P(100) Isopleths according to the Design Rainfall Intensities – Map "I" included in the exhibits. The site falls into area "B1" (0.68/0.71) for the design rain fall variations – Map "V" included in the exhibits.

Refer to the following pages for 25- and 100-year hydrology calculations.

MILL VALLEY OFFICE
225 Flamingo Road
Mill Valley, CA 94941
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

Preliminary Drainage and Capacity Analysis:

The proposed project will incorporate grading at the project site to allow stormwater to be conveyed along the street and toward four proposed bioretention areas, prior to being discharged to each respective POC/existing stormdrain culvert. Additionally, the project mimics pre-project flow patterns by conveying drainage, in similar flow directions and volumes, to the same outlet locations as the pre-project condition.

This preliminary drainage analysis proposes to

a) match pre-project drainage routes and flow patterns by maintaining similar tributary areas for each POC to the pre-project condition, and retaining any excess runoff

b) provide stormwater detention at bioretention ponds to mitigate post-construction peak runoff rates to match pre-construction hydrologic conditions for the 100-year design storm

c) provide stormwater treatment for proposed impervious surfaces by incorporating bioretention facilities prior to drainage to the public stormwater system.

Preliminary hydrologic and hydraulic computations were performed for proposed tributaries and drainage features determine the 25- and 100-year peak runoff rates for associated tributaries and determine necessary pipe sizing for proposed closed conduit conveyances. Hydrology calculations were performed per the methodology detailed in the previous section. Hydraulic capacity calculations were performed to establish approximate pipe sizing using AutoCad Civil 3D Hydraflow Express and StormSewers Extensions to check capacity and HGL.

For all analyses, a “worst-case scenario” was modelled using the drainage features conveying the maximum flow for each feature type, at either the shallowest proposed slope, or an assumed worst-case slope. Because the attached calculations show sufficient capacity in all proposed worst-case features, it follows that the remaining proposed features (which are to convey less flow, or at greater slope, or both) will have sufficient capacity as well. This analysis demonstrates that the proposed drainage system is sufficiently sized to meet City of Novato standards for the 25-year and 100-year design storm events.

MILL VALLEY OFFICE
225 Flamingo Road
Mill Valley, CA 94941
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

In addition, conservative worst-case starting HGL elevations were assumed for stormdrain capacity calculations. For each bioretention area, a starting 25-year HGL equivalent to the overflow elevation (overflow swale or inlet) was assumed for upstream stormdrain pipes. Likewise, a starting 100-year HGL equivalent to overflow elevation + 6" was assumed for each bioretention area.

Further downstream, the worst-case 25-year HGL is assumed to be equivalent to downstream SD inlet grate elevations (along Redwood Boulevard and Hwy 101), while the 100-year starting HGL is assumed to be equivalent to the FEMA 100-year base flood elevation in this area (10.0'), which is equivalent to Basalt Creek flowing full.

Post-construction, no runoff from the project site will cross property lines onto Days Inn Hotel (APN 125-180-80), but will instead outlet to the same existing stormdrain pipes in the public right of way (Existing SD-2, SD-3, and SD-4) that currently collect flow from each area. Capacity of these overflow conveyances and diversion swales have been calculated, and have been verified to have sufficient capacity, see attached calculations.

Downstream Impacts:

(EX) SD-1:
This stormdrain collects no project runoff either pre-construction or post-construction, no changes.

(EX) SD-2:
Per the attached Volume Retention Calculations, the post-construction Q100 flowing to this culvert exceeds pre-construction Q100 by 1.6 cfs, which is more than offset by proposed on-site volume retention. Pre-construction and post-construction 100-year HGL have been checked for (EX) SD-2, and confirm that the proposed construction will not negatively impact the 100-year HGL in this pipe.
Project runoff will be directed to Bioretention Area BR-1 for treatment. Overflow from BR-1, as well as diverted flows from Diversion Swale #1 and Diversion Swale #2, will ultimately be directed to proposed stormdrain pipes which will outlet to (EX) SD-2, matching the pre-construction condition without outletting onto the Days Inn property.

(EX) SD-3:
Per the attached Volume Retention Calculations, the post-construction Q100 flowing to this culvert is approximately 14.4 cfs lower than pre-construction runoff volumes. Pre-construction and post-construction 100-year HGL have been checked for (EX) SD-3, and confirm that the

MILL VALLEY OFFICE
225 Flamingo Road
Mill Valley, CA 94941
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

proposed construction will not negatively impact the 100-year HGL in this pipe.
Project runoff will be directed to Bioretention Areas BR-3 and BR-4 for treatment. Overflow from BR-3 and BR-4 will outlet directly to (EX) SD-3 via proposed stormdrain pipes, matching the pre-construction condition without outletting onto the Days Inn property.

(EX) SD-4:
Per the attached Volume Retention Calculations, the post-construction Q100 flowing to this culvert exceeds pre-construction Q100 by approximately 17.0 cfs. This is off-set by proposed on-site volume retention provided by Bioretention Area #2, and in addition, pre-construction and post-construction 100-year HGL have been checked for (EX) SD-4, and confirm that the proposed construction will not negatively impact the 100-year HGL in this pipe.
Project runoff will be directed to Bioretention Area BR-2 for treatment. Overflow from BR-2 will outlet directly to (EX) SD-4 via proposed stormdrain pipes (outletting above the approximate OHWM observed in the field), matching the pre-construction condition without directing overflows to the existing drainage channel upstream.

Because the 100-year HGL in existing stormdrains (Ex) SD-1, SD-2, SD-3, and SD-4 will not change, and each of these pipes outlets to the same roadside drainage along Hwy 101 and ultimately, Basalt Creek, the proposed volume retention will more than offset any increase in total flow entering the unnamed roadside drainage along Hwy 101.

Stormwater Treatment

In accordance with the County of Marin's Grading Ordinance, the project has been designed to limit post-development storm water pollutant levels in compliance with the Bay Area Stormwater Management Agencies Association (BASMAA) Post-Construction Manual, as detailed in the Stormwater Control Plan accompanying this report. Limiting post-development storm water levels includes minimizing pollutant discharges.

There are several pollutants of concern for this project. Erosion is expected from grading activities and will be addressed by placing straw wattles along hillsides and providing rock rip rap at storm drain and roof leader outlets. Metal and TPH (total petroleum hydrocarbons) pollutants are expected from automobile use from the parking areas and roadways and will be reduced by flow to vegetated / landscaped areas and infiltration through soil in each bioretention facility. These

MILL VALLEY OFFICE
225 Flamingo Road
Mill Valley, CA 94941
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

Planning
Civil Engineering
Project Management
Construction Management
Surveying
Entitlements
Concept Design
Feasibility Studies

controls will provide treatment before the stormwater re-enters the existing stormdrains further downhill.

Each bioretention facility (BR-1 through BR-4) was sized to treat drainage management areas in accordance with criteria outlined in Chapter 4 of the BASMAA Manual. The preliminary design incorporates bioretention facilities that are oversized due to the project being at a preliminary design phase. The footprint, size and orientation of these facilities may change as the project design moves forward.

Stormwater treatment calculations were performed in accordance with the requirements outlined in the Bay Area Stormwater Management Agencies Association (BASMAA) design manual. The attached Post-Construction Hydrology Map details the proposed drainage improvements, flow patterns, treatment facilities and outfall locations.

Conclusion

In conclusion, the proposed project will:

- Provide adequate flow capacity for all proposed on-site drainage conveyances for the 25- and 100-year design storm event in accordance with City of Novato standards.
- Provide more than sufficient stormwater volume retention to offset the increase in Post-construction runoff resulting from construction for the 100-year design storm event.
- Provide sufficient BMPs to meet BASMAA requirements for a regulated project (new/replaced impervious area > 5,000 sf threshold)(see Stormwater Control Plan).
- Not significantly alter the site hydrology because no additional runoff will cross property lines, and runoff leaving the site will mimic pre-project drainage patterns.

MILL VALLEY OFFICE
225 Flamingo Road
Mill Valley, CA 94941
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

HEALDSBURG OFFICE
513 Center St.
Healdsburg, CA 95448
Phone (707) 775-8986
dan@dvcgroup.net
www.dvcgroup.net

Weighted Runoff Coefficient Calculations **4/2/2021**

8161 Redwood Blvd.

Novato, CA 94945

PRE-CONSTRUCTION									
Tributary	Area (sf)	Area (ac)	Pervious Area (sf)	Pervious Area (ac)	Pervious C	Impervious Area (sf)	Impervious Area (ac)	Impervious C	Composite C
EC-1	1299943	29.84	1,299,943	29.84	0.70	0	0.00	0.90	0.70
EC-2	849699	19.51	849,699	19.51	0.70	0	0.00	0.90	0.70
EC-3	367829	8.44	367,829	8.44	0.70	0	0.00	0.90	0.70
EC-4	84352	1.94	84,352	1.94	0.70	0	0.00	0.90	0.70
TOTAL		**59.73**		**59.73**	**0.70**		**0.00**	**0.90**	**0.70**

POST-CONSTRUCTION									
Tributary	Area (sf)	Area (ac)	Pervious Area (sf)	Pervious Area (ac)	Pervious C	Impervious Area (sf)	Impervious Area (ac)	Impervious C	Composite C
PC-1	1207970	27.73	1,207,970	27.73	0.70	0	0.00	0.90	0.70
PC-2	233341	5.36	233,341	5.36	0.70	0	0.00	0.90	0.70
PC-3	42902	0.98	14,131	0.32	0.70	28771	0.66	0.90	0.83
PC-4	14486	0.33	2,703	0.06	0.70	11783	0.27	0.90	0.86
PC-5	59560	1.37	25,435	0.58	0.70	34125	0.78	0.90	0.81
PC-6	46452	1.07	7,924	0.18	0.70	38528	0.88	0.90	0.87
PC-7	298525	6.85	258,140	5.93	0.70	40385	0.93	0.90	0.73
PC-8	69411	1.59	37,331	0.86	0.70	32080	0.74	0.90	0.79
PC-9	405249	9.30	405,249	9.30	0.70	0	0.00	0.90	0.70
PC-10	17228	0.40	13,242	0.30	0.70	3986	0.09	0.90	0.75
PC-11	30540	0.70	16,118	0.37	0.70	14422	0.33	0.90	0.79
PC-12	15438	0.35	15,425	0.35	0.70	13	0.00	0.90	0.70
PC-13	89021	2.04	89,021	2.04	0.70	0	0.00	0.90	0.70
PC-14	65782	1.51	51,312	1.18	0.70	14470	0.33	0.90	0.74
TOTAL		**59.59**		**54.58**	**0.70**		**5.02**	**0.90**	**0.72**

Time of Concentration Calculations **4/2/2021**
8161 Redwood Blvd.
Novato, CA 94945

PRE-CONSTRUCTION CONVEYANCE TIME						
Tributary	**Inlet/DS**	**Horizontal Length (ft)**	**Elevation Difference (ft)**	**Slope (ft/ft)**	**C**	**Tc (min)**
EC-1	Existing Swale, EC-4	2,820	384	0.14	0.70	21.01
EC-2	(EX) SD-3	1,673	243	0.15	0.70	17.07
EC-3	(EX) SD-4	752	47	0.06	0.70	15.71
EC-4	(EX) SD-2	600	50	0.08	0.70	13.70

POST-CONSTRUCTION CONVEYANCE TIME						
Tributary	**Inlet/DS**	**Horizontal Length (ft)**	**Elevation Difference (ft)**	**Slope (ft/ft)**	**C**	**Tc (min)**
PC-1	(N) Worst-case Swale-1	2,683	285	0.11	0.70	21.97
PC-2	(N) Worst-case Swale-3	1,150	200	0.17	0.70	14.42
PC-3	SD (see StormSewers)	282	11	0.04	0.83	10.11
PC-4	SD (see StormSewers)	202	5	0.02	0.86	9.49
PC-5	SD (see StormSewers)	427	13	0.03	0.81	12.40
PC-6	SD (see StormSewers)	473	3	0.01	0.87	15.18
PC-7	SD (see StormSewers)	1,558	234	0.15	0.73	15.73
PC-8	SD (see StormSewers)	427	2	0.00	0.79	19.72
PC-9	(EX) SD-4	1,630	244	0.15	0.70	16.79
PC-10	SD (see StormSewers)	202	6	0.03	0.75	11.23
PC-11	SD (see StormSewers)	219	13	0.06	0.79	9.55
PC-12	(N) Worst-case Swale-2	166	11	0.06	0.70	10.01
PC-13	(N) Worst-case Swale-2	742	71	0.10	0.70	14.25
PC-14	(EX) SD-3	414	4	0.01	0.74	18.55

Pre- and Post-Construction Runoff Volumes
8161 Redwood Blvd.
Novato, CA 94945
4/2/2021

Impervious Area C-Value:	0.9
Vegetated Area C-Value:	0.7

Pre-Construction Runoff Volumes

Tributary	Area (ac)	C	Tc (min)	I (60) (in/hr)	Rd (10-yr)	Rd (25-yr)	I 25-year (in/hr)	I 100-year (in/hr)	Q 25-year (ft3/s)	Q 100-year (ft3/s)
EC-1	29.84	0.70	21.0	1.30	0.67	0.80	1.76	2.20	36.77	45.96
EC-2	19.51	0.70	17.1	1.30	0.67	0.80	1.92	2.40	26.22	32.77
EC-3	8.44	0.70	15.7	1.30	0.66	0.79	1.98	2.50	11.67	14.78
EC-4	1.94	0.70	13.7	1.30	0.66	0.79	2.13	2.70	2.89	3.66
								Total Runoff	**77.55**	**97.17**

Post-Construction Runoff Volumes

Tributary	Area (ac)	C	Tc (min)	I (60) (in/hr)	Rd (10-yr)	Rd (25-yr)	I 25-year (in/hr)	I 100-year (in/hr)	Q 25-year (ft3/s)	Q 100-year (ft3/s)
PC-1	27.73	0.70	22.0	1.30	0.67	0.80	1.76	2.20	34.16	42.71
PC-2	5.36	0.70	14.4	1.30	0.67	0.80	2.00	2.50	7.50	9.37
PC-3	0.98	0.83	10.1	1.30	0.66	0.79	2.45	3.10	2.01	2.55
PC-4	0.33	0.86	9.5	1.30	0.66	0.79	2.21	2.80	0.63	0.80
PC-5	1.37	0.81	12.4	1.30	0.66	0.79	2.13	2.70	2.38	3.01
PC-6	1.07	0.87	15.2	1.30	0.67	0.80	2.00	2.50	1.85	2.31
PC-7	6.85	0.73	15.7	1.30	0.67	0.80	2.00	2.50	9.97	12.46
PC-8	1.59	0.79	19.7	1.30	0.67	0.80	1.76	2.20	2.22	2.78
PC-9	9.30	0.70	16.8	1.30	0.67	0.80	1.92	2.40	12.50	15.63
PC-10	0.40	0.75	11.2	1.30	0.66	0.79	2.37	3.00	0.70	0.89
PC-11	0.70	0.79	9.5	1.30	0.66	0.79	2.45	3.10	1.36	1.73
PC-12	0.35	0.70	10.0	1.30	0.66	0.79	2.45	3.10	0.61	0.77
PC-13	2.04	0.70	14.3	1.30	0.67	0.80	2.08	2.60	2.98	3.72
PC-14	1.51	0.74	18.6	1.30	0.67	0.80	1.88	2.35	2.11	2.64
								Total Runoff	**80.98**	**101.35**

CAPACITY CALCULATIONS

Date: 4/2/2021

Job Name: 8161 Redwood Blvd.

Job # 77-18

Mannings "n" Value Table	
Description	n value
Concrete, steel troweled/smooth-finish	0.013
Concrete pipe, precast or cast-in-place	0.014
Corrugated metal pipe (non-spiral)	0.024
Loose rock riprap	0.035
Grassed Channels	0.035
Plastic Pipe	0.012

Worst-Case Drainage Feature Capacity Calculations

Note: runoff volumes based on worst-case time of concentration per Marin County standards, worst-case travel time assumed to be 0 minutes.

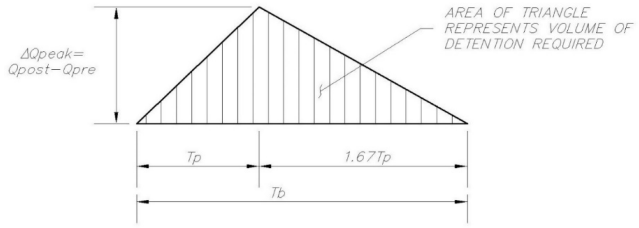
Drainage Feature	Worst Case Scenario	Feature ID#	Tribs Contributing to Flow	n-value	Slope	Depth (ft)	Material	Q25 (cfs)
(N) SWALE	25yr Flow	SWALE-1 Diversion Swale #1	PC-1	0.035	Varies	3.0	Rock/ Vegetated	**34.16**
(N) SWALE	25yr Flow	SWALE-2 Diversion Swale #2	PC-1, PC-2, PC-3, PC-4, PC-5*50%, PC-11, PC-12, PC-13	0.035	Varies	3.0	Vegetated	**50.45**
(N) SWALE	25yr Flow	SWALE-3 Worst-case roadside swale	PC-2*50%	0.035	1.0%	1.0	Rock Riprap	**3.75**
(N) SWALE	25yr Flow	SWALE-4 BR-1 Overflow	PC-4, PC-5*50%, PC-11	0.035	2.0%	1.0	Rock Riprap	**3.19**
(N) SD PIPE	25yr Flow	**Varies, see Storm Sewers HGL Analysis**						
(N) SD PIPE	25yr Flow	Worst-case 4" Sidewalk Drain	PC-14*20%	0.012	2.0%	0.33	PVC	**0.42**

Volume Retention Calculations
8161 Redwood Blvd.
Novato, CA 94945
4/2/2021

Pre- vs. Post-Construction Runoff Volumes						
Point of Concentration	**Outlet**	**Q100 Pre (cfs)**	**Q100 Post (cfs)**	**ΔQ = Qpost - Qpre (cfs)**	**Existing Tributary Area**	**Proposed Tributary Area**
POC-2	(EX) SD-2	49.62	51.23	1.61	EC-1+EC-4	PC-1+PC-4+PC-5*50%+PC-11+PC-12+PC-13
POC-3	(EX) SD-3	32.77	18.37	-14.40	EC-2	PC-2+PC-3+PC-5*50%+PC-6+PC-14
POC-4	(EX) SD-4	14.78	31.75	16.97	EC-3	PC-7+PC-8+PC-9+PC-10
	Total Runoff	**97.17**	**101.35**	**4.19**		

Triangular Hydrograph Method*:

*The triangular hydrograph is an approximation of the NRCS dimensionless unit hydrograph. According to Debo and Rees (1995) this method produces results that are sufficiently accurate for most stormwater management facility designs. In this model, the base of the hydrograph is 2.67 times the time of concentration (Tp).



Tc=Tp=	22.0	minutes
Tp=	1317.9	seconds
Tb=2.67*Tp=	3518.9	seconds
V=0.5*ΔQ*Tb=	**7364.4**	**cubic ft. required volume retention**

Bioretention Area Volume Retention										
Facility Name	Area (sf)	Soil Depth (ft)	Planter Soil Porosity	Soil Volume Retention (cf)	Rock Depth (ft)	Drain Rock Porosity	Rock Volume Retention (cf)	Min. Ponding Depth (ft)	Ponding Volume (cf)	Total Volume Retention (cf)
BR-1	1938	1.5	0.25	726.8	1.0	0.40	775.2	0.5	969.0	2471.0
BR-2	4119	1.5	0.25	1544.6	1.0	0.40	1647.6	0.5	2059.5	5251.7
BR-3	4139	1.5	0.25	1552.1	1.0	0.40	1655.6	0.5	2069.5	5277.2
BR-4	816	1.5	0.25	306.0	1.0	0.40	326.4	0.5	408.0	1040.4

Total Combined Bioretention Volume Retention:	**14040.3**	cf
Required Volume Retention per Pre- vs. Post- Calcs:	**7364.4**	cf

LEGEND

- FLOOD HAZARD LINE WITH BASE FLOOD INFORMATION (BFE = 10.0', NAVD88-FT) (ZONE AE)
- TRIBUTARY AREA
- PROPOSED IMPERVIOUS AREA
- DIRECTION OF WATER FLOW
- (N) BIORETENTION AREA
- (EX) STORMDRAIN PIPE (SURVEYED)
- (EX) STORMDRAIN PIPE PER CALTRANS AS-BUILTS (NOT SURVEYED)
- (N) STORMDRAIN PIPE
- (EX) MANMADE DRAINAGE
- (N) PROPOSED SWALE
- BOUNDARY RECORD

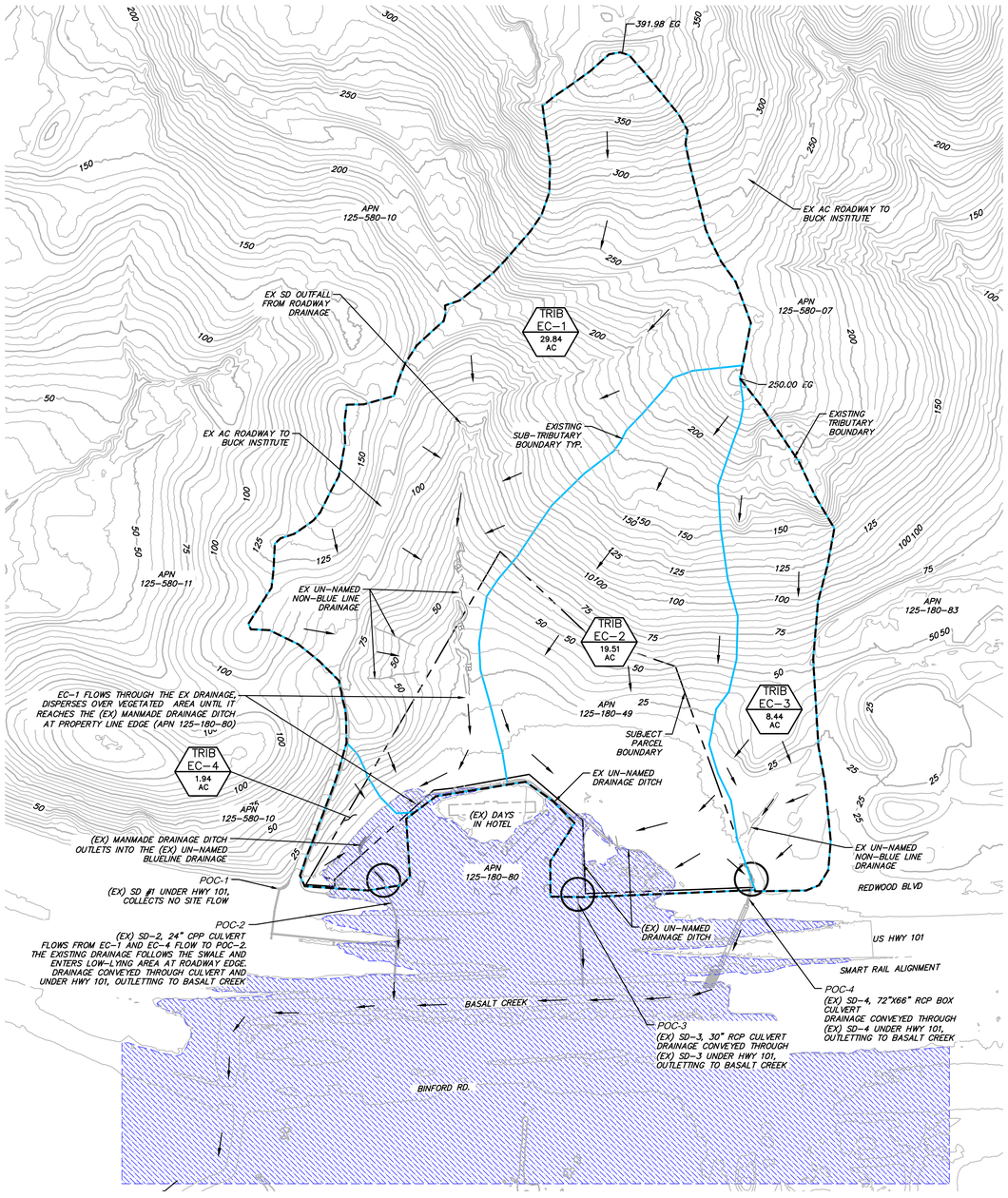
ELEVATION (NAVD88-FT)

ELEVATION CONTOURS SHOWN ON EXISTING HYDROLOGY MAP ARE DERIVED FROM FIELD SURVEY AND AVAILABLE 2013 USGS LIDAR.

TRIB # ## AC — TRIBUTARY ID, AREA AC

NOTES

1) FEMA INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV
2) BOUNDARY LINES SHOWN HEREON ARE DELINEATED FROM FIELD TIES AND RECORD DATA ONLY, AND DOES NOT CONSTITUTE A BOUNDARY SURVEY. THIS MAP IS NOT INTENDED TO PROVIDE A BOUNDARY RESOLUTION FOR THE SUBJECT PROPERTY.
3) ELEVATIONS SHOWN HEREON ARE BASED THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). BENCHMARK CONTROL POINT #104 SET 60D NAIL CONTROL POINT. ELEVATION = 21.38' NAVD 88

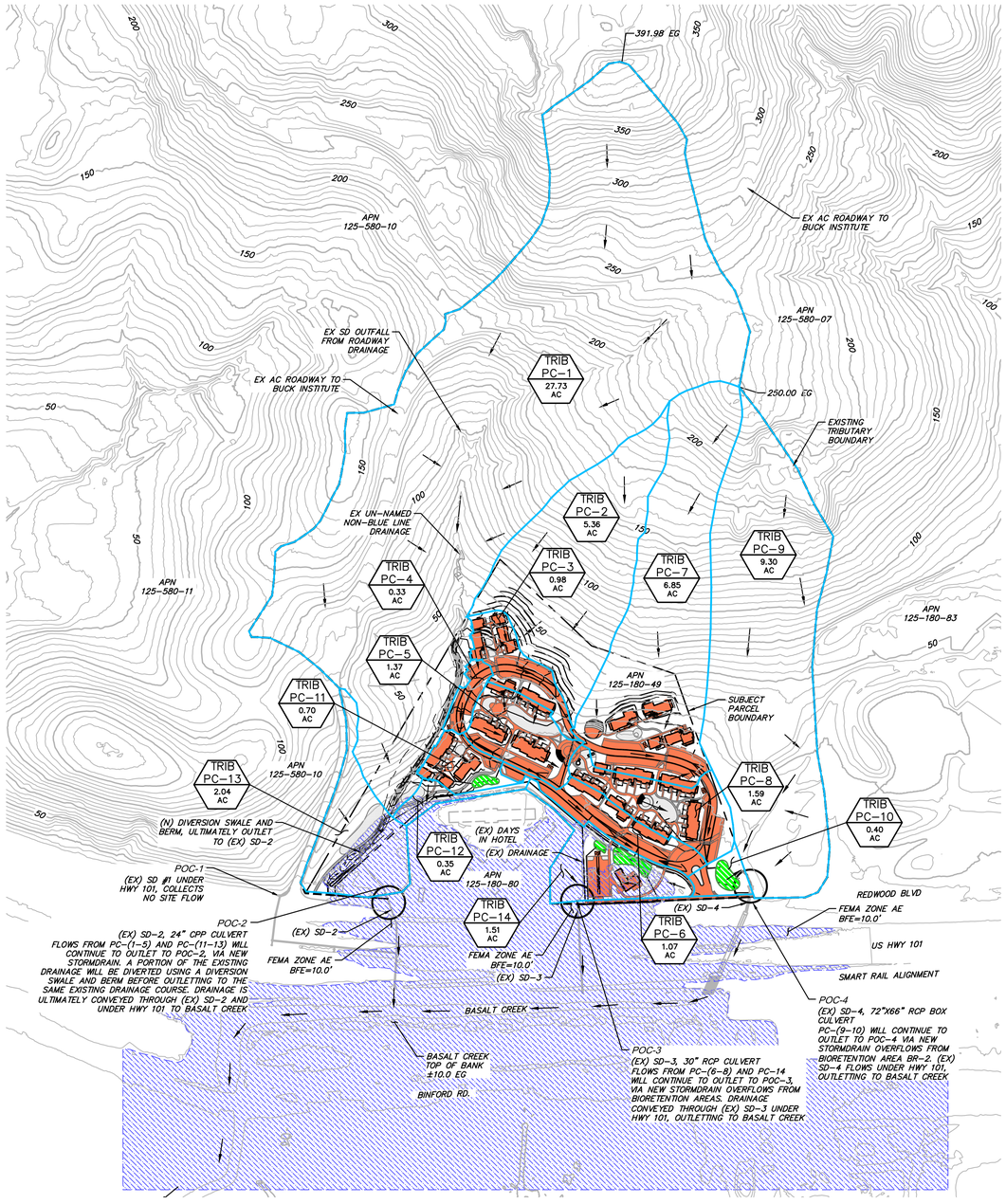


PRE-CONSTRUCTION HYDROLOGY MAP

SCALE: 1" = 200'

0 200 400 600

(GRAPHIC SCALE IN FEET)



POST-CONSTRUCTION HYDROLOGY MAP

SCALE: 1" = 200'

0 200 400 600

(GRAPHIC SCALE IN FEET)

REVISION	DESCRIPTION	BY	DATE

DVC GROUP INC.
PLANNING • ENGINEERING • C.M.
516 CENTER STREET
HEALDSBURG, CA 95448
(707) 385-0968

PROFESSIONAL ENGINEER • REGISTERED • STATE OF CALIFORNIA
DANIEL JOHN HUGHES
No. 60225
Exp. 6-30-22
CIVIL

DANIEL JOHN HUGHES DATE
RCE 60225

PLANNING APPLICATION RESUBMT #2

HABITAT FOR HUMANITY

PRE VS. POST-CONSTRUCTION HYDROLOGY MAP

125-180-49
8161 REDWOOD BLVD.
NOVATO, CA

APRIL 2, 2021

JOB NO. 77-18

SHEET NO. H1

OF 2 SHEETS

P:\DVC JOBS\2018\77-18 8161 REDWOOD BLVD (DVC)\DWGS\77-18 HYDROLOGY 4/2/2021 11:43 AM

LEGEND

- FLOOD HAZARD LINE WITH BASE FLOOD INFORMATION (BFE = 10.0', NAVD88-FT) (ZONE AE)
- TRIBUTARY AREA
- PROPOSED IMPERVIOUS AREA
- DIRECTION OF WATER FLOW
- (N) BIORETENTION AREA
- (EX) STORMDRAIN PIPE (SURVEYED)
- (EX) STORMDRAIN PIPE PER CALTRANS AS-BUILTS (NOT SURVEYED)
- (N) STORMDRAIN PIPE
- (EX) MANMADE DRAINAGE
- (N) PROPOSED SWALE
- BOUNDARY RECORD

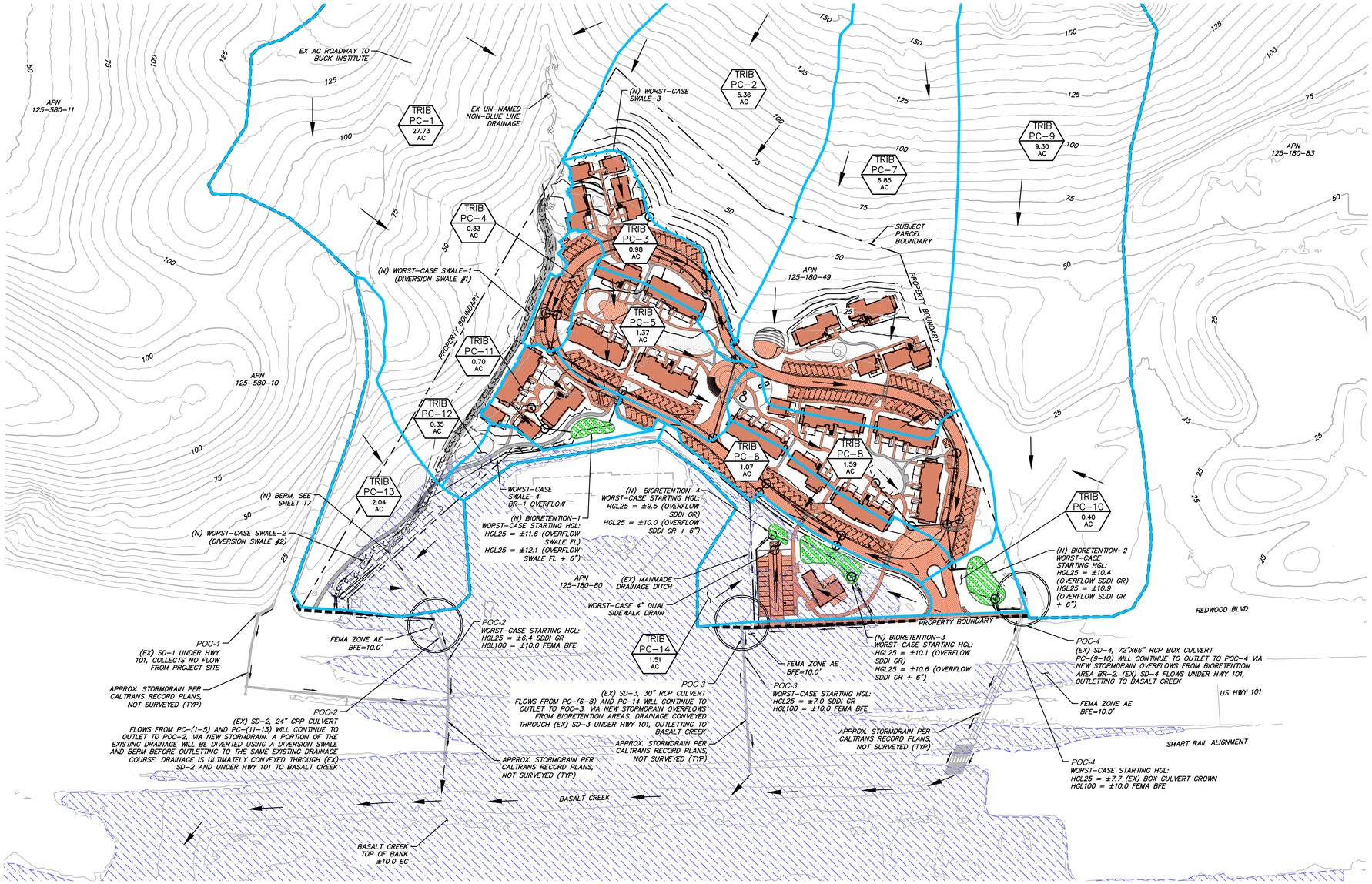
ELEVATION (NAVD88-FT)

ELEVATIONS SHOWN IN EXISTING HYDROLOGY MAP ARE DERIVED FROM AVAILABLE 2013 USGS LIDAR

TRIB # ## AC — TRIBUTARY ID / AREA AC

NOTES

1) FEMA INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV
2) BOUNDARY LINES SHOWN HEREON ARE DELINEATED FROM FIELD TIES AND RECORD DATA ONLY, AND DOES NOT CONSTITUTE A BOUNDARY SURVEY. THIS MAP IS NOT INTENDED TO PROVIDE A BOUNDARY RESOLUTION FOR THE SUBJECT PROPERTY.
3) ELEVATIONS SHOWN HEREON ARE BASED THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). BENCHMARK CONTROL POINT #104 SET 60D NAIL CONTROL POINT. ELEVATION = 21.38' NAVD 88



HYDRAULIC CAPACITY MAP

SCALE: 1" = 200'

0 200 400 600

(GRAPHIC SCALE IN FEET)

W S E N

REVISION	DESCRIPTION	BY	DATE

DVC GROUP INC.
PLANNING • ENGINEERING • C.M.
516 CENTER STREET
HEALDSBURG, CA 95448
(707) 385-0988

PROFESSIONAL ENGINEER • REGISTERED • STATE OF CALIFORNIA
DANIEL JOHN HUGHES
No. 60225
Exp. 6-30-22
CIVIL

DANIEL JOHN HUGHES DATE
RCE 60225

PLANNING APPLICATION RESUBMIT #2
HABITAT FOR HUMANITY
HYDRAULIC CAPACITY MAP
125-180-49
8161 REDWOOD BLVD.
NOVATO, CA

APRIL 2, 2021

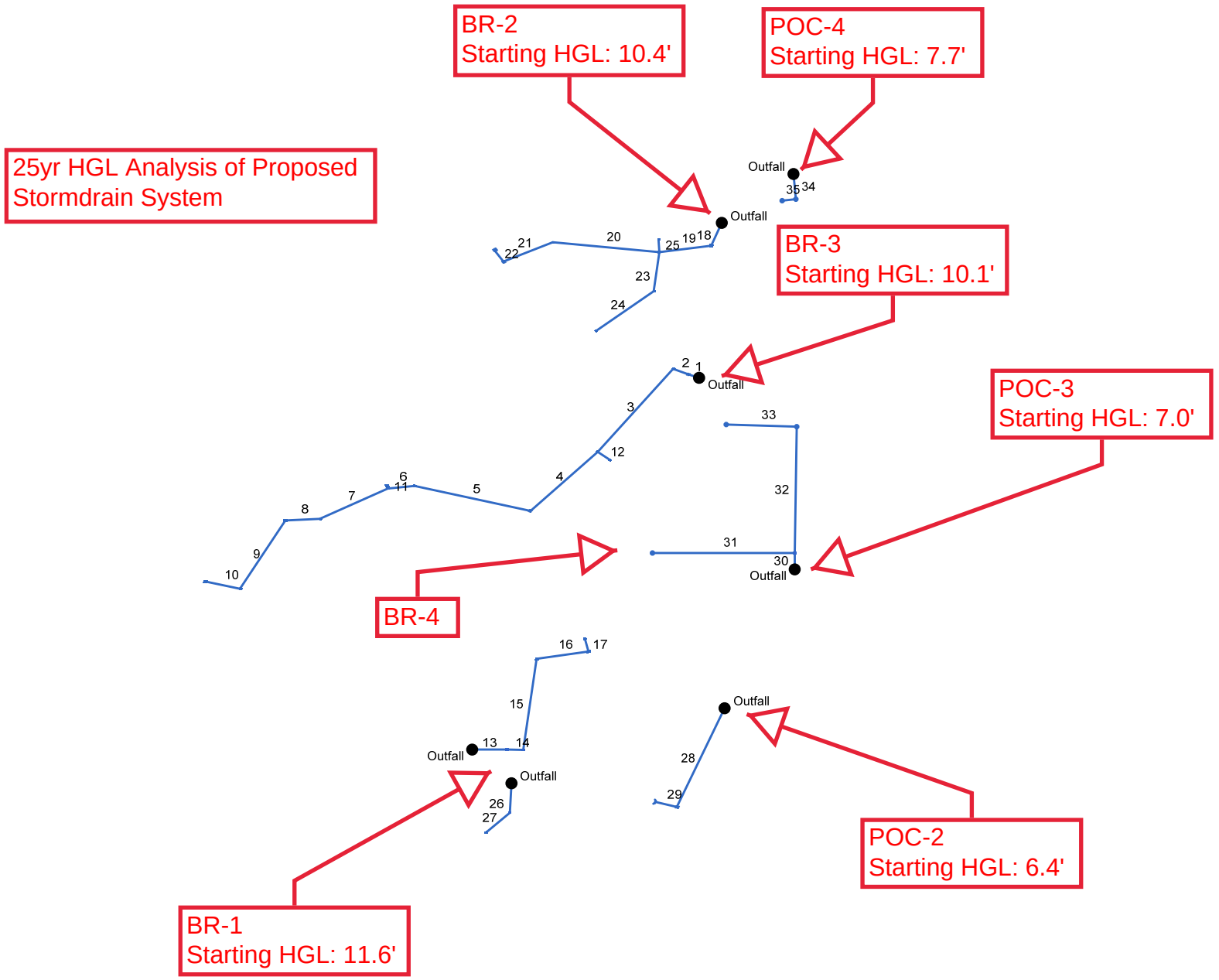
JOB NO. 77-18

SHEET NO. H2

OF 2 SHEETS

P:\DVC JOBS\2018\77-18 8161 REDWOOD BLVD (DVC)\LDWGS\77-18 HYDRO.DWG 4/2/2021 11:44 AM

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Habitat StormSewers.stm	Number of lines: 35	Date: 3/26/2021

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (21) (1) (1) (2) (1)	12.49	24	Cir	14.149	9.60	9.67	0.495	10.86	10.94	n/a	10.94	End	Curb-Horiz
2	Pipe - (21) (1) (1) (2)	12.04	24	Cir	21.007	9.17	9.28	0.524	10.94	10.53	0.79	10.53	1	Grate
3	Pipe - (21) (1) (1)	11.59	18	Cir	165.000	9.28	10.11	0.503	10.78*	12.49*	0.80	13.30	2	Grate
4	Pipe - (17) (1) (1) (1) (1)	10.69	18	Cir	127.451	10.61	11.24	0.494	13.30*	14.42*	0.28	14.71	3	Grate
5	Pipe - (17) (1) (1) (1) (1) (1) (1) (1)	9.50	18	Cir	148.465	10.73	12.07	0.903	14.71*	15.74*	0.31	16.05	4	Grate
6	Pipe - (17) (1) (1) (1) (1) (1) (1)	9.10	18	Cir	33.193	12.32	14.30	5.965	16.05*	16.26*	0.61	16.88	5	Grate
7	Pipe - (17) (1) (1) (1) (1) (1) (1) (2) (4)	4.95	18	Cir	97.827	14.30	17.20	2.964	16.88	18.06	n/a	18.06 j	6	Grate
8	Pipe - (17) (1) (1) (1) (1) (1) (1) (2)	4.55	15	Cir	42.696	17.20	18.45	2.928	18.06	19.31	n/a	19.31	7	Curb-Horiz
9	Pipe - (17) (3) (1) (2)	4.15	15	Cir	125.000	18.45	22.30	3.080	19.31	23.12	n/a	23.12 j	8	Grate
10	Pipe - (17) (3) (1)	3.75	15	Cir	45.025	22.30	22.53	0.511	23.12	23.33	0.32	23.65	9	DropGrate
11	Pipe - (17) (1) (1) (1) (1) (1)	3.75	18	Cir	4.853	14.30	14.40	2.061	16.88*	16.88*	0.07	16.95	6	DropGrate
12	Pipe - (21) (1) (1) (3)	0.45	15	Cir	20.023	10.61	10.71	0.499	13.30*	13.30*	0.00	13.30	3	Grate
13	Pipe - (19) (2)	2.27	15	Cir	43.000	11.10	13.10	4.651	11.60	13.70	n/a	13.70	End	Grate
14	Pipe - (19) (1)	1.82	15	Cir	19.979	13.10	13.20	0.501	13.70	13.74	n/a	13.74 j	13	Grate
15	Pipe - (19)	0.63	15	Cir	150.273	13.20	17.40	2.795	13.74	17.71	n/a	17.71 j	14	Curb-Horiz
16	Pipe - (17) (4) (4) (2)	0.42	15	Cir	65.075	17.40	19.50	3.227	17.71	19.75	n/a	19.75 j	15	Curb-Horiz
17	Pipe - (17) (4) (4) (2) (2)	0.21	15	Cir	21.523	19.50	19.61	0.511	19.75	19.79	n/a	19.79 j	16	Grate
18	Pipe - (30)	12.18	24	Cir	39.613	9.90	10.10	0.505	11.13	11.35	n/a	11.35	End	Curb-Horiz
19	Pipe - (29)	11.81	24	Cir	64.738	9.60	9.92	0.494	11.35	11.15	n/a	11.15	18	Grate
20	Pipe - (28)	10.33	18	Cir	132.624	10.42	11.30	0.664	11.92*	13.01*	0.49	13.51	19	Grate
21	Pipe - (28) (3)	9.96	18	Cir	68.792	11.30	11.67	0.538	13.51*	14.04*	0.74	14.78	20	Grate
22	Pipe - (27)	4.98	15	Cir	21.742	11.67	11.78	0.506	14.78*	14.89*	0.26	15.14	21	Curb-Horiz
23	Pipe - (28) (1)	0.74	15	Cir	64.329	10.42	10.75	0.513	11.15	11.09	n/a	11.09	19	DropGrate
24	Pipe - (28) (1) (1)	0.37	12	Cir	96.513	10.75	11.23	0.497	11.09	11.48	n/a	11.48 j	23	DropGrate

Project File: Habitat StormSewers.stm | Number of lines: 35 | Run Date: 3/26/2021

NOTES: Known Qs only ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	Pipe - (28) (2)	0.37	15	Cir	20.611	10.42	10.53	0.534	11.15	10.77	n/a	10.77	19	Grate
26	Pipe - (17) (4) (2) (1)	0.90	15	Cir	48.360	11.10	11.47	0.765	11.60	11.84	n/a	11.84 j	End	DropGrate
27	Pipe - (17) (4) (2) (1) (8)	0.45	15	Cir	43.710	11.47	11.99	1.190	11.84	12.25	n/a	12.25 j	26	DropGrate
28		51.23	30	Cir	172.100	3.97	4.85	0.511	6.40*	8.96*	0.17	9.12	End	DropGrate
29	Inserted Line	51.23	30	Cir	28.100	4.85	5.00	0.534	9.12*	9.56*	0.00	9.56	28	OpenHeadwall
30		14.66	24	Cir	26.800	3.10	3.37	1.007	7.00*	7.11*	0.51	7.62	End	Curb-Horiz
31	Inserted Line	2.11	12	Cir	175.300	3.50	5.26	1.004	7.62*	8.15*	0.06	8.20	30	DropGrate
32		12.55	24	Cir	207.000	3.37	5.45	1.005	7.62*	8.26*	0.37	8.63	30	Curb-Horiz
33		12.55	18	Cir	86.800	6.13	8.00	2.154	8.63*	9.69*	0.39	10.08	32	DropGrate
34		12.89	18	Cir	41.420	5.95	6.40	1.086	7.70*	8.32*	0.41	8.74	End	DropGrate
35		12.89	18	Cir	16.900	6.15	6.32	1.006	8.74*	8.96*	0.41	9.37	34	DropGrate

Project File: Habitat StormSewers.stm | Number of lines: 35 | Run Date: 3/26/2021

NOTES: Known Qs only ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	14.149	0.00	0.00	0.00	0.00	0.00	0.0	3.1	0.0	12.49	17.23	5.96	24	0.49	9.60	9.67	10.86	10.94	0.00	13.60	Pipe - (21) (1) (1)
2	1	21.007	0.00	0.00	0.00	0.00	0.00	0.0	3.0	0.0	12.04	17.73	4.97	24	0.52	9.17	9.28	10.94	10.53	13.60	13.64	Pipe - (21) (1) (1)
3	2	165.000	0.00	0.00	0.00	0.00	0.00	0.0	2.6	0.0	11.59	8.07	6.56	18	0.50	9.28	10.11	10.78	12.49	13.64	14.44	Pipe - (21) (1) (1)
4	3	127.451	0.00	0.00	0.00	0.00	0.00	0.0	2.2	0.0	10.69	8.00	6.05	18	0.49	10.61	11.24	13.30	14.42	14.44	15.39	Pipe - (17) (1) (1)
5	4	148.465	0.00	0.00	0.00	0.00	0.00	0.0	1.7	0.0	9.50	10.81	5.38	18	0.90	10.73	12.07	14.71	15.74	15.39	18.40	Pipe - (17) (1) (1)
6	5	33.193	0.00	0.00	0.00	0.00	0.00	0.0	1.6	0.0	9.10	27.78	5.15	18	5.97	12.32	14.30	16.05	16.26	18.40	19.00	Pipe - (17) (1) (1)
7	6	97.827	0.00	0.00	0.00	0.00	0.00	0.0	1.1	0.0	4.95	19.59	3.78	18	2.96	14.30	17.20	16.88	18.06	19.00	21.71	Pipe - (17) (1) (1)
8	7	42.696	0.00	0.00	0.00	0.00	0.00	0.0	0.9	0.0	4.55	11.97	5.06	15	2.93	17.20	18.45	18.06	19.31	21.71	22.30	Pipe - (17) (1) (1)
9	8	125.000	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	4.15	12.28	4.71	15	3.08	18.45	22.30	19.31	23.12	22.30	26.51	Pipe - (17) (3) (1)
10	9	45.025	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.75	5.00	4.45	15	0.51	22.30	22.53	23.12	23.33	26.51	26.68	Pipe - (17) (3) (1)
11	6	4.853	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.75	16.33	2.12	18	2.06	14.30	14.40	16.88	16.88	19.00	18.30	Pipe - (17) (1) (1)
12	3	20.023	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.45	4.94	0.37	15	0.50	10.61	10.71	13.30	13.30	14.44	14.45	Pipe - (21) (1) (1)
13	End	43.000	0.00	0.00	0.00	0.00	0.00	0.0	10.4	0.0	2.27	15.09	4.42	15	4.65	11.10	13.10	11.60	13.70	0.00	14.46	Pipe - (19) (2)
14	13	19.979	0.00	0.00	0.00	0.00	0.00	0.0	10.1	0.0	1.82	4.95	3.37	15	0.50	13.10	13.20	13.70	13.74	14.46	17.14	Pipe - (19) (1)
15	14	150.273	0.00	0.00	0.00	0.00	0.00	0.0	5.3	0.0	0.63	11.70	1.96	15	2.79	13.20	17.40	13.74	17.71	17.14	21.38	Pipe - (19)
16	15	65.075	0.00	0.00	0.00	0.00	0.00	0.0	2.1	0.0	0.42	12.57	2.08	15	3.23	17.40	19.50	17.71	19.75	21.38	23.61	Pipe - (17) (4) (4)
17	16	21.523	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.21	5.00	1.59	15	0.51	19.50	19.61	19.75	19.79	23.61	23.58	Pipe - (17) (4) (4)
18	End	39.613	0.00	0.00	0.00	0.00	0.00	0.0	5.5	0.0	12.18	17.41	5.94	24	0.50	9.90	10.10	11.13	11.35	0.00	13.87	Pipe - (30)
19	18	64.738	0.00	0.00	0.00	0.00	0.00	0.0	5.2	0.0	11.81	17.23	4.93	24	0.49	9.60	9.92	11.35	11.15	13.87	14.62	Pipe - (29)
20	19	132.624	0.00	0.00	0.00	0.00	0.00	0.0	0.3	0.0	10.33	9.27	5.85	18	0.66	10.42	11.30	11.92	13.01	14.62	15.44	Pipe - (28)
21	20	68.792	0.00	0.00	0.00	0.00	0.00	0.0	0.1	0.0	9.96	8.34	5.64	18	0.54	11.30	11.67	13.51	14.04	15.44	15.81	Pipe - (28) (3)
22	21	21.742	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.98	4.98	4.06	15	0.51	11.67	11.78	14.78	14.89	15.81	15.79	Pipe - (27)

Project File: Habitat StormSewers.stm

Number of lines: 35

Run Date: 3/26/2021

NOTES:Known Qs only ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	19	64.329	0.00	0.00	0.00	0.00	0.00	0.0	3.4	0.0	0.74	5.01	1.89	15	0.51	10.42	10.75	11.15	11.09	14.62	15.47	Pipe - (28) (1)
24	23	96.513	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.37	2.72	2.00	12	0.50	10.75	11.23	11.09	11.48	15.47	15.64	Pipe - (28) (1) (1)
25	19	20.611	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.37	5.11	1.40	15	0.53	10.42	10.53	11.15	10.77	14.62	14.67	Pipe - (28) (2)
26	End	48.360	0.00	0.00	0.00	0.00	0.00	0.0	2.0	0.0	0.90	6.12	2.45	15	0.77	11.10	11.47	11.60	11.84	0.00	17.40	Pipe - (17) (4) (2)
27	26	43.710	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.45	7.63	1.95	15	1.19	11.47	11.99	11.84	12.25	17.40	19.00	Pipe - (17) (4) (2)
28	End	172.100	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	51.23	29.33	10.48	30	0.51	3.97	4.85	6.40	8.96	0.00	10.30	
29	28	28.100	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	51.23	29.96	10.44	30	0.53	4.85	5.00	9.12	9.56	10.30	5.00	Inserted Line
30	End	26.800	0.00	0.00	0.00	0.00	0.00	0.0	1.1	0.0	14.66	22.70	4.67	24	1.01	3.10	3.37	7.00	7.11	0.00	7.70	
31	30	175.300	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.11	3.87	2.69	12	1.00	3.50	5.26	7.62	8.15	7.70	9.50	Inserted Line
32	30	207.000	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	12.55	22.67	4.00	24	1.00	3.37	5.45	7.62	8.26	7.70	9.50	
33	32	86.800	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	12.55	16.70	7.10	18	2.15	6.13	8.00	8.63	9.69	9.50	10.10	
34	End	41.420	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	12.89	10.95	7.29	18	1.09	5.95	6.40	7.70	8.32	0.00	12.80	
35	34	16.900	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	12.89	11.41	7.29	18	1.01	6.15	6.32	8.74	8.96	12.80	10.40	

Project File: Habitat StormSewers.stm

Number of lines: 35

Run Date: 3/26/2021

NOTES:Known Qs only ; c = cir e = ellip b = box

HGLReport

Line No.	Line ID	Line Size (in)	Line Slope (%)	Invert Dn (ft)	Cover Dn (ft)	HGL Dn (ft)	Gnd/Rim El Dn (ft)	Invert Up (ft)	Cover Up (ft)	HGL Up (ft)	Gnd/Rim El Up (ft)	Q Capt (cfs)	Q Carry (cfs)	Vel Dn (ft/s)	
1	Pipe - (21) (1) (1) (2) (1)	24	0.49	9.60	n/a	10.86	0.00	9.67	1.93	10.94	13.60	0.45	0.00	5.98	
2	Pipe - (21) (1) (1) (2)	24	0.52	9.17	2.43	10.94	13.60	9.28	2.36	10.53	13.64	0.45	0.00	4.10	
3	Pipe - (21) (1) (1)	18	0.50	9.28	2.86	10.78	13.64	10.11	2.83	12.49	14.44	0.45	0.00	6.56	
4	Pipe - (17) (1) (1) (1) (1)	18	0.49	10.61	2.33	13.30	14.44	11.24	2.65	14.42	15.39	1.19	0.00	6.05	
5	Pipe - (17) (1) (1) (1) (1) (1) (1) (1)	18	0.90	10.73	3.16	14.71	15.39	12.07	4.83	15.74	18.40	0.40	0.00	5.38	
6	Pipe - (17) (1) (1) (1) (1) (1) (1)	18	5.97	12.32	4.58	16.05	18.40	14.30	3.20	16.26	19.00	0.40	0.00	5.15	
7	Pipe - (17) (1) (1) (1) (1) (1) (1) (2) (1)	18	2.96	14.30	3.20	16.88	19.00	17.20	3.01	18.06 j	21.71	0.40	0.00	2.80	
8	Pipe - (17) (1) (1) (1) (1) (1) (1) (2)	15	2.93	17.20	3.26	18.06	21.71	18.45	2.60	19.31	22.30	0.40	0.00	5.09	
9	Pipe - (17) (3) (1) (2)	15	3.08	18.45	2.60	19.31	22.30	22.30	2.96	23.12 j	26.51	0.40	0.00	4.59	
10	Pipe - (17) (3) (1)	15	0.51	22.30	2.96	23.12	26.51	22.53	2.90	23.33	26.68	3.75	0.00	4.37	
11	Pipe - (17) (1) (1) (1) (1) (1)	18	2.06	14.30	3.20	16.88	19.00	14.40	2.40	16.88	18.30	3.75	0.00	2.12	
12	Pipe - (21) (1) (1) (3)	15	0.50	10.61	2.58	13.30	14.44	10.71	2.49	13.30	14.45	0.45	0.00	0.37	
13	Pipe - (19) (2)	15	4.65	11.10	n/a	11.60	0.00	13.10	0.11	13.70	14.46	0.45	0.00	4.95	
14	Pipe - (19) (1)	15	0.50	13.10	0.11	13.70	14.46	13.20	2.69	13.74 j	17.14	1.19	0.00	3.12	
15	Pipe - (19)	15	2.79	13.20	2.69	13.74	17.14	17.40	2.73	17.71 j	21.38	0.21	0.00	1.25	
16	Pipe - (17) (4) (4) (2)	15	3.23	17.40	2.73	17.71	21.38	19.50	2.86	19.75 j	23.61	0.21	0.00	1.77	
17	Pipe - (17) (4) (4) (2) (2)	15	0.51	19.50	2.86	19.75	23.61	19.61	2.72	19.79 j	23.58	0.21	0.00	1.19	
18	Pipe - (30)	24	0.50	9.90	n/a	11.13	0.00	10.10	1.77	11.35	13.87	0.37	0.00	6.00	
19	Pipe - (29)	24	0.49	9.60	2.27	11.35	13.87	9.92	2.70	11.15	14.62	0.37	0.00	4.05	
20	Pipe - (28)	18	0.66	10.42	2.70	11.92	14.62	11.30	2.64	13.01	15.44	0.37	0.00	5.85	
21	Pipe - (28) (3)	18	0.54	11.30	2.64	13.51	15.44	11.67	2.64	14.04	15.81	4.98	0.00	5.64	
22	Pipe - (27)	15	0.51	11.67	2.89	14.78	15.81	11.78	2.76	14.89	15.79	4.98	0.00	4.06	
23	Pipe - (28) (1)	15	0.51	10.42	2.95	11.15	14.62	10.75	3.47	11.09	15.47	0.37	0.00	0.99	

Project File: Habitat StormSewers.stm | Number of lines: 35 | Date: 3/26/2021

NOTES: ** Critical depth

HGLReport

Line No.	Line ID	Line Size (in)	Line Slope (%)	Invert Dn (ft)	Cover Dn (ft)	HGL Dn (ft)	Gnd/Rim El Dn (ft)	Invert Up (ft)	Cover Up (ft)	HGL Up (ft)	Gnd/Rim El Up (ft)	Q Capt (cfs)	Q Carry (cfs)	Vel Dn (ft/s)	
24	Pipe - (28) (1) (1)	12	0.50	10.75	3.72	11.09	15.47	11.23	3.41	11.48 j	15.64	0.37	0.00	1.60	
25	Pipe - (28) (2)	15	0.53	10.42	2.95	11.15	14.62	10.53	2.89	10.77	14.67	0.37	0.00	0.49	
26	Pipe - (17) (4) (2) (1)	15	0.77	11.10	n/a	11.60	0.00	11.47	4.68	11.84 j	17.40	0.45	0.00	1.96	
27	Pipe - (17) (4) (2) (1) (8)	15	1.19	11.47	4.68	11.84	17.40	11.99	5.76	12.25 j	19.00	0.45	0.00	1.47	
28		30	0.51	3.97	n/a	6.40	0.00	4.85	2.95	8.96	10.30	0.00	0.00	10.52	
29	Inserted Line	30	0.53	4.85	2.95	9.12	10.30	5.00	-2.50	9.56	5.00	51.23	0.00	10.44	
30		24	1.01	3.10	n/a	7.00	0.00	3.37	2.33	7.11	7.70	0.00	0.00	4.67	
31	Inserted Line	12	1.00	3.50	3.20	7.62	7.70	5.26	3.24	8.15	9.50	2.11	0.00	2.69	
32		24	1.00	3.37	2.33	7.62	7.70	5.45	2.05	8.26	9.50	0.00	0.00	4.00	
33		18	2.15	6.13	1.87	8.63	9.50	8.00	0.60	9.69	10.10	12.55	0.00	7.10	
34		18	1.09	5.95	n/a	7.70	0.00	6.40	4.90	8.32	12.80	0.00	0.00	7.30	
35		18	1.01	6.15	5.15	8.74	12.80	6.32	2.58	8.96	10.40	12.89	0.00	7.30	

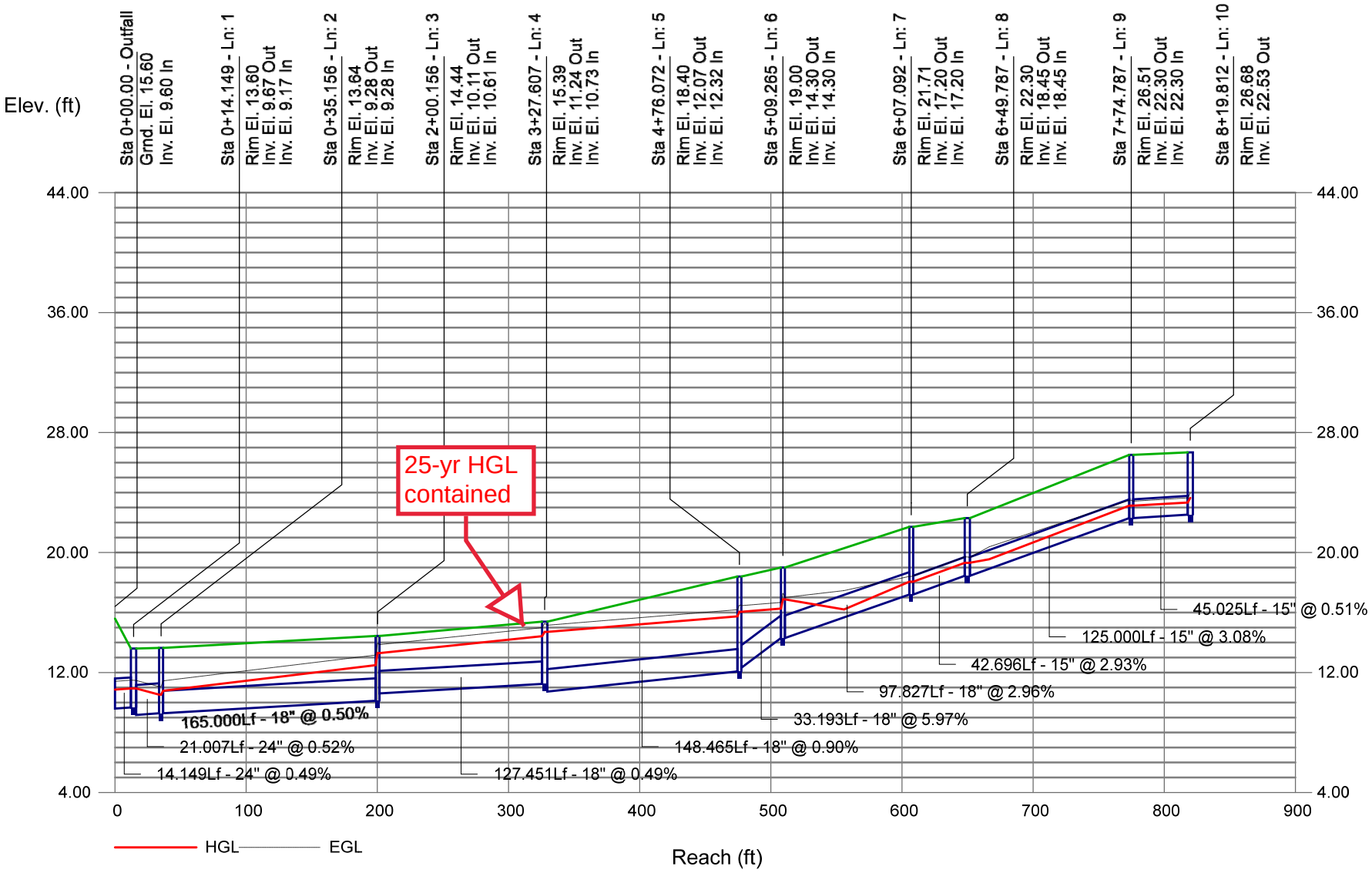
Project File: Habitat StormSewers.stm | Number of lines: 35 | Date: 3/26/2021

NOTES: ** Critical depth

Storm Sewer Profile

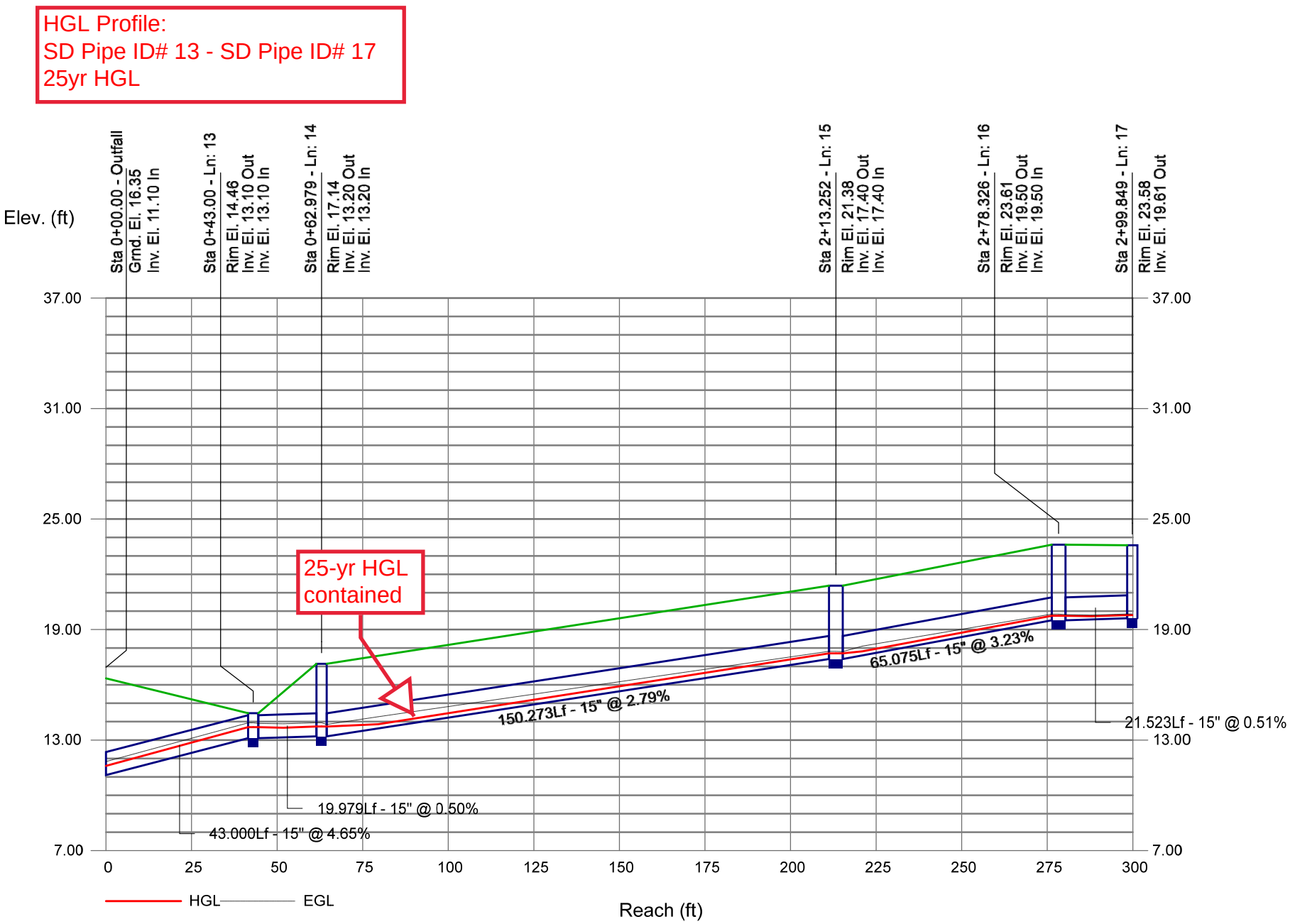
Proj. file: Habitat StormSewers.stm

HGL Profile:
SD Pipe ID# 1- SD Pipe ID# 10
25yr HGL
Downstream HGL = 10.1'



Storm Sewer Profile

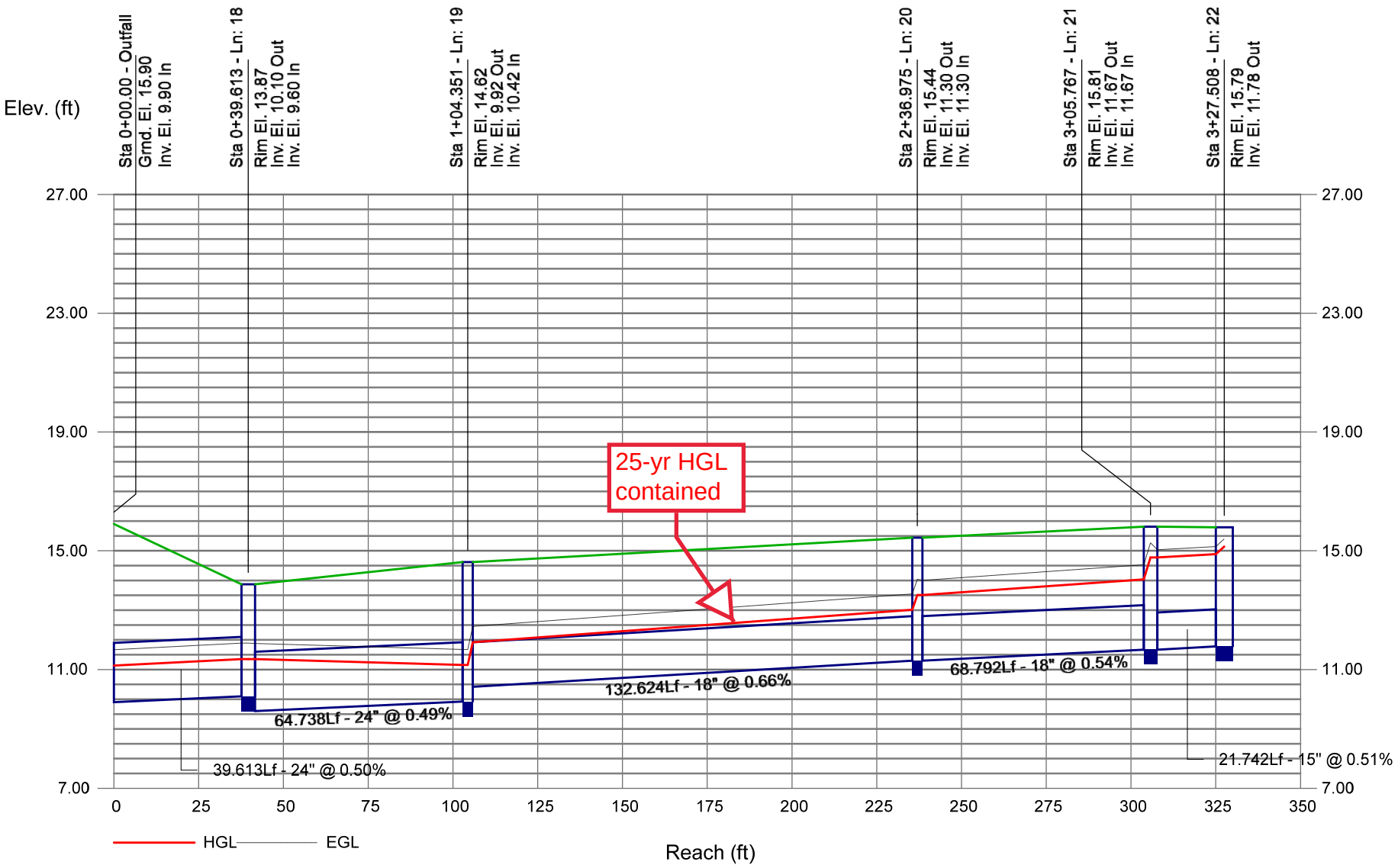
Proj. file: Habitat StormSewers.stm



Storm Sewer Profile

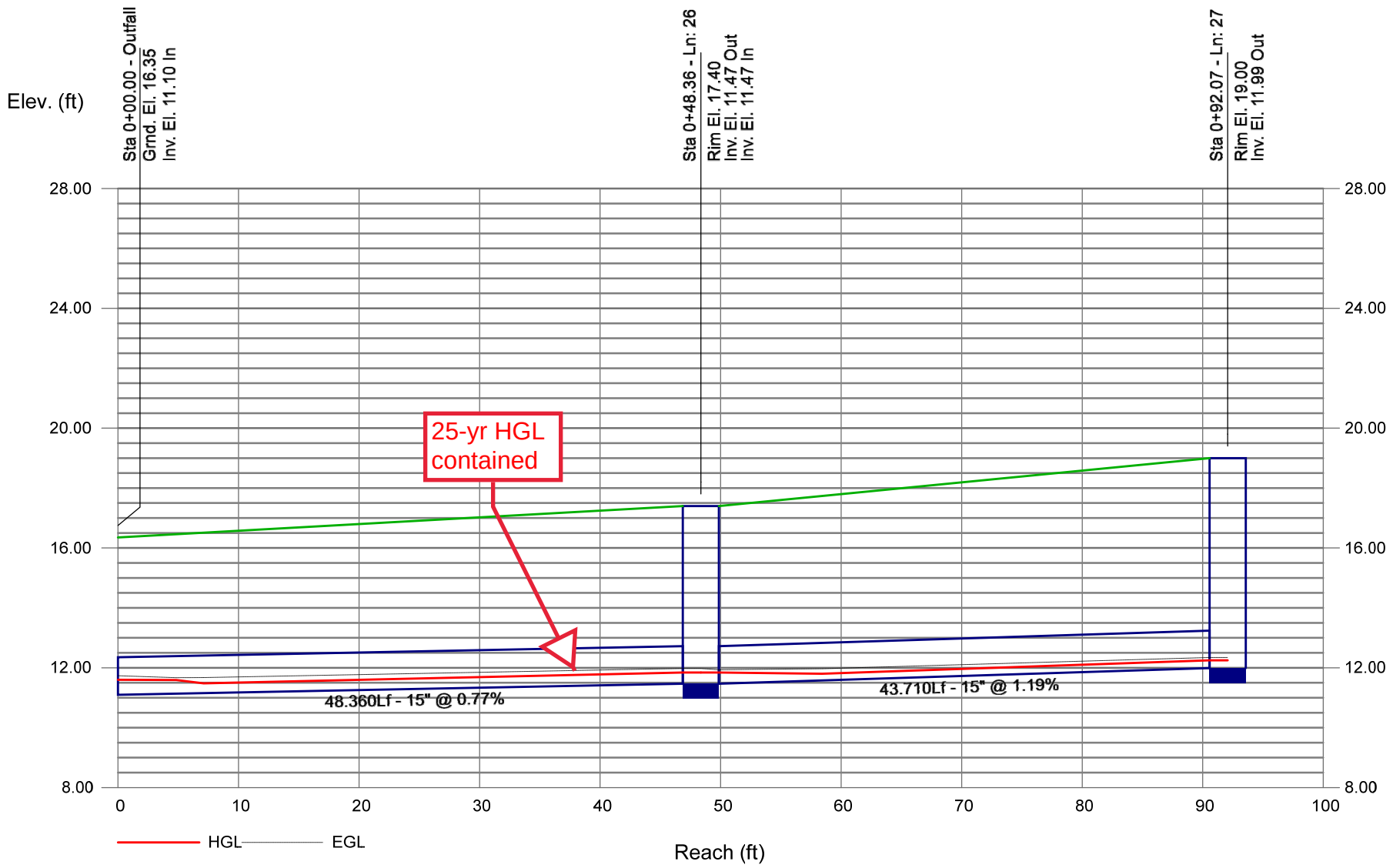
Proj. file: Habitat StormSewers.stm

HGL Profile:
SD Pipe ID# 18 - SD Pipe ID# 22
25yr HGL



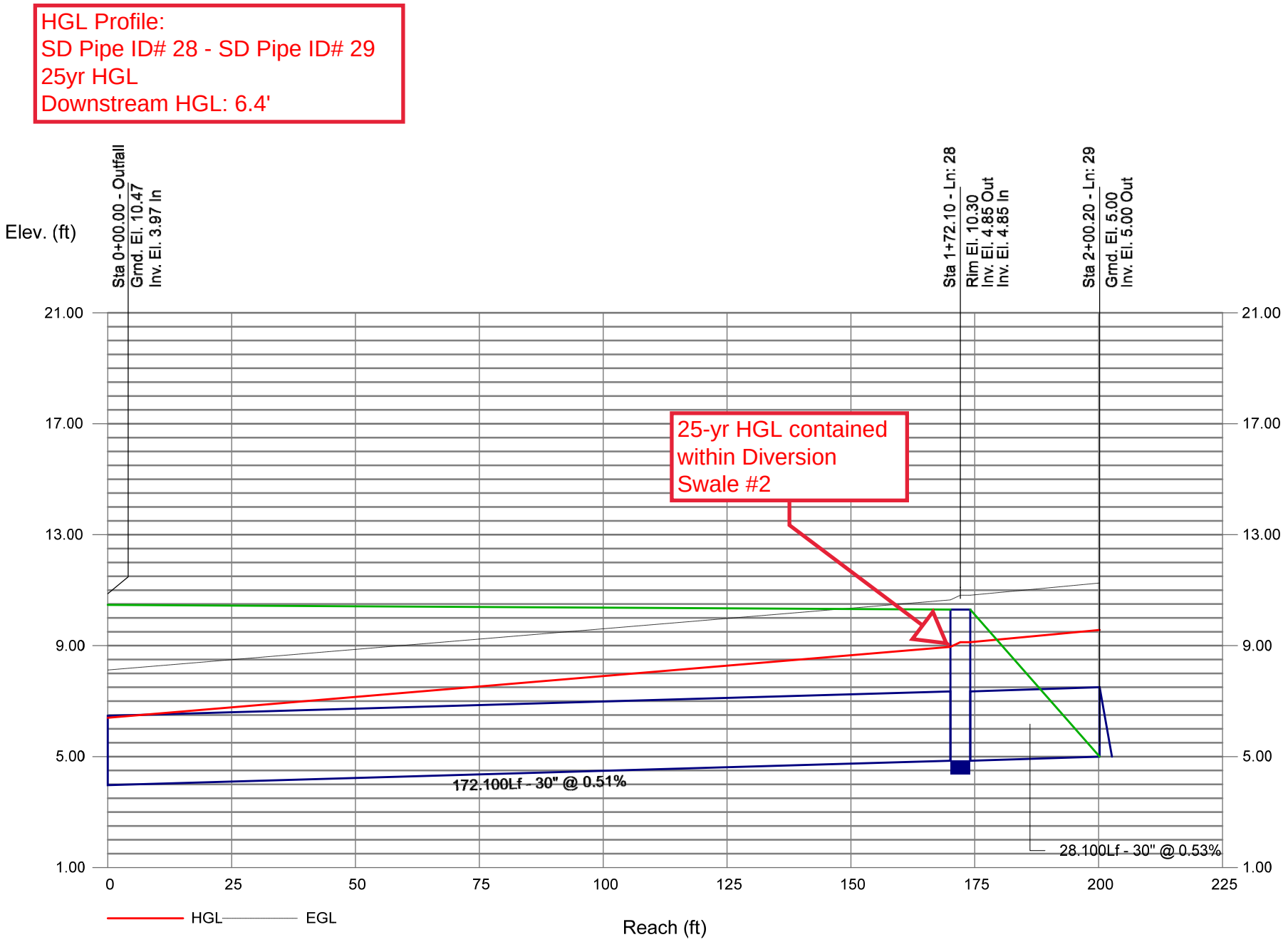
Storm Sewer Profile

HGL Profile:
SD Pipe ID# 26 - SD Pipe ID# 27
25yr HGL



Storm Sewer Profile

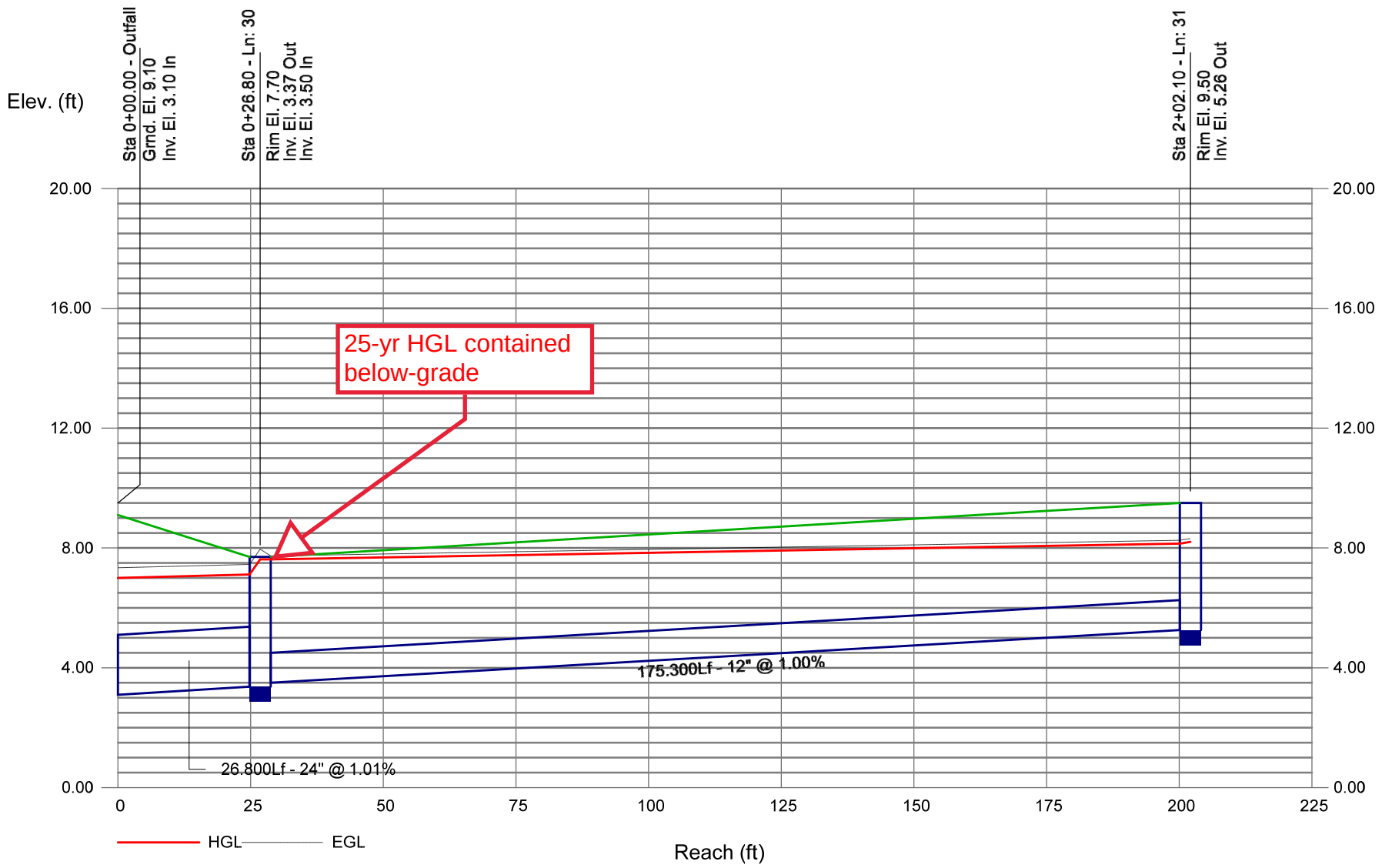
Proj. file: Habitat StormSewers.stm



Storm Sewer Profile

Proj. file: Habitat StormSewers.stm

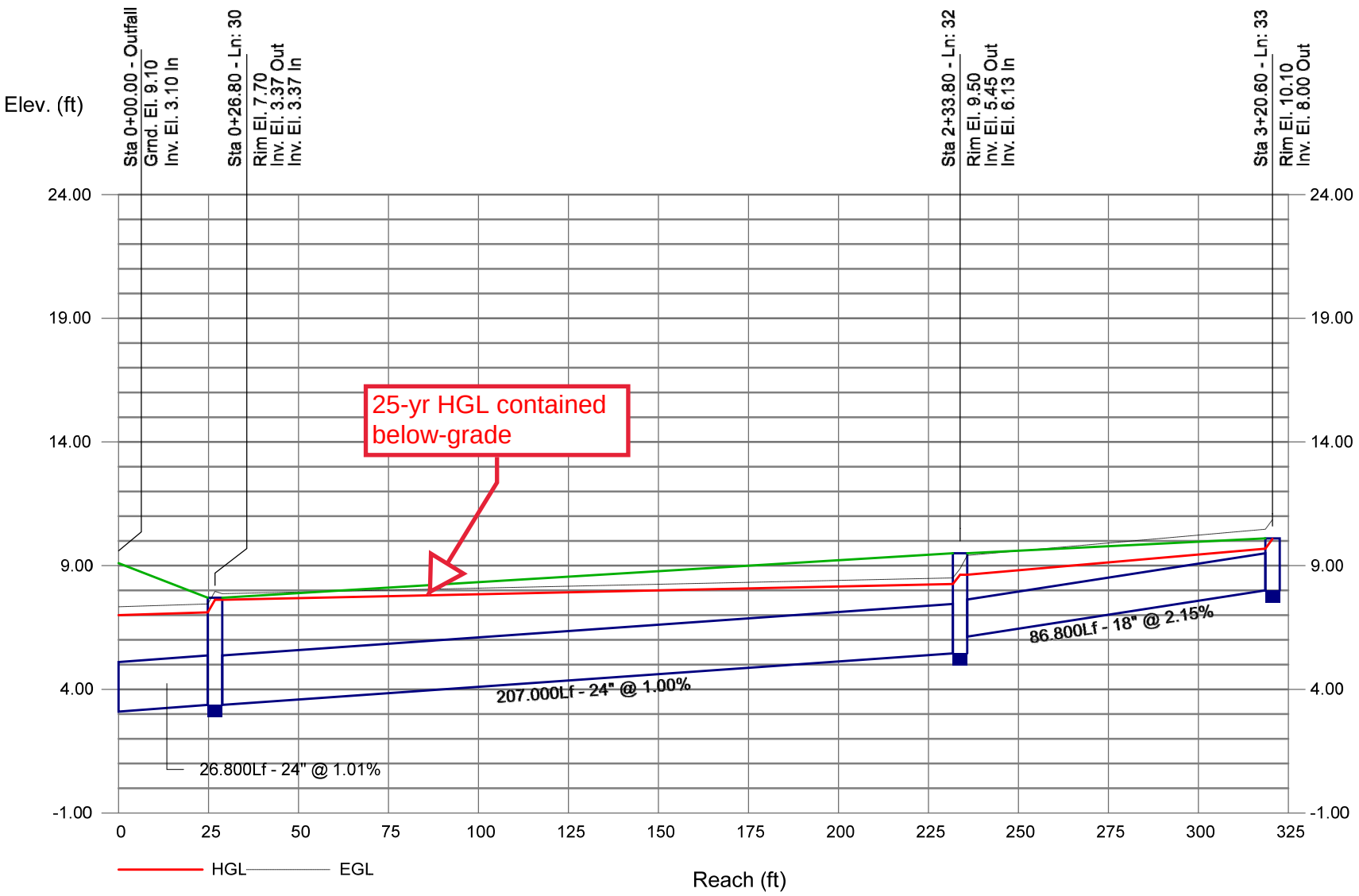
HGL Profile:
SD Pipe ID# 30 - SD Pipe ID# 31
25yr HGL
Downstream HGL: 7.0'



Storm Sewer Profile

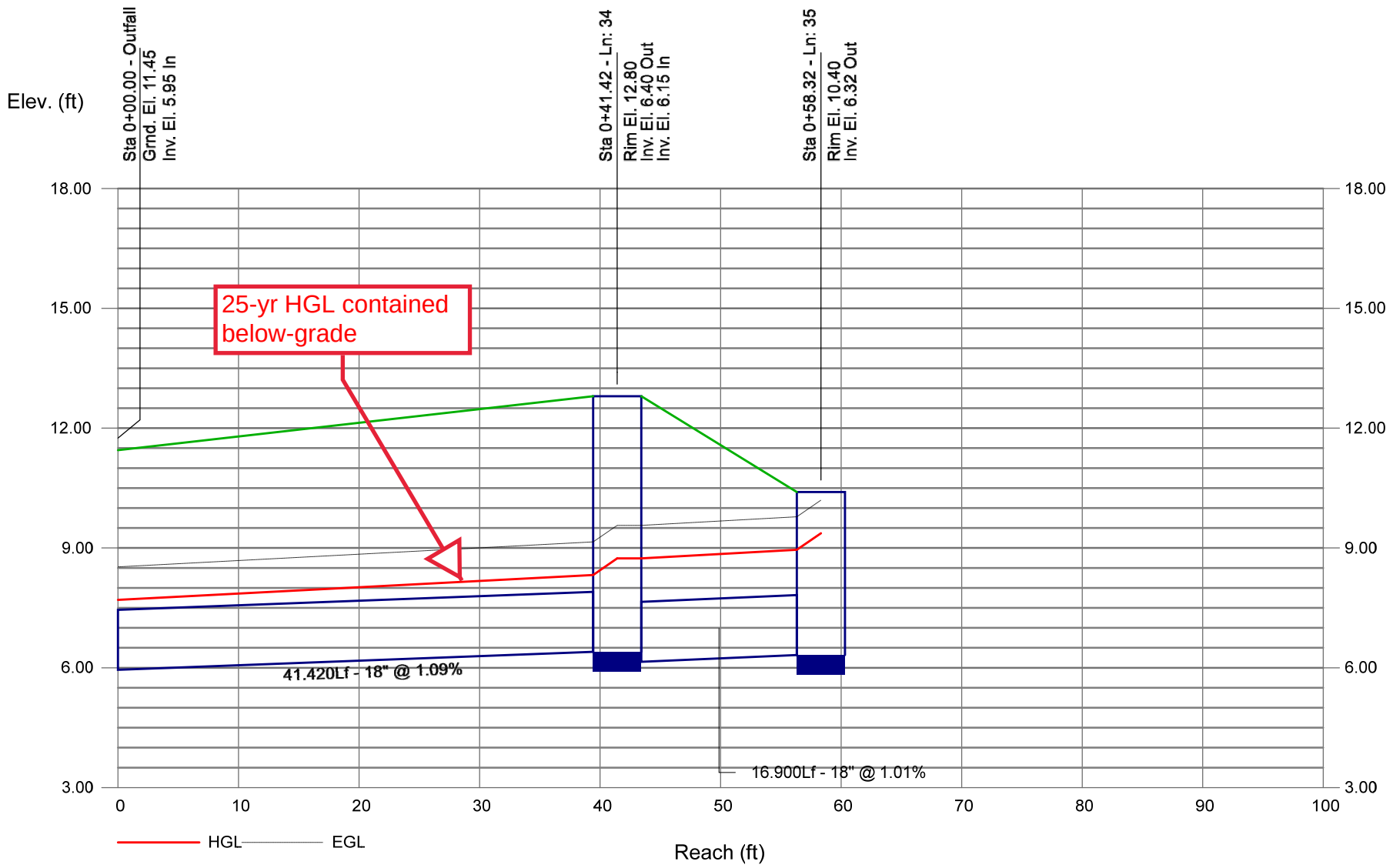
Proj. file: Habitat StormSewers.stm

HGL Profile:
SD Pipe ID# 30 - SD Pipe ID# 33
25yr HGL
Downstream HGL: 7.0'

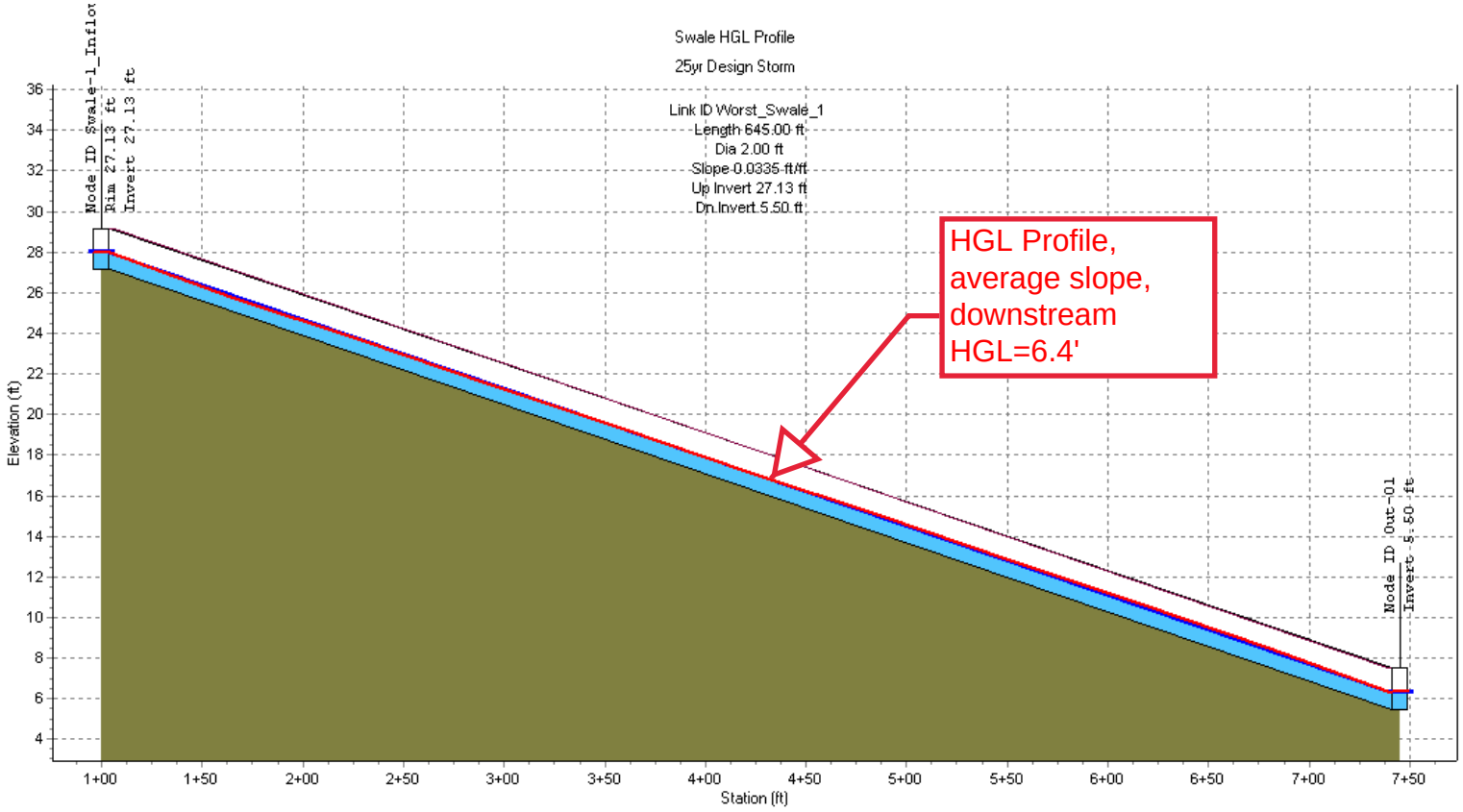


Storm Sewer Profile

HGL Profile:
SD Pipe ID# 28 - SD Pipe ID# 29
25yr HGL
Downstream HGL: 7.7'



Worst-case Swale-1
25yr HGL Profile

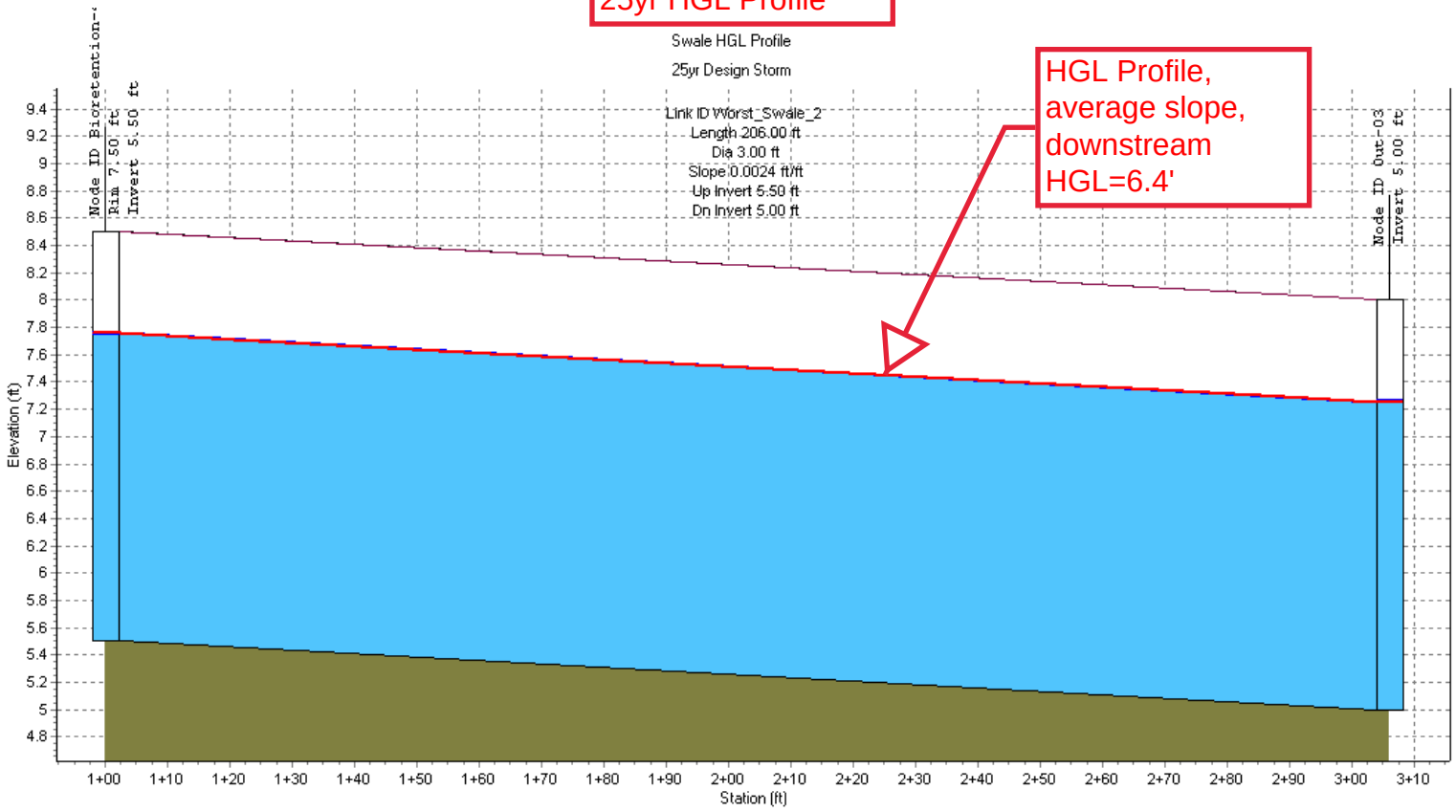


Node ID:		Out-01
Rim (ft):	27.13	
Invert (ft):	27.13	5.50
Min Pipe Cover (ft):	0.00	
Max HGL (ft):	27.96	6.33

Link ID:	Worst_Swale_1
Length (ft):	645.00
Dia (ft):	2.00
Slope (ft/ft):	0.0335
Up Invert (ft):	27.13
Dn Invert (ft):	5.50
Max Q (cfs):	34.16
Max Vel (ft/s):	6.01
Max Depth (ft):	0.83

Worst-case Swale-2
25yr HGL Profile

HGL Profile, average slope, downstream HGL=6.4'



Node ID:	Bioretention-4	Out-03
Rim (ft):	7.50	
Invert (ft):	5.50	5.00
Min Pipe Cover (ft):	0.00	
Max HGL (ft):	7.76	7.26

Link ID:	Worst_Swale_2
Length (ft):	206.00
Dia (ft):	3.00
Slope (ft/ft):	0.0024
Up Invert (ft):	5.50
Dn Invert (ft):	5.00
Max Q (cfs):	51.23
Max Vel (ft/s):	2.75
Max Depth (ft):	2.26

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Mar 26 2021

Worst-case SWALE-3 25yr Capacity

Triangular

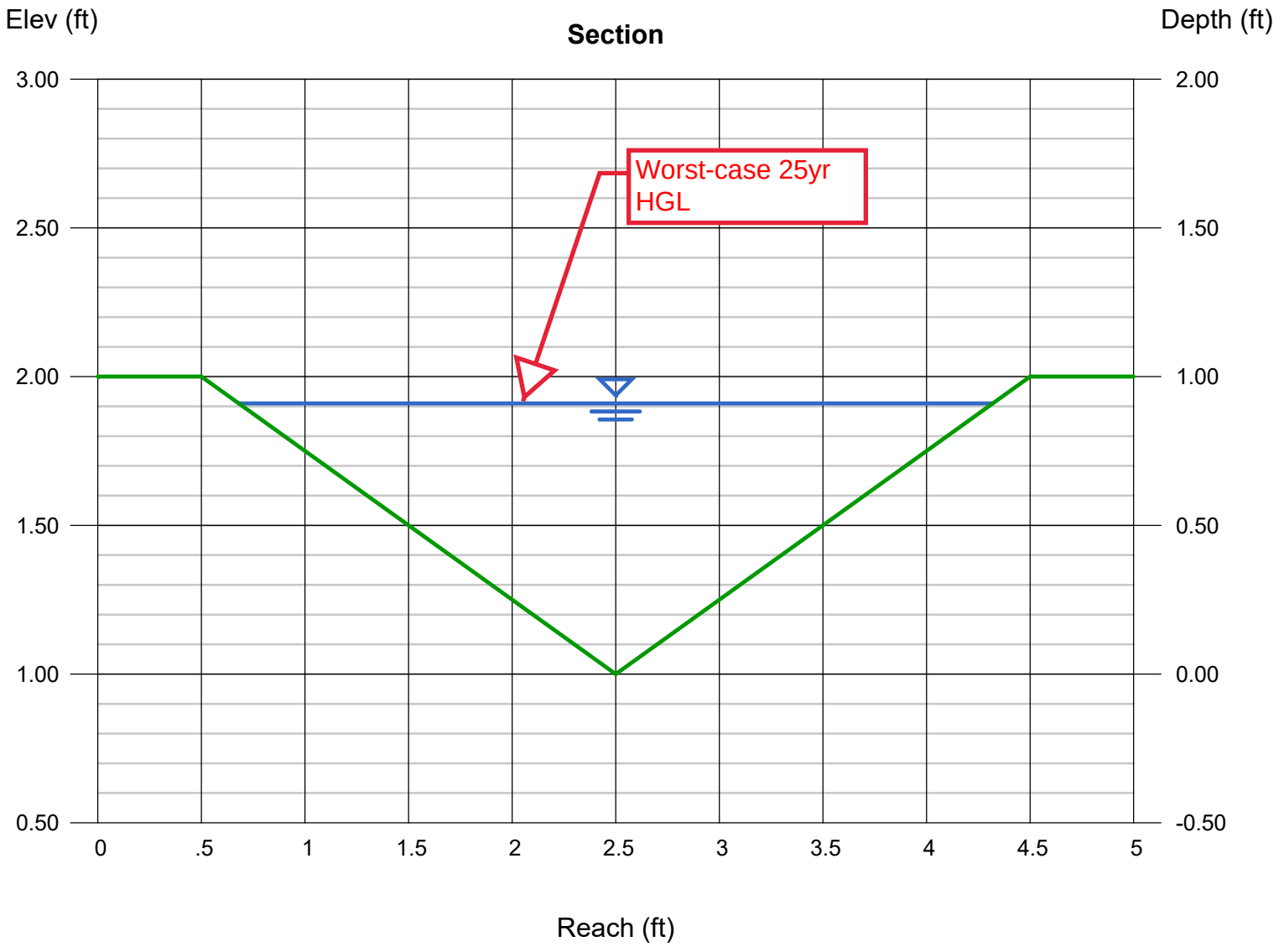
Side Slopes (z:1)	= 2.00, 2.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.00
N-Value	= 0.035

Calculations

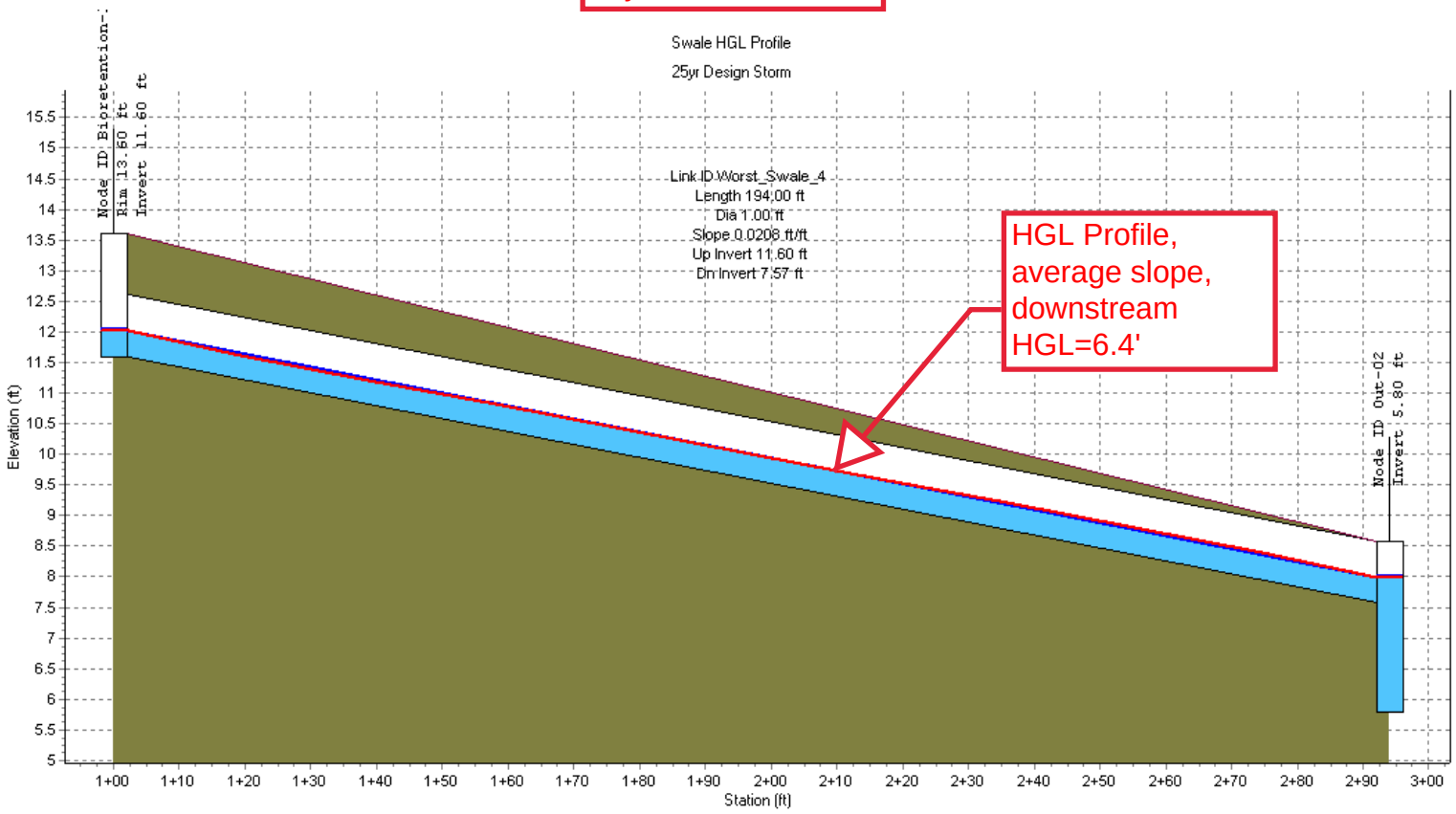
Compute by:	Known Q
Known Q (cfs)	= 3.75

Highlighted

Depth (ft)	= 0.91
Q (cfs)	= 3.750
Area (sqft)	= 1.66
Velocity (ft/s)	= 2.26
Wetted Perim (ft)	= 4.07
Crit Depth, Yc (ft)	= 0.74
Top Width (ft)	= 3.64
EGL (ft)	= 0.99



Worst-case Swale-4
25yr HGL Profile



Node ID:	Bioretention-1	Out-02
Rim (ft):	13.60	
Invert (ft):	11.60	5.80
Min Pipe Cover (ft):	1.00	
Max HGL (ft):	12.02	7.99

Link ID:	Worst_Swale_4
Length (ft):	194.00
Dia (ft):	1.00
Slope (ft/ft):	0.0208
Up Invert (ft):	11.60
Dn Invert (ft):	7.57
Max Q (cfs):	3.19
Max Vel (ft/s):	3.13
Max Depth (ft):	0.42

Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Mar 26 2021

Worst-case Sidewalk Drain 25yr Capacity

Invert Elev Dn (ft)	=	9.00
Pipe Length (ft)	=	25.00
Slope (%)	=	2.00
Invert Elev Up (ft)	=	9.50
Rise (in)	=	4.0
Shape	=	Circular
Span (in)	=	4.0
No. Barrels	=	2
n-Value	=	0.012
Culvert Type	=	Circular Culvert
Culvert Entrance	=	Smooth tapered inlet throat
Coeff. K,M,c,Y,k	=	0.534, 0.555, 0.0196, 0.9, 0.2

Embankment

Top Elevation (ft)	=	10.00
Top Width (ft)	=	20.00
Crest Width (ft)	=	10.00

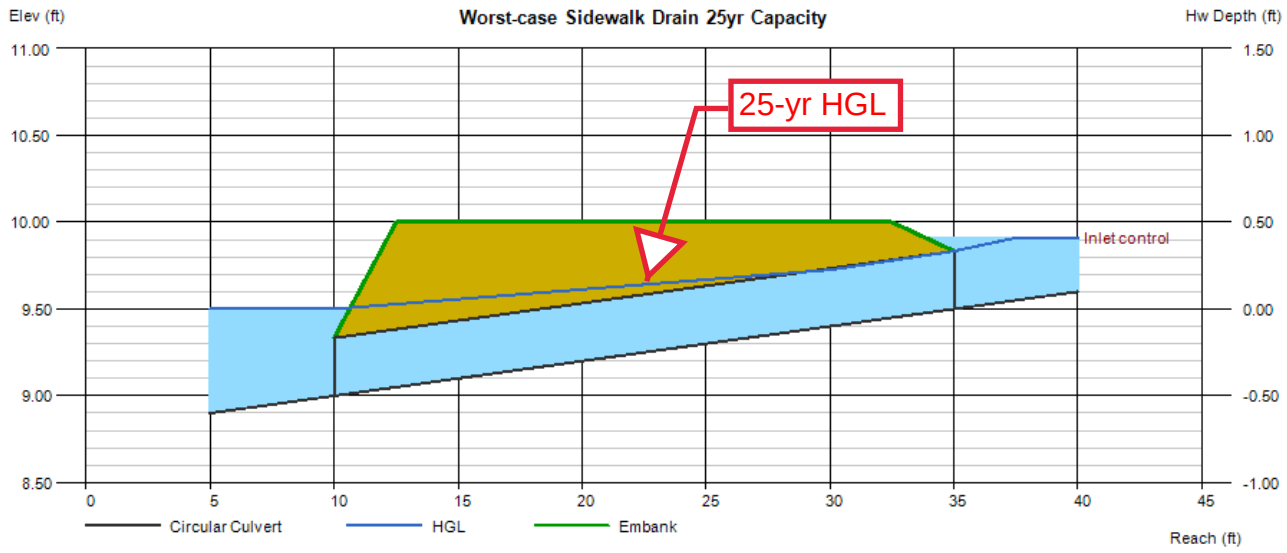
Starting HGL25: Overflow DI elevation

Calculations

Qmin (cfs)	=	0.42
Qmax (cfs)	=	0.42
Tailwater Elev (ft)	=	9.5

Highlighted

Qtotal (cfs)	=	0.42
Qpipe (cfs)	=	0.42
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	2.41
Veloc Up (ft/s)	=	2.67
HGL Dn (ft)	=	9.50
HGL Up (ft)	=	9.78
Hw Elev (ft)	=	9.91
Hw/D (ft)	=	1.23
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Mar 26 2021

PRE-CONSTRUCTION (EX) SD-2 100YR HGL

Invert Elev Dn (ft)	=	2.30
Pipe Length (ft)	=	112.00
Slope (%)	=	1.70
Invert Elev Up (ft)	=	4.20
Rise (in)	=	24.0
Shape	=	Circular
Span (in)	=	24.0
No. Barrels	=	1
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

Top Elevation (ft)	=	10.50
Top Width (ft)	=	100.00
Crest Width (ft)	=	50.00

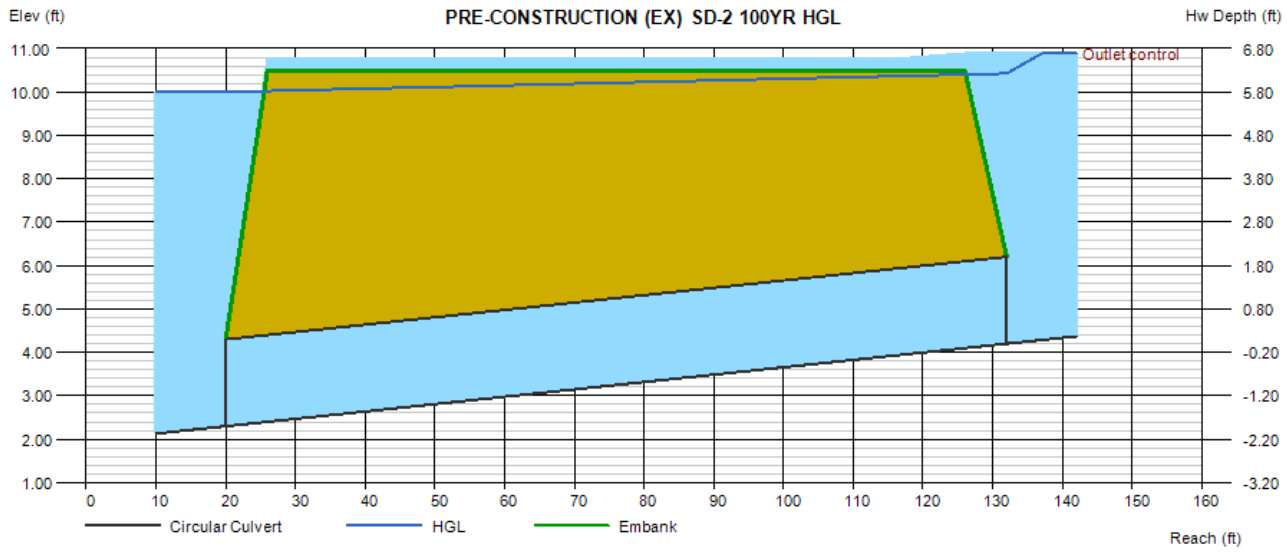
Calculations

Qmin (cfs)	=	49.62
Qmax (cfs)	=	49.62
Tailwater Elev (ft)	=	10

Highlighted

Qtotal (cfs)	=	49.62
Qpipe (cfs)	=	13.94
Qovertop (cfs)	=	35.68
Veloc Dn (ft/s)	=	4.44
Veloc Up (ft/s)	=	4.44
HGL Dn (ft)	=	10.00
HGL Up (ft)	=	10.43
Hw Elev (ft)	=	10.88
Hw/D (ft)	=	3.34
Flow Regime	=	Outlet Control

Pre-construction 100-year HGL



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Mar 26 2021

Worst-case assumption: peak post-construction Q with no retention

POST-CONSTRUCTION (EX) SD-2 100YR HGL

Invert Elev Dn (ft)	=	2.30
Pipe Length (ft)	=	112.00
Slope (%)	=	1.70
Invert Elev Up (ft)	=	4.20
Rise (in)	=	24.0
Shape	=	Circular
Span (in)	=	24.0
No. Barrels	=	1
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

Top Elevation (ft)	=	10.50
Top Width (ft)	=	100.00
Crest Width (ft)	=	50.00

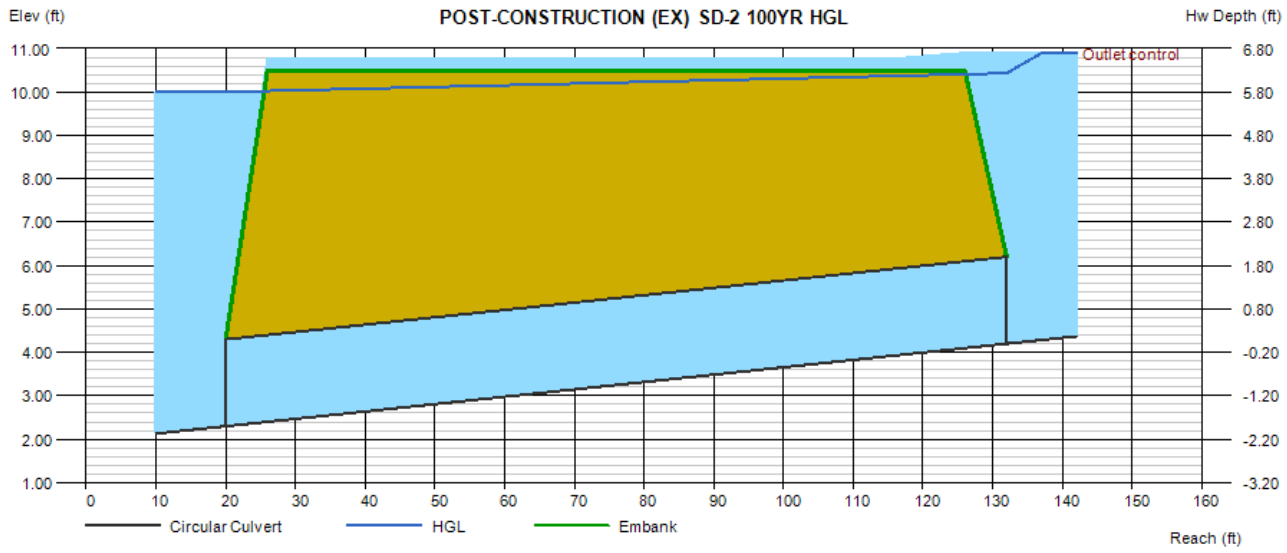
Calculations

Qmin (cfs)	=	51.23
Qmax (cfs)	=	51.23
Tailwater Elev (ft)	=	10

Highlighted

Qtotal (cfs)	=	51.23
Qpipe (cfs)	=	14.03
Qovertop (cfs)	=	37.20
Veloc Dn (ft/s)	=	4.47
Veloc Up (ft/s)	=	4.47
HGL Dn (ft)	=	10.00
HGL Up (ft)	=	10.43
Hw Elev (ft)	=	10.90
Hw/D (ft)	=	3.35
Flow Regime	=	Outlet Control

Post-construction 100-year HGL: No change from pre-construction



Culvert Report

PRE-CONSTRUCTION (EX) SD-3 100YR HGL

Invert Elev Dn (ft)	=	2.00
Pipe Length (ft)	=	60.00
Slope (%)	=	1.12
Invert Elev Up (ft)	=	2.67
Rise (in)	=	30.0
Shape	=	Circular
Span (in)	=	30.0
No. Barrels	=	1
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

Top Elevation (ft)	=	10.20
Top Width (ft)	=	50.00
Crest Width (ft)	=	50.00

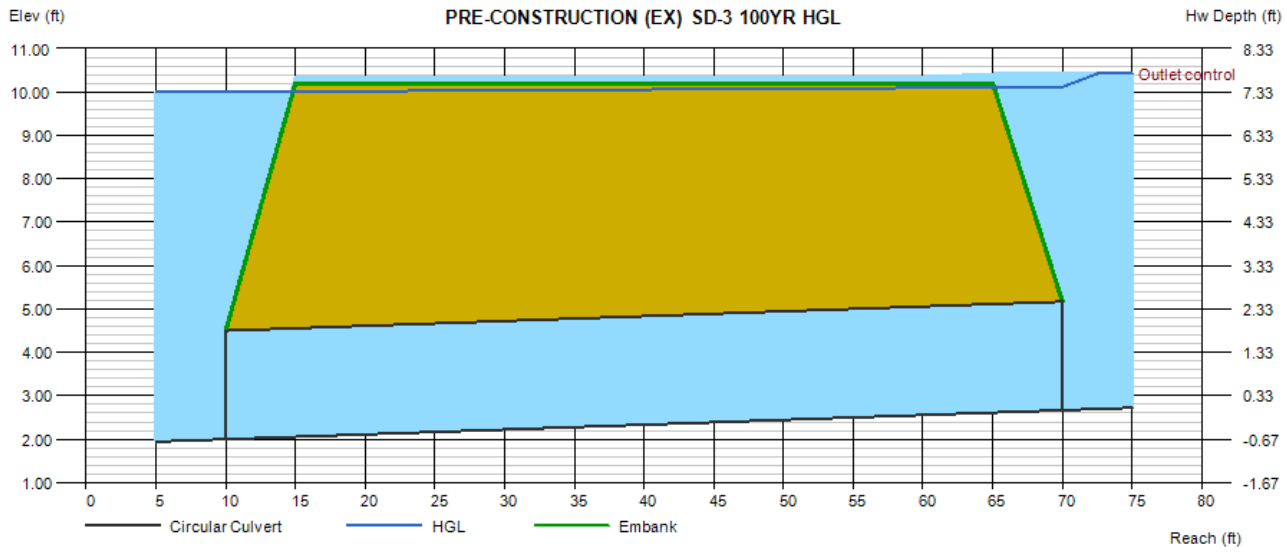
Calculations

Qmin (cfs)	=	32.77
Qmax (cfs)	=	32.77
Tailwater Elev (ft)	=	10

Highlighted

Qtotal (cfs)	=	32.77
Qpipe (cfs)	=	17.82
Qovertop (cfs)	=	14.95
Veloc Dn (ft/s)	=	3.63
Veloc Up (ft/s)	=	3.63
HGL Dn (ft)	=	10.00
HGL Up (ft)	=	10.11
Hw Elev (ft)	=	10.42
Hw/D (ft)	=	3.10
Flow Regime	=	Outlet Control

Pre-construction 100-year HGL



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Mar 26 2021

Worst-case assumption: peak post-construction Q with no retention

POST-CONSTRUCTION (EX) SD-3 100YR HGL

Invert Elev Dn (ft)	=	2.00
Pipe Length (ft)	=	60.00
Slope (%)	=	1.12
Invert Elev Up (ft)	=	2.67
Rise (in)	=	30.0
Shape	=	Circular
Span (in)	=	30.0
No. Barrels	=	1
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

Top Elevation (ft)	=	10.20
Top Width (ft)	=	50.00
Crest Width (ft)	=	50.00

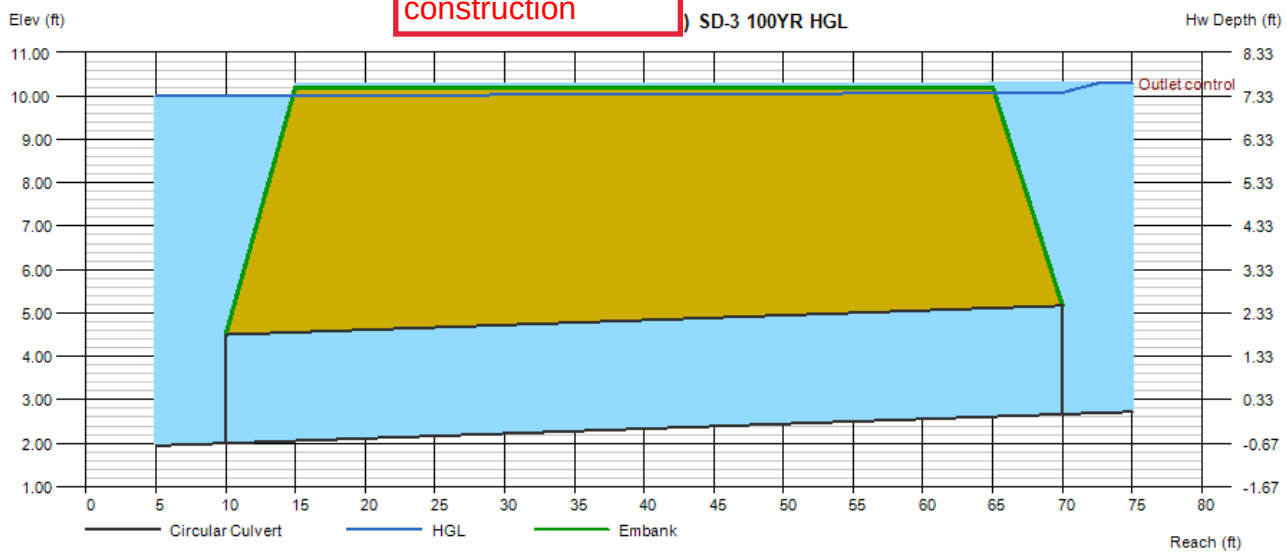
Calculations

Qmin (cfs)	=	18.37
Qmax (cfs)	=	18.37
Tailwater Elev (ft)	=	10

Highlighted

Qtotal (cfs)	=	18.37
Qpipe (cfs)	=	14.81
Qovertop (cfs)	=	3.56
Veloc Dn (ft/s)	=	3.02
Veloc Up (ft/s)	=	3.02
HGL Dn (ft)	=	10.00
HGL Up (ft)	=	10.08
Hw Elev (ft)	=	10.29
Hw/D (ft)	=	3.05
Flow Regime	=	Outlet Control

Post-construction 100-year HGL: Lower than pre-construction



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Mar 26 2021

PRE-CONSTRUCTION (EX) SD-4 100YR HGL

Invert Elev Dn (ft)	=	1.00
Pipe Length (ft)	=	233.00
Slope (%)	=	0.52
Invert Elev Up (ft)	=	2.20
Rise (in)	=	66.0
Shape	=	Box
Span (in)	=	72.0
No. Barrels	=	1
n-Value	=	0.014
Culvert Type	=	Flared Wingwalls
Culvert Entrance	=	30D to 75D wingwall flares
Coeff. K,M,c,Y,k	=	0.026, 1, 0.0347, 0.81, 0.4

Embankment

Top Elevation (ft)	=	13.00
Top Width (ft)	=	230.00
Crest Width (ft)	=	277.00

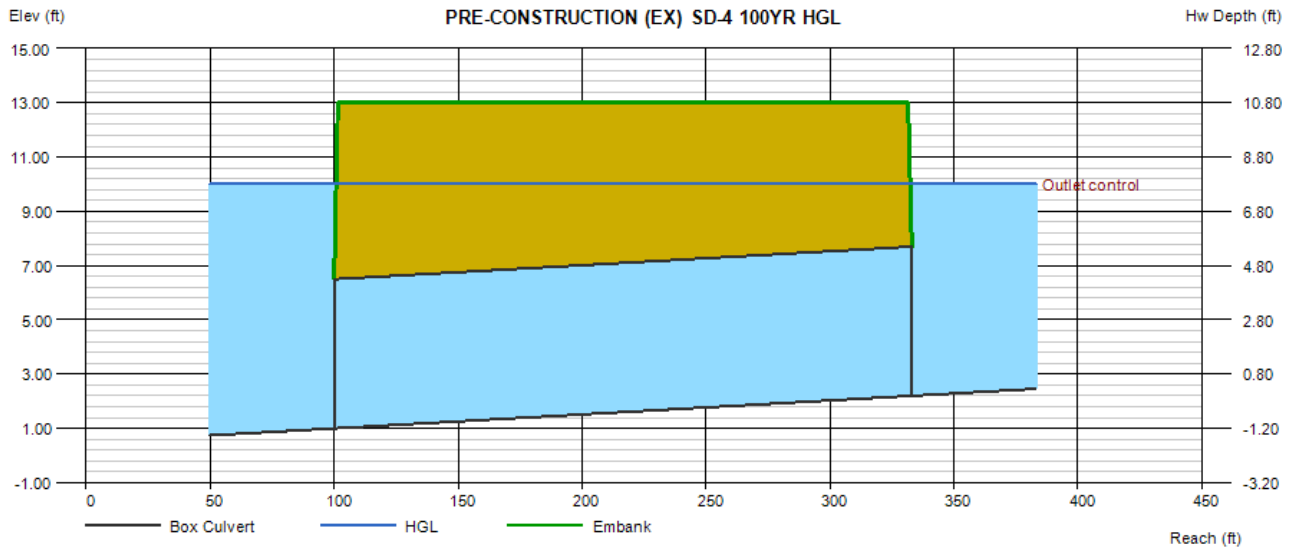
Calculations

Qmin (cfs)	=	14.78
Qmax (cfs)	=	14.78
Tailwater Elev (ft)	=	10

Highlighted

Qtotal (cfs)	=	14.78
Qpipe (cfs)	=	14.78
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	0.45
Veloc Up (ft/s)	=	0.45
HGL Dn (ft)	=	10.00
HGL Up (ft)	=	10.00
Hw Elev (ft)	=	10.01
Hw/D (ft)	=	1.42
Flow Regime	=	Outlet Control

Pre-construction 100-year HGL



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Friday, Mar 26 2021

Worst-case assumption: peak post-construction Q with no retention

POST-CONSTRUCTION (EX) SD-4 100YR HGL

Invert Elev Dn (ft)	=	1.00
Pipe Length (ft)	=	233.00
Slope (%)	=	0.52
Invert Elev Up (ft)	=	2.20
Rise (in)	=	66.0
Shape	=	Box
Span (in)	=	72.0
No. Barrels	=	1
n-Value	=	0.014
Culvert Type	=	Flared Wingwalls
Culvert Entrance	=	30D to 75D wingwall flares
Coeff. K,M,c,Y,k	=	0.026, 1, 0.0347, 0.81, 0.4

Embankment

Top Elevation (ft)	=	13.00
Top Width (ft)	=	230.00
Crest Width (ft)	=	277.00

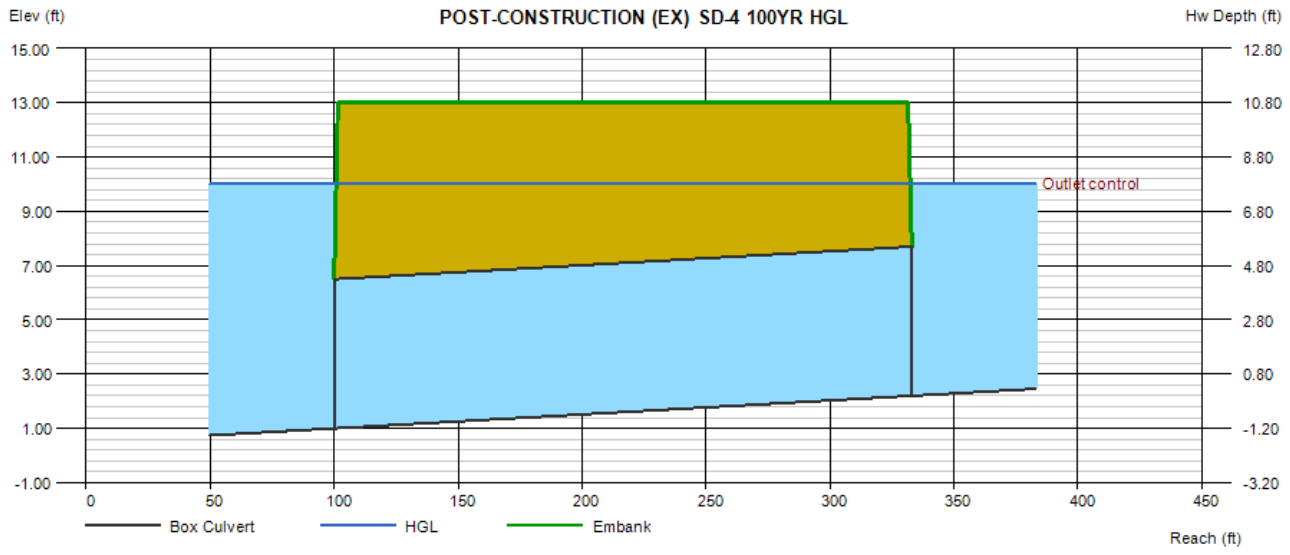
Calculations

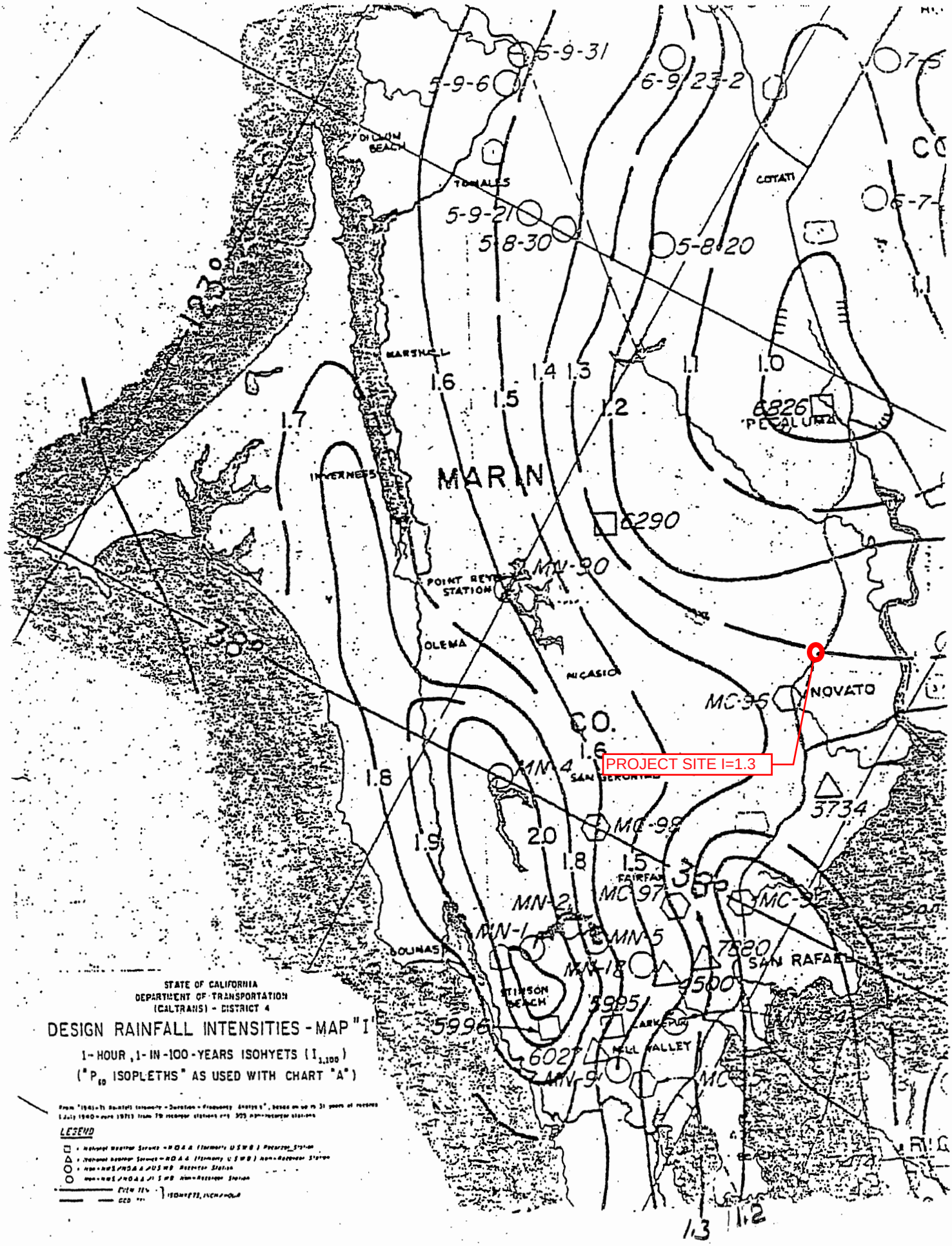
Qmin (cfs)	=	31.75
Qmax (cfs)	=	31.75
Tailwater Elev (ft)	=	10

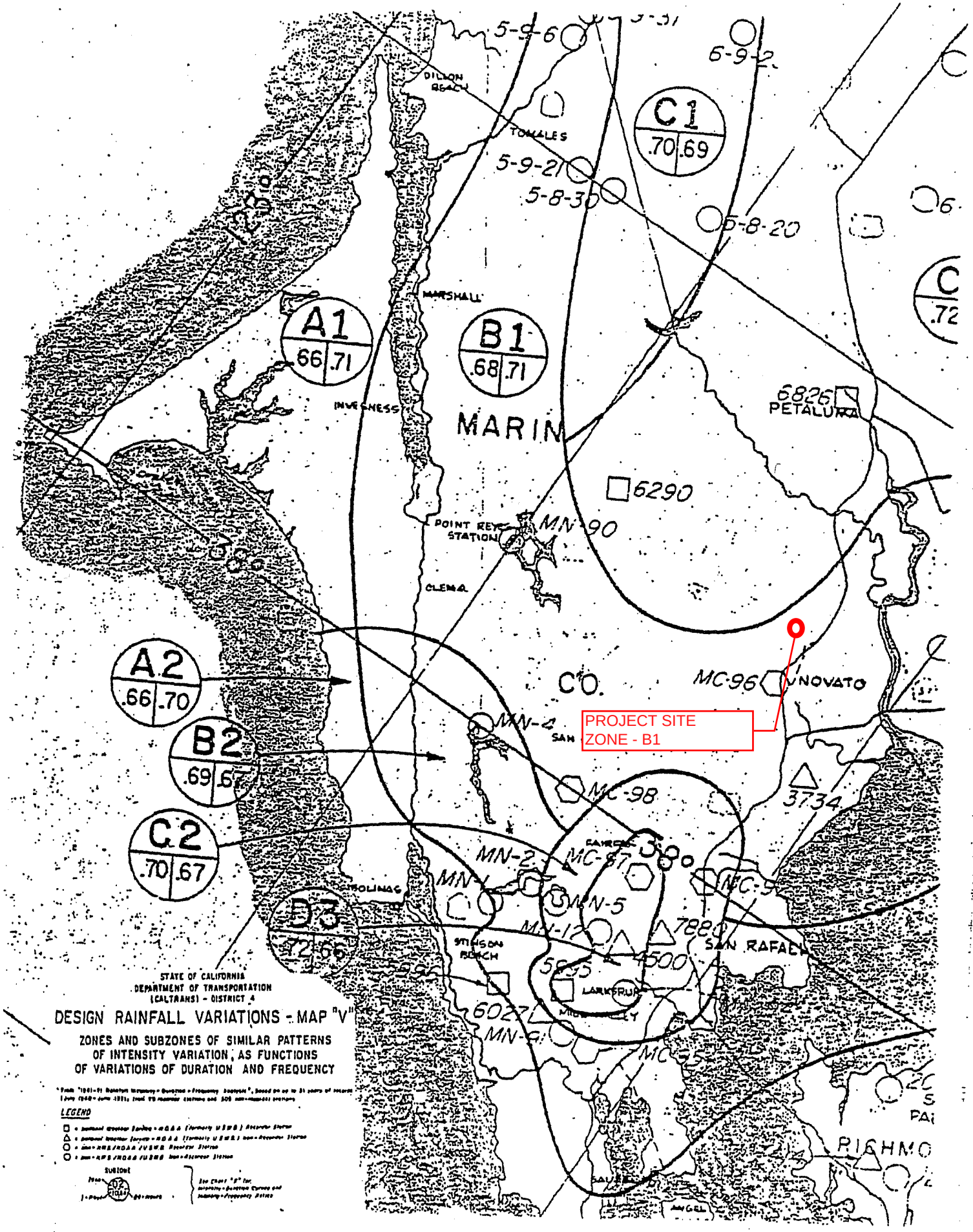
Highlighted

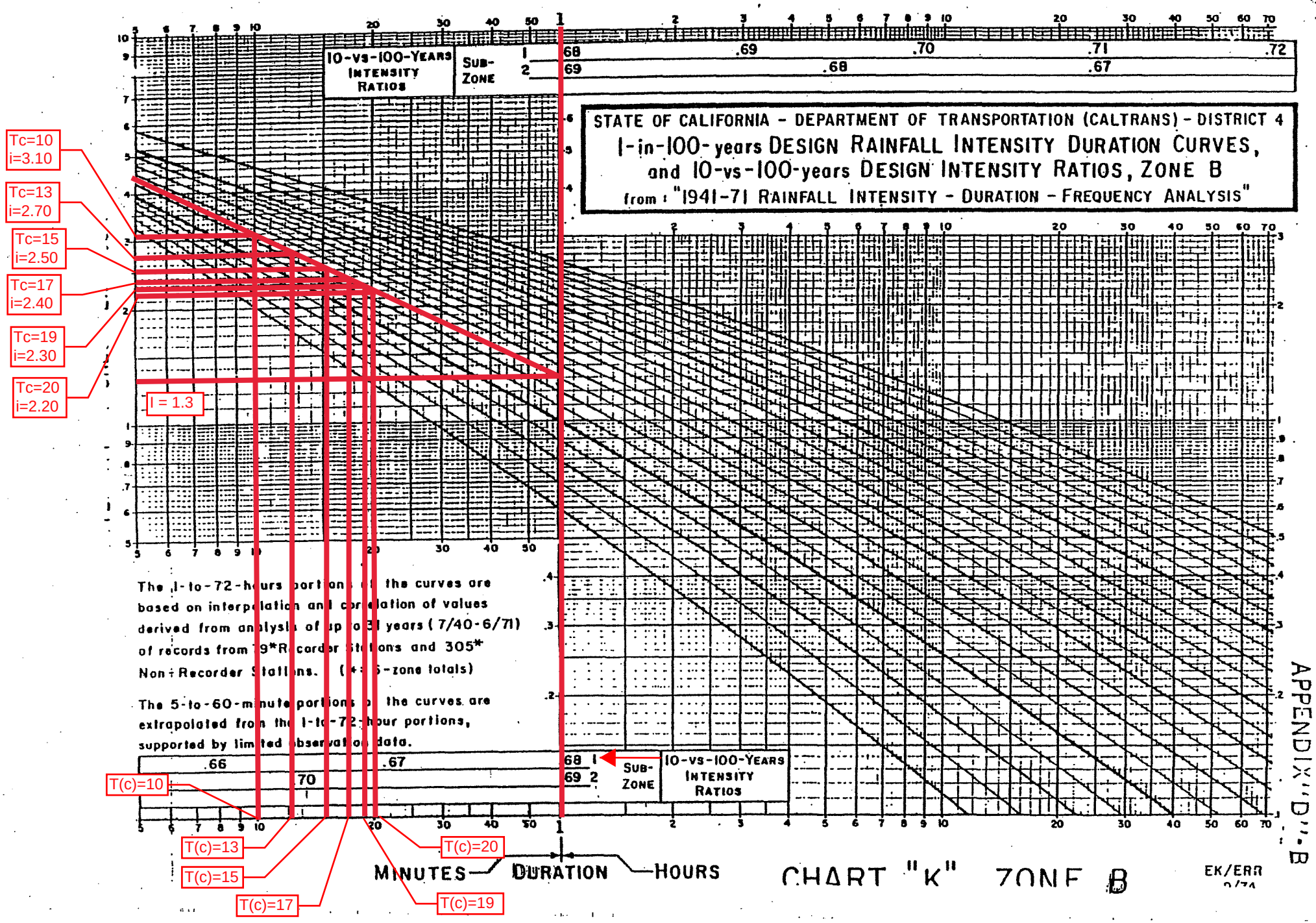
Qtotal (cfs)	=	31.75
Qpipe (cfs)	=	31.75
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	0.96
Veloc Up (ft/s)	=	0.96
HGL Dn (ft)	=	10.00
HGL Up (ft)	=	10.01
Hw Elev (ft)	=	10.03
Hw/D (ft)	=	1.42
Flow Regime	=	Outlet Control

Post-construction 100-year HGL: Negligible change from pre-construction




PROJECT SITE I=1.3
MARIN
NOVATO
POINT REYES STATION
OLEMA
NICASIO
INVERNESS
MARSHALL
TOMALES
DILLON BEACH
COTATI
PETALUMA
SAN RAFAEL
FAIRFAX
SAN GERONIMO
STINSON BEACH
MILL VALLEY
LARKSPUR
SOUTH
5-9-31
5-9-6
6-9-23-2
5-9-21
5-8-30
5-8-20
6826
6290
5734
7820
9500
5995
5996
602
MN-90
MN-4
MN-2
MN-1
MN-5
MN-18
MN-9
MC-96
MC-98
MC-97
MC-95
1.0
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
2.0
1.6
1.3
1.2
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
(CALTRANS) - DISTRICT 4
DESIGN RAINFALL INTENSITIES - MAP "I"
1-HOUR, 1-IN-100-YEARS ISOHYETS ($I_{1,100}$)
("P_{60} ISOPLETHS" AS USED WITH CHART "A")
LEGEND

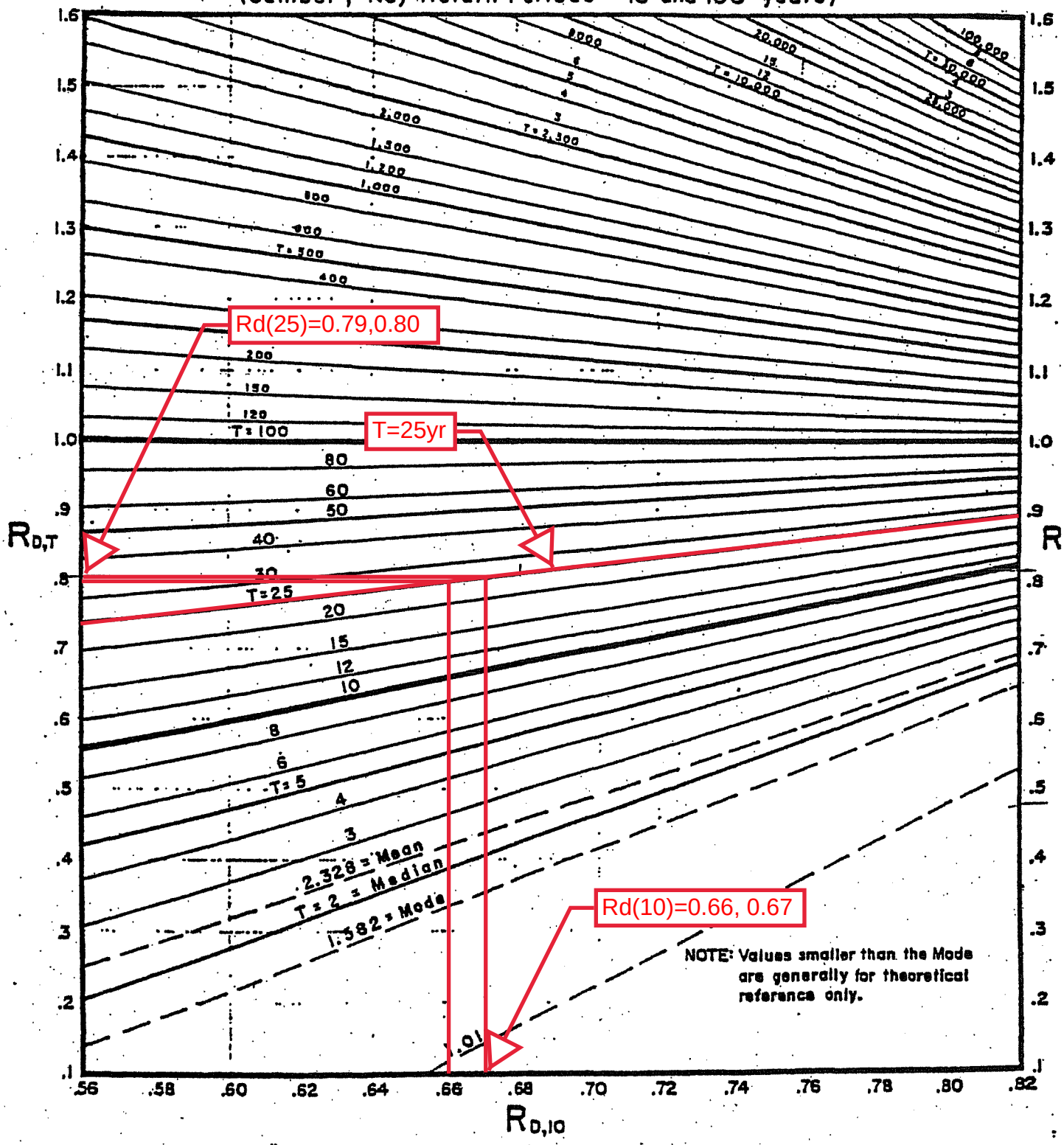

A1
.66 .71
B1
.68 .71
C1
.70 .69
A2
.66 .70
B2
.69 .67
C2
.70 .67
D3
.72 .66
MARIN
INVERNESS
MARSHALL
TOMALES
DILLON BEACH
POINT REYES STATION
OLEMA
PETALUMA
NOVATO
SAN RAFAEL
LARKSPUR
STINSON BEACH
SAN ANSELMO
6826
6290
3734
7884
4500
5895
6027
MN-90
MN-4
MN-2
MN-5
MN-12
MC-96
MC-98
MC-87
MC-5
PROJECT SITE
ZONE - B1
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
(CALTRANS) - DISTRICT 4
DESIGN RAINFALL VARIATIONS - MAP "V"
ZONES AND SUBZONES OF SIMILAR PATTERNS
OF INTENSITY VARIATION, AS FUNCTIONS
OF VARIATIONS OF DURATION AND FREQUENCY
LEGEND


STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION (CALTRANS) - DISTRICT 4
1-in-100-years DESIGN RAINFALL INTENSITY DURATION CURVES,
and 10-vs-100-years DESIGN INTENSITY RATIOS, ZONE B
from: "1941-71 RAINFALL INTENSITY - DURATION - FREQUENCY ANALYSIS"
10-vs-100-YEARS INTENSITY RATIOS
SUB-ZONE
1 .68 .69 .70 .71 .72
2 .69 .68 .67
Tc=10 i=3.10
Tc=13 i=2.70
Tc=15 i=2.50
Tc=17 i=2.40
Tc=19 i=2.30
Tc=20 i=2.20
I = 1.3
The 1-to-72-hours portions of the curves are based on interpolation and correlation of values derived from analysis of up to 31 years (7/40-6/71) of records from 79* Recorder Stations and 305* Non-Recorder Stations. (* 5-zone totals)
The 5-to-60-minute portions of the curves are extrapolated from the 1-to-72-hour portions, supported by limited observation data.
.66 .67 .70
T(c)=10
T(c)=13
T(c)=15
T(c)=17
T(c)=19
T(c)=20
MINUTES — DURATION — HOURS
CHART "K" ZONE B
APPENDIX "D" B
EK/ERR

STATE OF CALIFORNIA – DEPARTMENT OF TRANSPORTATION (CALTRANS) – DISTRICT 4

FREQUENCY DISTRIBUTION RATIOS CHART "R"

(Gumbel ; Key Return Periods = 10 and 100 years)



EQUATIONS SEE "1941-71 RAINFALL INTENSITY-DURATION-FREQUENCY ANALYSIS"

(29) $R_{D,T} = I_{D,T} / I_{D,100}$, where

(31) $I_{D,T} = I_{D,100}\left\{1 + \left[\left(\frac{1-R_{D,10}}{y_{100}-y_{10}}\right)(y_T - y_{100})\right]\right\}$ and

( ) $y_T = -\ln\left[-\ln(1-1/T)\right]$

T = Return Period, Years
R = Ratio
I_D = Intensity (For a given duration D), Inches/Hr.

Other parameters, such as discharge rate (Q) may be substituted for T_D.

Soil Map—Marin County, California
(77-18 Shapefile)



Map Scale: 1:4,420 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
128	Gilroy-Gilroy variant-Bonnydoon variant loams, 30 to 50 percent slopes	2.2	3.8%
141	Los Osos-Bonnydoon complex, 15 to 30 percent slopes	6.7	11.7%
203	Xerorthents, fill	2.6	4.4%
206	Yorkville clay loam, 15 to 30 percent slopes	39.6	68.6%
301	Reyes silty clay loam, 0 to 2 percent slopes	6.6	11.5%
Totals for Area of Interest		**57.7**	**100.0%**

Hydrologic Soil Group and Surface Runoff–Marin County, California			
Map symbol and soil name	**Pct. of map unit**	**Surface Runoff**	**Hydrologic Soil Group**
128—Gilroy-Gilroy variant-Bonnydoon variant loams, 30 to 50 percent slopes			
Gilroy	35	Very high	C
Gilroy variant	25	High	C
Bonnydoon variant	20	High	D
141—Los Osos-Bonnydoon complex, 15 to 30 percent slopes			
Los osos	60	Very high	D
Bonnydoon	20	High	D
203—Xerorthents, fill			
Xerorthents	100	—	—
206—Yorkville clay loam, 15 to 30 percent slopes			
Yorkville	85	Very high	D
301—Reyes silty clay loam, 0 to 2 percent slopes			
Reyes	90	Negligible	C

Data Source Information

Soil Survey Area: Marin County, California
Survey Area Data: Version 12, Sep 17, 2018

Appendix J

Environmental Noise Study

RGD ACOUSTICS

Acoustical & Audiovisual Consultants

ENVIRONMENTAL NOISE STUDY FOR:

HABITAT FOR GREATER SAN FRANCISCO – REDWOOD BOULEVARD

8161 REDWOOD BOULEVARD

NOVATO, CA 94945

RGD Project #: 20-053

PREPARED FOR:

Habitat for Humanity Greater San Francisco, Inc.
500 Washington Street, Suite 250
San Francisco, CA 94111

PREPARED BY:

Alan Rosen
Tsz "Anthony" Wong

DATE:

11 June 2021

1 Introduction

The proposed project is the development of a 13.56-acre site at 8161 Redwood Boulevard in Novato, California. The project includes 23 residential buildings with a total of 80 dwelling units and one office building.

This report addresses the noise environment with respect to the requirements of the State of California Building Code, City of Novato General Plan, Marin County Gnoss Field Airport Land Use Plan, and the U.S. Department of Housing and Urban Development. This report also analyzes the potential off-site noise impacts associated with the project.

2 Fundamental Concepts of Environmental Noise

Noise can be defined as unwanted sound. It is commonly measured with an instrument called a sound level meter. The sound level meter captures the sound with a microphone and converts it into a number called a sound level. Sound levels are expressed in units of decibels.

To correlate the microphone signal to a level that corresponds to the way humans perceive noise, the A-weighting filter is used. A-weighting de-emphasizes low-frequency and very high-frequency sound in a manner similar to human hearing. The use of A-weighting is required by most local General Plans as well as federal and state noise regulations (e.g. Caltrans, EPA, OSHA and HUD). The abbreviation dBA is sometimes used when the A-weighted sound level is reported.

Because of the time-varying nature of environmental sound, there are many descriptors that are used to quantify the sound level. Although one individual descriptor alone does not fully describe a particular noise environment, taken together, they can more accurately represent the noise environment. The maximum instantaneous noise level (L_{max}) is often used to identify the loudness of a single event such as a car pass-by or airplane flyover.

To express the average noise level the L_{eq} (equivalent noise level) is used. The L_{eq} can be measured over any length of time but is typically reported for periods of 15 minutes to 1 hour. The background noise level (or residual noise level) is the sound level during the quietest moments. It is usually generated by steady sources such as distant freeway traffic. It can be quantified with a descriptor called the L_{90} which is the sound level exceeded 90 percent of the time.

There are other statistical descriptors that are used, often times as part of a local noise ordinance. These descriptors are used since local ordinances will have limits based on the number of minutes per hour that an intrusive sound may exceed a specified limit. For example, if a specified noise level cannot be exceeded more than 30 minutes in an hour that is referred to as the L_{50}. The L_{50} is also referred to as the median noise level.

To quantify the noise level over a 24-hour period, the Day/Night Average Sound Level (DNL or L_{dn}) or Community Noise Equivalent Level (CNEL) is used. These descriptors are averages like the L_{eq} except they include a 10 dB penalty during nighttime hours (and a 5 dB penalty during evening hours in the CNEL) to account for peoples increased sensitivity during these hours. The CNEL and DNL are typically within one decibel of each other.

In environmental noise, a change in noise level of 3 dB is considered a just noticeable difference. A 5 dB change is clearly noticeable, but not dramatic. A 10 dB change is perceived as a halving or doubling in loudness.

Examples of common noise sources and their corresponding noise levels are provided in the following table.

Sound Source	**Sound Pressure Level (dBA)**
Air raid siren at 50 ft (threshold of pain)[1]	120
Maximum levels in audience at rock concerts[1]	110
Train horn at 100 ft[3]	103
On platform by passing subway train[1]	100
On sidewalk by passing heavy truck or bus[1]	90
Commuter train traveling at 79 mph at 100 ft[3]	88
On sidewalk by passing automobiles[1]	70
Typical gas and electric powered leaf blower at 50 ft[2]	68 - 71
Conversational speech[4]	60
Typical urban area background/busy office[1]	60
Typical suburban area background[1]	50
Quiet suburban area at night[1]	40
Typical rural area at night[1]	30
Isolated broadcast studio[1]	20
Audiometric (hearing testing) booth[1]	10
Threshold of hearing[1]	0

[1]Cowan, James P. *Handbook of Environmental Acoustics*. Van Nostrand Reinhold, 1994.

[2]California Environmental Protection Agency, Air Resources Board. Mobile Source Control Division (2000). A report to the California legislature on the potential health and environmental impacts of leaf blowers. Retrieved from https://ww3.arb.ca.gov/msprog/leafblow/leafblow.htm

[3]California High-Speed Rail Authority. (2018). *How do High-Speed Train Noise Levels Compare to Traditional Trains. Retrieved from* https://www.hsr.ca.gov/communication/info_center/factsheets.aspx

[4]Everest, Fredrick Alton, and Ken C. Pohlmann. *Master Handbook of Acoustics*, *5th Ed*. McGraw-Hill, 2009.

Vibration is an oscillatory motion which can be described in terms of the displacement, velocity, or acceleration. Because the motion is oscillatory, there is no net movement. Displacement is the easiest descriptor to understand. For a vibrating floor, the displacement is simply the distance that a point on the floor moves away from its static position. The velocity represents the instantaneous speed of the floor movement.

The peak particle velocity (PPV) is the descriptor used in monitoring of construction vibration since it is related to the stresses that are experienced by buildings. The table below shows the guideline criteria for building damage by Caltrans. The criteria are in terms of the peak particle velocity (PPV) expressed in inches per second.

Guideline Vibration Damage Potential Threshold Criteria (Caltrans Table 19[1])

	Maximum PPV (in/sec)	
Structure and Condition	**Transient Sources**	**Continuous/Frequent Intermittent Sources**
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

[1] Caltrans, *Transportation and Construction Vibration Guidance Manual*, September 2013.

3 Regulatory Framework

The following section identifies the applicable City and State acoustical goals for the project.

For the CEQA Analysis (Section 6), the *thresholds of significance* used to assess potential impact are identified prior to each checklist item in Section 6.

3.1 California Building Code

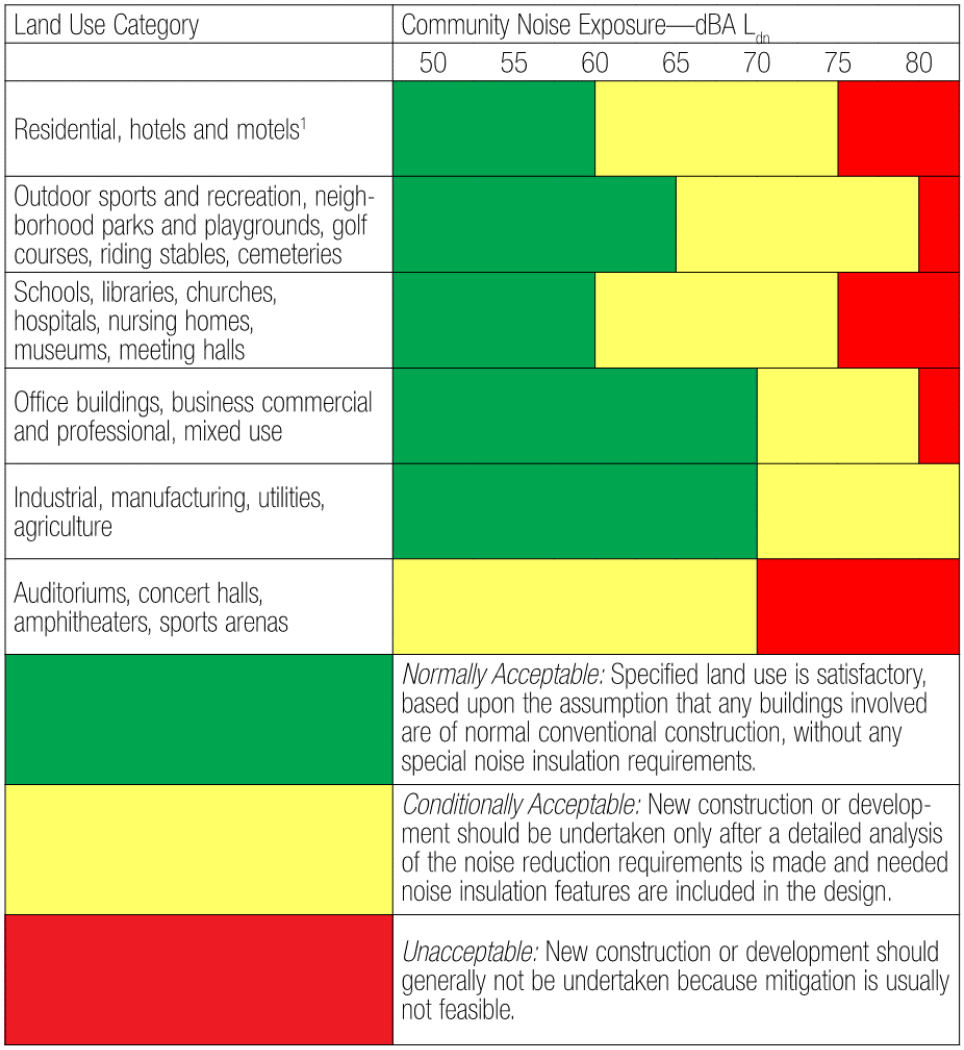
Section 1206.4 specifies allowable interior noise levels for new multi-family residential buildings. This section states that "*Interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. The metric shall be either the day-night average sound level (L_{dn}) or the community noise equivalent level (CNEL), consistent with the noise element of the local general plan*."

3.2 Novato General Plan

The Living Well Chapter of the City of Novato General Plan 2035 has goals, policies, and programs to protect the health and welfare of the community by promoting development which is compatible with established noise standards.

> **Goal NS 1: Maintain a quiet community**
>
> NS 1: **Compatibility of New Development**. Protect people in new development from excessive noise by applying the Land Use Compatibility Standards in Figure LW-5 [Figure 1] in locating and designing new development.

Figure 1: City of Novato General Plan Land Use Compatibility Standards (Novato General Plan Figure LW-5) –



1 Outdoor areas of multi-family developments are allowed a higher noise compatibility standard of 65 dBA Ldn.

NS 1a: **Acoustical Compatibility Study**. Require an acoustical study for all new residential projects with a future exterior noise exposure of 60 dBA L_{dn} or greater as shown on Figure LW-6 [Figure 1] and consider mitigation measures to lower noise exposure.

NS 1b: **Indoor Noise Standard**. The maximum acceptable interior noise level for all new residential development, including hotels and motels, is 45 dBA L_{dn}.

NS 1c: **Residential Near Gnoss Field**. An acoustical investigation and noise mitigation should be considered for residential development within the 55 dBA CNEL contour. For any residential development where outdoor noise exceeds 60 dBA L_{dn} require deed disclosure to all residents of the noise levels anticipated.

NS 1d: **Exterior Noise Standard**. New residential development should be located in areas where outdoor noise levels are no greater than 60 dBA L_{dn} in areas where outdoor use is a major consideration, such as backyards in single family developments and recreation areas in multifamily developments. This standard should not be applied to outdoor areas such as small decks and balconies typically associated with multifamily residential developments, which can have a higher standard of 65 dBA L_{dn}. This standard shall not apply to outdoor areas for residences in mixed use developments. Additional standards may be applied on a case-by-case basis where supported by acoustical analysis to mitigate the effects of single-event noise sources such as aircraft noise.

NS 2: **Noise Impacts of Development**. Prevent land uses which increase surrounding noise levels above acceptable standards.

NS 2a: **Acoustical Impact Study**. Require acoustical studies and mitigation measures for new developments and transportation improvements which affect sensitive receptors such as schools, hospitals, libraries, group care facilities, and convalescent homes.

NS 2b: **Noise Mitigation**. Consider mitigation measures for new projects or land uses that would cause a substantial increase in noise (i.e. cause an increase above 60 dBA L_{dn} or cause an increase in 5 dBA L_{dn} or more in the noise ambient noise levels) in adjacent residential areas or in residential areas affected by traffic generated by the proposed project.

NS 3: **Noise Mitigation – Sound Walls**. To minimize noise impacts consider site planning options prior to consideration of sound wall construction, such as increasing the distance from the noise source and receiver, careful building placement and taking advantage of the natural shape and terrain of the landscape. Avoid sound walls where possible, but where necessary, reduce visual impacts with interesting wall design and extensive landscaping.

3.3 City of Novato Municipal Code

Noise

The City of Novato Municipal Code Section 19.22.070 includes standards for allowable exterior noise levels. According to the Code, uses, activities, and processes shall not generate or emit any noise or sound in excess of the levels provided in Table 1 beyond the property line of the parcel on which they are located. Noise from authorized construction between 7 a.m. and 6 p.m. on weekdays and between 10 a.m. and 5 p.m. on Saturdays are exempted from the exterior noise standards. Additionally, authorized grading activities and equipment operations between the hours of 7 a.m. and 6 p.m. on weekdays, when City inspectors are available and routine maintenance are also exempted from the exterior noise standards. Section 19.22.070 is repeated below.

19.22.070 - Noise and Construction Hours.

A. *Applicability.* Uses, activities, and processes shall not generate or emit any noise or sound in excess of the levels provided in Table 3-5 [Table 1] beyond the property line of the parcel on which they are located, except as provided in Subsection B.

B. *Exceptions.* The following are exempt from the allowable noise level requirements of Table 3-5 [Table 1] as noted:

1. Aerial warning devices that are required by law to protect the health, safety, and welfare of the community;
2. Emergency vehicle responses and all necessary equipment utilized in responses to a declared state of emergency;
3. Airport, and railroad operations;
4. Authorized construction activities, including warming-up or servicing of equipment, and any preparation for construction between 7 a.m. and 6 p.m. on weekdays, and between 10 a.m. and 5 p.m. on Saturdays. No construction is allowed on Sundays or official federal national holidays, except as otherwise authorized herein by the Community Development Director.
5. Authorized grading activities and equipment operations between 7 a.m. to 6 p.m. weekdays only, when City inspectors are available.
6. Routine maintenance activities.
7. Other construction activities as authorized in writing by the Community Development Director.

C. *Noise Measurement.* Exterior noise levels shall be measured at the property line of the noise source. Noise measurement shall be made with a sound level meter using the "A" weighted scale at slow meter response. Fast meter response shall be used only for an impulsive noise.

Table 1: City of Novato Municipal Code Allowable Exterior Noise Levels (Municipal Code Table 3-5)

Type of Land Use	Allowable Exterior Levels (1)	
	Time Interval	Maximum Noise Level (2)
Residential (3)	10 p.m. to 6 a.m.	45 dBA
	6 a.m. to 10 p.m.	60 dBA
Commercial (4)	10 p.m. to 6 a.m.	60 dBA
	6 a.m. to 10 p.m.	70 dBA
Industrial or manufacturing (4)	Any time	70 dBA

Notes:

(1) Each of the noise limits specified in Table 3-5 shall be reduced by 5 dBA for impulse or simple tone noises. If the ambient noise exceeds the resulting standard, the ambient shall be the standard.

(2) Maximum noise levels shall not be exceeded for an aggregate period of more than three minutes within a one-hour time period or by more than 20 dBA at any time.

(3) Residential standards apply to sensitive receptors such as schools, hospitals, libraries, group care facilities, and convalescent homes. These uses may require special mitigation.

(4) Commercial standards apply to Mixed Use Districts.

D. Authorized construction activity and uses established through the discretionary land use permit process may be subject to specific noise conditions of approval and/or mitigation measures that are more restrictive.

Vibration

The City of Novato Municipal Code Section 19.22.090 limits vibration from uses, activities and processes but it exempts vibrations from temporary construction activities.

> **19.22.090 - Vibration.**
>
> Uses, activities, and processes shall not generate ground vibration that is perceptible without instruments by the average person at any point along or beyond the property line of the parcel containing the activities. Vibrations from temporary construction, demolition, and vehicles that enter and leave the subject parcel (e.g., construction equipment, trains, trucks, etc.) are exempt.

3.4 U.S. Department of Housing and Urban Development (HUD)

The U.S. Department of Housing and Urban Development (HUD) Site Acceptability Standards are contained in 24CFR51 and are summarized below in Table 2. According to the HUD regulations, development in Normally Unacceptable Noise Zones require a minimum of 5 decibels additional sound attenuation for buildings having noise-sensitive uses if the L_{dn} is greater than 65 dBA but does not exceed 70 dBA, or a minimum of 10 dBA additional sound attenuation if the L_{dn} is greater than 70 dBA but does not exceed 75 dBA. Noise attenuation measures in Unacceptable Noise Zones require the approval of the Assistant Secretary for Community Planning and Development, or the Certifying Officer for activities subject to 24 CFR part 58.

HUD's regulations do not contain standards for interior noise levels. Rather a goal of DNL 45 dBA is set forth and the attenuation requirements are geared towards achieving that goal. It is assumed that with standard construction any building will provide sufficient attenuation so that if the exterior level is 65 dBA or less, the interior DNL will be 45 dBA or less.

The results and analysis of HUD standards can be found in Appendix A.

Table 2: HUD Site Acceptability Standards

Noise Zone	Day-night average sound level (L_{dn}) (in decibels)	Special approvals and requirements
Acceptable	Not exceeding 65 dB (1)	None.
Normally Unacceptable	Above 65 dB but not exceeding 75 dB	Special Approvals (2) Environmental Review (3). Attenuation (4).
Unacceptable	Above 75 dB	Special Approvals (2). Environmental Review (3). Attenuation (5).

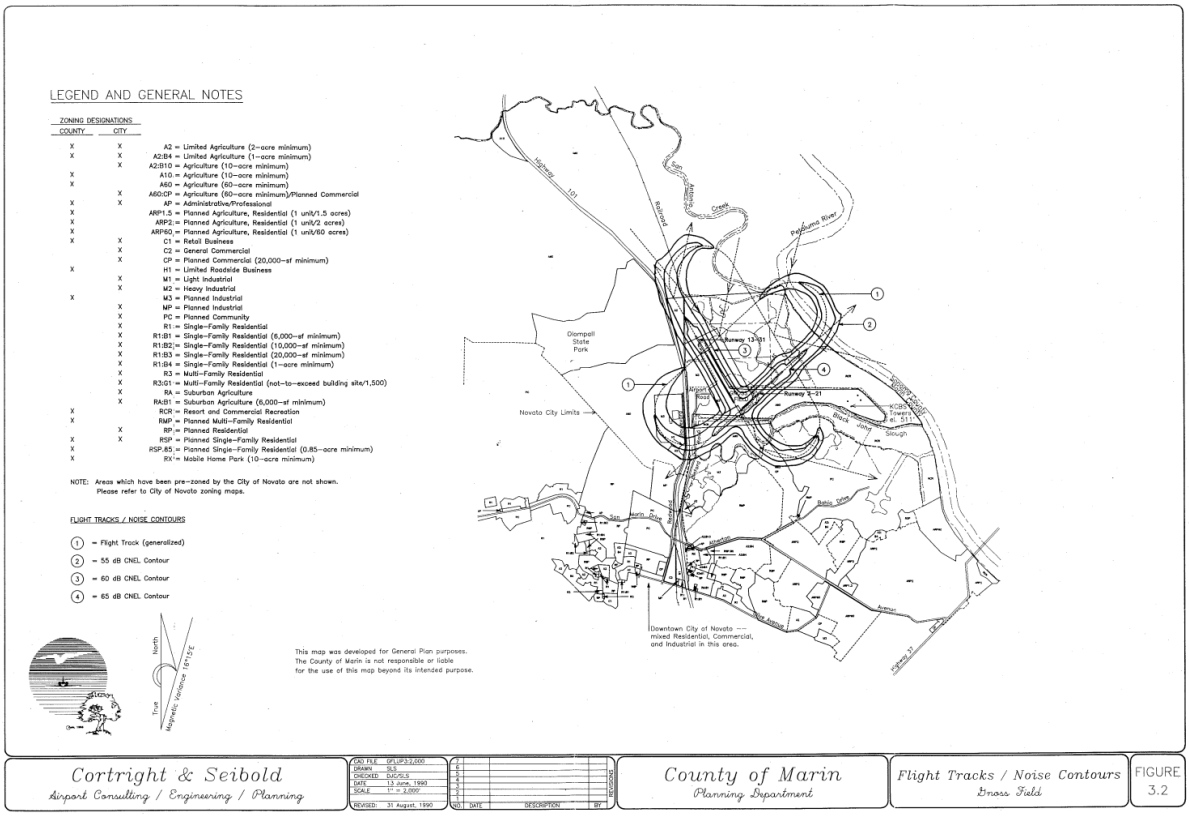
Notes: (1) Acceptable threshold may be shifted to 70 dB in special circumstances pursuant to § 51.105(a).
(2) See § 51.104(b) for requirements.
(3) See § 51.104(b) for requirements.
(4) 5 dB additional attenuation required for sites above 65 dB but not exceeding 70 dB and 10 dB additional attenuation required for sites above 70 dB but not exceeding 75 dB. (See § 51.104(a).)
(5) Attenuation measures to be submitted to the Assistant Secretary for CPD for approval on a case-by-case basis.
§ 51.104 (b) Special requirements - *Environmental review requirements.*
Environmental reviews shall be conducted pursuant to the requirements of 24 CFR parts 50 and 58, as applicable, or other environmental regulations issued by the Department. These requirements are hereby modified for all projects proposed in the Normally Unacceptable and Unacceptable noise exposure zones as follows:
(1) *Normally unacceptable noise zone.*
(i) All projects located in the Normally Unacceptable Noise Zone require a Special Environmental Clearance except an EIS is required for a proposed project located in a largely undeveloped area, or where the HUD action is likely to encourage the establishment of incompatible land use in this noise zone.
(ii) When an EIS is required, the concurrence of the Program Assistant Secretary is also required before a project can be approved. For the purposes of this paragraph, an area will be considered as largely undeveloped unless the area within a 2-mile radius of the project boundary is more than 50 percent developed for urban uses and infrastructure (particularly water and sewers) is available and has capacity to serve the project.
(iii) All other projects in the Normally Unacceptable zone require a Special Environmental Clearance, except where an EIS is required for other reasons pursuant to HUD environmental policies.
(2) *Unacceptable noise zone.* An EIS is required prior to the approval of projects with unacceptable noise exposure. Projects in or partially in an Unacceptable Noise Zone shall be submitted to the Assistant Secretary for Community Planning and Development, or the Certifying Officer for activities subject to 24 CFR part 58, for approval. The Assistant Secretary or the Certifying Officer may waive the EIS requirement in cases where noise is the only environmental issue and no outdoor noise sensitive activity will take place on the site. In such cases, an environmental review shall be made pursuant to the requirements of 24 CFR parts 50 or 58, as appropriate.

3.5 Airport Land Use Plan – Marin County Airport Gnoss Field

The project is located within the Gnoss Field “Referral Area” established in the current Airport Land Use Plan (1991). The Airport Land Use Plan has policies to evaluate land use plans and proposed development in the vicinity of Gnoss Field.

The Airport Land Use Plan contains noise contours depicting flight operations in the 2006, which at the time of preparation was a future year projection. These contours show the noise contribution from a proposed crosswind runway which, to date, has not been constructed. This noise contour map is shown in Figure 2.

Figure 2: Airport Land Use Plan (1991) Aircraft Noise Contours



The guidelines for aircraft noise/land use compatibility are shown in Table 3. The Compatibility Matrix for residential development is shown in Table 4 (ALUCP Table 4.1). The relevant noise related policies are repeated below.

- Policy NC-1.4 **Residential Land Use**. New residential development should be prohibited within the 60 dB CNEL noise contour.
- Policy NC-1.5 **Noise Easements**. As a condition of approval, noise easements should be granted to the County or any zoning change or new residential development within the 55 dB or higher CNEL noise contour.
- Policy NC-1.6 **Acoustical Study**. As a condition of approval, an acoustical study shall be required for any proposed new residential development within the 55 dB CNEL noise contour. Recommendations in the study regarding sound insulation shall be implemented.

Table 3: Land Use Guidelines for Noise Compatibility (ALUCP Table 3.3)

Table 3.3

LAND USE GUIDELINES FOR NOISE COMPATIBILITY
GNOSS FIELD

Land Use	55-60 dB CNEL	60-65 dB CNEL	65-70 dB CNEL	70-75 dB CNEL	75-80 dB CNEL	80+ dB CNEL
Residential/ Lodgings	- Potential for annoyance exists; identify high complaint areas - Determine whether sound insulation requirements should be established for these areas - Noise easements should be required for new construction - Limit residential use underneath the flight pattern	- No new single family dwellings - Prohibit mobile homes - New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation is included in the design - Noise easements should be required	- No new construction or development of residential uses - New hotels and motels may be permitted after an analysis of noise reduction requirements is made and needed noise insulation is included in the design	- No hotels, motels, or residential development	- Same as 70-75 dB CNEL	- Same as 70-75 dB CNEL
Public/ Institutional	- Satisfactory	- Satisfactory	- Discourage institutional uses - If no other alternative location is available, new construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation is included in the design	- No institutional uses	- Same as 70-75 dB CNEL	- Same as 70-75 dB CNEL
Commercial	- Satisfactory	- Satisfactory	- Satisfactory	- New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation features included in the design - Noise reduction levels of 25-30 dB will be required	- Same as 70-75 CNEL	- No new construction or development unless related to airport activities or services. Conventional construction will generally be inadequate and special noise insulation features should be included in the construction.
Industrial	- Satisfactory	- Satisfactory	- Satisfactory	- Satisfactory	- New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation features included in the design. - Measures to achieve noise reduction of 25-35 dB must be incorporated in portions of building where the public is received and in office areas.	- No new construction or development unless related to airport activities or services. Conventional construction will generally be inadequate and special noise insulation features should be included in the construction.
Recreation/ Open Space	- Satisfactory	- Satisfactory, with little noise impact and requiring no special noise insulation requirements for new construction. - Outdoor music shells and amphitheaters should not be permitted.	- Satisfactory, with little noise impact and requiring no special noise insulation requirements for new construction. - Outdoor music shells and amphitheaters should not be permitted.	- Parks, spectator sports, golf courses, and agricultural generally satisfactory with little noise impact. - Nature areas for wildlife and zoos should be permitted.	- Land uses involving concentrations of people (spectator sports and some recreational facilities) or of animals (livestock farming and animal breeding) should not be permitted.	- Same as 75-80 dB CNEL

Source: Adopted and modified from Table III-3, Technical Reference 9, by Cortright & Seibold

Table 4: Compatibility Matrix (ALUCP Table 3.4)

Table 4.1

COMPATIBILITY MATRIX
Marin County Airport
Environs Zoning

Zoning Designations (1)				CNEL Area (2)				ALUP Safety Zone (3)					
County	City	Zone	Category	70dB	65dB	60dB	55dB	1	2	3	4	5	Restrictions / Conditions
X		PF	Public Facility	Y	Y	Y	Y	N	N	C	Y	Y	Subject to approved Master Plan Special study required in Zone 3
	X	R1	Single-Family Residential	N(4)	N	N	C	N	N	N	C	Y	No schools, hospitals, libraries, day-care centers, or other
	X	R1:B1	Single-Family Residential (6,000-sf minimum)	N	N	N	C	N	N	N	C	Y	institutions in Zone 4 without special study
	X	R1:B2	Single-Family Residential(10,000-sf minimum)	N	N	N	C	N	N	N	C	Y	No uses requiring a permit without special study in Zone 4
	X	R1:B3	Single-Family Residential (20,000-sf minimum)	N	N	N	C	N	N	N	C	Y	
	X	R1:B4	Single-Family Residential (1-acre minimum)	N	N	N	C	N	N	N	C	Y	
X		R2	Two-Family Residential	N	N	N	C	N	N	N	C	Y	No uses requiring a permit without special study in Zone 4
	X	R3	Multi-Family Residential	N	N	N	C	N	N	N	C	Y	No uses requiring a permit without special study in Zone 4
	X	R3:G1	Multi-Family Residential (not-to-exceed building site/1,500)	N	N	N	C	N	N	N	C	Y	
	X	RA	Suburban Agriculture	N	N	N	C	N	N	N	C	Y	No uses requiring a permit without special study in Zone 4
	X	RA:B1	Suburban Agriculture (6,000-sf minimum)	N	N	N	C	N	N	N	C	Y	
X		RCR	Resort and Commercial Recreation	N	Y	Y	Y	N	N	C	Y	Y	Subject to approved Master Plan Special study required in Zone 3
X		RE	Residential Estates	N	N	N	C	N	N	N	C	Y	No schools, hospitals, libraries, day-care centers, or other institutions in Zone 4 without special study No uses requiring a permit without special study in Zone 4
X		RF	Floating Home Marina	N	N	N	C	N	N	N	C	Y	Subject to approved Master Plan Special study required in Zone 4
X		RMP	Planned Multi-Family Residential	N	N	N	C	N	N	N	C	Y	Same as applied for respective land use/zoning category or as adopted by ordinance in accordance with approved Master Plan
X		RMPC	Residential/Commercial Multiple Planned	N	N	N	C	N	N	N	C	Y	Same as RMP and/or CP zoning
	X	RP	Planned Residential	N	N	N	C	N	N	N	C	Y	Same as applied for respective land use/zoning category or as adopted by ordinance in accordance with approved Master Plan
X		RR	Restricted Residential	N	N	N	C	N	N	N	C	Y	No uses requiring a permit without special study in Zone 4
X	X	RSP	Planned Single-Family Residential	N	N	N	C	N	N	N	C	Y	Same as applied for respective land use/zoning category or as
X		RSP.85	Planned Single-Family Residential (0.85-acre minimum)	N	N	N	C	N	N	N	C	Y	adopted by ordinance in accordance with approved Master Plan
X		RX	Mobile Home Park (10-acre minimum)	N	N	N	C	N	N	N	C	Y	Subject to approved Master Plan Special study required in Zone 4
X		VCR	Village Commercial Residential	N	N	C	Y	N	N	C	Y	Y	Uses permitted in Zone 3 subject to restrictions for similar uses in other Safety Zones Conditional uses permitted subject to special study in Zone 3

(1) X = Applicable Zoning
(2) CNEL = Community Noise Equivalent Level per Title 21
(3) 1 = Clear Zone, 2 = Approach Zone, 3 = Traffic Pattern Zone, 4 = Overflight Zone, and 5 = Referral Area
(4) N = Not Compatible, C = Conditionally Compatible, and Y = Compatible

Source: Cortright & Seibold

3.6 CEQA Guidelines

In accordance with Section XI of Appendix G of the *CEQA Guidelines*, a proposed project could have a significant environmental impact if it would 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 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.

4 Noise Environment

The project site is located approximately 150 to 1,100 feet from the center of the freeway (US 101). Noise measurements were made between 30 November 2018 and 3 December 2018 to quantify the existing noise levels. The noise measurements consisted of long-term, 72-hour, noise measurements at two locations and short-term, 15-minute, noise measurements at four locations on the project site. The noise measurement locations are shown in Figure 3.

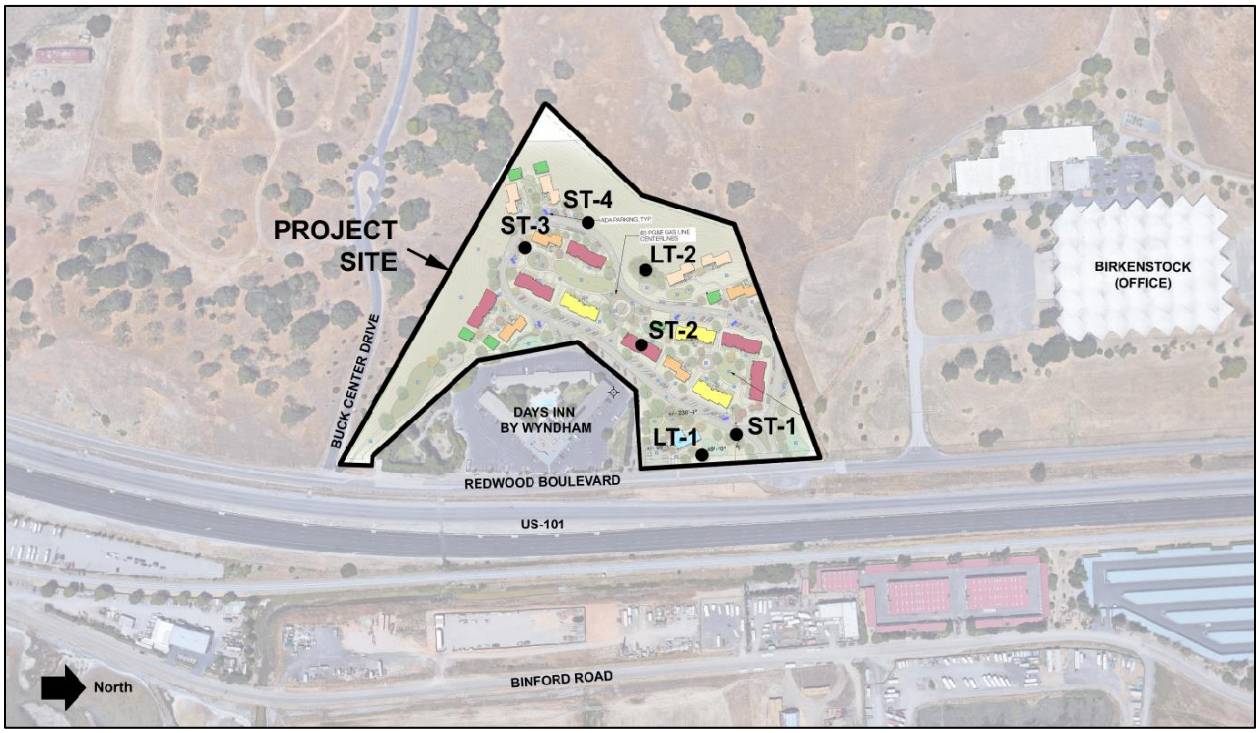
The long-term noise monitor at LT-1 was located near the eastern boundary of the project site and was approximately 37 feet from the centerline of Redwood Boulevard. The microphone was positioned approximately 10 feet above ground. Hourly average noise levels at this location typically ranged from L_{eq} 69 to 74 dBA during the day (7 AM – 10 PM) and L_{eq} 66 to 73 dBA during the night (10 PM – 7 AM). The calculated weekly L_{dn} was 77 dBA.

The long-term noise monitor at LT-2 was located on an existing tree near the middle of the site at approximately 580 feet from the centerline of Redwood Boulevard. The microphone was positioned approximately 8 feet above ground. Hourly average noise levels at this location typically ranged from L_{eq} 58 to 61 dBA during the day (7 AM – 10 PM) and L_{eq} 52 to 60 dBA during the night (10 PM – 7 AM). The calculated weekly L_{dn} was 65 dBA.

Short-term measurements were conducted at location ST-1, ST-2, ST-3, and ST-4. At locations ST-1, ST-2, and ST-3, two simultaneous measurements were conducted to document the noise exposure of upper and lower building levels. One measurement was made at a height of 24 feet above ground and the other at a height of 5 feet above ground. The measurement at ST-4 was conducted near the rear of the project site at a height of 5 feet above ground.

The major noise source affecting the project site is vehicular traffic from US-101 freeway. Other noise sources include aircraft which typically east of the site and generated noise levels less than freeway noise near location LT-1. The maximum instantaneous (L_{max}) aircraft noise levels near LT-2 were audible and typically between 58 and 64 dBA (includes some traffic noise contribution). The aircraft are typically smaller single or twin engine general aviation but during our site visit, we saw one jet aircraft flying near location ST-3 which generated an L_{max} of 62 dBA. It is important to note that the L_{max} noise levels observed at the site were for short duration events and the long-term average noise levels (L_{dn} and CNEL) due to aircraft are likely at least 10 to 20 dBA less than the L_{max} values. Another noise source is SMART trains traveling on tracks to the east of US-101, approximately 260 to 1250 feet from the project site. During our site visit, we observed one SMART train passby but the measured noise levels were dominated by freeway noise.

Figure 3: Noise Measurement Locations



Figures 4 and 5 show the long-term noise measurement results. Table 5 shows the short-term measurement results.

Figure 4: Noise Measurement Results Location LT- 1 (Weekly L_{dn} 77 dBA)

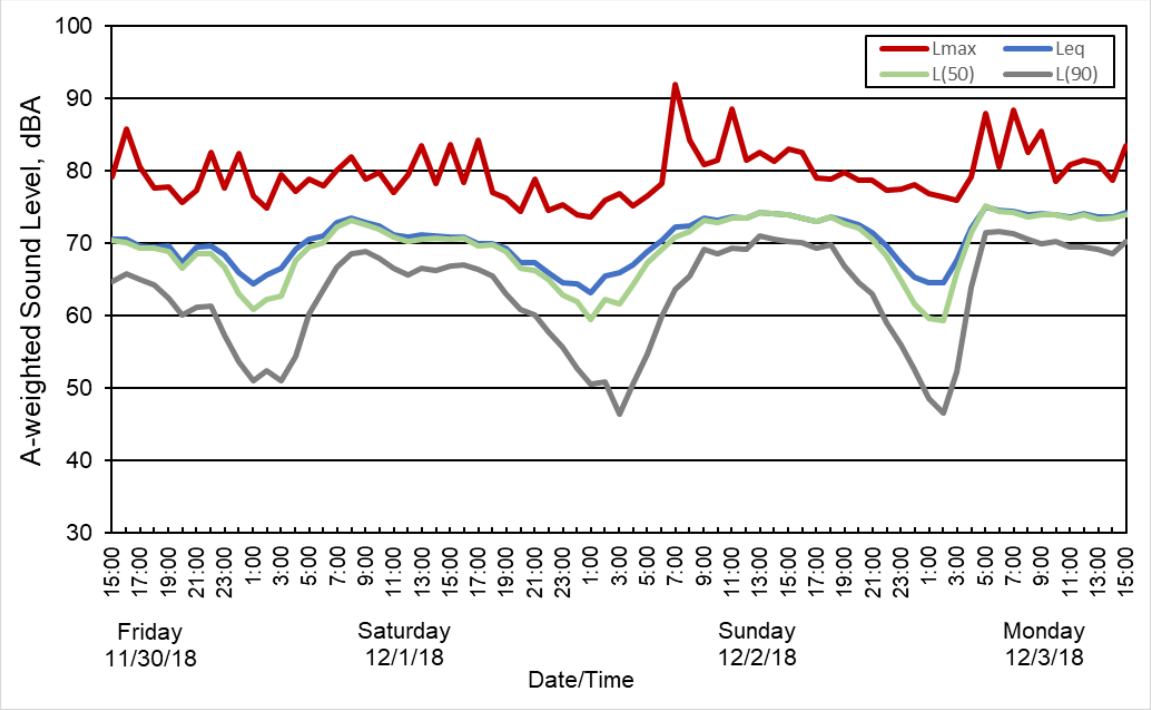


Figure 5: Noise Measurement Results Location LT- 2 (Weekly L_{dn} 65 dBA)

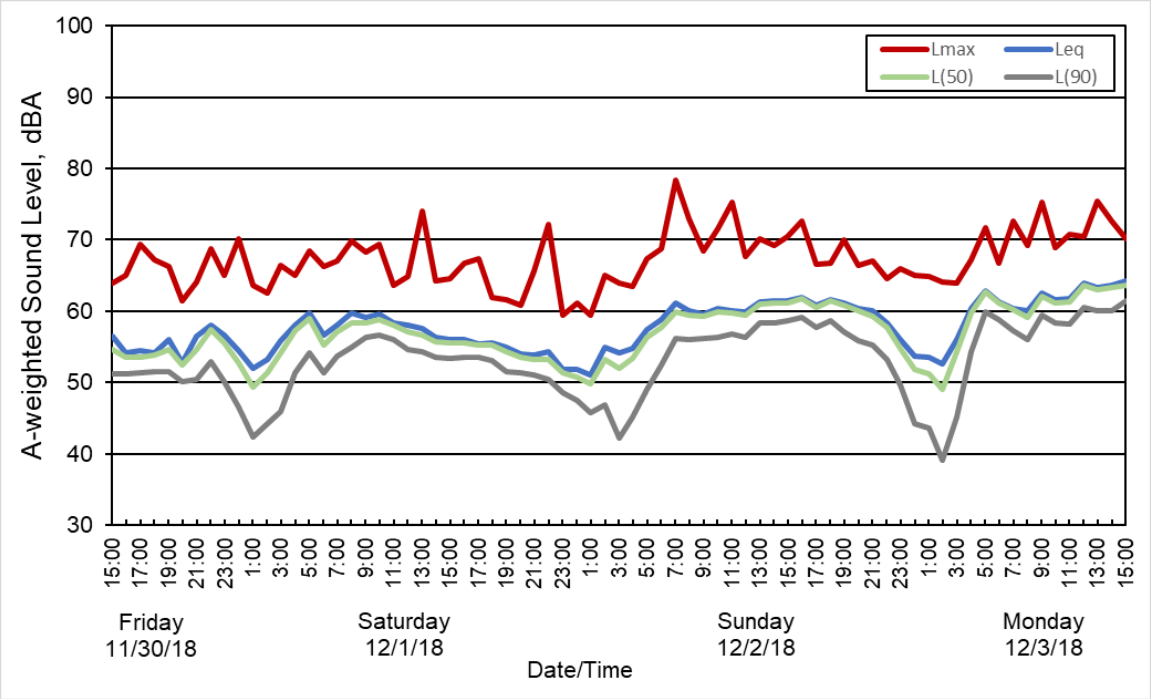


Table 5: Short-Term Noise Measurement Results – 3 December 2018

Location/ Height Above Ground		Time	L_{eq}	L_1	L_{10}	L_{33}	L_{50}	L_{90}	L_{dn}*	L_{max}
ST-1	24 ft	12:56 PM – 1:11 PM	74	78	76	75	73	69	77	Freeway: 72 – 75 typ. Heavy trucks on freeway: 72 – 75 Gen aviation: < 73, < 71
	5 ft		71	76	74	72	71	67	75	Freeway: 70 – 73 typ. Heavy trucks on freeway: 70 – 72 Gen aviation: < 73, < 71
ST-2	24 ft	1:41 PM – 1:56 PM	65	68	67	65	65	61	68	Freeway: 62 – 66 typ. Heavy trucks on freeway: 66 – 67 Gen aviation: < 68, < 64
	5 ft		62	65	64	62	62	59	65	Freeway: 60 – 63 typ. Heavy trucks on freeway: 63 – 65 Gen aviation: < 65, < 62
ST-3	24 ft	2:18 PM – 2:33 PM	62	65	64	63	62	58	63	Freeway: 58 – 64 typ. Helicopter: 62
	5 ft		62	66	64	63	62	59	64	Freeway: 58 – 64 typ. Helicopter: 62
ST-4	5 ft	2:39 PM – 2:54 PM	62	65	64	63	62	59	63	Freeway: 61 – 65 typ.

*L_{dn} calculated based on correlation with simultaneous measurement at long-term location.

Future Noise Environment

The section of US-101 freeway near the site is part of the Marin-Sonoma Narrows (MSN) HOV Widening Project. According to the MSN Project's Final Environmental Impact Report (FEIR)[2], the predicted future peak hour noise levels L_{eq} (h) along US-101 would increase by approximately 1 to 2 dBA.

To calculate the future noise levels at the project site, a 3D noise modeling program (SoundPlan) was used using the Federal Highway Administration's Traffic Noise Model (TNM 2.5). The noise model takes into account factors such as traffic volumes, ground effects, and site contour elevations. The traffic volumes are based on the traffic information from Caltrans' Traffic Census Program. We also calibrated the model based on the measurement results at locations close to the freeway.

Our calculations show that the typical project residential buildings with view of the US-101 would be exposed to a future noise level of L_{dn} 70 to 73 dBA at elevated receivers. At the nearest proposed residential building, the façade facing US-101 would be exposed up to L_{dn} 75 dBA. Receivers at the first floor would be exposed to less noise compared to elevated receivers and buildings in the rear, farther from the US-101, would also be exposed to less noise levels.

5 Land Use Compatibility

Evaluation of land use compatibility for noise sources other than aircraft is not required in a CEQA study. However, for the purposes of this report, the project site's noise exposure is assessed with respect to the acoustical requirements contained in the City of Novato General Plan.

The General Plan's Land Use Compatibility Standards (Figure 1) shows that residential land uses exposed to noise levels between L_{dn} 60 to 75 dBA are considered "conditionally acceptable" and new development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. For residential land uses exposed to noise levels greater than L_{dn} 75 dBA, the noise exposure is considered "unacceptable" and new development "should generally not be undertaken because mitigation is usually not feasible".

The proposed office building would be exposed to a future noise level of up to L_{dn}77 dBA, which is in the Land Use Compatibility Standards' "conditionally acceptable" noise level range for office buildings. The proposed residential buildings would be exposed to a future noise level of L_{dn} 75 dBA or less, which is in the Land Use Compatibility Standards' "conditionally acceptable" noise level range for residential uses.

The City's General Plan Policy NS 1a requires an acoustical study for residential projects with a future exterior noise exposure of L_{dn} 60 dBA or greater. The following analysis is based on the "Planning Application" set drawings dated 10/16/20.

[2] U.S. Department of Transportation, Federal Highway Administration and State of California Department of Transportation. "Marin-Sonoma Narrows (MSN) HOV Widening Project Final Environmental Impact Report/Final Environmental Impact Statement." 2009

5.1 Exterior Noise Levels

According to the Landscape Site Plan (Sheet L-1.00), the project includes multiple common outdoor use spaces that are primarily located at the center of each residential building cluster. These outdoor use spaces include community event spaces, lawn/play area, seating area, and playground areas. There are also a fenced dog park and a playground/nature area near the southeast end of the site near Redwood Boulevard. These common use outdoor spaces are noted below in Figure 6. The residential buildings would also feature private front yards/balconies. The private front yards/balconies are generally oriented away from the US-101 freeway.

Figure 6: Common Outdoor Use Spaces



Per General Plan Policy NS 1d, common recreational areas where outdoor use is a major consideration should be located in areas where outdoor noise levels are no greater than L_{dn} 60 dBA. Small decks and balconies in multifamily development have a standard of L_{dn} 65 dBA.

Figure 7 shows the calculated future noise contours at the project site. Figure 8 shows our legend for the calculated future noise levels at the private front yard/balconies in Table 6 and the common outdoor areas in Table 7. Noise levels in bold in the tables exceed the outdoor noise standard (L_{dn} 65 dBA for multifamily balconies and decks or L_{dn} 60 dBA for common outdoor recreational areas).

Figure 7: Future Exterior Noise Contours

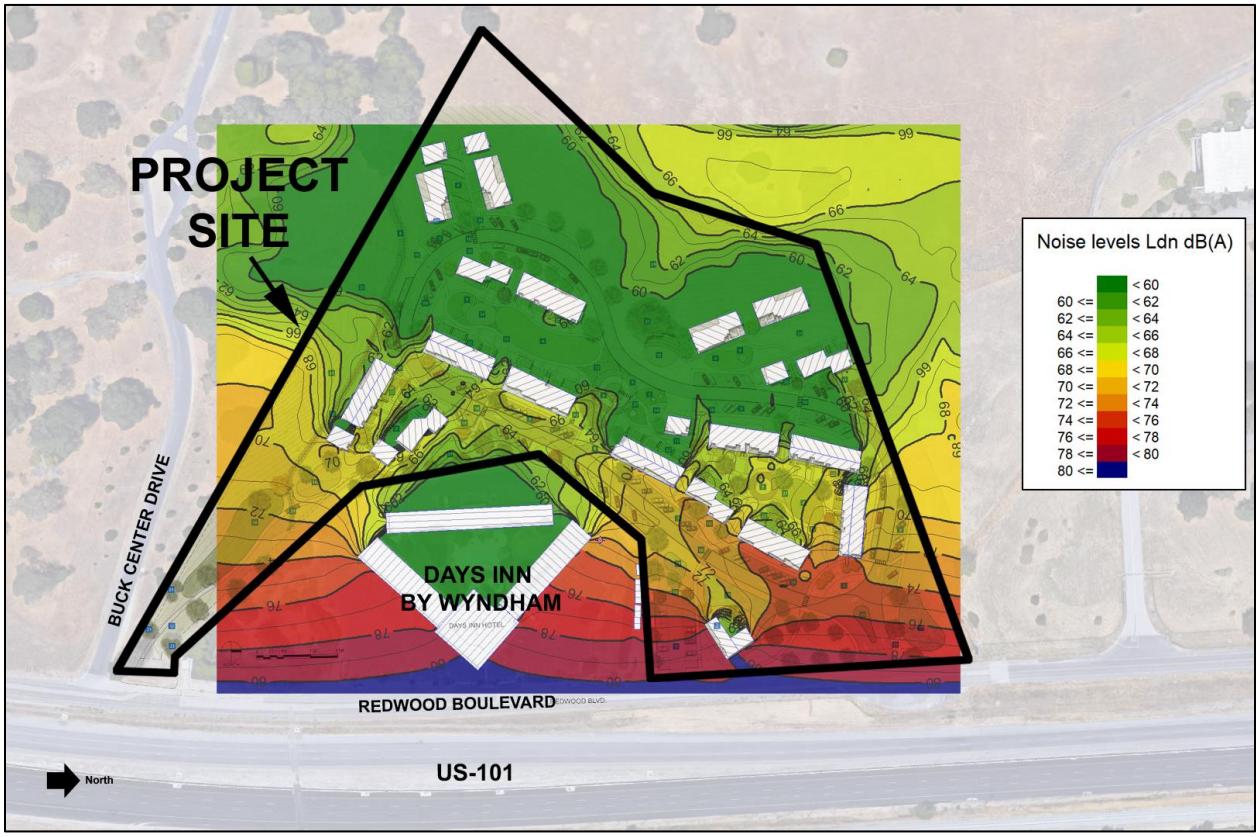


Figure 8: Exterior Noise Assessment Legend

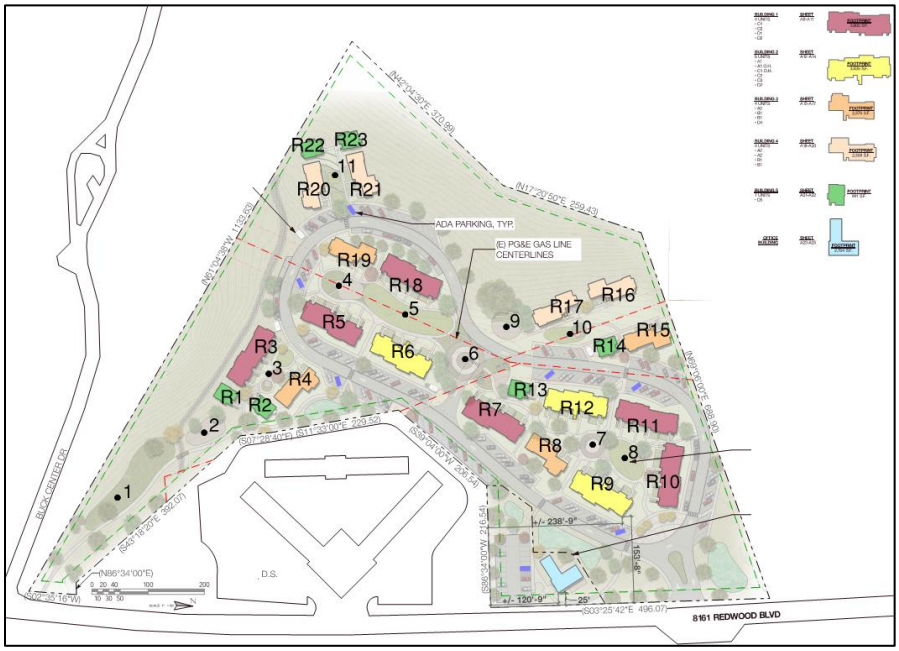


Table 6: Future Noise Levels at Residential Private Front Yards and Balconies

Building		Future L_{dn}, dBA	
		Front Yard	Balcony
R1	2-story	**67**	n/a
R2	2-story	65	n/a
R3	3-story	64 - **66**	n/a
R4	3-story	60	63
R5	3-story	55	n/a
R6	3-story	54	56
R7	3-story	58	n/a
R8	3-story	63	62 - 65
R9	3-story	64	**66**
R10	3-story	**66 - 70**	n/a
R11	3-story	**66 - 67**	n/a
R12	3-story	65	65 - **67**
R13	3-story	60	n/a
R14	3-story	54	n/a
R15	3-story	50	54
R16	2-story	57	61
R17	2-story	58	61
R18	3-story	60	n/a
R19	3-story	58	60
R20	2-story	54	58
R21	2-story	57	58
R22	2-story	56	n/a
R23	2-story	54	n/a

n/a: not applicable

Table 7: Future Noise Levels at Common Outdoor Areas

Outdoor Use Area	Future L_{dn}, dBA
1	**73**
2	**70**
3	**64**
4	56
5	56
6	60
7	**67**
8	**68**
9	55
10	58
11	55

As shown in Table 6 for future noise levels at private front yards and balconies, most of the private front yards/balconies facing away from the freeway would be exposed to a L_{dn} of 65 dBA or less. Some private front yards/balconies nearest the freeway (R1, R3, R9, R10, R11, R12) would be exposed up to L_{dn} 70 dBA and exceed the City's standard.

Table 7 shows that there are several common outdoor use spaces that meet the City's outdoor noise standard. However, those areas nearest the freeway would be exposed to noise levels exceeding L_{dn} 60 dBA. These spaces include the fenced dog park and "playground/nature play" area which would be exposed to typical noise levels of L_{dn} 70 to 73 dBA. While a majority of the common outdoor use spaces near the proposed residential buildings meet the current City standards, the "lawn/play" area, "informal seating area", and "event space" around Outdoor Locations 3, 7 and 8, would be exposed to typical noise levels of L_{dn} 64 to 68 dBA. These common outdoor use areas would be exposed to noise levels exceeding the City's standard if outdoor use is a major consideration.

For common outdoor use areas exceeding the City's standard, noise attenuation could be achieved by using noise barriers (solid wood or masonry fences) or earthen berms near the outdoor use area. For example, solid fences (8- to 10-feet tall) could be used to connect the buildings to "close off" gaps that allow sound transfer from the freeway to the outdoor area. Another example could be locating noise barriers in close proximity to each of the outdoor use areas and/or near front yards to help reduce noise. Detailed recommendations should be determined during the architectural design phase. However, due to the project layout (e.g. access requirements), noise barriers may not be practical or feasible and therefore, meeting the City's standard (L_{dn} 60 dBA for common areas and L_{dn} 65 dBA for front yards) may not be achievable in some areas.

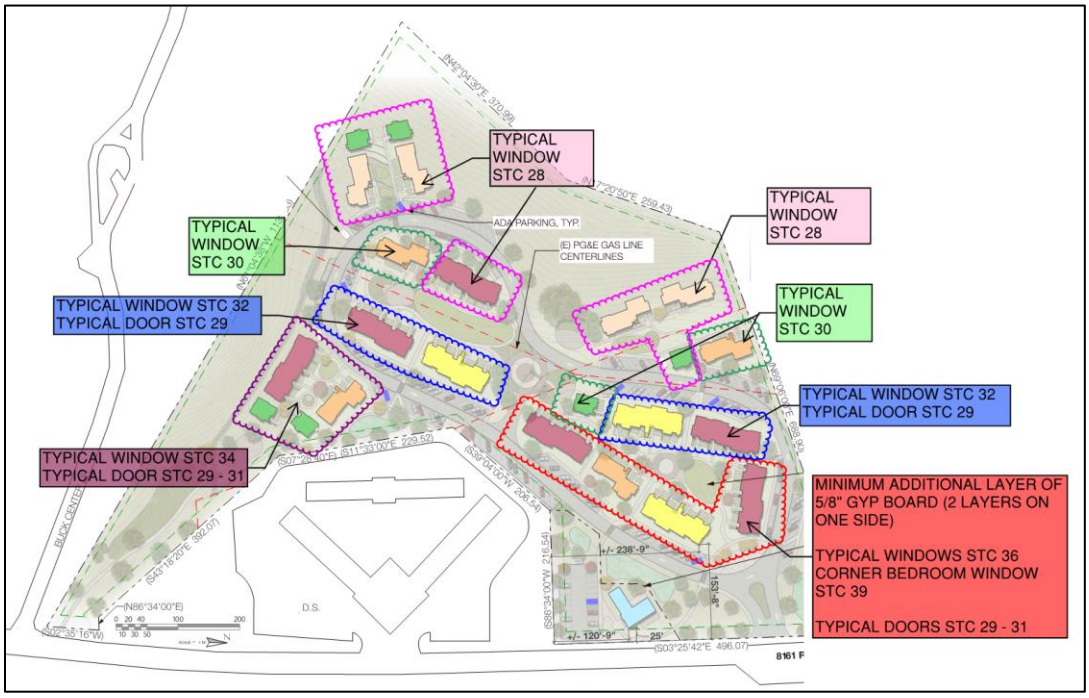
Reducing noise at private second floor balconies could be achieved through the use of a solid balcony railing. For example, a solid balcony railing that is at least four feet tall would be expected to reduce noise for seated person by 2-5 dBA though the exact amount would depend on location of the balcony, orientation and amount of reflected sound. We would expect that the

balconies in buildings R9 and R12 would be able to meet the City standards with these solid balcony railings. Detailed recommendations should be determined during the architectural design phase.

5.2 Interior Noise Levels

Per General Plan Policy NS 1b, the interior noise level standard for residential development is an L_{dn} 45 dBA. This interior noise standard can be achieved through the use of sound-rated windows, doors, and in some cases, special exterior wall construction. Figure 9 shows the preliminary recommendations to achieve an interior noise level of L_{dn} 45 dBA. The preliminary recommendations in Figure 9 are intended for informational purposes and are not to be used for construction.

Figure 9: Preliminary Recommendations to Meet Residential Interior Noise Standard L_{dn} 45 dBA



*STC ratings are preliminary and not to be used for design or construction. Detailed recommendations for window/exterior door STC ratings and exterior walls would be determined during the architectural design phase and are excluded from this report.

Per CALGreen, the interior noise level standard for nonresidential development is a L_{eq} of 50 dBA during the noisiest hour of the day. This applies to the proposed office building along Redwood Boulevard which would be exposed to a peak hour L_{eq} of 76 dBA. Based on the floor plan and elevation drawings, the windows and the lobby entrance door would need a minimum STC sound rating of 31. Other exterior doors to the conference room and open office would need to have a minimum STC sound rating of STC 29.

Detailed recommendations for sound ratings should be determined during the architectural design phase.

The windows can be operable but will need to be in the closed position to meet the interior noise standard. Therefore, an alternative form of ventilation (outside air) must be provided. The project will include mechanical ventilation system for fresh air. The ventilation system must not compromise the sound insulation of the façade. Through-the-wall air-conditioners may not be feasible at locations closest to the road since they tend to allow too much traffic noise transfer though the exterior wall. This mechanical ventilation system should be evaluated during the architectural design phase to confirm that it does not compromise the noise attenuation provided by the building shell.

6 CEQA Impact Assessment

6.1 Construction Noise (CEQA Checklist a)

6.1.1 Thresholds of Significance

The City of Novato Municipal Code Section 19.22.070 provides exemptions from exterior noise standards for noise from authorized construction between 7 a.m. and 6 p.m. on weekdays and between 10 a.m. and 5 p.m. on Saturdays. Section 19.22.070 also exempts authorized grading activities and equipment operations between the hours of 7 a.m. and 6 p.m. on weekdays, when City inspectors are available and routine maintenance.

Construction activities outside the allowable hours of 7 a.m. to 6 p.m. on weekdays and 10 a.m. to 5 p.m. on Saturdays, or on Sundays would be subject to the City's exterior noise limits, unless authorized in writing by the Community Development Director.

The project would result in a significant impact if:

- construction occurs outside the allowable hours or on Sundays, except as authorized by the Community Development Director.

- construction noise exceeds the FTA's daytime construction noise thresholds of L_{eq} 80 dBA and L_{eq} 85 dBA over an 8-hour period[3] for residential and commercial land uses, respectively.

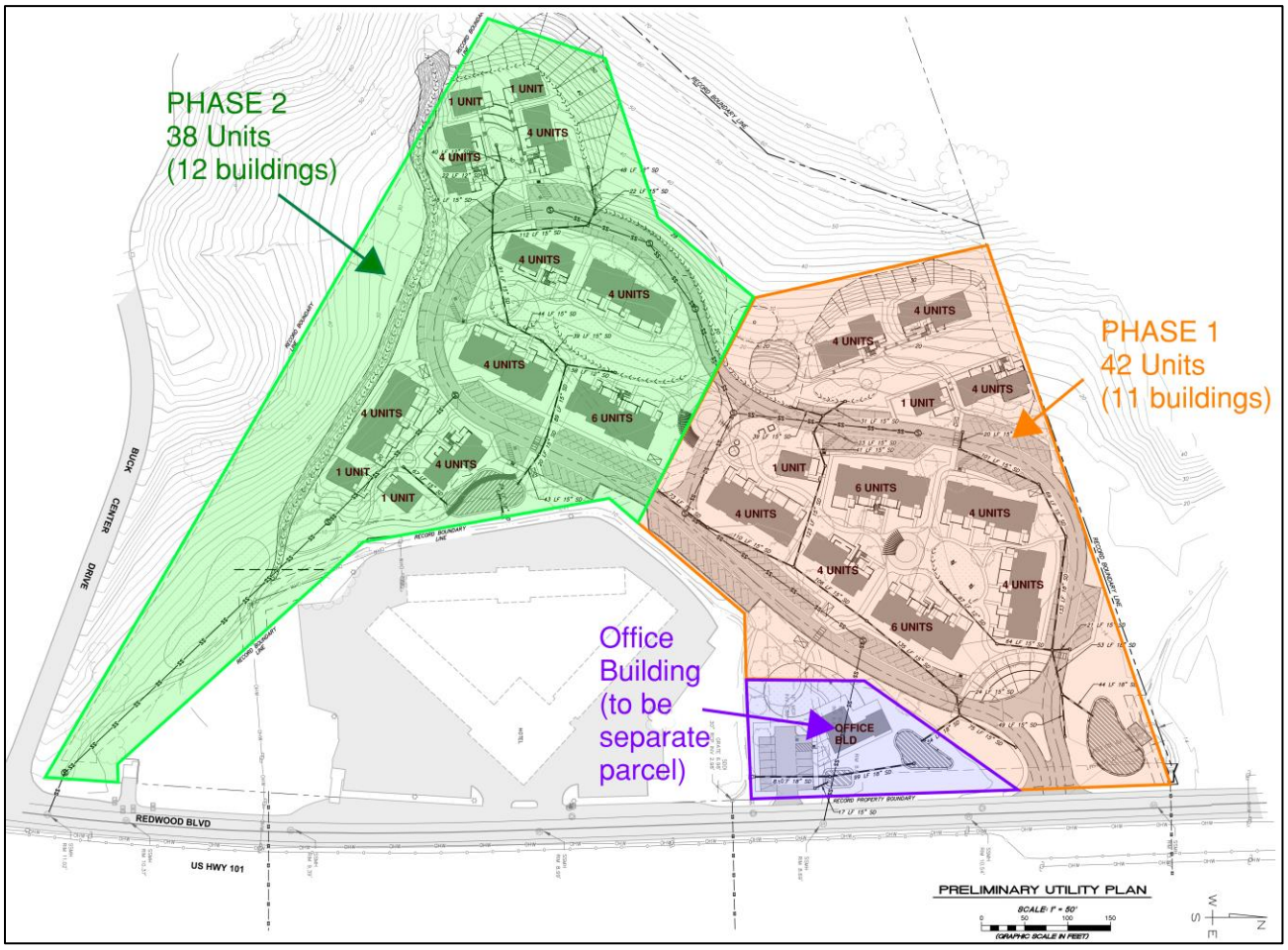
6.1.2 Construction Noise Impact Assessment

The project will be construction in two phases. Phase 1 construction consists of site development and the construction of the eleven residential buildings and one office building at the north side of the project site. Phase 1 construction is expected to begin in January 2022 and finish in October 2024, with a duration of 720 days. Phase 2 construction consists of site development and the construction of the twelve residential buildings at the south side of the project site. Phase 2 construction is expected to begin in December 2022 and finish in December 2025, with a duration of 780 days. Figure 10 shows locations of Phase 1 and Phase 2 construction areas. Table 8 shows the project's construction phases with start and end

[3] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018

dates[4]. For the purposes of this impact analysis, all construction is presumed to occur during the allowable hours per the City's municipal code.

Figure 10: Construction Phase



[4] Fowler, Doug, Habitat for Humanity Greater San Francisco. "RE: Habitat/Redwood Blvd – Env Noise Study." Email to Alan Rosen, RGD Acoustics, Inc. 14 September 2020.

Table 8: Construction Phases

	Duration	Start Date	Finish Date
CONSTRUCTION	**51 mons**	**1/17/2022**	**12/12/2025**
PHASE 1 - 42 homes / 11 buildings	**720 days**	**1/17/2022**	**10/18/2024**
Site Development	4 months	1/17/2022	5/6/2022
Office Building Construction	8 months	4/11/2022	11/18/2022
Home Construction	460 days	5/9/2022	2/9/2024
Foundation Work	*11 months*	*5/9/2022*	*3/10/2023*
Framing, Rough-In & Enclosure	*14 months*	*9/26/2022*	*10/20/2023*
Trim & Finish	*14 months*	*1/16/2023*	*2/9/2024*
Home Deliveries	20 months	4/10/2023	10/18/2024
PHASE 2 - 38 homes / 12 buildings	**780 days**	**12/19/2022**	**12/12/2025**
Site Development	4 months	12/19/2022	4/7/2023
Home Construction	460 days	7/3/2023	4/4/2025
Foundation Work	*11 months*	*7/3/2023*	*5/3/2024*
Framing, Rough-In & Enclosure	*14 months*	*11/20/2023*	*12/13/2024*
Trim & Finish	*14 months*	*3/11/2024*	*4/4/2025*
Home Deliveries	20 months	6/3/2024	12/12/2025

Construction will temporarily increase noise levels at adjacent land uses. Table 9 shows typical noise levels for the construction equipment that is expected to be used for the project.

Table 9: Construction Equipment Noise Levels

Construction Equipment	Ref. Noise Level at 50 feet, dBA*
Backhoe	78
Cement and Mortar Mixer	79
Compressor	78
Chain Saw	84
Excavator	81
Forklift	83
Generator	81
Grader	85
Front End Loader	79
Man Lift	75
Paving Equipment	77
Pickup Truck	75

Construction Equipment	Ref. Noise Level at 50 feet, dBA*
Roller	80
Rubber Tired Dozer	82
Scraper	84
Tractor	84

*Source: FHWA, *Roadway Construction Noise Model*, 2006.

The neighboring hotel building is approximately 120 feet from the nearest Phase 1 project building and 73 feet from the nearest Phase 2 project building. There is also a commercial property with two buildings to the north of the project site. The nearest neighboring commercial building is approximately 600 feet from the nearest Phase 1 project building and more than 950 feet from the nearest Phase 2 project building.

Tables 10 to 13 show the calculated noise levels in terms of the L_{eq} (average noise level) and the L_{max} (maximum noise level) for individual equipment that would be used during construction. The calculated exterior noise levels are based on the distance between the receiver and the nearest proposed project building and are based on the methodology of the Federal Highway Administration's (FHWA) Roadway Construction Noise Model (2006). This model uses a standard sound attenuation rate of 6 dBA per doubling of distance between the source and receiver. A "usage factor" accounts for the fraction of time each piece of equipment is operating at full power (i.e. loudest condition).

Table 10: Construction Noise Levels at Hotel Building to the East – Phase 1

Equipment	Qty	Usage Factor	Ref. Level dBA	Ref. Dist. ft	Distance, ft	Calculated Noise Level (dBA)	
						L_{eq}	L_{max}
Backhoe	1	40%	78	50	123 to 486	54 to 66	70
Cement and Mortar Mixer	1	40%	79	50	123 to 486	55 to 67	71
Compressor	1	40%	78	50	123 to 486	54 to 66	70
Chain Saw	1	20%	84	50	123 to 486	57 to 69	76
Excavator	1	40%	81	50	123 to 486	57 to 69	73
Forklift	1	40%	83	50	123 to 486	59 to 71	75
Generator	1	50%	81	50	123 to 486	58 to 70	73
Grader	1	40%	85	50	123 to 486	61 to 73	77
Front End Loader	1	40%	79	50	123 to 486	55 to 67	71
Man Lift	1	20%	75	50	123 to 486	48 to 60	67
Paving Equipment	1	50%	77	50	123 to 486	54 to 66	69
Pickup Truck	1	40%	75	50	123 to 486	51 to 63	67
Roller	1	20%	80	50	123 to 486	53 to 65	72
Rubber Tired Dozer	1	40%	82	50	123 to 486	58 to 70	74
Scraper	1	40%	84	50	123 to 486	60 to 72	76
Tractor	1	40%	84	50	123 to 486	60 to 72	76

Table 11: Construction Noise at Hotel Building to the East – Phase 2

Equipment	Qty	Usage Factor	Ref. Level dBA	Ref. Dist. ft	Distance, ft	Calculated Noise Level	
						L_{eq}, dBA	L_{max}, dBA
Backhoe	1	40%	78	50	73 to 575	53 to 71	75
Cement and Mortar Mixer	1	40%	79	50	73 to 575	54 to 72	76
Compressor	1	40%	78	50	73 to 575	53 to 71	75
Chain Saw	1	20%	84	50	73 to 575	56 to 74	81
Excavator	1	40%	81	50	73 to 575	56 to 74	78
Forklift	1	40%	83	50	73 to 575	58 to 76	80
Generator	1	50%	81	50	73 to 575	57 to 75	78
Grader	1	40%	85	50	73 to 575	60 to 78	82
Front End Loader	1	40%	79	50	73 to 575	54 to 72	76
Man Lift	1	20%	75	50	73 to 575	47 to 65	72
Paving Equipment	1	50%	77	50	73 to 575	53 to 71	74
Pickup Truck	1	40%	75	50	73 to 575	50 to 68	72
Roller	1	20%	80	50	73 to 575	52 to 70	77
Rubber Tired Dozer	1	40%	82	50	73 to 575	57 to 75	79
Scraper	1	40%	84	50	73 to 575	59 to 77	81
Tractor	1	40%	84	50	73 to 575	59 to 77	81

Table 12: Construction Noise at Commercial Building to the North – Phase 1

Equipment	Qty	Usage Factor	Ref. Level dBA	Ref. Dist. ft	Distance, ft	Calculated Noise Level	
						L_{eq}, dBA	L_{max}, dBA
Backhoe	1	40%	78	50	600 to 985	48 to 52	56
Cement and Mortar Mixer	1	40%	79	50	600 to 985	49 to 53	57
Compressor	1	40%	78	50	600 to 985	48 to 52	56
Chain Saw	1	20%	84	50	600 to 985	51 to 55	62
Excavator	1	40%	81	50	600 to 985	51 to 55	59
Forklift	1	40%	83	50	600 to 985	53 to 57	61
Generator	1	50%	81	50	600 to 985	52 to 56	59
Grader	1	40%	85	50	600 to 985	55 to 59	63
Front End Loader	1	40%	79	50	600 to 985	49 to 53	57
Man Lift	1	20%	75	50	600 to 985	42 to 46	53
Paving Equipment	1	50%	77	50	600 to 985	48 to 52	55
Pickup Truck	1	40%	75	50	600 to 985	45 to 49	53
Roller	1	20%	80	50	600 to 985	47 to 51	58
Rubber Tired Dozer	1	40%	82	50	600 to 985	52 to 56	60
Scraper	1	40%	84	50	600 to 985	54 to 58	62
Tractor	1	40%	84	50	600 to 985	54 to 58	62

Table 13: Construction Noise at Commercial Building to the North – Phase 2

Equipment	Qty	Usage Factor	Ref. Level dBA	Ref. Dist. ft	Distance, ft	Calculated Noise Level	
						L_{eq}, dBA	L_{max}, dBA
Backhoe	1	40%	78	50	950 to 1384	45 to 48	52
Cement and Mortar Mixer	1	40%	79	50	950 to 1384	46 to 49	53
Compressor	1	40%	78	50	950 to 1384	45 to 48	52
Chain Saw	1	20%	84	50	950 to 1384	48 to 51	58
Excavator	1	40%	81	50	950 to 1384	48 to 51	55
Forklift	1	40%	83	50	950 to 1384	50 to 53	57
Generator	1	50%	81	50	950 to 1384	49 to 52	55
Grader	1	40%	85	50	950 to 1384	52 to 55	59
Front End Loader	1	40%	79	50	950 to 1384	46 to 49	53
Man Lift	1	20%	75	50	950 to 1384	39 to 42	49
Paving Equipment	1	50%	77	50	950 to 1384	45 to 48	51
Pickup Truck	1	40%	75	50	950 to 1384	42 to 45	49
Roller	1	20%	80	50	950 to 1384	44 to 47	54
Rubber Tired Dozer	1	40%	82	50	950 to 1384	49 to 52	56
Scraper	1	40%	84	50	950 to 1384	51 to 54	58
Tractor	1	40%	84	50	950 to 1384	51 to 54	58

For the purpose of comparing construction noise with the adopted threshold of significance, noise from multiple pieces of equipment was considered. The equipment with the highest L_{eq} was located at the edge of the project building that would be closest to the receiver while the remaining equipment was located at the midpoint between the closest and farthest project buildings.

Table 14 summarizes the noise levels at the receivers as compared to the adopted threshold of significance. In all cases, construction noise does not exceed the significance threshold (L_{eq} 80 dBA for residential land uses and L_{eq} 85 dBA for commercial land uses). Therefore, this is a less than significant impact.

Table 14: Construction Noise Impact at Adjacent Uses

Construction Noise	**Hotel Building (East)**		**Commercial Building (North)**	
	Phase 1	Phase 2	Phase 1	Phase 2
Equipment Operating at Nearest Project Building	73 dBA	78 dBA	59 dBA	55 dBA
Equipment Operating at Center of Project Buildings	73 dBA	72 dBA	64 dBA	61 dBA
Total Construction Noise	**76 dBA**	**79 dBA**	**65 dBA**	**62 dBA**
Daytime L_{eq} Criteria	*80 dBA (Residential)*		*85 dBA (Commercial)*	
Exceed Daytime L_{eq} Criteria?	**No**	**No**	**No**	**No**

Based on the calculated L_{max} noise levels, construction activities will be noticeable and at times could be disruptive to normal daytime activities at the hotel such as watching TV or talking on phone. However, this would only be expected when construction occurs close to the eastern property line. Therefore, we recommend implementation of construction noise abatement measure NO-1.

Recommended Noise Abatement Measure NO-1: Construction Noise

City Standard Condition of Approval for Project Involving Construction

- During excavation and grading construction phases, all construction equipment, fixed or mobile, shall be operated with closed engine doors and shall be equipped with properly operating and maintained mufflers consistent with manufacturers' standards.
- All stationary construction equipment shall be placed so that emitted noise is directed away from the nearest sensitive receptors.
- Equipment staging shall be located in areas that will create the greatest distance feasible between construction-related noise sources and noise-sensitive receptors.
- Mobile construction equipment shall have smart back-up alarms that automatically adjust the sound level of the alarm in response to ambient noise levels. Alternatively, back-up alarms shall be disabled and replaced with human spotters to ensure safety when mobile construction equipment is moving in the reverse direction.

Additional recommendations for this project are provided below:

- Unnecessary idling of internal combustion engines should be strictly prohibited.
- Provide advance notification to surrounding land uses disclosing the construction schedule, including the various types of activities that would be occurring throughout the duration of the construction period.
- The construction contractor shall provide the name and telephone number an on-site construction liaison. If construction noise is found to be intrusive to the community (complaints are received), the construction liaison shall investigate the source of the noise and require that reasonable measures be implemented to correct the problem.
- Schedule high noise-producing activities during times when they would be least likely to interfere with the noise sensitive activities of the neighboring land use, when possible.

6.2 Construction Vibration (CEQA Checklist b)

6.2.1 Thresholds of Significance

Neither CEQA nor the State specifies acceptable vibration levels from construction activities. The City's Municipal Code Section 19.22.090 exempts vibrations from temporary construction, demolition, and vehicles that enter and leave the subject parcel.

For the purposes of this assessment, the criteria for potential building damage recommended by Caltrans[5] is used. The construction vibration damage criteria for new residential structures is a Peak Particle Velocity (PPV) of 0.5 inches/second.

6.2.2 Construction Vibration Impact Assessment

The nearest neighboring building is the neighboring hotel building. The hotel building is, at the nearest, 48 feet from the nearest Project property line. The construction of the project buildings will be located further from the hotel building. The nearest Phase 1 project building is 120 feet from the hotel and the nearest Phase 2 project building is 73 feet from the hotel.

Table 15 shows the calculated construction vibration levels at the hotel when equipment is operating at the nearest project property line at 48 feet.

Table 15: Calculated Vibration Levels from Construction

Equipment	PPV (inches/sec)
	Nearest Neighboring Building (Hotel)
	48 feet from Equipment
Vibratory Roller	0.08
Hoe Ram	0.03
Large Bulldozer	0.03
Caisson Drilling	0.03
Loaded Trucks	0.03
Jackhammer	0.01
Small Bulldozer	< 0.01

Table 15 shows that construction vibration levels are expected to be less than the potential building damage thresholds of a PPV of 0.5 inches/sec for new residential structures. Since vibration from construction would not exceed the threshold for potential building damage, this is considered less than significant.

[5] Caltrans, *Transportation and Construction Vibration Guidance Manual*, September 2013.

6.3 Operational Noise (CEQA Checklist a)

6.3.1 Traffic Noise

6.3.1.1 Thresholds of Significance

A significant impact would occur if the project would cause a substantial increase in traffic noise. Novato General Plan Policy NS 2 prevents land uses which increase surrounding noise levels above acceptable standards and per Policy NS 2b, noise mitigation measures need to be considered for new projects that would cause a substantial increase in noise (i.e., cause an increase above L_{dn} 60 dBA or cause an increase of L_{dn} 5 dBA or more in the ambient noise levels) in adjacent residential areas affected by traffic generated by the proposed project.

6.3.1.2 Traffic Noise Calculation Methodology

In order to calculate the increase in traffic noise due to the project, existing and future traffic noise levels were calculated using the Federal Highway Administration's Traffic Noise Model (TNM 2.5) with local road traffic volumes from the Project's traffic engineer[6] and the US-101 traffic volumes from Caltrans' Traffic Census Program. According to the traffic data from the Project's traffic engineer, the project would add up to 650 daily trips on Redwood Blvd, 380 daily trips on San Marin Drive (west of Redwood Blvd), and 100 daily trips on Atherton Avenue (east of Redwood Blvd). The project-generated traffic would account for less than 1% increase in existing US-101 traffic. The TNM model takes into account the vehicle class, speed, road surface, and distance from roadway to receptor. The TNM model calculates an L_{eq} at a distance of 50 feet from the roadway centerline.

6.3.1.3 Project Generated Traffic Noise Impact

Table 16 shows the local roadway traffic noise levels for the "Existing" and "Existing Plus Project" scenarios. The increases in existing traffic noise levels due to the project are 0.4 dBA or less and are less than the significant increase threshold of 5 dBA. The increase in noise level for Redwood Boulevard does not include the contribution of the US-101 traffic noise which would reduce the increase. Therefore, the increase in traffic noise due to the project is considered a less than significant impact.

[6] Bob Grandy, Fehr & Peers, email to Anthony Wong, RGD Acoustics dated 22 December 2020.

Table 16: Increase in Traffic Noise Levels due to Project

Roadway	L_{dn} at 50 feet, dBA		
	Existing	Existing Plus Project	Increase due to Project
Redwood Blvd south of San Marin Drive	65.5	65.9	0.4
Redwood Blvd north of San Marin Drive	69.4	69.5	0.1
San Marin Drive west of Redwood Blvd	72.6	72.6	0.0
Atherton Avenue east of Redwood Blvd	71.7	71.7	< 0.1

6.3.1.4 Cumulative Traffic Noise Impact

In the future, traffic will increase due to general growth in the area that is not directly related to the project. Table 17 shows the future traffic noise levels for the "cumulative no project" and "cumulative plus project" scenarios.

Table 17: Increase in Traffic Noise Levels

Roadway	L_{dn} at 50 feet, dBA				
	Existing	Cumulative No Project	Cumulative Plus Project	Existing to Future with Project Increase in L_{dn}	Project Contribution to Future L_{dn}
Redwood Blvd south of San Marin Drive	65.5	68.9	69.1	3.6	0.2
Redwood Blvd north of San Marin Drive	69.4	70.1	70.1	0.7	< 0.1
San Marin Drive west of Redwood Blvd	72.6	73.3	73.4	0.8	< 0.1
Atherton Avenue east of Redwood Blvd	71.7	71.8	71.8	0.1	< 0.1

Table 17 shows that the increase in local roadway traffic noise from cumulative development including the project would be less than the threshold of 5 dBA increase in the L_{dn} for all roadways in the study area. Furthermore, the project's contribution to the increase in future L_{dn} is 0.2 dBA or less. In addition, the increase in noise level for Redwood Boulevard does not include the contribution of the US-101 traffic noise which would reduce the increase. Therefore, the project's contribution to increases in cumulative traffic noise is less than significant.

6.3.2 Mechanical Equipment (HVAC) (CEQA Checklist a)

6.3.2.1 Thresholds of Significance

Mechanical equipment noise that exceeds the limits set forth in Table 3-5 of the City's Municipal Code Section 19.22.070 (Table 1) is considered a significant impact.

6.3.2.2 Mechanical Equipment Noise Impact Assessment

Typical residential development may have outdoor mechanical equipment generally associated with building ventilation/air-conditioning units and ventilation fans. This outdoor equipment would likely be located at the buildings. According to information from the Project Manager[7], the dwelling units project buildings are proposed to feature an electric strip heating system with a continuous energy recovery ventilator (ERV) as part of the mechanical equipment system. No exterior HVAC equipment are currently proposed.

According to the City's municipal code, maximum allowable exterior noise levels from the project are determined by the receiving land use category and shall be measured at the property line of the noise source. The maximum allowable exterior noise levels for residential land uses are 60 dBA between the hours of 6 a.m. to 10 p.m. and 45 dBA between the hours of 10 p.m. to 6 a.m. If the ambient noise exceeds the resulting standard, the ambient shall be the standard. Any outdoor mechanical equipment would need to comply with this standard.

This is considered a less than significant impact with mitigation.

Mitigation Measure NO-2: Mechanical Equipment Noise Requirements

Analysis of noise from any proposed project's outdoor mechanical equipment must be conducted to determine what, if any, noise control measures must be included in the design such that the combined noise level generated by all noise-generating outdoor mechanical equipment shall comply with the City's municipal code requirements per Section 19.22.070. This analysis must be completed prior to building permit issuance.

[7] Fowler, Doug, Habitat for Humanity Greater San Francisco. "RE: Habitat/Redwood Blvd – Env Noise Study." Email dated 14 September 2020.

6.4 Airport Noise (CEQA Checklist c)

6.4.1.1 Thresholds of Significance

A significant impact would occur if the project would expose people residing or working in the project area to excessive aircraft noise levels.

6.4.1.2 Airport Noise Impact Assessment

The Marin County Airport Gnoss Field Airport Land Use Plan (1991) show that parts of the project site would be located within the 60 dB aircraft future noise contour due to aircraft activities on a crosswind runway that has not been constructed but was proposed at the time the contours were prepared. However, based on information from Marin County, the crosswind runway concept is no longer being considered part of the future conditions of the airport[8].

Therefore, to assess the aircraft generated noise levels at the project site, we reviewed two recent publications on Gnoss Field Airport that do not include the effects of the previously proposed crosswind runway.

1. The 2035 Novato General Plan shows the project site is located outside the existing airport noise contour of CNEL 60 dBA. Figure 11 shows the existing airport noise contours from the 2035 Novato General Plan along with the project site.

2. The final environmental impact report for the Gnoss Field Airport's proposed Runway 13/31 extension (2013)[9] provides airport noise level predictions for the year 2018. The noise exposure contours indicate that the project site would be outside the lowest shown airport noise contour of CNEL 60 dBA. Figure 12 shows the airport noise contours along with the project site. It should be noted that the contours in this EIR are not for the explicit purpose of land use planning. In general, noise contours for land use planning purposes are found in the General Plan and the ALUC Airport Land Use Plan.

According to the 1991 Airport Land Use Plan's Compatibility Matrix, residential development located outside the CNEL 60 dBA airport noise contour and within the CNEL 55 dBA airport noise contour is considered "conditionally compatible".

Per the Airport Land Use Plan Policies NC-1.5 and NC-1.6, for residential development within the 55 dB or higher CNEL noise contour, noise easements should be granted as a condition of approval and the sound insulation recommendations in a required acoustical study shall be implemented in the project. The two recent publications on aircraft noise contours do not show CNEL 55 dBA aircraft noise contours and, therefore, do not indicate whether the site would be exposed to a CNEL of 55 dBA or greater. However, the project should consider noise easements per Policy NC-1.5 unless, later planning noise contours are developed (e.g. through an ALUC Plan update) that indicates the project site is outside the CNEL 55 dBA contour.

Aircraft noise is considered a less than significant impact.

[8] Daniel Dawson, Principal Transportation Planner County of Marin, email to Bob Brown, Novato Community Development Director dated 18 December 2018.
[9] "Gnoss Field Airport Proposed Extension of Runway 13/31 Final Environmental Impact Report." Marin County, 2013.

Figure 11: 2035 Novato General Plan Existing Noise Contours for Gnoss Field Airport (General Plan 2035 Figure LW-4)

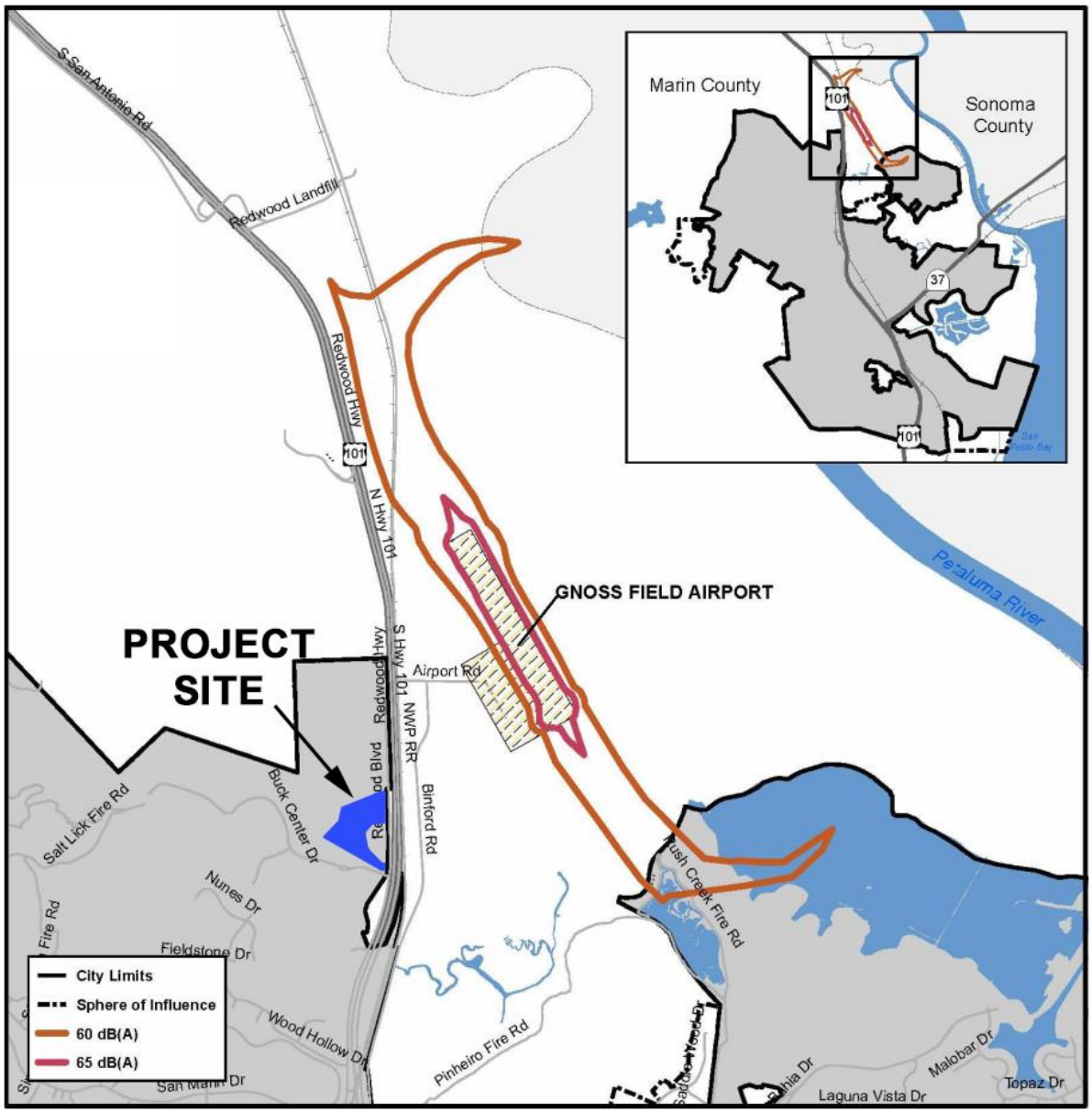
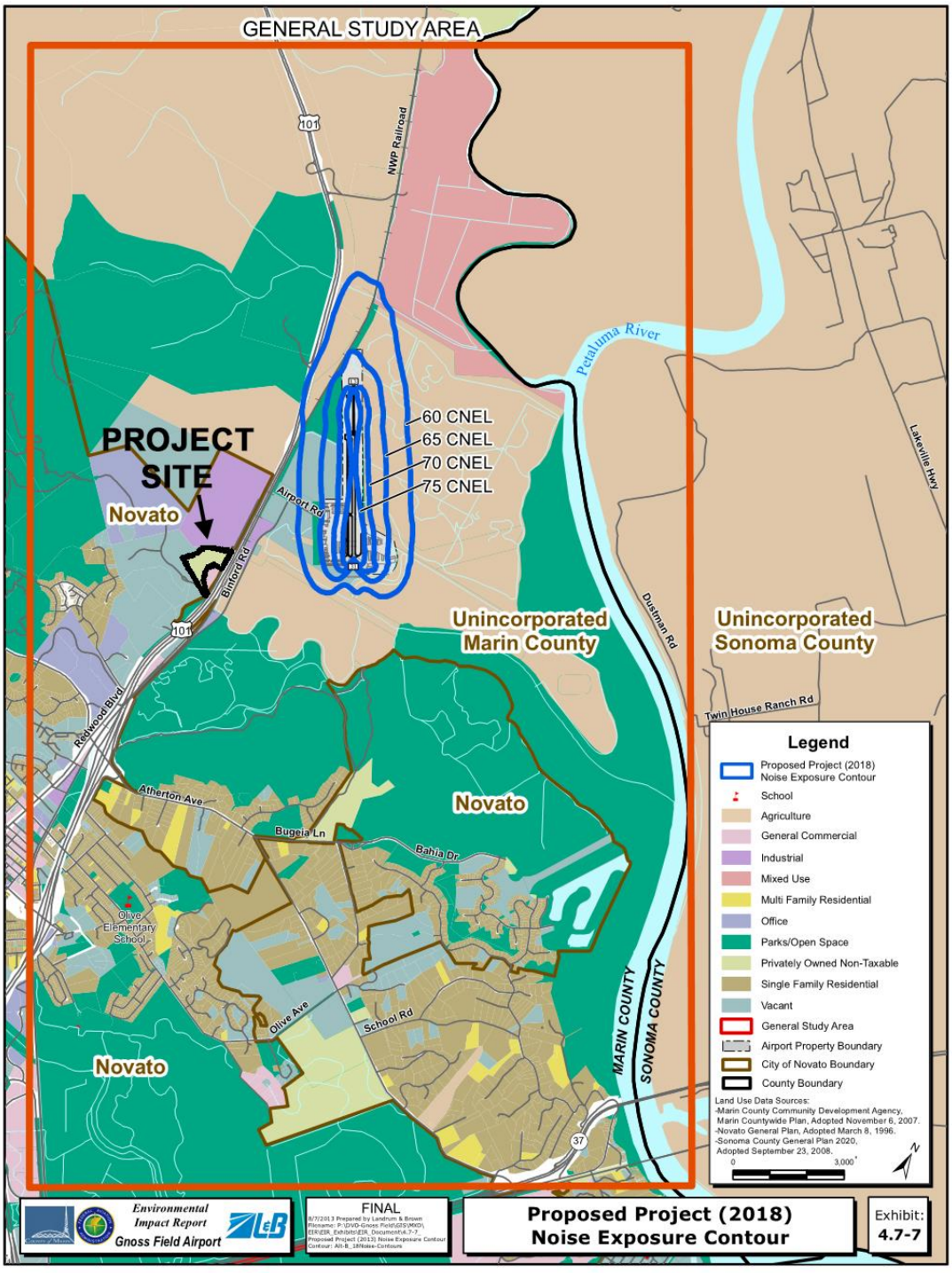


Figure 12: Gnoss Field Airport Runway Extension
Final Environmental Impact Report
2018 Noise Exposure Contours



Source: "Gnoss Field Airport Proposed Extension of Runway 13/31 Final Environmental Impact Report." Marin County, 2013.

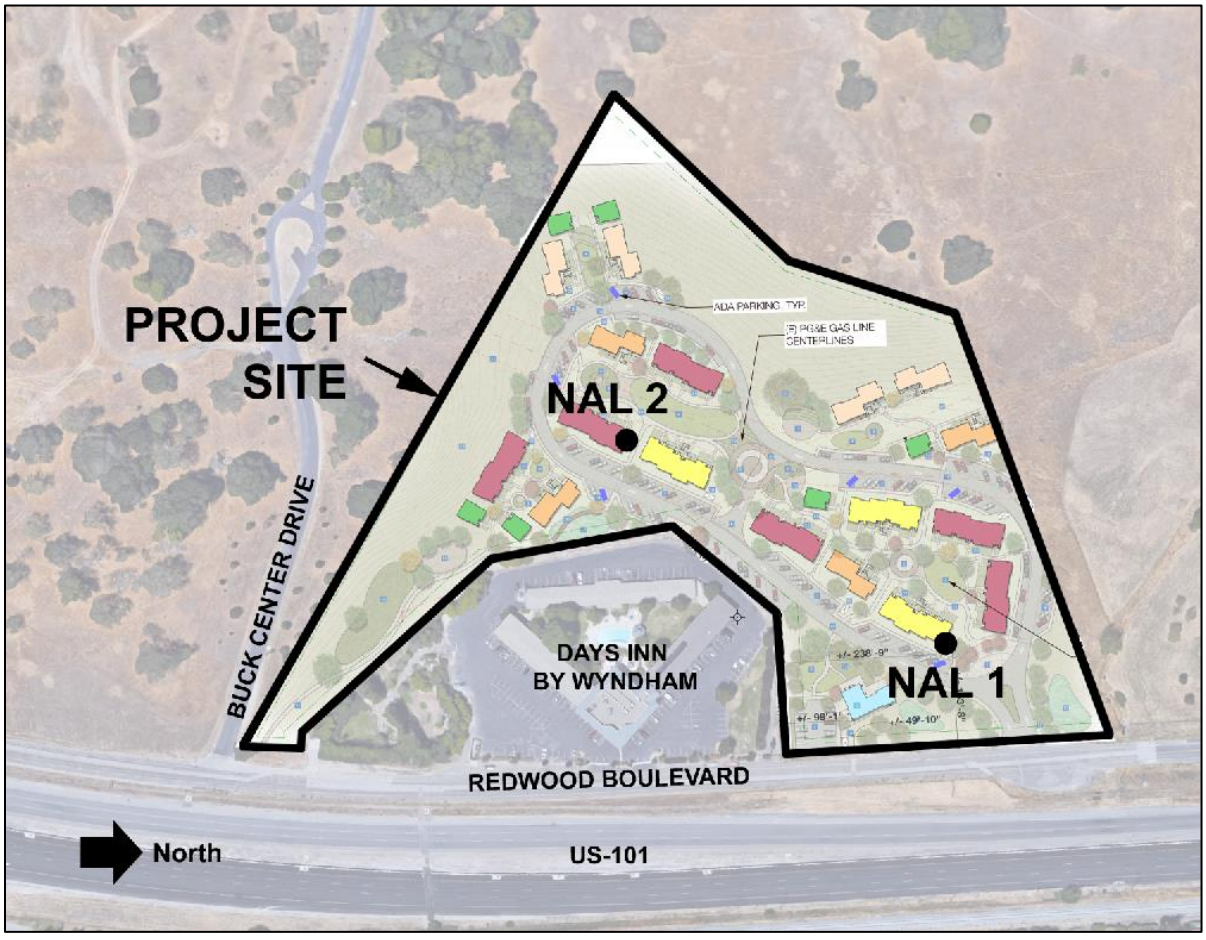
7 HUD Assessment

HUD's Noise Assessment Guidelines include a methodology for calculating a site's noise exposure from traffic and other noise sources. The noise calculation is based primarily on the volume and speed of traffic and the distance to the noise source. The following are the sources of information on which the noise assessment was completed:

- Annual Average Daily Traffic Volumes, Caltrans, 2019
- Annual Average Daily Truck Traffic Percentages, Caltrans, 2019
- HUD.gov Online Site DNL Calculator
- 2035 Novato General Plan Figure LW-5
- Project's "Cumulative Plus Project" traffic condition
- SMART weekday schedule effective January 1, 2020

Figure 13 shows the noise assessment locations (NAL). Figure 14 and Figure 15 are printouts of the On-line Site DNL Calculator using the HUD methodology at NAL 1 and NAL 2, respectively.

Figure 13: Noise Assessment Location



According to the HUD methodology, the proposed residential building closest to the freeway (NAL 1) would be exposed to an L_{dn} of 71 dBA. At a distance of 640 feet from the US-101 freeway centerline (NAL 2), the noise exposure is L_{dn} 66 dBA. The calculated noise level at NAL 1 using the HUD methodology is somewhat lower than the calculated noise level based on our site noise measurements. However, per the HUD Noise Assessment Guidelines, the noise levels calculated using the HUD methodology are used to assess the HUD noise standards.

Calculations based on the HUD methodology show that the project's residential buildings would be exposed to an L_{dn} of less than 75 dBA. A noise exposure of up to L_{dn} 75 dBA is considered "normally unacceptable". Per the HUD regulations, development would require a minimum of 5 dB additional sound attenuation for buildings having noise-sensitive uses if the L_{dn} is greater than 65 dBA but does not exceed 70 dBA. A minimum of 10 dBA additional sound attenuation is required if the L_{dn} is greater than 70 dBA but does not exceed 75 dBA.

In addition to any required sound attenuation, "Special Approvals" may be required. This could include preparation of an EIS and/or obtainment of "Special Environmental Clearance" from HUD. The need for these special approvals should be confirmed as the project entitlement phase progresses.

HUD's regulations do not contain standards for interior noise levels. Rather, a goal of L_{dn} 45 dBA is set forth and the attenuation requirements are geared towards achieving that goal. The interior noise level goal of L_{dn} 45 dBA or less is consistent with the Novato General Plan interior noise standard and the State of California Building Code.

As described in the Section 5, the project can achieve the interior noise goal (L_{dn} 45 dBA) through the use of sound-rated windows, doors, and in some cases, special exterior wall construction. Figure 19 of the HUD Noise Assessment Guidelines should be prepared once the project floor plans and elevations are developed in greater detail.

Much of the primary outdoor use areas will be exposed to noise levels considered acceptable (CNEL of 65 dBA or less). Some areas will be exposed to levels exceeding a CNEL 65 dBA. Reducing the noise levels in these areas is generally impractical due to site access requirements and topography. However, noise barriers will be considered in some areas as the project design progresses to the extent they are reasonable feasible. (see discussion in Section 5).

Figure 14: HUD Calculation Printout for NAL 1

HUD EXCHANGE

DNL Calculator

Site ID	8161 Redwood Blvd - NAL 1
Record Date	6/7/21
User's Name	Anthony Wong

Road # 1 Name:	US-101

Road #1

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	315	315	315
Distance to Stop Sign			
Average Speed	65	65	55
Average Daily Trips (ADT)	81243	2025	1731
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	66	60	65
Calculate Road #1 DNL	69	Reset	

Road # 2 Name:	Redwood Blvd

Road #2

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	171	171	171
Distance to Stop Sign			
Average Speed	45	45	45
Average Daily Trips (ADT)	16635	343	172
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	60	53	59
Calculate Road #2 DNL	63	Reset	

Railroad #1 Track Identifier:	SMART Train

Rail # 1

Train Type	Electric ☐	Diesel ☑
Effective Distance		408
Average Train Speed		40
Engines per Train		1
Railway cars per Train		2
Average Train Operations (ATO)		38
Night Fraction of ATO		11

Figure 14 (cont.): HUD Calculation Printout for NAL 1

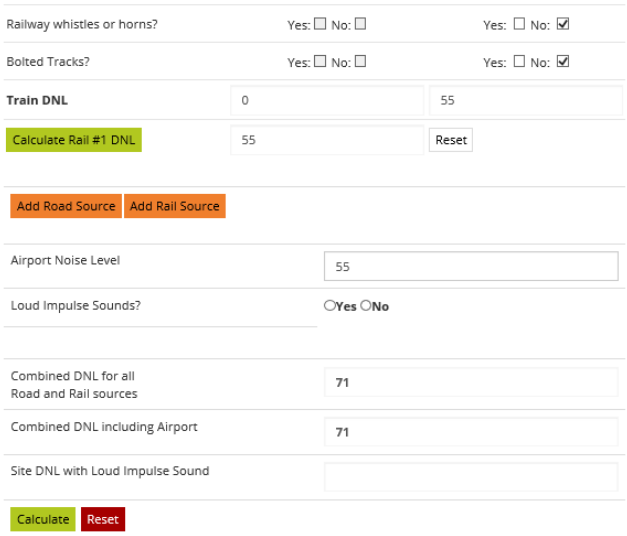
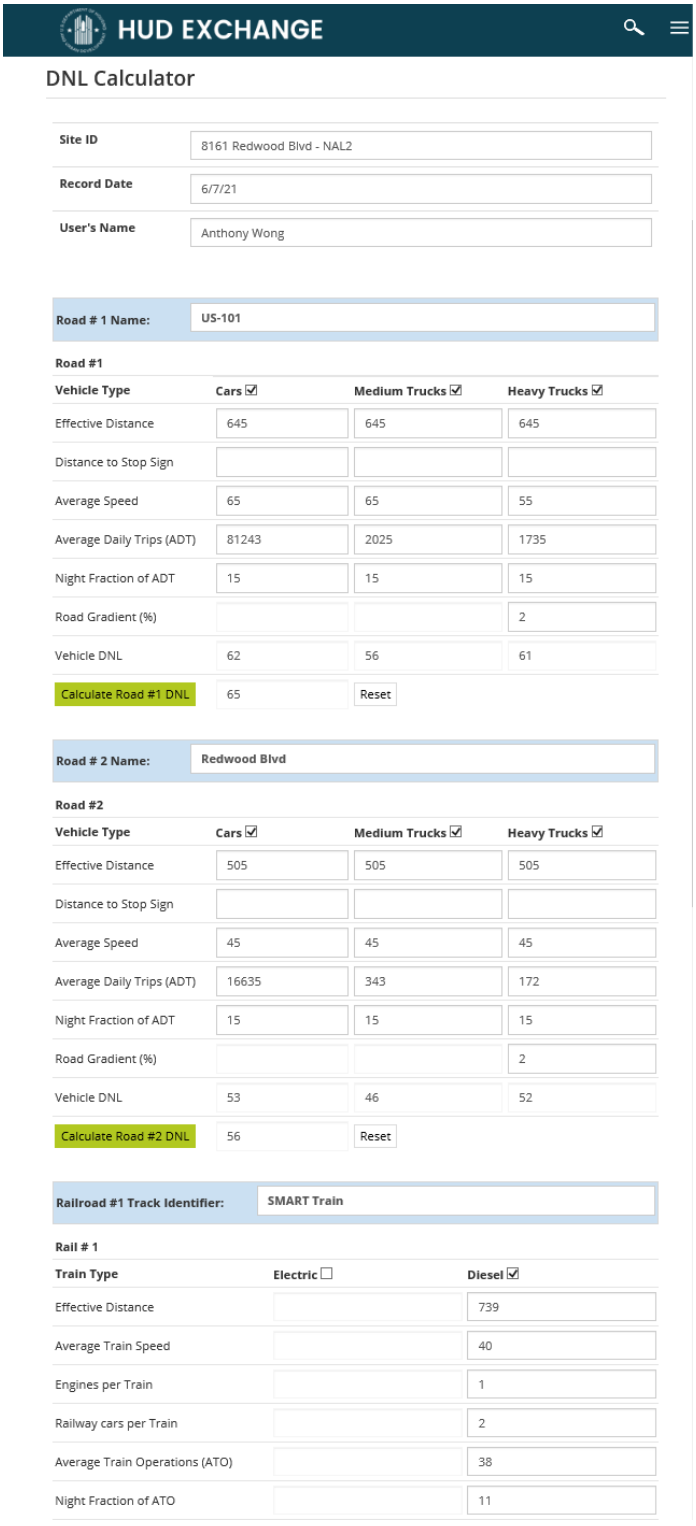


Figure 15: HUD Calculation Printout for NAL 2



HUD EXCHANGE

DNL Calculator

Site ID	8161 Redwood Blvd - NAL2
Record Date	6/7/21
User's Name	Anthony Wong

Road # 1 Name:	US-101

Road #1

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	645	645	645
Distance to Stop Sign			
Average Speed	65	65	55
Average Daily Trips (ADT)	81243	2025	1735
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	62	56	61
Calculate Road #1 DNL	65	Reset	

Road # 2 Name:	Redwood Blvd

Road #2

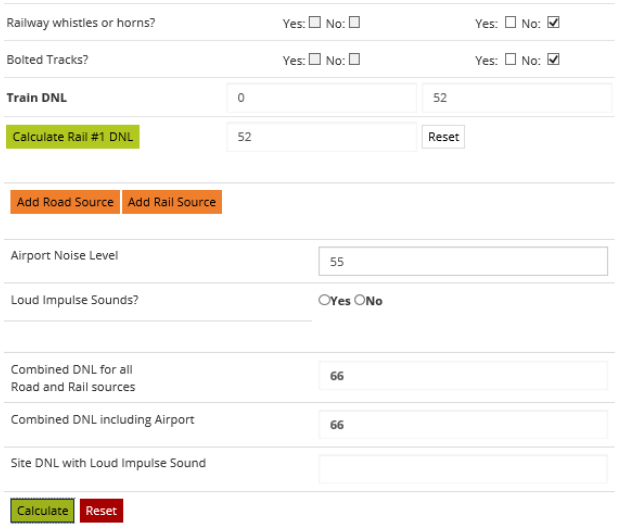
Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	505	505	505
Distance to Stop Sign			
Average Speed	45	45	45
Average Daily Trips (ADT)	16635	343	172
Night Fraction of ADT	15	15	15
Road Gradient (%)			2
Vehicle DNL	53	46	52
Calculate Road #2 DNL	56	Reset	

Railroad #1 Track Identifier:	SMART Train

Rail # 1

Train Type	Electric ☐	Diesel ☑
Effective Distance		739
Average Train Speed		40
Engines per Train		1
Railway cars per Train		2
Average Train Operations (ATO)		38
Night Fraction of ATO		11

Figure 15 (cont.): HUD Calculation Printout for NAL 2



* * *

Appendix K

Traffic Impact Study

Habitat Redwood Boulevard

Traffic Study

Prepared for:
Habitat for Humanity Greater San Francisco, Inc.

August 2021

SF20-1102

FEHR PEERS

Table of Contents

1. Introduction 1
   1.1 Purpose 1
   1.2 Project Description 1
   1.3 LOS Evaluation Scenarios 1
   1.4 Analysis Methodology 2
2. Existing Conditions 3
   2.1 Project Study Area 3
   2.2 Roadway Network 3
   2.3 Traffic Data Collection 4
   2.4 Study Periods 4
   2.5 Level of Service Definitions 4
   2.6 Existing Roadway Conditions 5
      2.6.1 Existing Intersection Operations 5
   2.7 Transit System 6
   2.8 Bicycle Facilities 7
   2.9 Pedestrian Facilities 8
   2.10 Safety Data 8
3. Regulatory Framework 15
   3.1 Federal Plans, Policies, Regulations and Laws 15
   3.2 State Plans, Policies, Regulations and Laws 15
      3.2.1 Caltrans 15
      3.2.2 Senate Bill 743 15
      3.2.3 California's Complete Streets Act 16
   3.3 Regional Plans and Programs 16
      3.3.1 Plan Bay Area 2040 16
      3.3.2 Marin County Congestion Management Plan 17
   3.4 Local Plans, Policies, Regulations, and Ordinances 17
      3.4.1 City of Novato General Plan 17
      3.4.2 City of Novato Bicycle/Pedestrian Plan 18
      3.4.3 City's Community Based Transportation Plan 18
      3.4.4 Marin Transit's 2016-2025 Short Range Transit Plan 19
      3.4.5 Sonoma-Marin Area Rail Transit 19
4. Project Travel Characteristics 20
   4.1 Trip Generation 20
   4.2 Trip Distribution 21
   4.3 Project Vehicle Miles Traveled (VMT) 21

5. Environmental Impacts and Mitigation Measures 23
5.1 Thresholds of Significance 23
5.1.1 Vehicle-Miles Traveled (VMT) 23
5.1.2 Local Roadway Network 24
5.1.3 Transit System 24
5.2 Impact Analysis 24
5.2.1 Project VMT 25
5.2.2 Local Roadway Network 25
5.2.3 Transit System 25
5.2.4 Bicycle Facilities 26
5.2.5 Pedestrian Facilities 26
6. Intersection Level of Service 28
6.1 Evaluation Scenarios 28
6.2 LOS Policy 28
6.3 LOS Analysis 29
6.3.1 Existing Plus Project Traffic Conditions 29
6.3.2 Existing Plus Approved Traffic Conditions 30
6.3.3 Existing Plus Approved Development Plus Project Traffic Conditions 31
6.3.4 Cumulative No Project Traffic Conditions 32
6.3.5 Cumulative Plus Project Traffic Conditions 34
6.4 Intersection Improvement Project 35
6.4.1 Description of Improvement Project 35
6.4.2 Cumulative Plus Project with Improvement Traffic Conditions 35

Appendices

Appendix A: Level of Service Calculations
Appendix B: Cumulative Projects Trip Generation

List of Figures

Figure 1-1: Study Area 10
Figure 1-2: Project Site Plan 11
Figure 2-1: Peak Hour Traffic Volumes and Lane Configurations – Existing Conditions 12
Figure 2-2: Transit Service 13
Figure 2-3: Bicycle Facilities 14
Figure 3-1: Peak Hour Traffic Volumes and Lane Configurations - Existing Plus Project 37
Figure 3-2: Peak Hour Traffic Volumes and Lane Configurations – Project Only Trips 38
Figure 3-3: Peak Hour Traffic Volumes and Lane Configurations - Existing Plus Approved 39
Figure 3-4: Peak Hour Traffic Volumes and Lane Configurations - Existing Plus Approved Plus Project 40
Figure 3-5: Peak Hour Traffic Volumes and Lane Configurations – Cumulative No Project 41
Figure 3-6: Peak Hour Traffic Volumes and Lane Configurations – Cumulative Plus Project 42
Figure 3-7: Peak Hour Traffic Volumes and Lane Configurations – Cumulative Plus Project w-Improvement 43

List of Tables

Table 1: Level of Service Definitions – Signalized Intersections 5
Table 2: Peak Hour Intersection LOS – Existing Conditions 6
Table 3: Collision History at Study Intersections by Type of Collision 9
Table 4: Collision History at Study Intersections by Severity 9
Table 5: Project Trip Generation 20
Table 6: Project Trip Distribution 21
Table 7: Peak Hour Intersection LOS – Existing Plus Project Conditions 30
Table 8: Peak Hour Intersection LOS – Existing Plus Approved Development Conditions 31
Table 9: Peak Hour Intersection LOS – Existing Plus Approved Plus Project Conditions 32
Table 10: Peak Hour Intersection LOS – Cumulative No Project Conditions 33
Table 11: Peak Hour Intersection LOS – Cumulative Plus Project Conditions 34
Table 12: Peak Hour Intersection LOS – Cumulative Plus Project with Improvement Conditions 36

1. Introduction

This report presents an analysis of the potential traffic impacts that would be associated with development of a proposed 80 multi-family affordable units and 2,154 square foot office space to be located at 8161 Redwood Boulevard, just north of Buck Center Drive. The traffic study was completed in accordance with the criteria established by the City of Novato.

1.1 Purpose

This study summarizes the results of a traffic study prepared for the proposed mixed-use development project located at 8161 Redwood Boulevard in Novato, CA. The project area is located at the north end of Novato's city limits. This analysis examines the transportation impacts to VMT as well as roadway, transit, bicycle, and pedestrian systems that would result from the addition of vehicle traffic generated by the proposed project.

1.2 Project Description

The proposed development is in north Novato along Redwood Boulevard, just north of Buck Center Drive and would consist of 80 multi-family affordable housing units and 2,154 square foot office space. The project would provide 162 vehicle parking spaces for residential uses and 23 vehicle parking spaces for the office use. The project would provide 40 bike parking spaces. The project would also provide pedestrian facilities along the project frontage. Access to the project would be provided by Redwood Boulevard on the east. This traffic study considers impacts associated with the full build-out of the described project at three intersections, including San Marin Drive/Redwood Boulevard, Atherton Avenue/SB US-101 Ramps, and Atherton Avenue/NB US-101 Ramps.

1.3 LOS Evaluation Scenarios

For the LOS evaluation in Section 6, the following scenarios are analyzed. The existing turn movement volumes and cumulative turn movement volumes for the three study intersections were obtained from the Novato General Plan EIR for 2035:

1. Existing Conditions – represents conditions in November 2016.
2. Existing Plus Approved Conditions – represents existing conditions with seven approved development projects that would add trips to the study intersections

3. Existing Plus Project Conditions – represents existing conditions with proposed project implementation
4. Existing Plus Approved Plus Project Conditions – represents existing conditions plus trips added by approved development and the proposed project
5. Cumulative No Project Conditions– represents conditions for a cumulative scenario, which includes reasonably foreseeable land uses and planned transportation improvement projects, without proposed project implementation
6. Cumulative Plus Project Conditions – represents conditions for a cumulative scenario, which includes reasonably foreseeable land uses, planned transportation improvement projects, and proposed project build-out
7. Cumulative Plus Project Mitigated Conditions – represents conditions for a cumulative scenario, which includes reasonably foreseeable land uses, planned transportation improvement projects, and proposed project build-out with changes to existing intersection geometry and signal timing

1.4 Analysis Methodology

The impact analysis pertains to roadway, transit, bicycle, and pedestrian components of the transportation system, as well as the proposed project's effect on vehicle-miles traveled (VMT). The impact analysis on transit, bicycle, and pedestrian systems, as well as VMT, of the proposed project was evaluated for consistency with existing and planned service and facilities as well as consistency with related policies of the City of Novato.

2. Existing Conditions

This section describes the existing environmental setting, which is the baseline scenario upon which project-specific impacts are evaluated. The traffic count data evaluated in this study was collected for the Novato General Plan EIR in November 2016. Based on consultation with City staff, it was determined that use of the General Plan count data was more representative of normal conditions and their use is preferred to conducting new counts given the changes in travel patterns that have occurred during the current COVID-19 pandemic. The environmental setting for transportation includes baseline descriptions for roadway, bicycle, pedestrian, and transit facilities.

2.1 Project Study Area

The study area was developed by considering the following factors: the project's expected travel characteristics (including number of vehicle trips and directionality of those trips), primary travel routes to/from the project vicinity, and a trip assignment based on destinations identified for housing projects in the Novato Housing Element EIR. **Figure 1-1** shows the location and extent of the proposed project relative to the rest of the City of Novato and the study intersections selected for analysis. The study intersections are those locations where 50 or more weekday peak hour vehicle trips would be added by the project. **Figure 1-2** shows the project site plan. This study also addresses transit, bicycle, and pedestrian facilities near the project.

2.2 Roadway Network

The following major roadways would provide access to the proposed project site.

- Redwood Boulevard is a north-south major arterial that provides access to the project site. North of San Marin Drive/Atherton Avenue, Redwood Boulevard is a two-lane roadway. South of this intersection, the roadway is divided, becoming two lanes in each direction.

- San Marin Drive is a major arterial that runs east-west from Novato Boulevard to Redwood Boulevard for approximately two and a half miles of divided roadway varying in number of lanes along its route with parking along the west side of San Marin Drive.

- Atherton Avenue is a two-lane minor arterial with bike lanes on both sides of the roadway. Atherton Avenue runs east-west for approximately three miles from Redwood Boulevard to Harbor Drive. Near the study area, access to Atherton Avenue is provided by following Redwood Boulevard south until the intersection at San Marin Drive/Atherton Ave.

- US-101/Redwood Highway is a key transportation route that runs north-south through California, connecting Novato to Petaluma in the north and San Francisco and San Jose to the south. North of De Long Avenue, US-101 has four lanes plus an HOV lane in the north direction, and three lanes in the south direction. Access to US-101 is provided to the project site residents by following Redwood Boulevard south and turning left onto Atherton Avenue at San Marin Drive/Redwood Boulevard.

2.3 Traffic Data Collection

Peak hour intersection counts were taken from the Novato General Plan. **Figure 2-1** shows existing intersection counts.

2.4 Study Periods

Study intersections are evaluated for weekday AM and PM peak hour conditions, as these time periods represent the greatest level of activity when combining existing traffic, traffic generated by reasonably foreseeable land uses, and traffic generated by implementation of the proposed project.

2.5 Level of Service Definitions

This study analyzes traffic operating conditions using level of service (LOS). Vehicle LOS is a qualitative measure of traffic flow from the perspective of motorists and are an indication of the comfort and convenience associated with driving. The LOS analysis uses procedures identified in the *Highway Capacity Manual, Sixth Edition* (HCM) published by the Transportation Research Board of the National Academies of Science. The HCM defines six levels of service ranging from LOS A (representing free-flow vehicular traffic conditions with little to no congestion) to LOS F (oversaturated conditions where traffic demand exceeds capacity resulting in long queues and delays).

The LOS at signalized intersections is based on the average delay experienced by all motorists traveling through the intersection. **Table 1** presents the delay range for each LOS category for signalized intersections as presented in the HCM.

Table 1: Level of Service Definitions – Signalized Intersections

Level of Service	Description (at Signalized Intersections)	Average Control Delay[1]
A	Volume-to-capacity ratio is low and either progression is exceptionally favorable or cycle length is very short. Most vehicles arrive during the green indication and travel through the intersection without stopping.	≤ 10
B	Volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.	>10 to 20
C	Progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 to 35
D	Volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.	>35 to 55
E	Volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.	>55 to 80
F	Volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	>80

Notes: [1]Average control delay presented in seconds per vehicle. Delay values are rounded to the nearest second.
Source: *Highway Capacity Manual* (Transportation Research Board, 2017).

2.6 Existing Roadway Conditions

The following section provides information on existing conditions for the three study intersections.

2.6.1 Existing Intersection Operations

Table 2 summarizes existing weekday AM and PM peak hour traffic operations analysis results at the study intersections (refer to Appendix B for detailed calculation sheets). The following is a summary of the results of the analysis. All intersections operate at or above LOS D conditions, which are acceptable conditions based on General Plan LOS threshold found on page 4.6-17.

Table 2: Peak Hour Intersection LOS – Existing Conditions

Intersection	Traffic Control	LOS Threshold	Peak Hour	Existing Conditions	
				Delay	LOS
1. San Marin Drive/Redwood Boulevard	Signal	D	AM	30	C
			PM	39.8	D
2. Atherton Avenue/US-101 SB Ramps	Signal	D	AM	8.1	A
			PM	7.1	A
3. Atherton Avenue/US-101 NB Ramps	Signal	D	AM	11.4	B
			PM	15	B

Notes:
Bold text indicates intersection would not meet General Plan LOS goals.
1. The overall average intersection control delay is reported in seconds.
Source: Fehr & Peers, 2020.

2.7 Transit System

Marin Transit, Golden Gate Transit, and Sonoma Marin Area Rail Transit (SMART) provide local and regional transit service in the City of Novato. Commuter or express service buses on Golden Gate Transit provide service to downtown San Francisco via Routes 54, 56, and 58. Several daytime transit routes are provided by Golden Gate Transit (Route 70, 101(X), and 80) and Marin Transit (Route 49, 259, 71, 251, and 257) that operate along US-101, Redwood Boulevard, San Marin Drive, Novato Boulevard, and Hamilton Parkway. Additional services include School Route 151 and 154, Paratransit and Dial-A-Ride, and Community Shuttle 259. Many of the above bus routes have been either suspended or modified as a result of the Coronavirus Pandemic. Golden Gate Transit Routes 54, 70, 72, and 101, and Marin Transit Routes 35, 49, 71(X), 171, 251, and 257 are currently active. The School Routes have been suspended at this time.

SMART provides public transit service for Sonoma and Marin Counties. SMART is primarily a passenger rail service and includes a bicycle and pedestrian pathway along the rail corridor. SMART trains have ADA accessible restrooms and seating, and bikes spaces are available on the trains. The proposed project is located approximately one mile north of the Novato San Marin SMART rail station located at 7700 Redwood Boulevard, which provides access to a 45 mile rail corridor connecting a northern terminus at the Sonoma County Airport in Sonoma County to a southern terminus at the Larkspur station in Marin County. The proposed project residents and employees would be able to access the SMART station via auto, bicycle, or ridehail service. The SMART station currently has a small park-and-ride lot, a passenger drop-off/pick-up zone, and bike racks and bike lockers. TAM currently has a program that provides up to $5-off shared Lyft rides to and from all SMART stations in Marin County based on a partnership with Lyft and Whistlestop.

Marin Transit Route 49 currently provides bus service from the San Marin SMART Station south via Redwood Boulevard to the Novato Transit Center in Downtown Novato, south through the city via Novato Boulevard, and then south via US-101 to San Rafael.

Golden Gate Transit Route 54 is a commuter bus route that connects Novato to San Francisco via US-101. The closest stop to the proposed project site is at the Atherton Avenue bus pads at the southern ramps of the US-101/San Marin Drive-Atherton Avenue interchange. The bus pads are located approximately 1.3-1.4 miles from the proposed project site. Golden Gate Transit Route 101 is a regional bus route that connects Santa Rosa to San Francisco primarily via US-101. Route 101 diverts from US-101 in Novato along a segment of San Marin Drive, Redwood Boulevard, and DeLong Avenue. The closest bus stop for Route 101 to the proposed project location is at the intersection of Redwood Boulevard/Escallonia Drive, approximately 1.4 miles from the project site.

Figure 2-2 shows existing transit routes in and near the study area.

2.8 Bicycle Facilities

The 2015 City of Novato Bicycle/Pedestrian Plan identified existing and planned bikeway facilities. An updated facilities map can be seen in the 2035 General Plan. **Figure 2-3** shows existing bikeways in and near the study area, in accordance with the following definitions:

- Class I Bikeway – Dedicated bike paths within an exclusive right of way, typically shared with pedestrians and other active transportation users
- Class II Bikeway – Striped one-way bike lanes on roadways
- Class III Bikeway – Bike routes shared with motor vehicles, identified by signing and/or pavement markings.
- Class IV Bikeway –One-way or two-way bike paths protected from motor vehicles by using barriers, bollards, curbing, parked cars, posts, planters, or other vertical elements

Bicycles are permitted on all roads in California and in Novato, excluding freeways. The City designates certain roads with these classifications to recognize routes that are optimal for bicyclists and helps focus resources to build out and expand the network.

Class I paths make up 5.34 miles in the city and include the Enfrente Road Connector, Novato Boulevard Path, South Novato Boulevard path, Pacheco Hill Path, and the SMART Path. In addition to these key bicycle paths, several half-mile or less segments link neighborhoods to the City's primary bicycle network comprised of mostly Class II bicycle lanes. The primary north-south Class II bicycle lane is along Novato and

South Novato Boulevards and Redwood Boulevard. The primary east-west bikeways are provided along San Marin Drive, Atherton Avenue, Olive Avenue, Rowland Boulevard, Ignacio Boulevard, Bel Marin Keys Boulevard and Hamilton Parkway. Class III bike routes are located along Redwood Boulevard between Rowland Boulevard and South Novato Boulevard, and several short segments connect the Class II bikeways along Alameda Del Prado to the Novato South Hamilton SMART Station.

2.9 Pedestrian Facilities

Pedestrian facilities along Redwood Boulevard vary through the study area. North of the San Marin Drive, Redwood Boulevard has a continuous sidewalk on the west side of the street from San Marin Drive to Pinkston Road. North of Pinkston Road, there is a sidewalk on the east side of Redwood Boulevard from Pinkston Road to Buck Center Drive. North of Buck Center Drive, there are no sidewalks or other pedestrian facilities on either side of Redwood Boulevard including along the frontage of the Days Inn Hotel, the proposed project, and the Birkenstock campus to the north.

Pedestrians walking along Redwood Boulevard in this section where there are no sidewalks use the shoulder/bike lane. The shoulder on the west side of Redwood Boulevard, in the vicinity of the project site, is approximately six feet wide.

Mobility Policy MO 20a (New Development and City Projects) indicates that the city shall "require new development projects to include a sidewalk, path or shoulder on all property street frontages as deemed appropriate by City staff, and routinely include projects to close gaps in the pedestrian system on existing streets through the City's Capital Improvement Program".

At the San Marin SMART Station located approximately one mile south of the project site, train riders park vehicles on the shoulder on either side of Redwood Boulevard between San Marin Drive and the station driveway. There are no sidewalks on either side of Redwood Boulevard in this segment south of the station driveway. Just north of the station driveway, approximately 650 feet from the study intersection, sidewalks connect residents traveling between residential uses along Wood Hollow Drive to the train station.

2.10 Safety Data

Collision records for the three study intersections were collected from The California Statewide Integrated Traffic Records System (SWITRS) database from 2014-2018. **Table 3** summarizes the total number of collisions by type of collision and the collision severity.

Table 3: Collision History at Study Intersections by Type of Collision

Intersection	Sideswipe	Rear-end	Broadside	Hit Object	Overturned	Other
1. San Marin Drive/Redwood Boulevard	4	7	2	4	0	0
2. Atherton Avenue/US-101 SB Ramps	1	1	0	1	1	0
3. Atherton Avenue/US-101 NB Ramps	1	2	0	2	0	1

Source: Fehr & Peers, 2020.

Table 4 summarizes the severity of collisions for those occurring between 2014-2018 at the study intersections.

Table 4: Collision History at Study Intersections by Severity

Intersection	Fatal	Severe	Moderate	Minor	Property Damage Only
1. San Marin Drive/Redwood Boulevard	0	0	1	6	10
2. Atherton Avenue/US-101 SB Ramps	0	1	0	1	2
3. Atherton Avenue/US-101 NB Ramps	0	0	1	2	3

Source: Fehr & Peers, 2020.

A total of 27 collisions occurred at these intersections between 2014 and 2018; 17 occurred at the intersection of San Marin Drive and Redwood Boulevard, 4 occurred at the US-101 Southbound Ramps, and 6 occurred at the US-101 Northbound Ramps. Of the 17 collisions that occurred at the San Marin Drive/Redwood Boulevard intersection, 10 were property damage only. All collisions at the three intersections were non-fatal, and most were rear end collisions, which is typical for signalized intersections along urban arterials. None of the collisions involved pedestrians or cyclists.



C:\Users\ndaugherty\OneDrive - Fehr Peer\Document\Novato HFH Graphic\ArcPro Novato HFH.aprx

Study Intersection

Project Site

City of Novato City Limits

Figure 1-1

Project Study Area

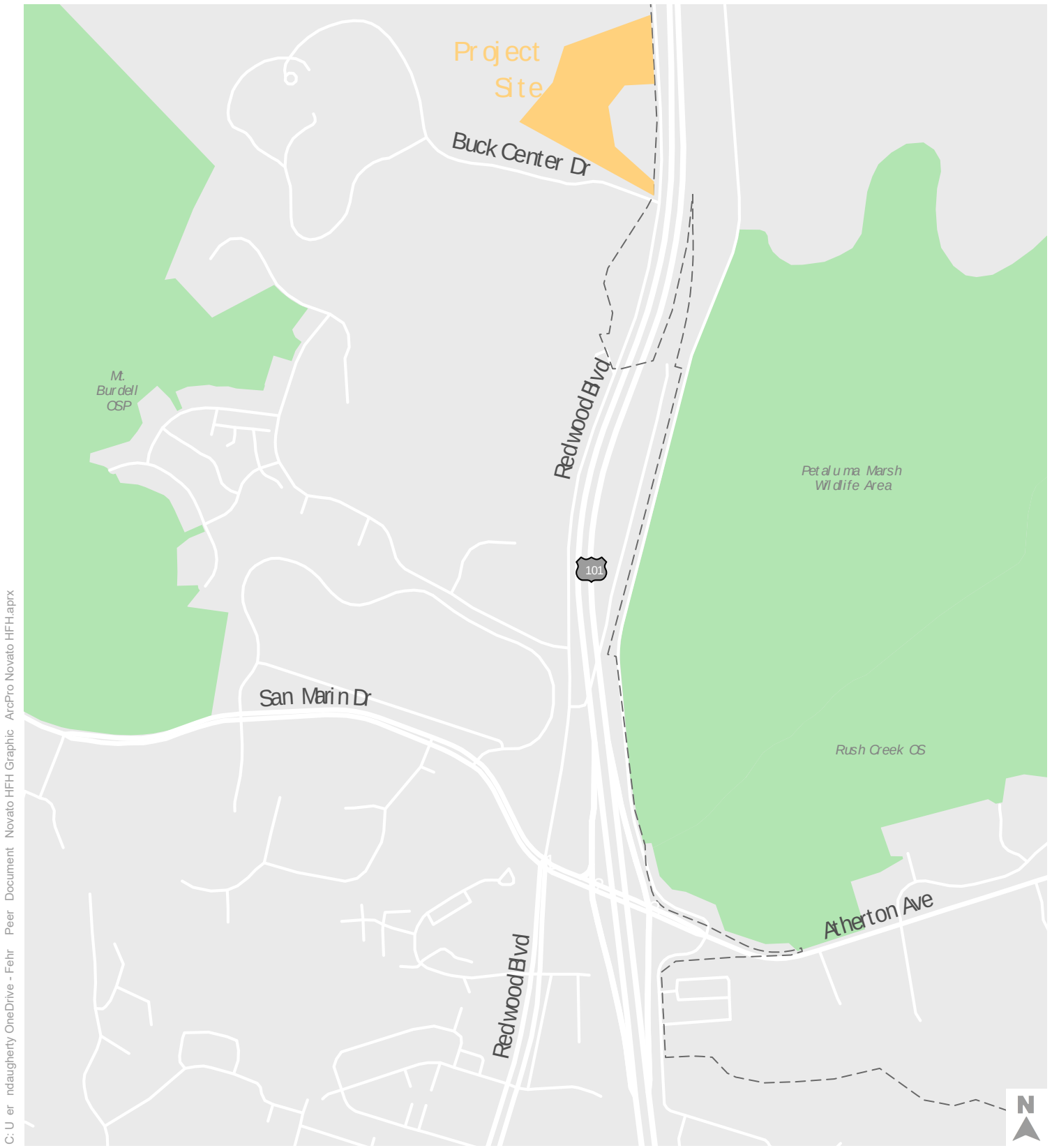


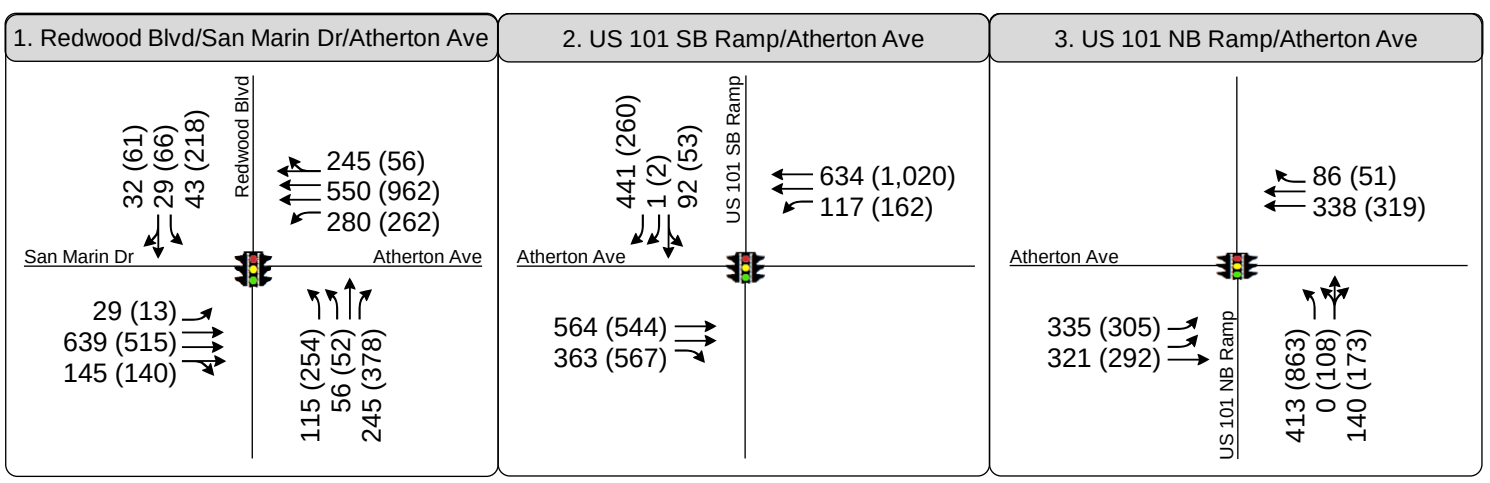
C:\Users\ndaugherty\OneDrive - Fehr & Peers\Documents\Novato HFH\Graphics\ArcPro\Novato HFH.aprx

Figure 1-2

Project Site Plan

Source: Dorman Associates & PGAdesign





Study Intersection

Project Site

City of Novato City Limits

AM (PM) Peak Hour Traffic Volume

Lane Configuration

Traffic Signal

Figure 2-1

Peak Hour Traffic Volumes and Lane Configurations - Existing Conditions

C: U er ndaugherty OneDrive - Fehr Peer Documents Novato HFH Graphic ArcPro Novato HFH.aprx

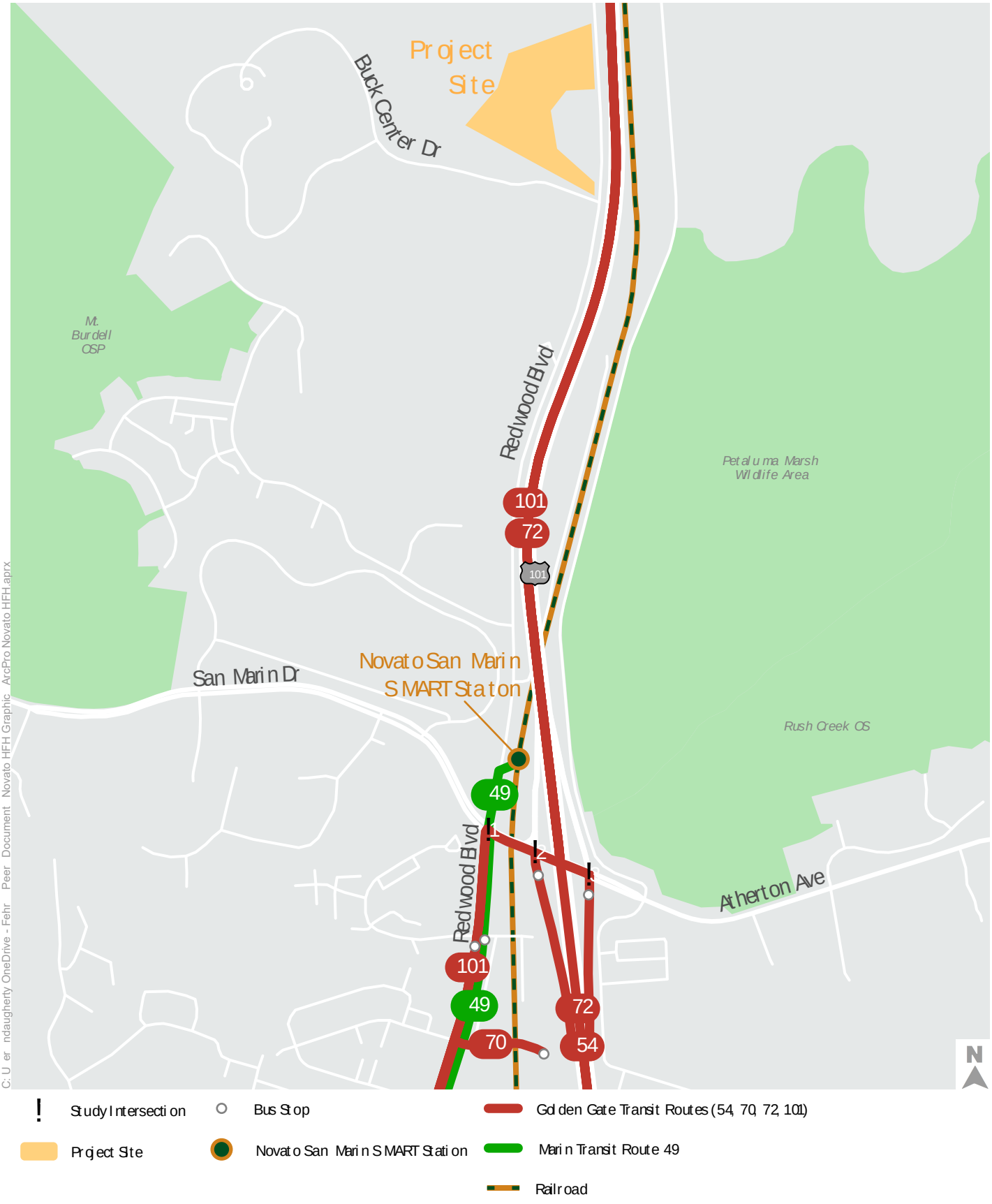


Figure 2-2

Transit Service

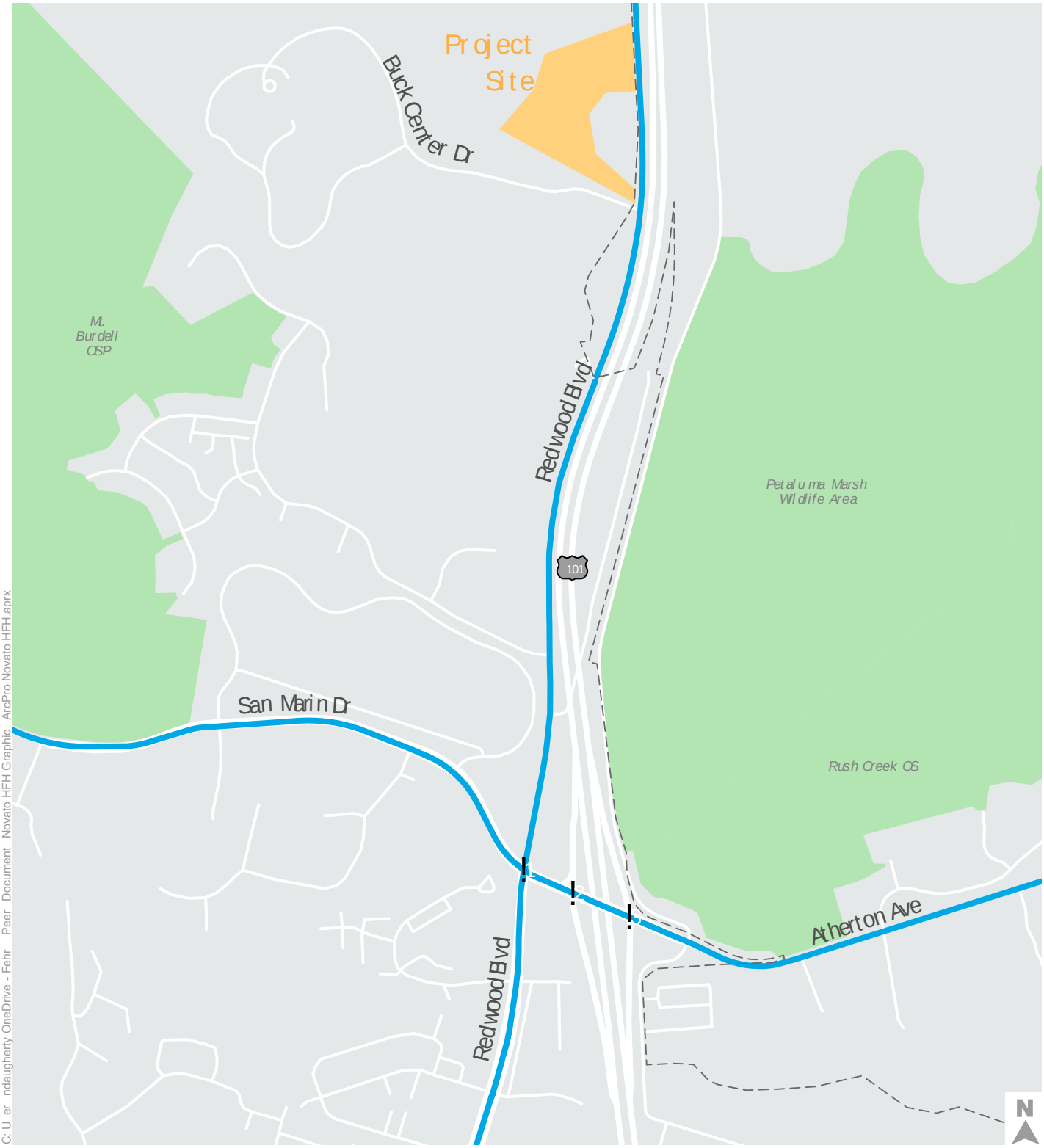


Figure 2-3

Bicycle Facilities

3. Regulatory Framework

The 2035 Novato General Plan EIR summarizes the Federal, State, Regional, and Local regulatory framework related to transportation and circulation issues on pages 4.14-17 through 4.14-21. Those aspects of the existing regulatory framework that are relevant to potential impacts of the project are briefly highlighted below. Please see Section 4.14 of the 2035 Novato General Plan EIR for more detail.

3.1 Federal Plans, Policies, Regulations and Laws

There are no applicable federal regulations pertaining to transportation that apply directly to the proposed Project.

3.2 State Plans, Policies, Regulations and Laws

3.2.1 Caltrans

Deputy Directive 64 (Complete Streets – Integrating the Transportation System) is a policy directive related to non-motorized travel throughout the state and contributes to the California Department of Transportation (Caltrans) mission and vision to improve mobility across California. "The Department views all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in California and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system". Two study intersections, Atherton Avenue/US-101 SB Ramps and Atherton Avenue/US-101 NB Ramps, are part of the state highway system and maintained by Caltrans.

3.2.2 Senate Bill 743

With the passage of SB 743 (September 27, 2013) and the subsequent adoption of revised *California Environmental Quality Act (CEQA) Guidelines* in 2019, level of service (LOS) can no longer be used as a criterion for identifying significant transportation impacts for most projects under CEQA. LOS measures the average amount of delay experienced by vehicle drivers at an intersection during the most congested time of day, while the new CEQA metric (Vehicle Miles Traveled or VMT) measures the total number of daily miles traveled by vehicles on the roadway network and thereby the impacts on the environment from those miles traveled.

In other words, SB 743 changes the focus of transportation impact analysis in CEQA from measuring impacts *to* drivers, to measuring the impact *of* driving. Land use projects with one or more of the following characteristics would have lesser VMT impacts:

- Higher land use densities
- Mix of project uses
- Support of a citywide jobs-housing balance (i.e., provide housing in a job rich area, or vice versa)
- Proximity to the core of a region
- Proximity to high quality transit service
- Located in highly walkable or bikeable areas

This shift in transportation impact criteria is expected to better align transportation impact analysis and mitigation outcomes with the State's goals to reduce GHG emissions, encourage infill development, and improve public health through more active transportation. Specific to SB 743, Section 15064.3(c) of the revised Guidelines states that, "a lead agency may elect to be governed by the provisions of this section immediately. Beginning on July 1, 2020, the provisions of this section shall apply statewide."

3.2.3 California's Complete Streets Act

California's Complete Streets Act was adopted in 2008. The Act requires cities to plan for a balanced, multimodal transportation network to meet the needs of all users including motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation.

3.3 Regional Plans and Programs

3.3.1 Plan Bay Area 2040

Plan Bay Area 2040, adopted in July 2017, was produced by the Metropolitan Planning Commission (MTC) and the Association of Bay Area Governments (AGAG). AGAG's members include the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma and the towns and cities that make up those counties. Plan Bay Area 2040 provides investment recommendations to improve the regional transportation system including for regional highway, transit, local roadway, bicycle and pedestrian improvements. The plan includes regional transportation and land use policy and provides capital program planning for all regional, state, and federally funded projects.

3.3.2 Marin County Congestion Management Plan

The Marin County Congestion Management Plan was updated in 2019 by the Transportation Authority of Marin (TAM). The plan first describes the existing roadway and system performance including LOS, travel time, and delay for vehicles, as well as performance of the entire transportation system including bicycles, pedestrian, and transit service from Golden Gate Ferry, Golden Gate Transit, and Marin Transit. TAM uses Transportation Demand Management strategies to improve efficiency of the existing transportation systems and uses a travel demand model to forecast proposed changes to the transportation network. Additionally, land use analysis, capital improvements, and deficiency plan procedures are included in the Plan.

3.4 Local Plans, Policies, Regulations, and Ordinances

3.4.1 City of Novato General Plan

The City of Novato General Plan 2035 sets forth overarching goals and objectives related to transportation and circulation in the context of planned land use within the City. The City's vision encourages interconnected modes of local transportation. The General Plan guides the development of new roads and roadway modifications to serve long-term needs of Novato through the year 2035. The General Plan also provides direction for multimodal implementation.

All of the study intersections are evaluated in Chapter 6 for consistency with the City of Novato level of service (LOS) standards. As noted earlier, this LOS analysis is not used as the basis for determining CEQA impacts. The City of Novato General Plan identifies LOS D conditions as the AM and PM peak hour threshold service level for intersections with traffic signals or four-way stops, and LOS E conditions area acceptable for intersections with stop signs on side streets only. The Transportation Authority of Marin sets LOS standards biennially for several roadway and freeway segments that are a part of the Marin County Congestion Management Program (CMP) network. In Novato, LOS E or better is required for US-101 and a LOS D or better is required for SR 37 and designated CMP major arterial segments of Novato Boulevard, South Novato Boulevard, and Bel Marin Keys Boulevard.

Relevant transportation goal and policy statements from the Mobility Section of the General Plan are provided below.

- Parking – Provide enough parking in downtown area, with an occupancy of on-street parking spaces below 90 percent. Continue parking management and enforcement of existing parking spaces in highly desired locations.

- Bicycle Network – Execute City adopted requirements for bicycle parking for new multi-family and commercial development and showers and change facilities in large, newly-developed and expanded employment centers. The General Plan supports the Novato Bicycle/Pedestrian Plan and the City's Community Based Transportation Plan.
- Pedestrian Network – Improve pedestrian safety and amenities and improve sidewalk coverage downtown and in outlying residential neighborhoods.
- Safe Routes to School – Continue to construct safe pathways to Novato schools and provide bicycle education and safety programs through the Novato Police Department.
- Transit Network – The General Plan supports Marin Transit's 2016-2025 Short Range Transit Plan and Sonoma Marin Area Rail Transit service improvements for a continuous bicycle pedestrian pathway linked to SMART service routes.

3.4.2 City of Novato Bicycle/Pedestrian Plan

The City of Novato Bicycle/Pedestrian Plan was adopted in 2015. This Plan recommends improvements to sidewalks, bicycle paths, lanes and routes, along with bicycle and pedestrian related programs and support facilities.

3.4.3 City's Community Based Transportation Plan

The City's Community Based Transportation Plan (CBTP), adopted in 2015, is part of a collaborative effort by the Metropolitan Transportation Commission (MTC), the Transportation Authority of Marin (TAM), and the City of Novato to involve residents in identifying transportation needs and solutions to address them. The plan describes existing issues residents identified and opportunities for improved transportation services and facilities. Certain neighborhoods are designated as important focus areas for the City of Novato based on key indicators of vulnerable populations within Novato, and the set of 25 transportation solutions recommended help to address the transportation gaps identified by the community by priority. The top ten strategies identified for addressing transportation gaps identified by the community are as follows.

1. Improve Safety for Pedestrians at Intersection Crossings
2. Improve Transit Schedule Coordination for Connecting Services
3. Bus Access and Platform Improvements
4. New Sidewalk Construction & Repair Broken Sidewalks
5. Improve Facilities, Communication, and Training Related to Wheelchair Lifts at Transit Stops
6. Identify ADA-Accessible Bus Stops on Transit Maps
7. Study Supplemental Service for Senior, Disabled, and Medical Trips for Areas Outside Paratransit Service Boundaries

8. Improve Online Transportation Resources
9. New Bicycle Lanes and Facilities
10. Provide Incentives for Wheelchair-Accessible Taxi Service

3.4.4 Marin Transit's 2016-2025 Short Range Transit Plan

The 2016-2025 Short Range Transit Plan (SRTP) serves as a guide for local public transit services. The plan includes systemwide goals, targets, and performance and is also broken down by route and district, provides a service plan for both planned service levels and unfunded service needs, a capital plan, and a financial plan using projected costs and revenues over a five-year timeframe.

3.4.5 Sonoma-Marin Area Rail Transit

The Sonoma-Marin Area Rail Transit (SMART) 2019 Strategic Plan is meant to hold SMART accountable and provide transparency to the communities that are funding the service through tax money. The Plan includes financial planning options available to continue funding the service past when current sales tax for SMART expires in 2029 and provides information regarding SMART's current operation and capital projects, as well as its goals to improve service. The Plan was reviewed by SMART's Citizens Oversight Committee and worked closely with municipalities located along the project corridor, transit agencies, and county transportation agencies to ensure planning efforts achieve wider goals in the area.

4. Project Travel Characteristics

This chapter presents the methods used to estimate the amount of traffic generated by the proposed development and how it will be distributed to the roadway system. Project VMT forecasts are also provided.

Travel forecasts for the study scenarios were prepared using the trip rates in the Institute of Transportation Engineers' (ITE) Trip Generation manual, 10th Edition, 2017.

4.1 Trip Generation

The purpose of this vehicle trip generation forecast is to identify the number of new vehicle trips entering and exiting the project site for residential and employment purposes during a selected time period. The proposed project includes multifamily housing and office space.

As noted above, the travel forecasts prepared for all the future study scenarios were developed using the trip rates in the Institute of Transportation Engineers' (ITE) Trip Generation manual, 10th Edition, 2017. The trip generation is based on trip rates for Multifamily Housing Low-Rise (ITE Land Use Code #220) for the 80 residential units and Small Office Building (ITE Land Use Code #712) for the office use.

The project would generate a total of approximately 599 daily trips, 43 trips during the AM peak hour, and 54 trips during the PM peak hour. **Table 5** presents the forecast project trip generation for the Habitat Redwood project.

Table 5: Project Trip Generation

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Total Trips	In	Out	Rate	Total Trips	In	Out
Residential	80	7.32	564	0.46	39	9	30	0.56	49	31	18
Office	2,154 sf	16.19	35	1.92	4	3	1	2.45	5	2	3
Totals		-	599	-	43	12	31	-	54	33	21

Source: Fehr & Peers, 2020.

4.2 Trip Distribution

The trip distribution allocations for the project are based on the travel destinations identified for housing projects in the Novato Housing Element Draft EIR, August 2013. **Table 6** presents the forecast trip distribution, which is used to allocate project trips to the three study intersections along San Marin Drive and Atherton Avenue.

Table 6: Project Trip Distribution

Gateway Direction/Route	Percent
US-101 North (via San Marin-Atherton interchange)	4%
US-101 South (via San Marin-Atherton interchange)	47%
West via San Marin Drive	16%
East via Atherton Avenue	3%
North via Redwood Boulevard	5%
South via Redwood Boulevard	25%

Source: Fehr & Peers, 2020.

4.3 Project Vehicle Miles Traveled (VMT)

The Governor's Office of Planning and Research (OPR), in their 2018 *Technical Advisory on Evaluating Transportation Impacts in CEQA* that addresses how to evaluate VMT impacts under the provisions of SB 743, recommends that the dominant land use in mixed use projects be evaluated for VMT purposes. For the Novato Habitat project, the VMT assessment will thus be based on VMT generated by the residential uses.

The CEQA VMT threshold is consistent with the threshold applied for the Hamilton Village Project Traffic Impact Study (April 9, 2020) and OPR guidance that states a project would generate significant VMT impact if the project's residential VMT per capita exceeds a level that is fifteen percent below the citywide residential VMT per capita.

The City of Novato has a baseline residential VMT of 17.0 miles per resident, based on data from the Transportation Authority of Marin Demand Model (TAMDM). A project generating a VMT per capita that is 15 percent or more below this citywide value, or 14.5 miles per resident, would have a less-than-significant VMT impact.

The project VMT per capita is estimated by multiplying the daily vehicle trip generation for residential uses shown in **Table 5** (adjusted for the effect of the project's share of affordable housing on daily vehicle trip generation) by the average trip length for residential uses in the two micro-analysis zones closest to the project site as extracted from the TAMDM, divided by the forecast project residential population. The VMT per resident for the proposed project is 13.3 based on the following project travel metrics.

- Weekday residential daily trip generation of 564 vehicle trips (based on ITE Trip Generation)
- Average home-based vehicle trip length for residential uses in the two micro-analysis zones closest to the project site (per TAM model) of 8.9 miles
- Project population of 359 persons, based on population per household data from similar recent Habitat for Humanity Greater San Francisco projects
- VMT reduction of 5.1 percent[1] to account for 50 percent of housing units in the project being occupied by low-income residents (e.g., household earns between 50% and 80% of median family income or annual median income).

[1] Newmark, G. and Haas, P. 2015. Income, Location Efficiency, and VMT: Affordable Housing as a Climate Strategy. The California Housing Partnership.

5. Environmental Impacts and Mitigation Measures

This section provides a description of the thresholds of significance applied for the impact assessment, the VMT impact assessment, local roadway network assessment, transit impact assessment, bicycle impact assessment, and pedestrian impact assessment.

5.1 Thresholds of Significance

In accordance with CEQA, the effects of a project are evaluated to determine if they will result in a significant adverse impact on the environment. For the purposes of this analysis, an impact is considered significant if implementation of the project would have any of the effects described below.

The standards of significance in this analysis are based upon current CEQA Guidelines and the current practice of the appropriate regulatory agencies. For most areas related to transportation and circulation, policies from the City of Novato General Plan 2035 are used.

5.1.1 Vehicle-Miles Traveled (VMT)

The City of Novato has not formally adopted a threshold of significance for evaluating VMT for CEQA purposes and City staff has directed that guidance provided by the California Governor's Office of Planning and Research (OPR) in *Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018)* on VMT thresholds be applied in CEQA studies. For residential uses, OPR identifies a recommended threshold where a significant transportation impact may be indicated if a proposed project exceeds a level of 15 percent below existing VMT per capita. OPR indicates that the residential VMT per capita threshold may be measured as a regional VMT per capita or as a city VMT per capita. City staff has directed that the citywide VMT per capita be used as a threshold for residential uses. This VMT threshold was first applied in the *Traffic Impact Study for the Hamilton Village Project (April 9, 2020)*.

As such, a VMT-related impact would be considered significant if implementation of the proposed residential project would trigger the following condition.

- Home VMT per resident exceeds 15 percent below average citywide baseline rate of 17.0, or a threshold of 14.5

5.1.2 Local Roadway Network

An impact to the roadway system would be considered significant if implementation of the proposed project would trigger any of the following conditions.

- Create inconsistencies with the road system policies adopted by the City of Novato
- Create conflicts between modes (e.g., vehicles and bicycles)

A Roadway System LOS assessment that addresses the Novato General Plan LOS policy, which is separate from the CEQA assessment provided in Section 5, is provided in Section 6.

5.1.3 Transit System

An impact to the transit system would be considered significant if the proposed project would trigger any of the following conditions.

- Create demand for public transit services above that which is provided, or planned to be provided
- Disrupt existing transit services or facilities
- Interfere with planned transit services or facilities
- Create an inconsistency with the transit policies or standards of plans adopted by the City of Novato Bicycle and Pedestrian Facilities

5.1.4 Bicycle and Pedestrian Network

An impact to the bicycle or pedestrian system would be considered significant if the proposed project would trigger any of the following conditions.

- Disrupt existing bicycle or pedestrian facilities
- Interfere with planned bicycle or pedestrian facilities
- Create an inconsistency with the bikeway or pedestrian policies or standards of plans adopted by the City of Novato

5.2 Impact Analysis

The section addresses potential transportation impacts related to VMT, local roadway network, transit services, bicycle facilities, and pedestrian facilities.

5.2.1 Project VMT

The purpose of the following VMT assessment is to determine whether the proposed project exceeds a level of 15 percent below existing citywide VMT per capita and thus results in a significant transportation impact. The existing citywide VMT per capita for the City of Novato, as extracted from the Marin County travel model developed and maintained by TAM for this purpose, is 17.0 for residential uses. The VMT per capita threshold applied for residential projects in Novato, which is 15 percent below this existing baseline, is thus 14.5.

The VMT per capita for the proposed project of 13.3 as described in detail in Section 4.3. The project VMT per capita is below the current residential VMT threshold of 14.5 per resident. As such, the proposed project is presumed to have a less than significant impact based on the VMT threshold. No mitigations are required.

5.2.2 Local Roadway Network

The Mobility chapter of the City of Novato 2035 General Plan calls for providing a safe and efficient system that accommodates all users and maintains acceptable levels of service (MO 1), encourages sustainable mobility systems that reduce dependence on low-occupancy automobiles (MO 2), supports local and regional transit that is efficient, convenient, and safe (MO 3), and provides a safe and convenient bicycle and pedestrian network that accommodates all ages and abilities (MO 4).

The proposed project is an 80-unit multi-family residential development with a proposed driveway access onto Redwood Boulevard located approximately 1,200 feet north of Buck Center Drive. The proposed project would not change the configuration of Redwood Boulevard, a two-lane road designated as a minor arterial in the General Plan. Redwood Boulevard is approximately 35 feet wide along the proposed project frontage, with eleven-foot wide vehicle travel lanes and seven-foot wide shoulders striped as Class II bike lanes. The project would add approximately 43 vehicle trips during the AM peak hour and 54 vehicle trips during the PM peak hour in both directions to Redwood Boulevard, almost all of which would travel to and from the south of the project. The proposed project does not create inconsistencies with the City's adopted road system policies or create conflicts between modes.

Project impacts to the local roadway network are considered **less-than-significant.** No mitigations are required.

5.2.3 Transit System

The proposed project is located approximately one mile north of the Novato San Marin SMART rail station located at 7700 Redwood Boulevard, which provides access to a 45 mile rail corridor connecting a northern terminus at the Sonoma County Airport in Sonoma County to a southern terminus at the Larkspur station

in Marin County. The proposed project residents and employees would be able to access the SMART station via auto, bicycle, or ridehail service. The SMART station currently has a small park-and-ride lot, a passenger drop-off/pick-up zone, and bike racks and bike lockers. TAM currently has a program that provides up to $5-off shared Lyft rides to and from all SMART stations in Marin County based on a partnership with Lyft and Whistlestop.

Marin Transit Route 49 currently provides bus service from the San Marin SMART Station south via Redwood Boulevard to the Novato Transit Center in Downtown Novato, south through the city via Novato Boulevard, and then south via US-101 to San Rafael. Golden Gate Transit Route 54 is a commuter bus route that connects Novato to San Francisco via US-101. The closest stop to the proposed project site is at the Atherton Avenue bus pads at the southern ramps of the US-101/San Marin Drive-Atherton Avenue interchange. The bus pads are located approximately 1.3-1.4 miles from the proposed project site. Golden Gate Transit Route 101 is a regional bus route that connects Santa Rosa to San Francisco primarily via US-101. Route 101 diverts from US-101 in Novato along a segment of San Marin Drive, Redwood Boulevard, and DeLong Avenue. The closest bus stop for Route 101 to the proposed project location is at the intersection of Redwood Boulevard/Escallonia Drive, approximately 1.4 miles from the project site.

The proposed project would not disrupt or interfere with existing or planned transit services. The residential and employment population of the proposed 80-unit residential project at build-out would not result in a substantial demand for transit service given the project location and proposed parking supply levels. Transit service that is expected to be restored after the Coronavirus pandemic would be adequate to accommodate project-generated trips.

Project impacts to the local transit system are considered **less-than-significant.** No mitigations are required.

5.2.4 Bicycle Facilities

The project would provide 20 bike parking spaces. Redwood Boulevard currently has Class II bike lanes from the proposed project site south into Downtown Novato and beyond to Rowland Boulevard. The project would not disrupt or interfere with existing or planned bicycle facilities.

Project impacts to bicycle facilities are considered **less-than-significant.** No mitigations are required.

5.2.5 Pedestrian Facilities

Mobility Policy MO 20a (New Development and City Projects) indicates that the city shall "require new development projects to include a sidewalk, path or shoulder on all property street frontages as deemed appropriate by City staff".

A sidewalk exists on the west side of Redwood Boulevard as far north as Pinkston Road, approximately 0.5 miles south of the proposed project driveway. A raised asphalt sidewalk exists on the east side of Redwood Boulevard from Pinkston Road to Buck Center Drive. Sidewalks do not exist along either side of Redwood Boulevard from Buck Center Drive to the north.

The project will provide a sidewalk along its frontage, on the west side of Redwood Boulevard, as well as an internal path from the center of the project site to the northwest corner of the Redwood Boulevard/Buck Center Drive intersection. The project would provide sidewalk facilities along its frontage and would not disrupt or interfere with existing or planned pedestrian facilities. Project impacts to pedestrian facilities are considered **less-than-significant.** No mitigations are required.

While functional, the raised asphalt sidewalk on the east side of Redwood Boulevard between Pinkston Road and Buck Center Drive is seldom used by pedestrians who were observed to walk in the six-foot wide southbound bicycle lane on the west side of Redwood Boulevard instead. This likely occurs as the asphalt sidewalk on the east side of Redwood Boulevard is adjacent to the southbound lanes of US 101 and access to the 0.25-mile length of asphalt sidewalk requires pedestrians to cross Redwood Boulevard from the west side of the street twice. City staff have indicated that a sidewalk has not yet been constructed on the west side of Redwood Boulevard in this section due to issues with hill slope stabilization on property on the west side of the street owned by Caltrans.

The lack of a sidewalk on the west side of Redwood Boulevard between Pinkston Road and Buck Center Drive represents a gap in the pedestrian network that is inconsistent with City General Plan pedestrian policies. The inconsistency is an existing condition along a section of Redwood Boulevard located south of the project site.

> **Sidewalk Improvement Recommendation.** Prior to occupancy of the proposed project, the applicant shall obtain an encroachment permit from Caltrans and construct a sidewalk on the west side of Redwood Boulevard from the project site to the existing sidewalk at Pinkston Road. This improvement project would require Caltrans to complete slope stabilization improvements on the west side of the street that would provide a buildable area for a sidewalk. As an alternative, if it is determined that this improvement project is infeasible, the applicant shall construct crosswalk, pedestrian traffic control treatments, and other required improvements as approved by the City of Novato Public Works Director at the intersections of Redwood Boulevard/Buck Center Drive and Redwood Boulevard/Pinkston Road, to facilitate pedestrian crossings to and from the existing sidewalk on the east side of the street.

6. Intersection Level of Service

The purpose of the following section is to evaluate Vehicle Level of Service (LOS) for General Plan consistency and to identify feasible improvement measures to meet the General Plan Vehicle LOS Standard. This information is not used to make CEQA impact determinations, rather to identify potential improvement projects that may be included as conditions of approval for the project.

6.1 Evaluation Scenarios

The following Intersection LOS assessment addresses weekday AM and PM peak hour operations at three intersections for the following scenarios:

1. Existing plus Project Conditions
2. Existing plus Approved Conditions
3. Existing plus Approved plus Project Conditions
4. Cumulative No Project Conditions
5. Cumulative plus Project Conditions
6. Cumulative plus Project with Improvement Conditions

6.2 LOS Policy

The Novato General Plan 2035 (February 2020) contains circulation-related goals and policies beginning on page 6-50 including Level of Service Standards in Mobility Goal MO 2 as described below.

> **MO 2: Level of Service Standards**. Establish traffic Level of Service (LOS) standards as follows for use in evaluating the impacts of proposed development projects so the project can be redesigned or effective mitigation measures can be implemented, making improvements to the roadway system, and determining appropriate traffic impact fees. Continue to consider LOS standards in evaluating the merits of proposed development or traffic infrastructure projects in addition to consideration of standards associated with Vehicle Miles Traveled (VMT) in the required environmental review process.
>
> Acceptable LOS standards for intersections in the City are:
>
> a. At intersections with signals or four-way stop signs: operation at LOS D.

b. At intersections with stop signs on side street only: operation at LOS E.

For the three study intersections, which are all controlled by traffic signals, LOS D would apply for the assessment of General Plan consistency.

The Transportation Authority of Marin (TAM) is responsible for preparing and regularly updating a Congestion Management Plan (CMP) for Marin County. The 2019 CMP is the most current version of the document that identifies a CMP roadway system, LOS standards for the CMP roadway and freeway segments, monitors system performance, identifies Transportation Demand Management (TDM) strategies to improve the efficiency of the system without significant expansion, describes land use analysis requirements, provides information on the county travel demand model (TAMDM), provides information on capital improvement programs, and describes deficiency plan procedures. The Marin County CMP network does not include Atherton Avenue, San Marin Drive, or Redwood Boulevard. As such, the three study intersections being evaluated on these road segments are not part of the CMP network. The land use analysis program in the CMP indicates that major development proposals that are projected to generate a net increase of 100 vehicle trips during the PM (afternoon) peak hour is subject to a CMP analysis. As the proposed project generates less than 100 vehicle trips during the PM peak hour, it is not subject to a CMP analysis.

6.3 LOS Analysis

6.3.1 Existing Plus Project Traffic Conditions

This section presents LOS conditions on the surrounding transportation system under Existing plus Project conditions. Existing plus Project conditions are defined as Existing conditions with the addition of vehicle trips upon full occupancy of the project, based on the project trip generation and distribution.

6.3.1.1 Existing plus Project Intersection Operations

Figure 3-1 shows peak hour volumes for Existing plus Project conditions. **Figure 3-2** shows added project trips only to all movements at the three study intersections. **Table 7** provides a summary of LOS results for Existing plus Project conditions, compared with Existing conditions results, which are also presented in Table 2. **Appendix A** includes LOS calculation sheets for all scenarios. All intersections would operate at acceptable LOS conditions during the AM peak and PM peak hour.

Table 7: Peak Hour Intersection LOS – Existing Plus Project Conditions

Intersection	Traffic Control	LOS Threshold	Peak Hour	Existing		Existing plus Project	
				Delay	LOS	Delay	LOS
1. San Marin Drive/Redwood Boulevard	Signal	D	AM	30	C	30.7	C
			PM	39.8	D	40.2	D
2. Atherton Avenue/US-101 SB Ramps	Signal	D	AM	8.1	A	8.0	A
			PM	7.1	A	7.1	A
3. Atherton Avenue/US-101 NB Ramps	Signal	D	AM	11.4	B	11.4	B
			PM	15	B	15.2	B

Notes:
1. The overall average intersection control delay is reported in seconds.
2. HCM 2000 methodology is used for the intersection of San Marin Drive/Redwood Boulevard.
Source: Fehr & Peers, 2020.

6.3.2 Existing Plus Approved Traffic Conditions

This discussion presents LOS conditions on the surrounding transportation system under Existing plus Approved Development conditions. Existing plus Approved Development conditions are defined as Existing conditions with completion of previously approved development projects. No roadway improvements are assumed to be constructed in the analysis of Existing plus Approved Development conditions.

Seven approved developments were identified by the City of Novato, the first six of which were evaluated in the General Plan EIR, as listed below:

1. 7711 Redwood Project – 80 unit for-sale townhomes
2. Wood Hollow Hotel, 7701 Redwood Blvd. – 87 room hotel
3. Park-a-pup, 7586 Redwood Blvd. – 12,143 s.f. of boarding facility
4. Atherton Place, 7533/7537 Redwood Blvd. – 50 unit for-sale townhomes, 1,300 s.f. retail
5. Residence Inn, 7546 Redwood Blvd. – 103 room hotel, 8,000 s.f. retail
6. Springbrook, 1602 Vallejo Ave – 9 single family homes
7. Buck Center, 8001 Redwood Blvd. – 130 unit for-sale townhomes

The trip generation forecasts for the seven approved projects are shown in **Appendix B**. The trips generated by approved developments are added to existing conditions to establish the Existing plus Approved Development scenario volumes.

6.3.2.1 Existing Plus Approved Development Intersection Operations

Figure 3-3 shows peak hour volumes for Existing plus Approved Development conditions. **Table 8** provides a summary of LOS results for Existing plus Approved Development conditions, compared with Existing conditions results, which are also presented in Table 2. All intersections would operate at acceptable LOS under Existing plus Approved conditions for the AM peak and PM peak hours.

Table 8: Peak Hour Intersection LOS – Existing Plus Approved Development Conditions

Intersection	Traffic Control	LOS Threshold	Peak Hour	Existing		Existing plus Approved	
				Delay	LOS	Delay	LOS
1. San Marin Drive/Redwood Boulevard	Signal	D	AM	30	C	32	C
			PM	39.8	D	42.1	D
2. Atherton Avenue/US-101 SB Ramps	Signal	D	AM	8.1	A	7.9	A
			PM	7.1	A	7.5	A
3. Atherton Avenue/US-101 NB Ramps	Signal	D	AM	11.4	B	11.6	B
			PM	15	B	15.7	B

Notes:
1. The overall average intersection control delay is reported in seconds.
2. HCM 2000 methodology is used for the intersection of San Marin Drive/Redwood Boulevard
Source: Fehr & Peers, 2020.

6.3.3 Existing Plus Approved Development Plus Project Traffic Conditions

This discussion presents LOS conditions on the surrounding transportation system under Existing plus Approved Development plus Project conditions. Existing plus Approved Development plus Project conditions are defined as Existing conditions with added trips generated by the seven previously approved developments and added trips generated by the Project. No roadway improvements were included in the analysis of Existing plus Approved Development plus Project conditions.

6.3.3.1 Existing Plus Approved Development Plus Project Intersection Operations

Figure 3-4 shows peak hour volumes for Existing plus Approved Development plus Project conditions. **Table 9** provides a summary of LOS results for Existing plus Approved Development plus Project conditions, compared with Existing plus Approved Development conditions results. All intersections would operate at acceptable LOS during the AM peak and PM peak hour.

Table 9: Peak Hour Intersection LOS – Existing Plus Approved Plus Project Conditions

Intersection	Traffic Control	LOS Threshold	Peak Hour	Existing plus Approved		Existing plus Approved plus Project	
				Delay	LOS	Delay	LOS
1. San Marin Drive/Redwood Boulevard	Signal	D	AM	32	C	32.5	C
			PM	42.1	D	42.8	D
2. Atherton Avenue/US-101 SB Ramps	Signal	D	AM	7.9	A	8.0	A
			PM	7.5	A	7.7	A
3. Atherton Avenue/US-101 NB Ramps	Signal	D	AM	11.6	B	11.7	B
			PM	15.7	B	16.2	B

Notes:
1. The overall average intersection control delay is reported in seconds.
2. HCM 2000 methodology is used for the intersection of San Marin Drive/Redwood Boulevard
Source: Fehr & Peers, 2020.

6.3.4 Cumulative No Project Traffic Conditions

This discussion presents LOS conditions on the surrounding transportation system under Cumulative No Project conditions. Cumulative No Project conditions are a project-based scenario that includes approved and planned projects in the study area. Signal timing at the study intersections were modified for the Cumulative No Project conditions to account for new trips generated by future development, under the presumption that the signal timing would be updated as conditions change.

Projections of added traffic for Cumulative No Project conditions were based on adding new traffic generated by the seven approved projects as described in Section 6.3.2 plus trips generated from occupancy of vacant space at the 100 Wood Hollow Drive office building, two mixed use developments, two residential projects with a mix of single and multi-family units, a multifamily housing development, and one office use project that are currently pending review or planned. The projects considered for cumulative conditions include:

1. 7711 Redwood Project – 80 unit for-sale townhomes
2. Wood Hollow Hotel, 7701 Redwood Blvd. – 87 room hotel
3. Park-a-pup, 7586 Redwood Blvd. – 12,143 s.f. of boarding facility
4. Atherton Place, 7533/7537 Redwood Blvd. – 50 unit for-sale townhomes, 1,300 s.f. retail
5. Residence Inn, 7546 Redwood Blvd. – 103 room hotel, 8,000 s.f. retail
6. Springbrook, 1602 Vallejo Ave – 9 single family homes
7. Buck Center, 8001 Redwood Blvd. – 130 unit for-sale townhomes
8. Grant Avenue Mixed Use – 227 unit apartments and 8,190 s.f. retail

9. Village at Novato – 178 unit apartments and 14,000 s.f. retail
10. 1787 Grant Avenue – 35 unit for-sale townhomes
11. 100 Wood Hollow Drive office – 66,180 s.f. vacant office (of 130,000 s.f. existing building)
12. Meadow West Lot – 8.3-acre office space (58,900 s.f.)
13. Valley Oak Project – 92 single family homes, 28 multi-family units
14. 777 San Marin (former Fireman's Fund campus) – 181 senior adult housing units, 160 single family homes, 224 multi-family (low-rise) units, and 516 multi-family (mid-rise) units

The trip generation forecasts for the 13 cumulative projects are shown in **Appendix B**. The trips generated by cumulative development projects are added to existing conditions to establish the Cumulative No Project scenario volumes.

6.3.4.1 Cumulative No Project Intersection Operations

Figure 3-5 shows peak hour volumes for Cumulative no Project conditions. **Table 10** provides a summary of LOS results for Cumulative No Project conditions, compared with Existing plus Approved Development conditions, which are also presented in Table 9. All intersections would operate at acceptable LOS during the AM and PM peak hours.

Table 10: Peak Hour Intersection LOS – Cumulative No Project Conditions

Intersection	Traffic Control	LOS Threshold	Peak Hour	Existing plus Approved		Cumulative No Project		Meets GP LOS Standard
				Delay	LOS	Delay	LOS	
1. San Marin Drive/Redwood Boulevard	Signal	D	AM	32	C	34.9	C	√
			PM	42.1	D	54.6	D	
2. Atherton Avenue/US-101 SB Ramps	Signal	D	AM	7.9	A	9.1	A	√
			PM	7.5	A	8.6	A	
3. Atherton Avenue/US-101 NB Ramps	Signal	D	AM	11.6	B	12.7	B	√
			PM	15.7	B	20.0	C	

Notes:
Bold indicates that intersection would not meet General Plan LOS goals.
1. The overall average intersection control delay is reported in seconds.
2. HCM 2000 methodology is used for the intersection of San Marin Drive/Redwood Boulevard
Source: Fehr & Peers, 2020.

The General Plan EIR determined that the intersection of Redwood Boulevard/San Marin Drive would operate at LOS D conditions during the AM peak hour and LOS F conditions during the PM peak hour under cumulative conditions. The General Plan EIR also indicated that the US-101 North Ramps/Atherton Avenue

would operate at LOS B conditions during the AM peak hour and LOS E conditions during the PM peak hour.

6.3.5 Cumulative Plus Project Traffic Conditions

This discussion presents LOS conditions on the surrounding transportation system under Cumulative plus Project conditions. Cumulative plus Project conditions are defined as the Cumulative No Project conditions presented in Section 6.3.4 with the addition of trips generated by the Project. Signal timing at the study intersections was not changed from the Cumulative No Project conditions and no roadway improvements were assumed in the analysis for this scenario.

6.3.5.1 Cumulative Plus Project Intersection Operations

Figure 3-6 shows peak hour volumes for Cumulative plus Project conditions. **Table 11** provides a summary of LOS results for Cumulative plus Project conditions, compared with Cumulative no Project conditions. All intersections operate at acceptable LOS during the AM peak hour. The Atherton Avenue/US-101 Northbound and Southbound Ramp intersections operate at acceptable LOS during the PM peak hour. The Redwood Boulevard/San Marin Drive intersection would operate at LOS E conditions, and thus does not meet General Plan Vehicle LOS standards under Cumulative plus Project conditions during the PM peak hour.

Table 11: Peak Hour Intersection LOS – Cumulative Plus Project Conditions

Intersection	Traffic Control	LOS Threshold	Peak Hour	Cumulative No Project		Cumulative plus Project		Meets GP LOS Standard
				Delay	Delay	Delay	LOS	
1. San Marin Drive/Redwood Boulevard	Signal	D	AM	34.9	C	35.5	D	No
			PM	54.6	D	**55.8**	**E**	
2. Atherton Avenue/US-101 SB Ramps	Signal	D	AM	9.1	A	9.2	A	√
			PM	8.6	A	8.7	A	
3. Atherton Avenue/US-101 NB Ramps	Signal	D	AM	12.7	B	12.7	B	√
			PM	20.0	C	20.4	C	

Notes:
Bold indicates that intersection would not meet General Plan LOS goals.
1. The overall average intersection control delay is reported in seconds.
2. HCM 2000 methodology is used for the intersection of San Marin Drive/Redwood Boulevard
Source: Fehr & Peers, 2020.

6.4 Intersection Improvement Project

6.4.1 Description of Improvement Project

This section provides a description of road system improvements designed to improve operating conditions at the Redwood Boulevard/San Marin drive intersection to meet the General Plan LOS Standards for Cumulative plus Project conditions.

Redwood Boulevard/San Marin Drive Intersection Improvements

- Widen the southbound Redwood Boulevard approach to provide a left-turn lane, shared left-turn/through lane, and shared through/right-turn lane
- Update signal timing to add a right-turn overlap signal phasing on the northbound approach
- Any required modifications to existing traffic signal, pedestrian and bicycle facilities at the intersection associated with the above widening of the southbound approach
- Signal timing modifications as required at the time of project implementation

The above improvements are a partial version of the cumulative mitigations identified for the Redwood Boulevard/San Marin Drive intersection in the General Plan EIR. The improvements fit within the footprint of the ultimate long-term improvement identified in the General Plan EIR. Since the above improvements are required to meet General Plan LOS standards for cumulative development, the proposed project should contribute its proportional share for the improvements through its payment of transportation development fees.

6.4.2 Cumulative Plus Project with Improvement Traffic Conditions

This discussion presents LOS conditions on the surrounding transportation system under Cumulative plus Project conditions with the improvement recommended at the Redwood Boulevard/San Marin Drive intersection to improve future conditions to an acceptable LOS according to the General Plan. The improvement measure includes widening the southbound Redwood Boulevard approach to provide a left-turn lane, shared left-turn/through lane, shared through/right-turn lane, right-turn overlap signal phasing on the northbound approach, and optimized signal timing.

6.4.2.1 Cumulative Plus Project with Improvement Traffic Operations

Figure 3-7 shows peak hour volumes for Cumulative plus Project with Improvement conditions. **Table 12** provides a summary of LOS results for Cumulative plus Project with Improvement conditions, compared

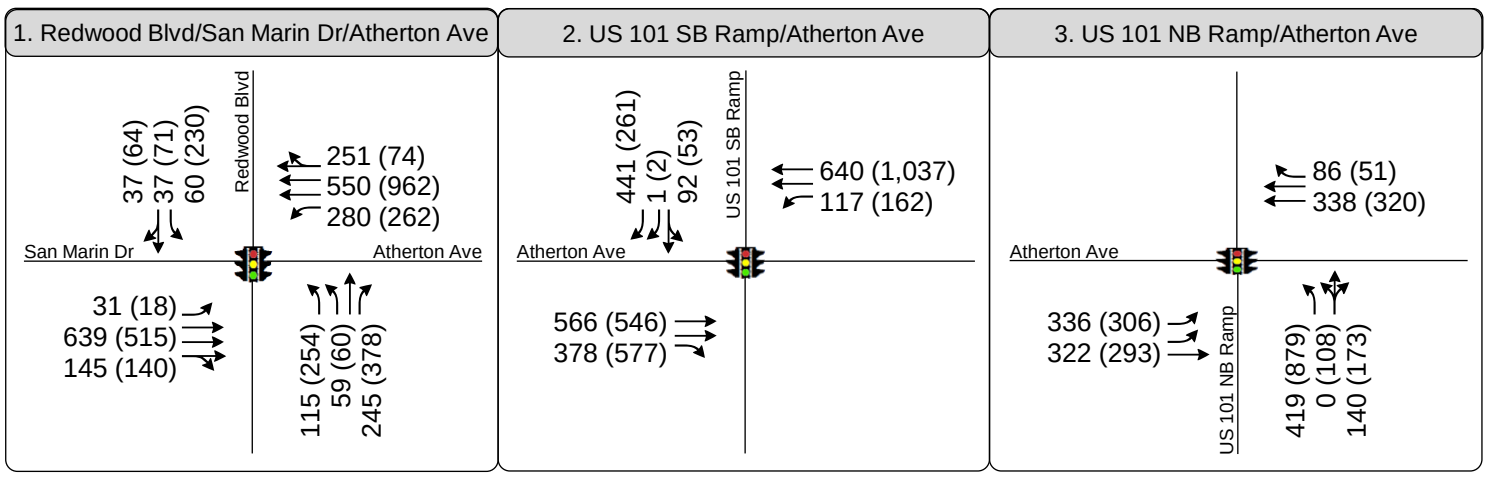
with Cumulative plus Project conditions without improvements. All intersections operate at acceptable LOS during the AM and PM peak hours with the recommended improvement measure.

Table 12: Peak Hour Intersection LOS – Cumulative Plus Project with Improvement Conditions

Intersection	Traffic Control	LOS Threshold	Peak Hour	Cumulative plus Project		Cumulative plus Project with Improvement		Meets GP LOS Standard
				Delay	Delay	Delay	LOS	
1. San Marin Drive/Redwood Boulevard	Signal	D	AM	35.5	D	32.1	D	√
			PM	**55.8**	**E**	44.8	D	
2. Atherton Avenue/US-101 SB Ramps	Signal	D	AM	9.2	A	9.2	A	√
			PM	8.7	A	8.8	A	
3. Atherton Avenue/US-101 NB Ramps	Signal	D	AM	12.7	B	12.7	B	√
			PM	20.4	C	20.4	C	

Notes:
Bold indicates that intersection would not meet General Plan LOS goals.
1. The overall average intersection control delay is reported in seconds.
2. HCM 2000 methodology is used for the intersection of San Marin Drive/Redwood Boulevard
Source: Fehr & Peers, 2020.





Study Intersection

Project Site

City of Novato City Limits

AM (PM) Peak Hour Traffic Volume

Lane Configuration

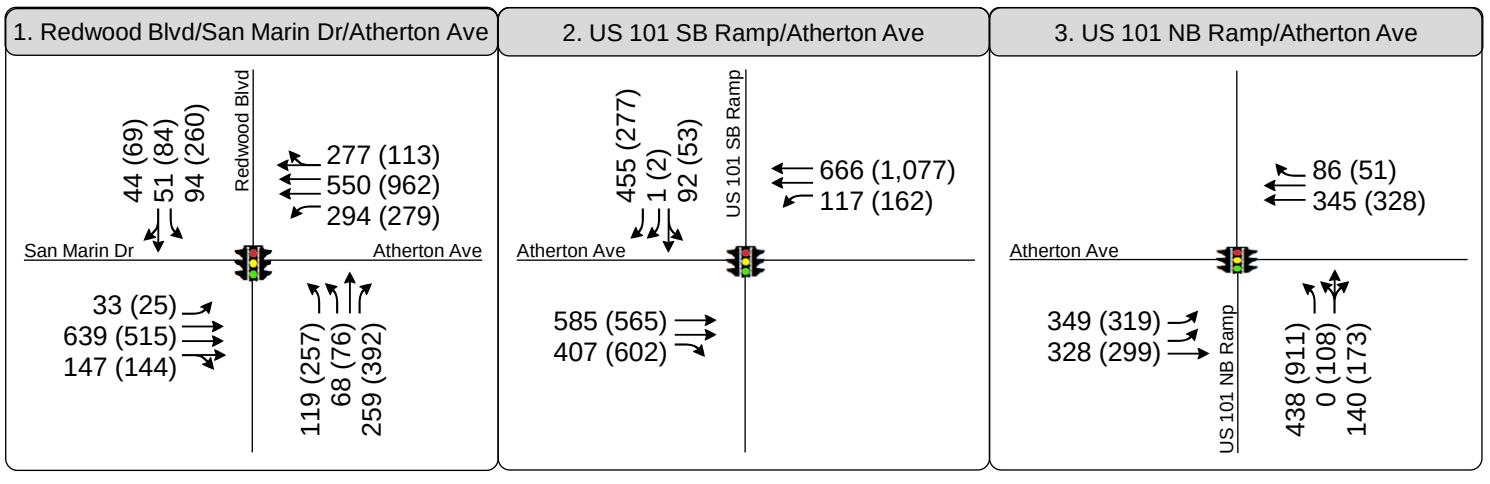
Traffic Signal

Figure 3-1

Peak Hour Traffic Volumes and Lane Configurations - Existing Plus Project

C: U er ndaugherty OneDrive - Fehr Peer Do cument Novato HFH Graphic ArcPro Novato HFH.aprx





Study Intersection

Project Site

City of Novato City Limits

AM (PM) Peak Hour Traffic Volume

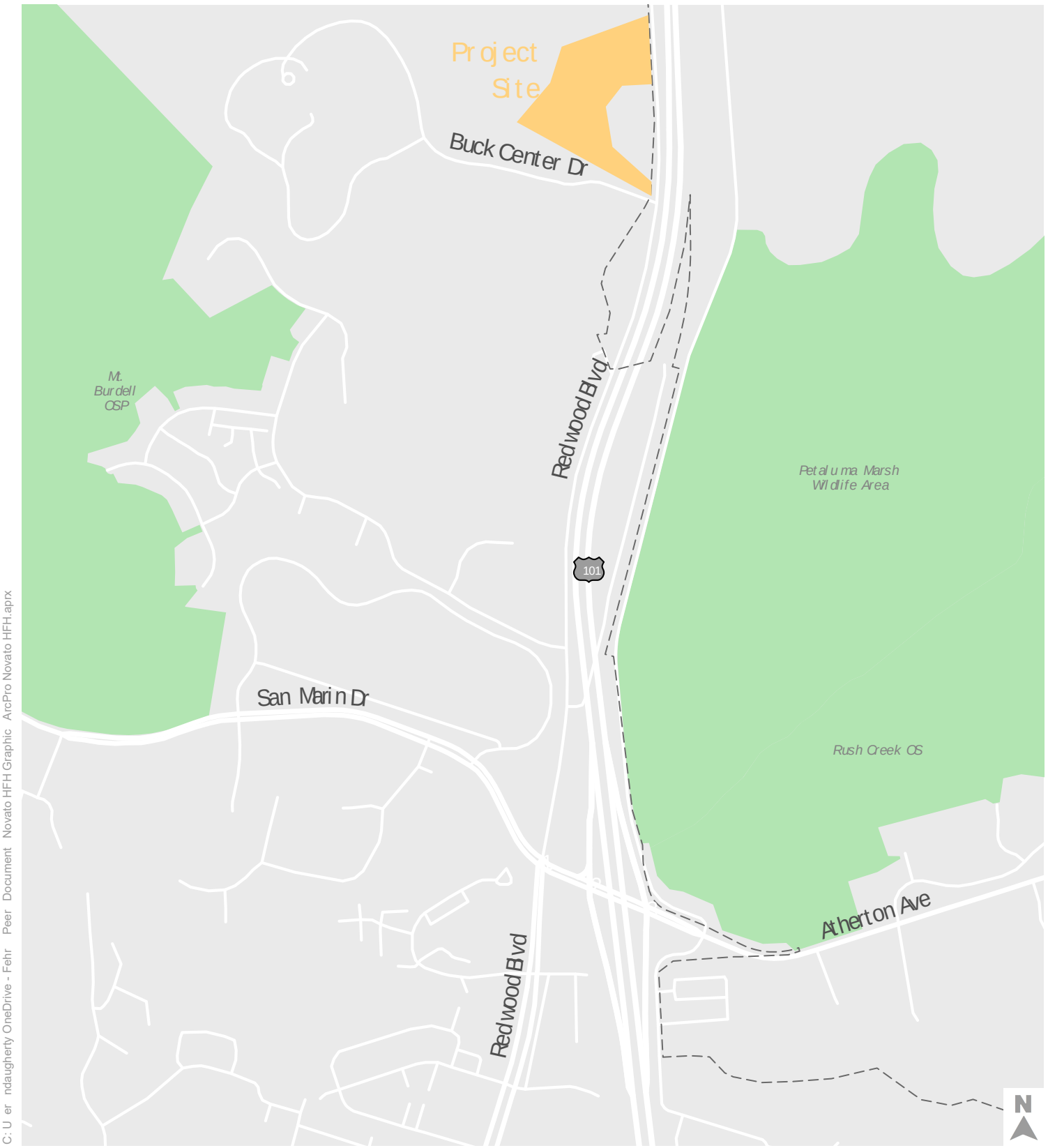
Lane Configuration

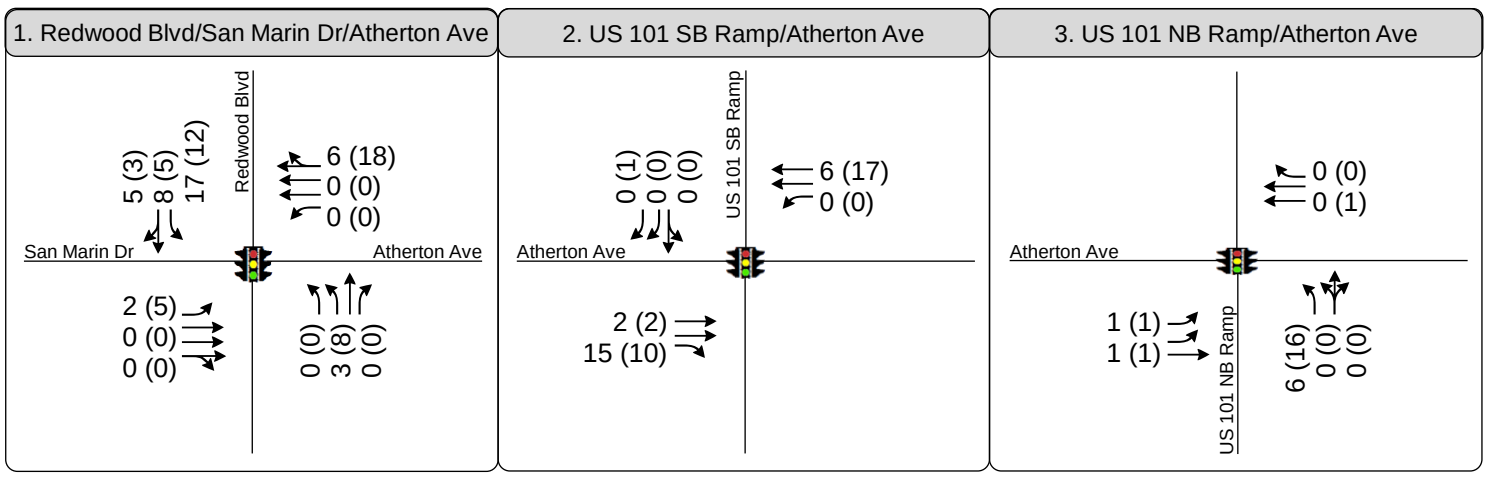
Traffic Signal

Figure 3-2

Peak Hour Traffic Volumes and Lane Configurations - Existing Plus Approved

C: U er ndaugherty OneDrive - Fehr Peer Docum nent Novato HFH Graphic ArcPro Novato HFH.aprx





Study Intersection

Project Site

City of Novato City Limits

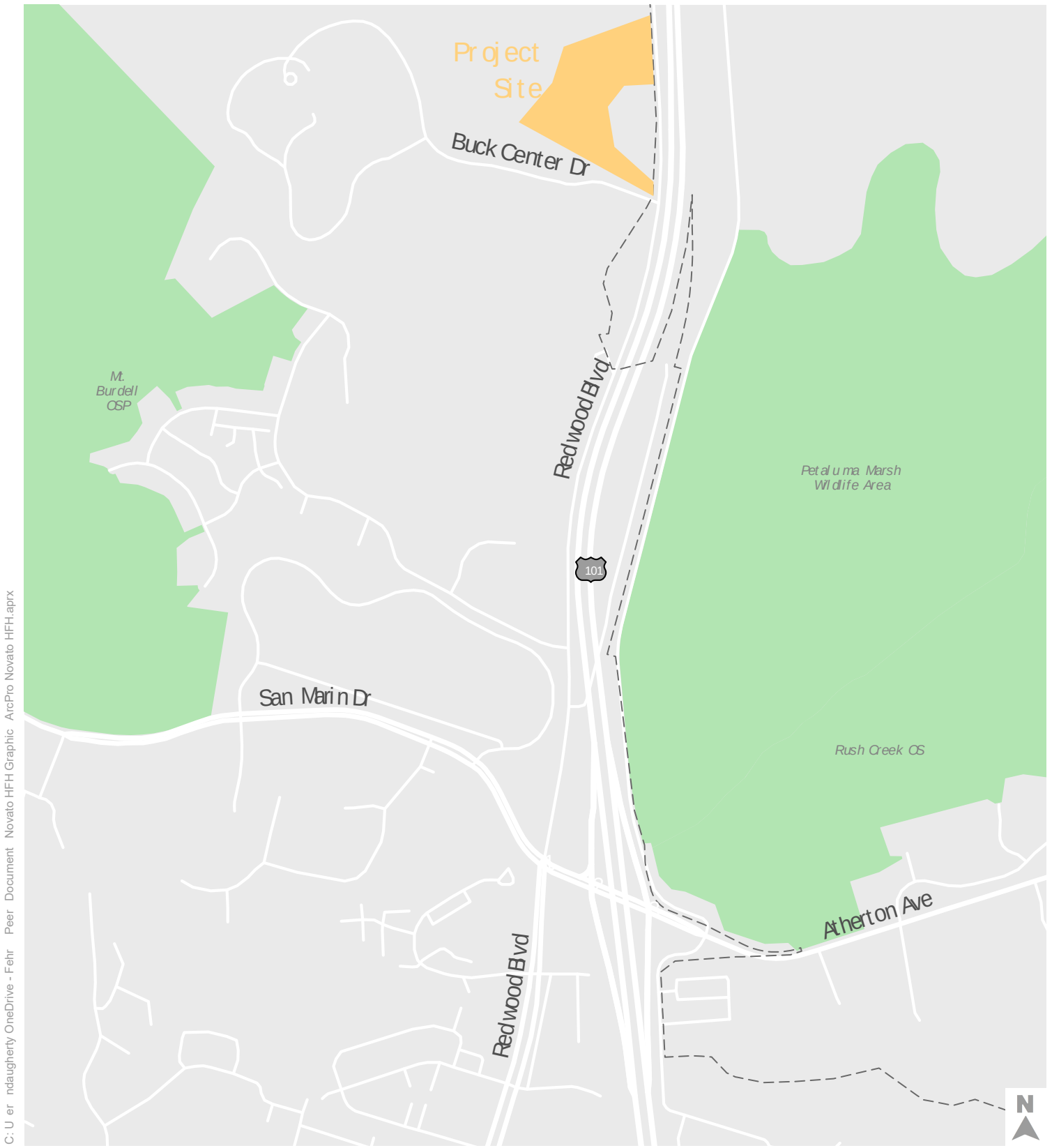
AM (PM) Peak Hour Traffic Volume

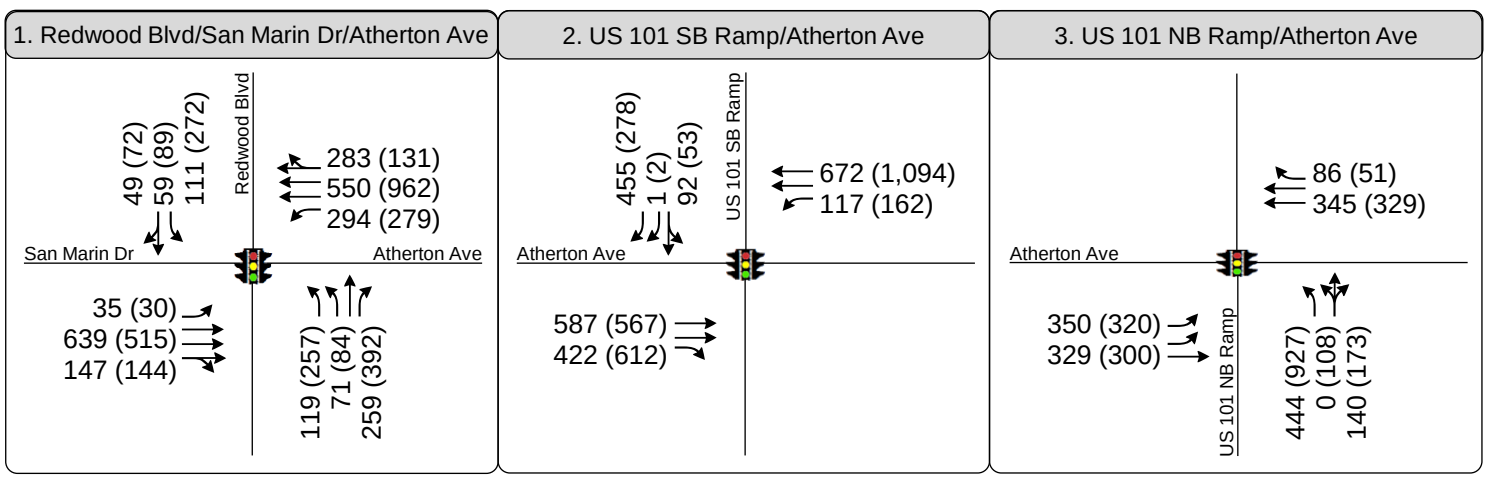
Lane Configuration

Traffic Signal

Figure 3-3

Peak Hour Traffic Volumes and Lane Configurations - Project





Study Intersection

Project Site

City of Novato City Limits

AM (PM) Peak Hour Traffic Volume

Lane Configuration

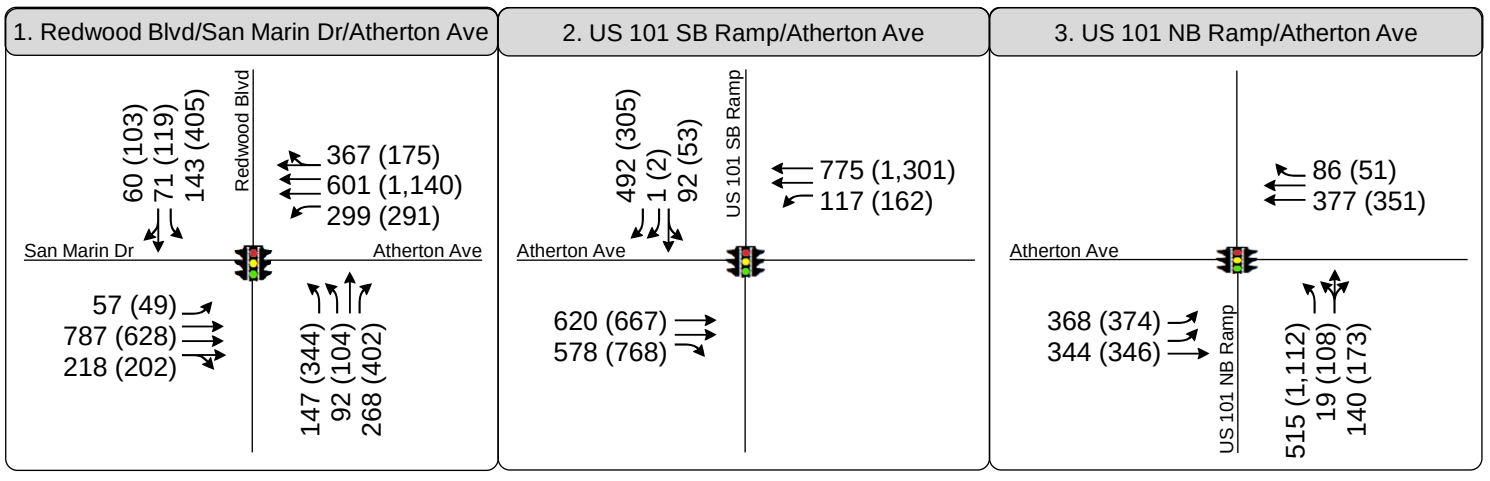
Traffic Signal

Figure 3-4

Peak Hour Traffic Volumes and Lane Configurations - Existing Plus Approved Plus Project

C:\Users\ndaugherty\OneDrive - Fehr Peer Documents\Novato HFH Graphic ArcPro\Novato HFH.aprx





Study Intersection

Project Site

City of Novato City Limits

AM (PM) Peak Hour Traffic Volume

Lane Configuration

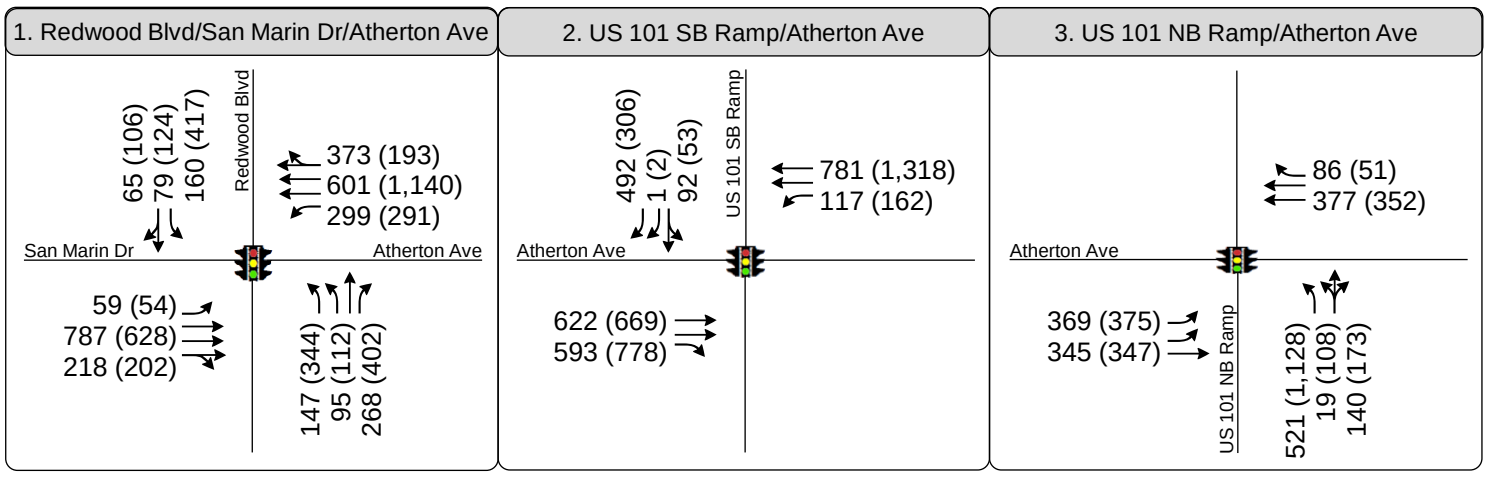
Traffic Signal

Figure 3-5

Peak Hour Traffic Volumes and Lane Configurations - Cumulative No Project

C: U er ndaugherty OneDrive - Fehr Peer Do cument Novato HFH Graphic ArcPro Novato HFH.aprx





Study Intersection

Project Site

City of Novato City Limits

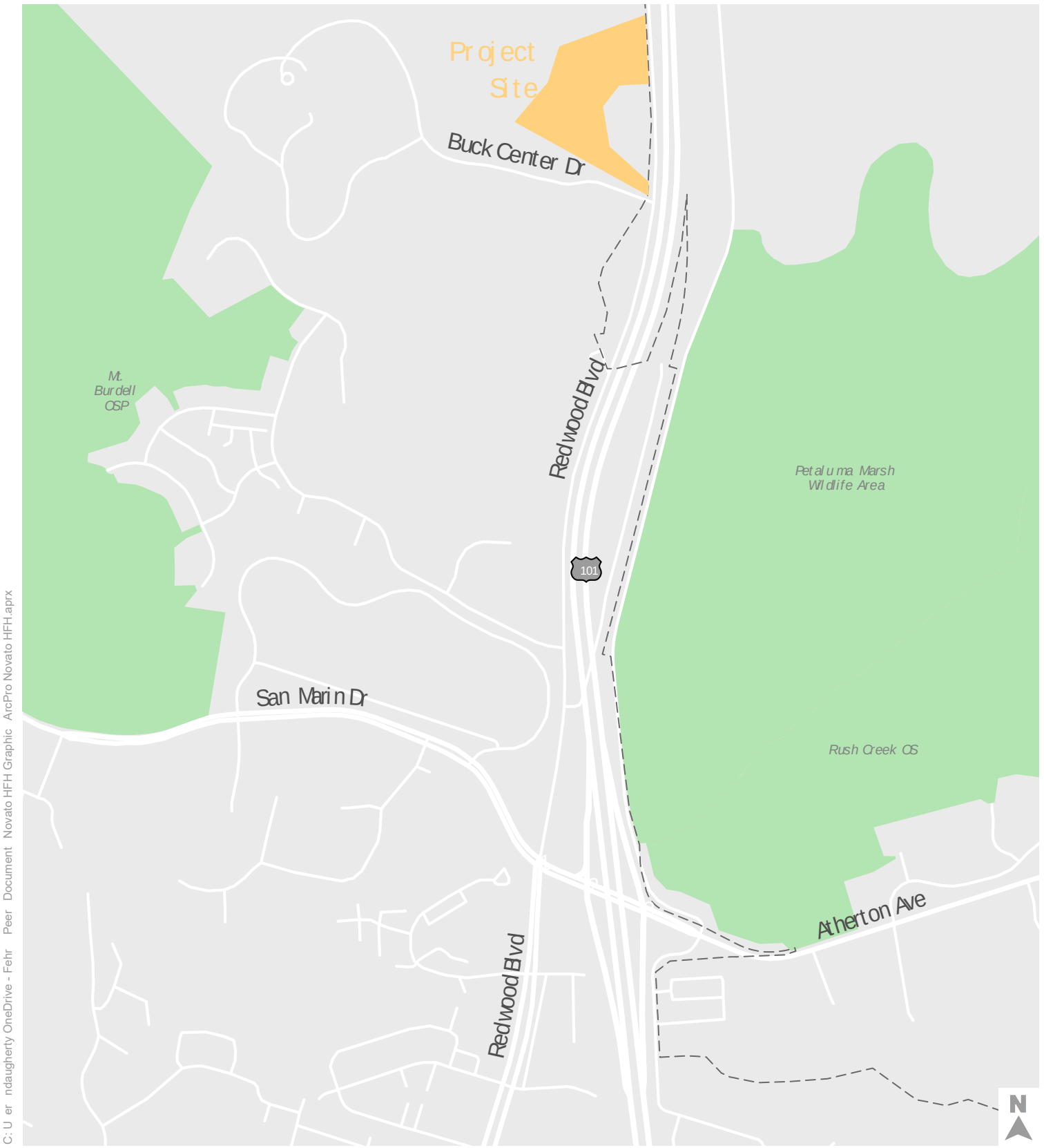
AM (PM) Peak Hour Traffic Volume

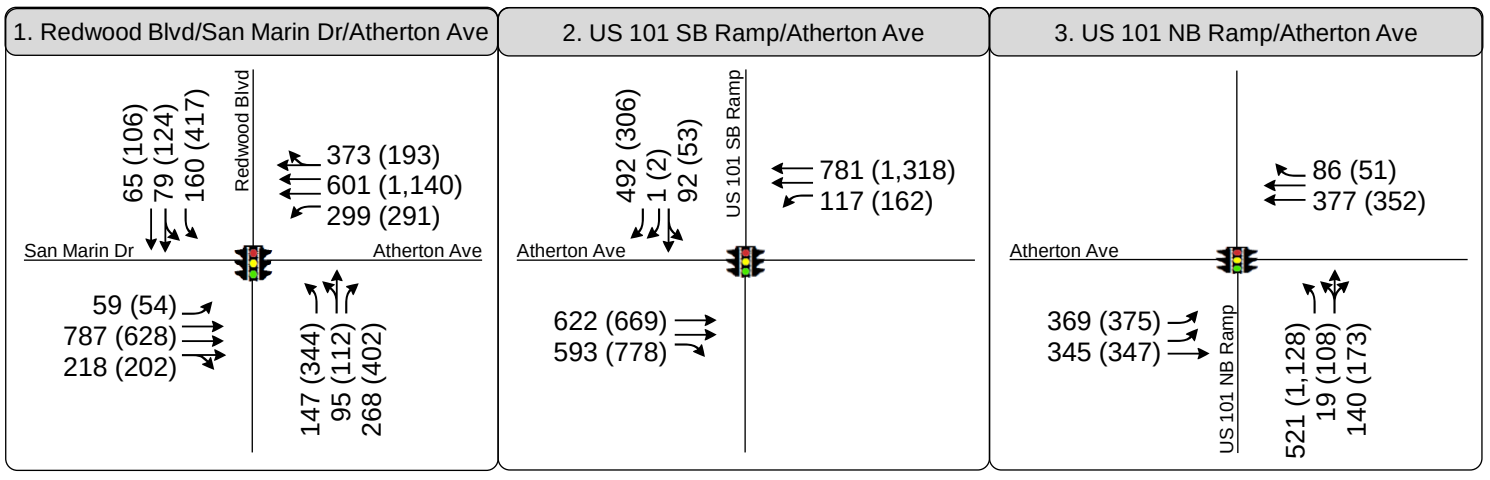
Lane Configuration

Traffic Signal

Figure 3-6

Peak Hour Traffic Volumes and Lane Configurations - Cumulative Plus Project





Study Intersection

Project Site

City of Novato City Limits

AM (PM) Peak Hour Traffic Volume

Lane Configuration

Traffic Signal

Figure 3-7

Peak Hour Traffic Volumes and Lane Configurations - Cumulative Plus Project with Improvement

C: U er ndaugherty OneDrive - Fehr Peer Do Novato HFH Graphic ArcPro Novato HFH.aprx